

Figuring Out the Doha Round

Gary Clyde Hufbauer, Jeffrey J. Schott, Matthew Adler, Claire Brunel, and Woan Foong Wong¹

OVERVIEW

The Doha Round of multilateral trade negotiations marked its eighth birthday in November 2009, making it the longest running negotiation in the postwar era. And the end is not in sight. Members of the World Trade Organization (WTO) continue to disagree about prospective liberalization in the areas of Agriculture and nonagricultural market access (NAMA), and this rift has delayed the discussion of other important issues on the negotiating agenda, particularly Services. To date, the WTO members have elaborated general formulas for cutting tariffs and reducing agricultural subsidies but differ sharply on how countries should limit or exempt certain products from these “formula cuts.” Negotiations on Services have barely progressed from the initial offers put on the table years ago, but talks in a few other areas are well advanced, including an agreement on Trade Facilitation measures and new rules on the transparency of regional trading arrangements (already implemented on a provisional basis).

¹© Peterson Institute for International Economics, 2010. Gary Clyde Hufbauer is the Reginald Jones Senior Fellow at the Peterson Institute for International Economics. Jeffrey J. Schott is a senior fellow at the Peterson Institute for International Economics. Matthew Adler, Claire Brunel, and Woan Foong Wong are research analysts at the Peterson Institute for International Economics. This study revises and updates our earlier working paper titled “What’s on the Table? The Doha Round as of August 2009”, which was posted on the Peterson Institute website in August 2009.

Doha participants have different assessments concerning the accomplishments to date. Some see the glass mostly full, with the formulas providing the backbone of liberalization commitments. Others think there is simply not enough on the table and worry that “flexibilities” to exclude products from formula cuts will turn the backbone into a rubber hose and further weaken the commercial value of a deal. To some, the prospective deal is significant; to others, the deal seems a close approximation of the *status quo* and not worth doing.

The Doha Round needs to be completed for two key reasons. The first is to implement the tariff and subsidy reforms embedded in the draft texts developed to date, and to pocket the gains already substantially agreed. As this study will demonstrate, these gains are significant in the aggregate but unimportant for the United States and other key countries. Despite eight years of effort, the overall Doha package is still not ambitious enough and does not adequately balance the interests of the major trading nations, and thus is unlikely to garner the political support in national legislatures needed to ratify and implement the deal.

The second reason why the Doha Round needs to succeed is to ensure the viability of the rules-based multilateral trading system. If a multilateral deal is put on hold, national governments—pressed by their domestic constituencies—will seek other means to resolve trade and investment problems. Some will pursue protective measures that impede import competition in their markets; some will open new trade and investment opportunities through bilateral and regional trade pacts. In other words, continued drift in the Doha Round negotiations will foster broad scale neglect of the multilateral trading system, causing irreparable harm to the WTO’s credibility as a

negotiating forum, which would, over time, also undermine its valuable dispute settlement mechanism.

A failure scenario is especially worrisome given the frailty of the global recovery from the financial crisis and concerns about a “jobless recovery” with prolonged high unemployment in the United States and Europe that exacerbates protectionist pressures. Aware of this possibility, leaders of the Group of 20 (G-20) have repeatedly underscored, at their summit meetings in Washington, London, and Pittsburgh in 2008 and 2009, their commitment to conclude the Doha Round in 2010, citing a successful Round as one means of reviving the global economy. But the lofty summit rhetoric has not resulted in significant changes in national negotiating positions, so the impasse in the WTO talks has not been broken. The 2010 commitment is already a dead letter.²

The key to completing the Doha Round is to achieve meaningful cuts in trade barriers in Agriculture, NAMA, and Services, and to restrain recourse by major trading nations—developed and developing—to the ample “flexibilities” allowed by the negotiating modalities. What counts are the agreements made by the major trading countries in their schedules on specific products and sectors in goods and services. Who are these countries? Overall, we consider participants in the G-20 summit process to have self-selected themselves for this leadership role in the Doha Round.³

To shed light on the debate concerning the benefits from the WTO negotiations, this study estimates the potential gains from liberalization in Agriculture and NAMA

² In November 2009, leaders of the Asia Pacific Economic Cooperation (APEC) forum also pledged to complete the Round in 2010. Asia-Pacific Economic Cooperation. 2009. 2009 Leaders’ Declaration. Available at http://www.apec.org/apec/leaders_declarations/2009.html (accessed December 18, 2009). It is worth noting that there is a large overlap between the G-20 and APEC membership.

³ The G-20 summit members should not be confused with the G-20 developing-country caucus that was created just prior to the Cancun WTO ministerial in 2003 and coordinates the agricultural trade positions of its members in Doha Round talks.

resulting from the “formula cuts” specified in the negotiating “modalities” drafted by the chairs of the Doha Round negotiating groups. Next, we estimate the benefits that could result from sectoral initiatives in chemicals, information technology (IT) goods, and environmental goods that go beyond the liberalization that would result from the formula tariff cuts. We selected these three sectors because, in our judgment (informed by soundings in Washington and Geneva) they are among those most often cited by officials from major trading nations to be the subject of new sectoral initiatives and because sectoral breakthroughs would make a major contribution to the overall package. These results estimate the gains from elimination or substantial reduction of tariffs in each sector. We recognize that the negotiators are not likely to achieve this level of perfection, though they should be able to achieve a big hunk of the potential gains; our calculations should be seen as the maximum that could be achieved.

The focus after that is on services trade reforms. We calculate prospective gains from a 10 percent reduction by major trading nations in barriers to their imports of services. The 10 percent benchmark, which we recognize is an arbitrary and optimistic goal, would yield large gains for both developed and developing countries. Finally, we estimate the benefits from enhanced Trade Facilitation measures, primarily drawing on analyses by John Wilson, Catherine Mann, and Tsunehiro Otsuki (2005). In each of these sections, we calculate both *trade gains* and *GDP gains*.

Throughout the study, we consider that both exports *and* imports deliver *trade gains*. Politicians and unions often take a mercantilist approach to trade: Exports are good and imports are bad. However, imports provide benefits for consumers in three ways: They deliver lower prices, better quality, and greater variety. Consumers are not just

individuals; industries are consumers as well, and they benefit from imports in the same ways. For example, greater variety allows industrial firms to “right size” their purchased inputs. Moreover, domestic firms learn from import competition: Often they boost their own productivity and improve the quality of their product lines. Leading exporting firms are often big importers as well.

Note that we do not include an assessment of prospective results from the Doha Round negotiating group on rules. Some of this work has already been implemented on a provisional basis (regarding regional trading arrangements). Disciplines on fish subsidies remain a work in progress and should add to the value of the overall package. With respect to antidumping procedures, we believe that the negotiations will leave intact nearly all current practices and rulings by the Appellate Body. Our methodology is summarized in Box 1 and explained in more detail in the appendices of this study.

Table 1 summarizes the *trade gains* we have calculated for the 22 Doha participants in our sample.⁴ Our dataset, provided by the WTO Secretariat, covers 7 developed and 15 developing countries.⁵ In 2008 these countries accounted for 73 percent of world exports and 76 percent of world imports, and 88 percent of global GDP (table A1). Fourteen of the countries are G-20 summit participants. These 14 countries account for 91 percent of G-20 exports to the world and 96 percent of G-20 imports from the world (table A1). Liberalization from implementing what is already “on the table” in

⁴ Most of the 22 sample countries belong to the G-20 summit process. The countries in our sample that are also part of the G-20 are: Argentina, Australia, Brazil, Canada, China, the European Union, India, Indonesia, Japan, the Republic of Korea, Mexico, South Africa, Turkey, and the United States. It is worth noting that the G-20 summit participation extends beyond 20 members, and now encompasses over 30 countries and supra-national bodies (such as the European Union).

⁵ The 7 developed countries are: Australia, Canada, the European Union, Japan, Norway, Switzerland, and the United States. The 15 developing nations are: Argentina, Brazil, China, Colombia, India, Indonesia, the Republic of Korea, Malaysia, Mexico, Pakistan, the Philippines, South Africa, Taiwan, Thailand, and Turkey.

Agriculture and NAMA would yield an increase in exports of \$54.4 billion among the sample countries. Trade between these 22 countries (meaning exports of the 22 countries to other countries in the sample) would increase by another \$37.2 billion from a 10 percent liberalization of services barriers and by a further \$50.8 billion from the three sectoral initiatives.

We suspect that table 1 and the numbers discussed throughout this introduction will prove disconcerting to many readers: For the 22 countries, import gains across the board are larger than export gains! This, however, is no cause for alarm; the disparity between import and export gains is created by our data methods—not by poor bargaining on the part of the sample countries. Our method covers prospective tariff and NTB cuts only for imports by the 22 sample countries. This means, for example, that we cover imports by the United States (a sample country) from, say, Vietnam (not a sample country), but we do not include exports by the United States to Vietnam. Therefore, import gains are routinely larger than export gains. Generally, we rely on these unbalanced calculations because they are the most accurate that our data methods can generate. However, we also have made rough calculations to “size up” the export data and portray exports to the world by the 22 countries. When this adjustment is made, import and export gains for the 22 countries are roughly equal (see table 2).

In turn, we estimate that the trade growth (using exports to the sample countries *and* imports from the world) would yield global *GDP gains* of \$63.0 billion due to the modalities currently on the table in Agriculture and NAMA (table 3).⁶ Bold new

⁶ The *global GDP gain* numbers were calculated by scaling up the GDP gains of the 22 countries. Since *GDP gains* for the 22 countries in agriculture and NAMA are \$55.5 billion, and since these 22 countries account for 88 percent of global GDP, we estimate that *global GDP gains* will be roughly \$63 billion

initiatives on liberalizing Services and freeing trade in selective sectoral initiatives could increase global GDP by an additional \$101.9 billion. Improvements in Trade Facilitation could yield additional global *GDP gains* of \$117.8 billion, if governments engage in wide-ranging policy and administrative reforms. In sum, the Doha deal “on the table”, topped up with additional liberalization in services and manufactures plus the expected gains from the Trade Facilitation reforms, would raise the value of the Doha package, measured in global *GDP gains*, to as much as \$282.7 billion.

Overall, we find the prospective results from what has already been agreed in Doha Round talks to be significant—but probably not sufficient to marshal the necessary political support to close the deal and ensure its ratification by member countries. To pass political muster, Doha offers—primarily by the G-20 countries—need to be “topped up”. We conclude that the “potential” exists for a good outcome in the Doha Round, even if our ambitious targets for comprehensive trade reforms are not fully achieved.

[(\$55.5 billion/88)*100 = \$63 billion]. This method of scaling-up assumes that the *GDP gains* of the 22 sample countries reasonably represent the *GDP gains* of excluded countries.

Box 1 How We Estimate Trade and GDP Gains

In order to fully understand the potential value of a Doha Round accord, it is important to go beyond analyzing the tariff cuts. In this study, we strive to do that. First, we examine “what’s on the table” in Agriculture and NAMA. Calculating the impact of the tariff cuts is relatively straightforward (as explained in the appendices), but including the effects of subsidy and quota reforms requires additional considerations. We calculate the gains from formula cuts in trade barriers using three metrics:

- **Reciprocity measure:** This metric calculates the change in revenue from tariff cuts in Agriculture and NAMA and the revenue equivalent of concessions on nontariff barriers (NTBs), namely agricultural tariff quotas, domestic support, and export subsidies. Using this metric, concessions received are expressed in terms of tariffs and tariff equivalent costs *not* paid by exporting countries. Concessions given are expressed in terms of tariffs and tariff-equivalent barriers *foregone* by importing countries.⁷
- **Trade gains:** This metric indicates the increased trade that results from the tariff cuts and tariff equivalent of concessions on NTBs calculated in the *reciprocity measure*. Trade gains are separately stated for exports and imports.
- **GDP gains:** This metric builds on the calculated *trade gains* by applying a GDP coefficient to increased exports and imports. The details surrounding the GDP coefficient are explained in Appendix A. It is important to emphasize that larger exports and imports *both* contribute to higher GDP through lower consumer

⁷ Our interpretation of the reciprocity measure assumes that the incidence of tariffs falls entirely on the sellers (the exporters) and not at all on the buyers (the importers). This interpretation accords with the mercantilist spirit that dominates trade negotiations. In real life, however, a country that protects its domestic markets usually raises the price paid by its own domestic buyers, both for the imported good and its domestic substitutes.

prices, more variety, greater productivity, and improved allocation of resources (Bradford, Grieco, and Hufbauer 2005). We clearly indicate the three metrics in the section headings and italicize them throughout the text.

The following subsections break down these estimates by major trading nation, for trade with the 22 sample countries. The cited export gains are calculated with reference to the 22 country sample but sized up to reflect the prospective gains from larger exports to countries not in the sample(as reported in table 2), while the cited import gains are calculated with reference to imports from the world. The cited *GDP gains* reflect exports to the 22 country sample and imports from the world.

The Doha Round Box Score below, citing sized up exports, contrasts the *trade* and *GDP gains* for the major trading nations from a Doha package consisting of only the formula cuts against an expanded Doha package that includes our recommendations. The “World Total” is calculated by scaling up the *GDP* and *trade gains* according to the sample countries’ share of GDP and trade to the world in 2008.

Our summary results, as reported in the Box Score, reveal a large gap between Doha gains that are “on the table” and those that would be derived from an admittedly very optimistic negotiating scenario. The two scenarios chart what we consider the range of feasible outcomes. However, we recognize that negotiators are unlikely to harvest the full yield from our expanded package of trade reforms. But two-thirds or even half a loaf would still be very nourishing!

The United States, European Union, and China are big winners from an ambitious and balanced Doha package of reforms, so they should take the initiative to accelerate and

expand their Doha offers. Even if the end results don't reach this ambitious target, the additional liberalizations would substantially improve the value and distribution of the Doha package.

Box 2: Doha Round Box Score

Countries	Doha "Formula Cuts" in Agriculture and NAMA				Doha "Topped Up" Reforms in Goods, Services, and Trade Facilitation			
	Trade Gains		GDP Gains		Trade Gains		GDP Gains	
	Exports	Imports			Exports	Imports		
	(\$ billion)	(percent)	(\$ billion)		(\$ billion)	(percent)	(\$ billion)	
United States	7.6	14.3	0.1	9.3	39.4	45.9	0.4	36.2
European Union	13.4	26.3	0.1	16.3	62.7	53.5	0.3	45.6
Japan	8.0	4.9	0.1	5.6	30.6	13.7	0.3	18.6
Brazil	2.7	1.0	0.1	1.5	30.6	13.9	0.7	8.9
China	16.8	6.9	0.3	9.7	55.7	68.4	1.6	52.7
India	1.9	0.7	0.1	1.1	7.7	20.3	1.0	11.8
Total of 22 Doha Participants	67.7	66.1	0.1	55.5	280.4	311.6	0.5	248.8
World Total*	92.8	86.9	0.1	63.0	384.1	409.9	0.5	282.7

* World Total is derived from a simple scaling up of the sample countries accounting for 73 percent of world exports, 76 percent of world imports, and 88 percent of global GDP (2008).

Note: GDP gains result from increases in global imports and exports to other Doha participants.

Source: Tables 2 and 3.

United States

The United States would reap small trade gains from the formula cuts in Agriculture and NAMA (export and import gains of \$7.6 billion and \$14.3 billion, respectively). This result is not surprising since the United States already has free trade agreements or low barriers with many of the other 21 countries. These relatively small gains and the imbalance between the gains from exports and imports explain why the deal on modalities has not attracted active support from pro-trade constituencies in the United

States. To acquire that support, the deal needs to be supplemented, particularly in Services, which could add \$13.1 billion to export gains, and \$3.1 billion to import gains. In addition, “topping up” NAMA in several sectors could yield further gains up to \$8.0 billion in exports and \$5.5 billion in imports, and Trade Facilitation reforms at home and abroad could boost US exports and imports by \$10.5 billion and \$23 billion, respectively. Combined, we estimate US export gains of \$39.4 billion and US import gains of \$45.9 billion from a more ambitious Doha deal. The resulting *GDP gains* for the United States would be \$36.2 billion.

European Union

The European Union stands to gain more from Agriculture and NAMA reforms than the United States, because its current barriers are higher. The formula cuts produce EU export gains of \$13.4 billion and import gains of \$26.3 billion, generating overall *GDP gains* in Agriculture and NAMA of \$16.3 billion—the largest gains incurred by any of the six major trading nations. EU *trade gains* from Services reform (\$17.4 billion and \$5.2 billion, respectively, in exports and imports) and from NAMA top-ups (\$15.6 billion and \$4.7 billion) are roughly comparable to the US results. It is interesting to note that the European Union would be, after China, one of the main beneficiaries of a sectoral agreement in environmental goods (based on the product coverage listed in World Bank 2007). As a big trading bloc, the European Union would also benefit substantially from the Trade Facilitation reforms, which could boost EU exports and imports by \$16.3 billion and \$17.2 billion, respectively. Combined, EU benefits would total \$62.7 billion

on the export side and \$53.5 billion on imports, which would boost EU GDP by \$45.6 billion.

Japan

Japanese trade gains are most notable in NAMA: exports would increase by \$7.5 billion and imports by \$2.5 billion. Agricultural reform, by contrast, offers much fewer benefits, mostly on the import side (\$0.5 billion in exports and \$2.4 billion in imports). In Services, Japanese exports increase by \$3.8 billion and imports by \$3.5 billion. In the three “top-up” sectors, Japan has barely any import gains, but gains can be significant on the export side, notably a \$7.8 billion increase in electronics and electrical goods. Somewhat surprisingly, Japan benefits far less than other big traders from Trade Facilitation, with export gains of \$7.5 billion and import gains of \$5.1 billion. Combined, Japanese export gains of \$30.6 billion are more than double its import gains (\$13.7 billion), and a large share of those benefits derive from broad-scale NAMA tariff reforms. The overall *GDP gains* for Japan (\$18.6 billion) are smaller than those of the European Union and the United States in absolute numbers; in relative terms, however, Japan is in line with the two other major nations—0.4 percent of GDP for formula tariff cuts, Services, NAMA “top-ups”, and Trade Facilitation combined.

Brazil | India | China

Brazil’s *trade gains* are most prominent in exports of Agriculture (\$2.3 billion) and imports of Services (\$2.8 billion) and electronics and electrical goods (\$3.9 billion). Overall Brazilian trade gains would be \$6.0 billion on exports and \$13.9 billion on

imports. Formula cuts would boost Brazilian GDP by \$1.5 billion; Services reforms would yield benefits of \$1.6 billion; NAMA top-ups would add \$2.6 billion to GDP; and Trade Facilitation reforms would yield \$3.2 billion more. In total, the boost to Brazilian GDP would be \$8.9 billion or 0.7 percent of GDP—almost double the impact of the Doha package on developed country economies.

India's *trade gains* from both the formula cuts and Doha top-ups are much more muted, with the notable exception of import gains in Services (\$7.2 billion). Trade Facilitation reforms also are important, with export gains of \$2.6 billion and import gains of \$9.1 billion. All combined, India could garner \$7.7 billion and \$20.3 billion in export and import gains, respectively. As a result, India could achieve GDP gains greater than Brazil from an ambitious Doha accord (\$11.8 billion or 1 percent of GDP). Liberalization of Services would generate an increase of \$3.6 billion in Indian GDP (0.3 percent) and account for about one-third of India's *GDP gains* from an expanded Doha accord.

As a result of liberalization undertaken in its WTO accession process, China has low tariff barriers in NAMA relative to other developing countries. China's Agriculture and NAMA *trade gains* are concentrated on the export side, with gains of \$16.8 billion, more than twice as large as its import gains. Conversely, its gains from Services reform are predominantly on the import side (\$12.0 billion in imports versus \$4.4 billion in exports). NAMA top-ups would yield greater balance between China's export and import gains, especially if additional reforms are made in the electronic and electrical goods sectors. Liberalization in the three sectors would increase Chinese exports and imports by \$14.5 billion and \$17.5 billion respectively. China is also, by far, the largest beneficiary of Trade Facilitation reforms, with export gains of \$19.9 billion and import gains of

\$32.0 billion. Taken together, China would be one of the top beneficiaries of an ambitious Doha accord, with export gains of \$55.7 billion and import gains of \$68.4 billion. Combined, liberalization of goods and services and Trade Facilitation reforms would boost Chinese GDP by \$52.7 billion or 1.6 percent of GDP.

Comparing Gains for Developed and Developing Countries

WTO members expect that a final deal should provide relatively larger benefits for developing countries if Doha is to meet its advertised goal of being a “development round.” Overall, we find this to be the case, as reported in tables 2 and 3.⁸

In absolute numbers, *trade gains* in Agriculture are larger for developed countries (\$9.5 billion and \$19.2 billion in exports and imports, respectively) than for developing countries (\$7.7 billion and \$1.4 billion). In NAMA, gains for the two country groups are of similar magnitude, but developing countries gain more on the export side (\$27.5 billion for exports versus \$16.1 billion for imports), whereas developed countries gain more in imports (\$29.5 billion in imports versus \$23.1 billion in exports). Still, as shown in table 3, *GDP gains* from Agriculture and NAMA formula cuts for developing countries amount to 0.2 percent of GDP (\$21.5 billion), more than double the percentage increase for developed countries of 0.1 percent (\$34.0 billion).

In Services, under a 10 percent liberalization scenario, the *trade gains* for developed countries are higher than for developing countries in exports (\$38.9 billion *versus* \$16.1 billion for developed and developing countries, respectively) but lower in imports (\$14.5 billion *versus* \$35.3 billion, respectively). *GDP gains* for developing

⁸ Note that these results don’t incorporate “duty-free, quota-free” (DFQF) reforms that would eliminate tariffs and quotas on Least Developed Countries’ (LDC) imports.

countries reach \$21.5 billion (0.2 percent of GDP) compared with \$18.5 billion for developed countries (0.05 percent of GDP).

In the three NAMA top-ups, the additional increase in trade from sectoral tariff cuts above the NAMA formula cuts is roughly equal for developing and developed countries on the export side, but developing countries gain more in imports. *GDP gains*, when all three sectors are liberalized, total \$31.5 billion for developing countries (0.3 percent) and \$18.2 billion for developed countries (0.05 percent).

As for Trade Facilitation (where the numbers are less rigorous), *trade gains* for developing countries exceed those for developed countries, both in exports (\$47.3 billion *versus* \$39.5 billion for developing and developed countries, respectively) and imports (\$84.0 billion *versus* \$54.5 billion for developing and developed countries, respectively). Developing countries might expect *GDP gains* of 0.6 percent (\$60.4 billion), while the GDP increase for developed countries might reach 0.1 percent (\$43.2 billion).

In sum, the broader reforms we recommend would validate a core objective of the venture officially called the Doha Development Agenda: the potential trade and GDP gains for developing countries exceed those for developed countries. Compared to the outcome from the formula cuts, which substantially benefits the richer countries, the broader package of reforms in an expanded Doha Round accord would yield results that are both more ambitious and more balanced among WTO participants.

AGRICULTURE AND NONAGRICULTURAL MARKET ACCESS (NAMA)

For each of the countries in our sample, the dataset contains three tariff rates: the bound rates, the most favored nation (MFN) applied rates, and, where applicable, the preferential duty rates.⁹ Our methodology is detailed in appendix B. The tables report trade-weighted averages of bound and applied tariff rates. However, trade-weighted averages miss an important reform contemplated in the Doha Round—namely downward harmonization of rates. Sharp reductions in tariff peaks are reflected in aggregate numbers on bound and applied tariff rate cuts; however the reduction of peaks is especially important in Agriculture. That is why negotiators worry about “special” and “sensitive” products, categories that often encompass goods with peak tariffs which importing countries are very reluctant to cut.¹⁰

Results for Agriculture

The agricultural negotiations seek to eliminate export subsidies, sharply reduce tariffs and domestic farm subsidies, and expand tariff rate quotas (TRQs). In this study, we do not go into the details of the commitments for each product but rather summarize the overall gains in Agriculture for selected countries.

⁹ The data covers all tariff lines of traded goods in 2006 at the 2-digit level of the HS code. HS stands for the Harmonized Commodity Description and Coding System. The level of detail goes to 8 digits and for some countries to 10 digits.

¹⁰ Bhala (2009) outlines the fine distinction between “special” and “sensitive” merchandise. The designation of an agricultural good as a “special” product is a form of special and differential treatment for poor countries, but results in another restriction on market access. Labeling products as “special” exempts these products – partially or entirely – from any tariff cut under the tiered tariff formula. This avenue is not available for developed countries. However, all WTO members, whether developing or developed, can designate “sensitive” products, which are also exempt – partially or entirely – from any tariff cut. The discipline on resort to “special” and “sensitive” exemptions comes by way of agreed limits on the number of tariff lines entitled to each form of exemption.

Table B3 shows the trade-weighted average bound and applied tariff rates, both pre- and post-Doha, for the sample group of all 22 countries and for 6 major trading nations that we will discuss in more detail: Brazil, China, India, the European Union, Japan, and the United States. For the group of all 22 countries, bound rates will be decreased from 25 percent to 18.2 percent. The US average pre-Doha bound rate is quite low, 3 percent, and will be reduced to 1.6 percent. The European Union has a higher average pre-Doha bound rate, 7.8 percent, but commits to a cut of almost half, bringing the post-Doha bound rate down to 4.2 percent. Among the leading developed countries, Japan has the highest average pre-Doha bound rate, 10.7 percent, which will be cut to 4.5 percent, a level similar to the EU post-Doha bound rate.

The largest cuts in percentage point terms come from the three developing countries. India has a particularly high average pre-Doha bound rate (167 percent), which will be reduced by 36.6 percentage points to 130.4 percent. This is by far the largest cut in average bound rates, but the post-Doha average is still remarkably high. Brazil commits to cut its average bound rate by 9.6 percentage points, from an initial level of 40.6 percent to a new level of 31 percent. These large cuts in bound rates for developing countries reflect high pre-Doha bound rates in Agriculture and show the workings of the tiered formula for cutting tariffs.¹¹

Tables B10 and B11 in appendix B show details of the pre-Doha and post-Doha bound rates and the cuts in percentage points, respectively, for bilateral trade between selected country groups and individual countries. Particularly steep reductions can be

¹¹ As detailed in appendix B, the tiered formula applies larger percentage point cuts to high initial tariffs and smaller cuts to low initial tariffs.

observed in the rates applied to imports of agricultural goods by the majority of developing countries from least developed countries (LDCs) and from China.

Cuts in bound rates may not create new opportunities for trade because the new bound rates may still be higher than the old applied rates. However, bound rates are important because they lock in liberalization and provide insurance against large doses of new protection in the future via unilateral increases in applied rates. Although “lock in” and “insurance” gains are not quantifiable, they are an important benefit of the Doha Round.

As a result of substantial unilateral liberalization over the past two decades, many developing countries impose tariffs at levels well below their WTO bound rates. Those countries have the right to raise such tariffs at any time without violating their obligations to other WTO members, and they value that flexibility. In effect, countries that apply tariffs below their bound rates can have recourse to a “free safeguard,” namely, a WTO-legal tariff increase equal to (or less than) the difference between the bound and applied rates. When the bound rate comes closer to (or even equal to) the applied rate, the WTO member has less scope for applying “free safeguards” and its trading partners benefit from greater policy security that import barriers will not be easily raised.

Column 3 of table B3 shows the pre-Doha applied rates (again, trade-weighted averages). As noted above, applied rates are often well below WTO bound rates because of unilateral liberalization. The difference between bound and applied rates, in percentage points, measures the “water” in the tariff schedule. Brazil and India have particularly high water levels. In fact, water levels are usually quite high in Agriculture for developing countries (see table B12 of appendix B for detail). China is an exception as it recently

acceded to the WTO and generally bound its tariffs at or close to the levels negotiated in its bilateral accession protocols.¹²

Table B13 in appendix B presents the trade-weighted average applied tariff rates for the 22 countries in the sample for 2001, 2006, and post-Doha. Between the beginning of the Doha negotiations in November 2001 and the end of 2006, some countries engaged in unilateral liberalization and reduced their applied MFN rates, sometimes substantially. China, for example, lowered its trade-weighted average applied MFN rates on Agriculture from 49 to 16.1 percent. Korea and Mexico also significantly decreased their trade-weighted average applied MFN rates on Agriculture, from 79.2 to 14.1 percent and from 34.4 to 23.9 percent, respectively. In other words, key emerging countries have been liberalizing farm trade throughout the Doha Round talks. For some of those countries, the additional reduction from Doha commitments would be marginal compared with the unilateral liberalization they have already implemented in recent years. A few countries, by contrast, raised their average trade-weighted applied MFN tariff rates in Agriculture between 2001 and 2006 (e.g., Malaysia, Pakistan, and India).

We see no reason why countries that have unilaterally reduced tariffs should not receive credit in WTO negotiations, provided they accept a legal obligation to maintain or “lock-in” the reforms. In other words, a country should be able to claim a negotiating credit for any increase in imports that is reasonably attributable to its unilateral liberalization. Indeed, we proposed such a process at the start of the Uruguay Round! For

¹² In the July 2008 draft text on agriculture, recently acceded members (RAMs) would be granted additional time to implement their Doha commitments if those overlap with commitments to be undertaken according to their accession agreements. Very recently acceded countries, namely Macedonia, Saudi Arabia, Tonga, Vietnam, and Ukraine, and small low-income RAMs, namely Albania, Armenia, Georgia, Kyrgyzstan, Moldova, and Mongolia, would be exempt from tariff reductions beyond their accession commitments.

example, a country that liberalized imports of a product category, and experienced a rise in imports in that category of \$500 million that can be reasonably attributed to the lower tariff, should be able to claim concessions of an equivalent amount in WTO negotiations (Hufbauer and Schott 1985). Unfortunately, this very sound idea has yet to be accepted as a WTO negotiations template.

Column 4 of table B3 shows prospective post-Doha applied rates. Applied rates are cut only when the pre-Doha applied rate of a specific tariff line exceeds the post-Doha bound rate for that tariff line. For the group of 22 countries, the average trade-weighted applied rate will be reduced from 7.6 to 5.3 percent. Japanese and EU applied rates in Agriculture are high by comparison with other developed countries, and their commitments for reducing applied rates in Agriculture are significant (this is the case for imports from both developed and developing countries—see table B14 in appendix B). India will undergo much higher cuts in applied tariffs on agricultural imports than China or Brazil, because current Indian applied tariffs are much higher.

As for the United States, while US negotiators argue that the Doha Round must achieve “effective market access,” meaning significant cuts in foreign applied tariffs and subsidies, in fact the United States has committed to very little reduction in its own applied rates on agricultural imports. At present, the United States would reduce its weighted average applied rate by just 0.6 percentage points in agricultural goods, which is comparable with the commitments of major developing countries such as Brazil and China. On the other hand, India would reduce its applied rates on agricultural imports by 4.5 percentage points. However, US peak tariffs would be cut substantially due to the

harmonizing effect of the formula cuts. Moreover, the United States and the European Union also contribute large cuts in agricultural subsidies (discussed below).

The United States generously subsidizes its farmers who grow “field crops” (soybeans, wheat, corn, and cotton) and certain other products. The subsidies fall in two categories. The first covers payments to farmers which can be either direct payments decoupled from production and price or payments that compensate for adverse price movements. The second category covers price support programs (mostly for dairy and sugar). When the relevant price falls below a certain level, the US Department of Agriculture buys excess production to bolster the price.

The US proposal in July 2008 offered to lower the ceiling for its overall trade-distorting domestic support (OTDS) from \$48 billion to around \$15 billion. Developing countries argued that the offer was insufficient since actual disbursements of subsidies are already well below \$15 billion owing to the general rise in commodity prices in recent years. However, the US proposal would constrain an increase in subsidies when prices fall. Moreover, the proposal as it stands, or anything more stringent, will require significant changes in some US farm programs currently in force, but not in the near term because the most politically sensitive concessions are usually back-end loaded—meaning they are implemented after a lengthy transition period.¹³ In other words, the Doha agreement would not require major changes in the current US farm bill. Instead, in writing the next farm bill in 2012 and 2013, Congress would need to restructure US programs so that they conform to new WTO obligations.

¹³ Kimberly Ann Elliott, “Last Gasp for Doha,” CGD Global Development: Views from the Center, Center for Global Development, July 25, 2008.

Table B15 summarizes the prospective cuts in applied rates in percentage point terms. Neither developed nor developing countries will appreciably decrease their tariffs on LDC agricultural exports. Rates on LDC exports are already low across the board, except in a few developing-country importers such as Brazil and India. China's applied rates are similar to those of Japan (9.6 and 10.4 percent, respectively, from table B3), but China has committed to Doha reductions that are much smaller, less than 1 percentage point compared with Japan's 6 percentage points.

Table B4 shows the bound and applied rates in Agriculture, pre- and post-Doha, imposed by Brazil, China, and India on the imports of the 15 developing countries in the sample. Again, Indian bound and applied rates stand out as extremely high and Indian bound rates would undergo large cuts. Brazil has particularly low applied rates on agricultural imports from the 15 developing countries. This is in part explained by the presence of Argentina in the group of 15 developing countries. Argentina accounts for a large proportion of Brazilian agricultural imports from the group, and much of the trade between Argentina and Brazil is already duty-free under the Mercosur (Southern Cone Common Market).¹⁴

The final design element among Doha “modalities” that could further limit the range of products covered by prospective tariff cuts is the proposed Special Safeguard Mechanism (SSM), which would allow developing countries flexibility to protect their rural communities against a surge of imported farm products by imposing temporary safeguard measures in the form of tariffs. Negotiators differ on what conditions should trigger the imposition of such safeguards. According to one proposal, the SSM should

¹⁴ However, there are notable exceptions to duty-free trade in Mercosur, and several of them are in agriculture.

cover all agricultural products imported by developing countries, with a single set of triggers, but differentiate between four country groups (developing, recently acceded, small and vulnerable, and least developed), and with a gradual phase-out of the maximum tariff that can be imposed.¹⁵ Other proposals have also been tabled, but for now the SSM talks are still at an impasse. Depending on how it is structured, the SSM could potentially offset much of the expected gains from the agricultural negotiations, so negotiators need to resolve this matter before they will be able to conclude the modalities for Agriculture.

Reciprocity Measure

Table B7 summarizes the total *reciprocity measure* concessions given and received by each country, in billions of dollars, distinguishing for Agriculture between tariff cuts and concessions on nontariff barriers (NTBs), namely export subsidies, domestic support, and tariff rate quotas. Concessions given are tariff and tariff-equivalent revenues forgone on imports and reduced subsidies on agricultural production. Concessions received are reduced tariffs or tariff equivalents on the country's exports, or reduced subsidies in the importing market.

These calculations suggest that 44 percent of developed-country *reciprocity measure* concessions (in both Agriculture and NAMA) arise in the agricultural sector (combining tariff cuts with subsidy concessions). On the other hand, only 9 percent of developing-country concessions are made in Agriculture. Looking at the country breakdown for the major developed economies, roughly half of EU and Japanese concessions, but only 10 percent of US concessions, come from Agriculture.

¹⁵ Gary Hufbauer and Matthew Adler, "The Special Safeguard Mechanism: Possible Solutions to the Impasse," note prepared for the World Bank and presented in Geneva, October 28, 2008.

Interestingly, however, the majority of US *reciprocity measure* gains received come from Agriculture. Among developing countries, Brazil and China concede little in Agriculture, either in terms of the *reciprocity measure* expressed in dollars or the percent of total concessions. Indian concessions in Agriculture represent 30 percent of total Indian concessions, but the *reciprocity measure* of agricultural concessions is small, only \$200 million.

Table B7 shows that, in Agriculture, apart from the European Union, all of the other major trading nations receive more gains from the liberalization of NTBs than from lower tariff rates, in *reciprocity measure* terms. The United States is the largest beneficiary of NTB liberalization in *reciprocity measure* terms (\$2.4 billion), followed by Brazil (\$1.6 billion). The European Union receives less than \$1 billion in NTB cuts but gains \$1.2 billion in tariff cuts (the largest tariff gains of all six major trading nations).

In *reciprocity measure* terms, EU and Japanese tariff concessions in Agriculture are significantly higher than concessions by other countries (more than \$2 billion compared with less than \$0.5 billion for the others). EU concessions in NTBs also dwarf those of the other five countries (over \$12 billion for the European Union, compared with \$1 billion or less for each of the others). Tables B16 through B18 in appendix B show that EU concessions are large in all three categories of NTBs: tariff rate quotas, export subsidies, and domestic support. However, the magnitude of the figures may be biased by our methodology. To calculate the tariff rate equivalents of NTB concessions, our method uses outlays notified to the WTO over the last three years for which data are available. In the case of the European Union, these were high years and EU concessions are thus calculated on the basis of high outlay levels. This could exaggerate the extent of

concessions offered. The European Union also has high trade flows in the products it subsidizes, another factor that contributes to a calculation of high concessions. Finally, after calculating the concessions in domestic support based on the modalities, we checked to ensure that the total does not exceed the agreed OTDS limit. In the case of the European Union, however, the total for subsidies often exceeded the OTDS limit, so another adjustment was needed, on the assumption that the European Union does not in fact exceed its OTDS limit for subsidies to Agriculture.

US agricultural concessions are larger in NTBs than in tariffs, when calculated in *reciprocity measure* terms. Nonetheless, US NTB concessions are still small (\$1 billion). This can be partly explained by the methodology. Due to high commodity prices in the past few years, US subsidies paid to farmers have been limited. Concessions are calculated from a low base since they are calculated using the last three years of notified outlays.

The draft modalities propose the abolition of all export subsidies in Agriculture. Aside from the European Union, the effects of eliminating export subsidies are limited (table B17 in appendix B). However, as previously discussed, despite the low impact of this measure, the lock-in effect is not negligible, and its advantages are especially evident in times of crisis.

Table B19 in appendix B gives a breakdown of the gains by partner. The *reciprocity measure gains* for US exports to the 22 countries in the sample are over \$3 billion. For the most part, that gains comes from concessions by the European Union (almost \$2 billion). *Reciprocity measure* gains for Brazilian exports are over \$2 billion.

In terms of the shares of agricultural concessions, our calculations show that 93 percent will originate from developed countries, while only 7 percent will originate from developing countries (table B8). Therefore, developed countries will do the heavy lifting. The distribution of the *reciprocity measure* gains is the opposite. 48 percent of the gains in Agriculture accrue to the developing countries in the sample and 37 percent to the developed countries in the sample.¹⁶ Brazil, despite conceding roughly nothing in Agriculture, receives 9.4 percent of the gains, meaning Brazilian exports will benefit from lower tariffs and NTBs in partner countries. Brazil benefits from the liberalization of others while keeping its own barriers up.

The breakdown by country shows that, among developed economies, the European Union makes the most total concessions, followed by the United States, and then Japan. EU concessions are particularly important in Agriculture, which reflects the fact that the European Union has long maintained high tariffs in Agriculture, its most sensitive sector. Despite making a large share of overall concessions in Agriculture (63.9 percent), the European Union does not capture a large portion of *reciprocity measure* gains (only 8 percent) (table B8).

The United States, which makes 6.2 percent of total agricultural concessions, will receive 13.9 percent of total agricultural gains, in *reciprocity measure* terms (table B8). These figures include export subsidies, domestic support, and tariff quota expansions. As discussed above, US agricultural tariffs are low, but US domestic subsidies are high. Developing countries are particularly intent on obtaining US commitments to reduce those subsidies, but they have yet to achieve their goal. In political terms, cutting farm

¹⁶ The remaining 15 percent of gains accrue to the rest of the world, since those countries also benefit from liberalization by the 22 countries in the sample.

support is a highly sensitive proposition for the United States, and only large concessions in NAMA or Services will generate the necessary political support in Congress to enact significant cuts in farm support. That said, substantially cutting the “water” in the US bindings on farm subsidies is feasible and would constrain future efforts to expand production-based subsidy programs.

Trade Gains

Table B9 calculates the increase in trade owing to tariff cuts in Agriculture, using the elasticity of trade to tariff cuts calculated in table B2 in appendix B. In other words, table B9 reflects the *trade gains* in Agriculture that will result from reducing applied tariff rates by the amounts shown in table B15. Table B9 also calculates the increase in trade generated by cuts in tariff quotas, domestic support, or export subsidies, based on the tariff equivalents calculated in our discussion of the *reciprocity measure*.

Table B9 gives bilateral detail of estimated trade gains from tariff cuts and concessions in NTBs. The total increase in agricultural exports of the 22 countries in the sample to the other 21 countries is estimated at \$14.1 billion, 5.2 percent of 2006 agricultural exports (table B9). The majority of *trade gains* within the sample (exports of the 22 countries to the rest of the sample), which amount to an increase of 3.3 percent in trade, are due to NTB concessions, and the remaining *trade gains*, which amount to another 2 percent of trade, are due to tariff cuts. Gains in agricultural exports to the group of 22 countries (not the world) due to tariff cuts amount to roughly 2.5 percent of exports

each for the European Union, Japan, Brazil, and China.¹⁷ The comparable figures for the United States and India are 1.3 and 1.1 percent, respectively.

Export gains from NTB concessions are more significant, except in the case of EU exports, which gain only 1.2 percent. Overall, EU agricultural exports to the other 21 countries will be boosted by around 4 percent, notably to Japan and India. Japanese exports will experience the sharpest percentage rise from NTB concessions, 24.9 percent, but this represents an absolute increase in total agricultural exports for Japan of less than \$1 billion. The growth percentages for Japanese agricultural exports are very large but the dollar figures are small because Japanese agricultural exports are low.

US exports of agricultural products due to NTB concessions will increase by 3.9 percent to the group of 22 countries. Brazil will also benefit significantly from NTB concessions, with exports rising by 6.1 percent. In total, US agricultural exports will grow by around 5.2 percent. US exports to the European Union will witness the largest growth, 28 percent total, including almost 25.8 percent due to EU NTB concessions. US exports to India will increase by 6 percent.

The total increase in agricultural imports of the 22 countries of the sample from the world is \$20.5 billion, 6.2 percent of 2006 agricultural imports. EU concessions in NTBs will lead to an increase in EU agricultural imports of 16 percent. Cuts in EU agricultural tariffs will increase EU imports by an additional 2.7 percent. The large combined increase in EU imports from the world (18.7 percent) can be explained by high pre-Doha EU levels of protection, which keep imports low, and by large EU concessions

¹⁷ Note that the calculations are not symmetrical: While import numbers have been calculated for imports from the world, the data did not allow us to calculate exports to the world, so the table reports exports to the group of 22 countries in the sample.

in NTBs. EU NTB concessions will notably increase imports from India by almost 10.5 percent.

Japanese agricultural imports from the world will increase by 5.7 percent, mostly due to cuts in tariffs (4.7 percent) rather than in NTBs (1 percent). Japan will see greater import increases from the European Union, the United States, Brazil, and China.

The United States will experience a smaller increase in agricultural imports, 2.3 percent, with a majority (1.6 percent) arising from NTB concessions. US agricultural imports will grow, particularly from developing countries: a 4.3 percent increase from Brazil, 4.4 percent from China, and 2.9 percent from India. Brazil, China, and India will see small import increases due to tariff cuts, below \$0.2 billion for each country. This figure represents a significant percentage increase in agricultural imports for India (3.5 percent from the world, as much as 6 percent from developed countries, and 9.7 percent from Brazil), all from a low base.

Results for NAMA

Products in the nonagricultural market access (NAMA) basket account for around 90 percent of world exports. They are the “big boys” in world merchandise trade.

Table B5 shows the pre-Doha and post-Doha bound tariff rates (trade-weighted averages) in NAMA for the entire group of 22 countries and the 6 major trading nations. The group of 22 countries will cut its average bound rate from 8.6 to 3.7 percent. The United States and Japan have higher average levels of bound rates than the European Union. After the Swiss formula is applied, however, all three countries will have roughly similar average bound rates.

Among the developing countries, China commits to small cuts in its average NAMA bound tariffs because, as a recently acceded country to the WTO, China has significantly reduced its bound rates over the past few years. In fact, while the pre-Doha bound rate for China is only 4.1 percent, the comparable figures for Brazil and India are 30.3 and 30.4 percent, respectively. Brazil and India stand out for making substantial concessions in their average NAMA bound tariffs, reductions of roughly 18 percentage points each. These are evenly spread out between different trading partners (see tables B10 and B11 of appendix B for a breakdown by partner).

Tables B10 and B11 present bilateral detail of pre-Doha and post-Doha bound rates, with the cuts in bound rates expressed in percentage points. Both the United States and Japan will make important reductions to their bound rates on NAMA imports from LDCs.

Column 3 of table B5 provides the weighted average of pre-Doha applied duties for NAMA goods. Applied rates in NAMA are cut according to the methodology in appendix B only if the current applied rate is higher than the post-Doha bound rate. The “water level” in NAMA is much lower than in Agriculture (see table B12). Only Brazil and India maintain high water levels.

As in Agriculture, applied rates are lower than bound rates because of unilateral trade liberalization in NAMA goods since 2001. In fact, table B13 shows that all of the 15 developing countries in the sample decreased their NAMA MFN rates between 2001 and 2006. Some countries that undertook particularly steep liberalization include India, whose MFN rate dropped from 21 to 8 percent, Pakistan from 20.9 to 12.8 percent, and China from 11.2 to 3.6 percent. Compared with other developing countries, China has

relatively low tariff barriers to world NAMA imports (3.5 percent as a weighted average, table B14), as a result of the liberalization undertaken when it acceded to the WTO in late 2001. Because its applied rates are already low, China could afford to cut its existing rates to zero without significantly changing its competitive position.

Column 4 of table B5 shows the post-Doha applied rates. On average, the group of 22 countries would reduce its applied rate from 2.4 to 1.8 percent. The applied rates of each of the 6 major trading nations on NAMA imports are significantly lower than on agricultural imports. However, despite low trade-weighted averages, relatively high tariff peaks still persist on some tariff lines. The United States, the European Union, and Japan arrive at similar levels of applied rates after the cuts (0.7, 0.8, and 0.5 percentage points, respectively). Developing countries start at higher applied rates, but on a percentage point basis, all 6 major trading nations commit to comparable cuts in NAMA applied rates, with Brazil slightly ahead.

Table B15 in appendix B presents the cuts in applied rates broken down by partner. US NAMA exports will benefit from large tariff cuts by Brazil and China. The United States will cut its tariffs on NAMA imports from LDCs by 2.9 percentage points, much higher than on imports from other sources. Of course, this result does not account for the virtual elimination of tariffs on LDC imports that would apply if the Doha agreement on DFQF treatment for LDC products is concluded. China and Brazil, and to a lesser extent India, will cut tariffs on NAMA imports from the European Union, United States, and Japan more than on other imports.

Looking at South-South trade, the progress in lowering NAMA applied rates by Brazil, China, and India on imports from the 15 developing countries is quite small (table

B6). The lack of progress on liberalizing South-South trade remains a major obstacle to achieving the goals of a development round.

Reciprocity Measure

The *reciprocity measure* of gains from liberalization of NAMA are calculated in table B7, and the breakdown by trading partner is shown in table B19. In terms of concessions given, China and Brazil stand out in NAMA, compared with their concessions in Agriculture. In terms of concessions received, China will be by far the main beneficiary of NAMA liberalization (over \$12 billion in *reciprocity measure* terms, meaning \$12 billion fewer tariffs to pay). The European Union and Japan will also reap significant gains (around \$7 billion and \$6 billion respectively in *reciprocity measure* terms). The United States reaps about \$3 billion in *reciprocity measure* terms. The modest figure for the United States reflects the fact that several countries covered in the sample already have free trade agreements with the United States—namely, Australia, Canada, and Mexico.¹⁸ Table B19 shows that developing countries will see the greatest *reciprocity measure gains* from the European Union and the United States, with China capturing more than \$4 billion from each.

As can be seen in table B8, it is in NAMA that developing countries account for the highest share of concessions (36 percent) and capture the highest share of gains (57 percent), in *reciprocity measure* terms. All three key emerging markets studied—China, India, and Brazil—make larger concessions in NAMA than in Agriculture, although the

¹⁸ The European Union likewise has agreements with Norway and Switzerland through the European Free Trade Association (EFTA) and with Mexico, Turkey, and South Africa, but the latter three are small trading partners of the European Union.

numbers are roughly equal for India. India captures higher gains in NAMA than in Agriculture.

Trade Gains

NAMA *trade gains* for the group of 22 countries will entail an increase in trade flows among the group (exports from the 22 to the rest of the group) of \$40.3 billion. Despite contributing only one-third of concessions, developing countries see an increase in NAMA imports equal to that of the developed countries, 0.7 percent (table B9). Increased exports by developing countries are mostly to the European Union and Japan. US export gains are small, but again, the United States has already liberalized two-way trade with important countries in the sample. We estimate that LDCs will see a 3 percent increase in NAMA exports to the United States. Chinese NAMA exports will see sizeable increases to the European Union, Japan, the United States, and Brazil. Indian NAMA exports will grow by roughly 3.5 percent to the European Union and by 2.2 percent to the United States (table B20). The European Union, Japan, and the United States will all see significant increases in their exports to Brazil and China.

The statistical analysis in this paper does not cover NTBs in NAMA. Progress in cutting NTBs on NAMA goods will emerge, if it does, largely from the sectoral discussions. This is the main open issue in NAMA. Sectoral agreements would provide deeper cuts and reforms of NTBs, either on a comprehensive or partial basis. At the Hong Kong ministerial in December 2005, the parties suggested that participation in sectoral agreements would be voluntary. Fourteen sectors are being considered for sectoral

agreements.¹⁹ In later sections of this paper, we analyze two of those sectors where progress would yield sizeable benefits: chemicals and electronic/electrical products. In addition, we study the environmental goods sector, which is being discussed in the negotiating group on rules and where topping up NAMA liberalization could also produce large gains.

GDP Gains

Table 4 estimates the GDP impact of the trade gains. The calculations in table 4 are based on the trade gains in table B9 for agricultural tariff cuts, agricultural NTB concessions, and NAMA formula tariff cuts. Both imports and exports raise a country's GDP through a variety of channels; so far as econometric evidence indicates, the positive impact of large imports is about the same as the positive impact from an equivalent rise in exports. We are fully aware that many trade negotiators, business lobbies, and ordinary citizens see things differently. Put crudely, "exports good, imports bad" is an all-too-common view. However, faithful to sound economics, our GDP metric reflects the gains from *both* increased exports and increased imports.

The *GDP impact* from Agriculture and NAMA liberalizations for the European Union is \$16.3 billion (0.1 percent), for the United States \$9.3 billion (0.1 percent), and for China \$9.7 billion (0.3 percent). For the United States and China, the gains come primarily from NAMA. The European Union, on the other hand, benefits equally from both Agriculture and NAMA. The weighted average of the percent increase in GDP for

¹⁹ The 14 sectors are: automotive and related parts, bicycles and related parts, chemicals, electronics/electrical products, fish and fish products, forestry products, gems and jewelry products, raw materials, sports equipment, healthcare, pharmaceutical and medical devices, hand tools, toys, textiles, clothing and footwear, and industrial machinery.

all 22 countries is 0.11 percent (0.03 percent from Agriculture and 0.08 percent from NAMA). The total dollar gain calculated from the formula tariff cuts in Agriculture and NAMA, and from NTB concessions, for all 22 countries in the study comes to about \$55.5 billion (\$15.9 billion from Agriculture and \$39.5 billion from NAMA). Since the sample countries represent 88 percent of world GDP, we project the annual increase in *global* GDP from the formula tariff liberalization in Agriculture and NAMA to be \$63.0 billion. This gain would be fully realized after a few years. This figure, however, is probably an underestimate as it does not include gains from the reduction of nontariff barriers in NAMA nor additional liberalization that could arise from sectoral negotiations and from scheduling deeper cuts in specific products. It does not reflect the possible GDP gains from the liberalization of Services trade or from Trade Facilitation, discussed later. Finally, as discussed in Appendix B, our calculations are based on a weighting scheme for calculating average tariffs that understates their distortive impact.

Different Negotiating Scenarios

Tables B21 to B23 show the trade impact if a major emerging economy chooses a different negotiating scenario for NAMA tariff cuts (see appendix B for a description of the various scenarios). What comes out quite clearly is that—in the aggregate—a change in the negotiating scenario would have limited impact on the total trade gains from NAMA tariff cuts but could alter the distribution of tariff and NTB cuts for politically sensitive products.

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.²⁰

In 2007, world Services exports, as conventionally measured, were valued at roughly \$3.3 trillion; merchandise exports (i.e., Agriculture and NAMA) were more than four times larger at \$13.6 trillion (WTO 2008a).²¹ While some services are inherently nontradable, 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. While there have been more than 100 offers for Services liberalization in the Round, most 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

²⁰ 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.

²¹ 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 re-insurance company (a form of commerce that falls under Mode 3 of the General Agreement on Trade in Services).

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.²² 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. Sectoral 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 FTAs have made significant progress in liberalizing Services trade (e.g. NAFTA and Euro-Mediterranean pacts), 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

²² Contrary to popular belief, this procedural “agreement” is not included in the ministerial declaration.

data on trade in services is 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 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 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.²³ 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 C4). 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.

²³ Businesses routinely report that making barriers definitive has value; how much value is uncertain.

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

We find that a 10 percent reduction 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 1). Increases both in 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 3). The estimated global GDP impact of the *trade gains* (exports and imports) resulting from a 10 percent reduction in Services barriers is about \$56.4 billion (table 3). Bilateral trade relationships are explored in appendix C.

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.²⁴ Most tariffs on chemical products for CTHA signatory countries are set at 0, 5.5 percent, 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 sectoral initiative for chemicals (WTO 2008c).

Chemicals account for more than 10 percent of total merchandise imports by the 22 countries (table 6).²⁵ 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 2007.²⁶ EU trade also exhibits a

²⁴ CTHA signatory countries include: 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 2009).

²⁵ Chemical goods imports by the 22 countries from the world in 2007 were \$862.5 billion; total merchandise imports by the 22 countries from the world were \$8,308.3 billion.

²⁶ US chemical goods exports in 2007 to the 21 partner countries were \$156.6 billion; US total merchandise exports to the 21 partner countries were \$935.1 billion. US chemical goods imports in 2007 from the world were \$197.3 billion; US total merchandise imports were \$2,017.1 billion.

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.²⁷

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 6). 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 the 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.²⁸ These modality tariff cuts would increase the export trade within the 22 countries by \$12.3 billion or roughly 1.7 percent from the current level of chemicals trade (table 6). Increases in US and EU exports, \$2.5 billion and \$3.6 billion respectively, could account for half of the growth.²⁹

What more could be achieved in sectoral negotiations? The sectoral 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 and equal to or

²⁷ EU chemical goods exports in 2007 to the 21 partner countries were \$219.8 billion; EU total merchandise exports to the 21 partner countries were \$1,049.2 billion. EU chemical goods imports in 2007 from the world were \$179.2 billion; EU total merchandise imports were \$1,954.0 billion.

²⁸ We assume that, if countries are going to participate in certain sectoral negotiations (e.g., chemicals, electronics/electrical, or environmental goods), they are not going to utilize any of their tariff cut flexibilities in those sectors. In reality, countries might exclude some sensitive products from sectoral negotiations and use their tariff cut flexibilities on those same products.

²⁹ 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 earlier calculations 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 utilized on some chemical products; in the sectoral calculation, we assume no flexibilities are utilized.

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 post-modality and sectoral cuts scenario 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 6). 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 merchandise 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 to specifically the sectoral cuts in chemicals is \$13.0 billion (table 6).³⁰ The chemicals world export for the 22 sample countries could increase by \$15.8 billion based on this sectoral initiative (table 2). Bilateral trade and tariff relationships are detailed in appendix D.

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,

³⁰ The *GDP gains* enumerated here are only based on the trade impact of the sectoral cuts and not the total gains from both the modality and sectoral cuts. The *GDP gains* that result from modality cuts are quoted as part of the NAMA calculations earlier.

and scientific instruments by January 2000. The ITA is considered to be 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 that ITA by expanding the country coverage and deepening the 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.³¹ 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.³²

While the Dreyer and Hindley proposal seems unlikely, a sectoral deal that goes beyond IT products has already been discussed in the Doha Round. Rather than pursuing an IT-only sectoral initiative, WTO negotiators have actually devised a broader electronics/electrical goods sectoral, which largely encompasses the ITA along with many new IT products. The proposed product list for the electronics/electrical goods

³¹ 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).

³² 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.

sectoral covers roughly 50 percent more world trade than the ITA.³³ The proposed product list for the electronics/electrical goods sectoral initiative 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 sectoral 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 but 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.

³³ Recent world exports of electronic/electrical goods (as defined by the WTO December 2008 NAMA modalities) to the 22 countries used in this study were \$1,688 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 billion.

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 sectoral agreement, there would be some liberalization of ITA trade. Assuming no flexibilities are utilized, 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 7). These modality cuts would increase exports by the 22 sample countries to each other by \$5.8 billion while increasing their imports to be world by \$6 billion. Chinese ITA imports would increase by \$1.9 billion or 1 percent.³⁴

An additional sectoral 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 sectoral cuts, with an increase in Chinese imports of \$8.7 billion accounting for about a third of the total increase (table 7). US gains would be modest, a \$3.3 billion gain in exports and a \$1.5 billion gain in imports. The additional gain in exports to the sample countries would be \$27.9 billion while their increase in imports from the world would be \$23.2 billion.

The potential exports to sample countries and imports from the world increase from just the sectoral cuts on ITA goods is \$23.2 billion and \$22.1 billion, respectively

³⁴ 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 -2.01, while the earlier calculations 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 utilized on some ITA products; in the sectoral calculation we assume no flexibilities are utilized.

(table 7). This estimation does not include the gains from the modality tariff cuts. This translates into \$20.8 billion of *GDP gains* for the 22 countries.

Gains under a sectoral initiative in electronics/electrical goods would be still larger. Free trade in electronics/electrical goods would increase exports to 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 8)—these are increases of more than \$14 billion each compared to an ITA-only modality and sectoral initiative. Among the 22 countries, Chinese imports again dominate the increase in trade. Under the electronics/electrical goods sectoral initiative (including the modality cuts), 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 sectoral initiative: US exports would increase by \$4.4 billion and imports by \$4 billion.

The estimated gains in exports to sample countries and imports from the world based on just the sectoral initiative in electronics/electrical goods are \$35.4 billion and \$33.5 billion, respectively. The world export gains from the sectoral initiative (not including modality cuts) in electronics/electrical goods is \$49.2 billion (table 2). The corresponding *GDP gains* is \$31.7 billion, which is \$10.9 billion more than the ITA goods sectoral initiative alone (tables 7 and 8). Bilateral trade and tariff relationships under the ITA-only and electronics/electrical goods sectoral initiatives are detailed in appendix E.

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 NAMA formula cuts: Additional liberalization could arise from a *sui generis* sectoral 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.³⁵

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 9). For the United States, 1.7 percent of both merchandise exports and imports are contained in the 45 tariff lines identified by the World Bank as environmental goods (table F1).³⁶ 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.

³⁵ Kirkpatrick (2006) reviewed the environmental services negotiations and found limited progress at that time. Little new ground has been broken since 2006.

³⁶ 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 9).

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 the products are “environmentally friendly.”³⁷ 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 environmentally friendly automobiles (notably, hybrid cars) in the negotiations (Japan 2009). Details are sketchy at the point, but depending on what types of cars are included it could vastly increase the amount of trade covered by the negotiations could vastly increase. We do not include environment-friendly automobiles in our calculations.

Trade and GDP Gains

We first estimate the impact of the 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.³⁸ 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

³⁷ 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 Bork 2006).

³⁸ 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.

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.³⁹ One minus the resulting figure (expressed as a percent) is then multiplied by current trade to estimate new trade after the tariff cut.⁴⁰ 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 F2). The modest tariff cuts produce modest *trade gains*; environmental goods exports to the sample country and imports from the world will increase by only \$1 billion and \$1.5 billion, respectively, after the modality tariff cuts (table 9). 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.⁴¹

Under a sectoral 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 sectoral initiative, including the modality cuts, would be an additional \$7.8 billion increase in environmental goods imports from the world (table 9). The increase in exports of environmental goods to the 22 countries

³⁹ This elasticity is calculated as the simple average of all environmental good observations in Kee *et al* (2004). See table F1 for a list of environmental goods.

⁴⁰ 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 .

⁴¹ 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 earlier calculations used an elasticity of -1.19 . Also, in the full NAMA calculations we assume that tariff cut flexibilities are utilized on some environmental products; in the sectoral calculation we assume no flexibilities are utilized.

could reach \$5.5 billion from the modality and sectoral tariff cuts combined. A trade increase of this size would increase total world trade by roughly one-tenth of one percent (0.1 percent). Together, the sectoral 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 gains in world exports of \$5.9 billion and *GDP gains* of \$5.0 billion for the group of 22 countries (tables 2 and 3). Bilateral trade and tariff relationships are detailed in appendix F.

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 G8). 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.⁴² 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 G8 contains a list of proposed provisions now included in the Trade Facilitation negotiations.

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*

⁴² WTO | WTO analytical index: Guide to WTO Law and Practice - General Agreement on Tariffs and Trade 1994." *World Trade Organization*. Web. 23 Sept. 2009.
<http://www.wto.org/english/res_e/booksp_e/analytic_index_e/gatt1994_05_e.htm>.

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 (2003) evaluates direct and indirect total trade costs to measure the effects of Trade Facilitation. Using a 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: agro-food products face a faster decay time (thus a higher total trade cost) when in transit compared to non-food merchandise; small and medium size 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 Fontagne (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. The main reason is that Wilson, Mann, and Otsuki (2005) expressed their results in a manner that maps directly onto the Trade Facilitation agenda of the Doha Round.

Wilson, Mann and Otsuki (2005) used a gravity model to estimate Trade Facilitation gains among a group of 75 countries. The authors 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.⁴³ 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 sea port facilities and inland waterways, are related to GATT Article V; customs environment, measured by hidden import barriers and bribery, are relevant to GATT Article VIII; the regulatory environment, measured by transparency of government policies and corruption control, are relevant to GATT Article X; and services infrastructure, which is measured by the efficacy of internet access, are related broadly to trade in services within the Trade Facilitation agenda (Wilson, Mann, and Otsuki 2005).

The simulation results of Wilson, Mann, and Otsuki (2005) (referred to as WMO) are shown in table G6 of appendix G. 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

⁴³ For example, if the global average was 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.

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 show calculations that omit port efficiency and service infrastructure from our Trade Facilitation calculations. This is for two reasons. Firstly, 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 service infrastructure used by ports.⁴⁴ Secondly, 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 service reforms and Trade Facilitation; accordingly, port efficiency was excluded from the present calculations.⁴⁵

Trade and GDP Gains

Table G5 shows our calculations of the potential *trade gains* for the 22 countries in our sample. To be complete, we show both a “broad definition” – covering everything in the WMO analysis, and a “narrow definition”, omitting reforms to service infrastructure used by ports and port efficiency. 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

⁴⁴ Improved service 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 G7). These are very large sums. However, the trade facilitation negotiations do not appear to cover service infrastructure; reforms in services for handling cargo will be addressed, if at all, in the services negotiations.

⁴⁵ 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 G7).

countries would rise by \$86.8 billion using the “narrow definition” and \$284 billion using the “broad definition”. The positive *GDP impact* for the 22 countries is \$103.6 billion for the “narrow definition”, amounting to a 0.2 percent increase. The “broad definition” estimates an increase of \$346 billion of *GDP gains*, a 0.7 percent increase.

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 the gains would be very large, especially for developing countries.

CONCLUSION

The Doha Round is now older than its immediate predecessor, the Uruguay Round, which lasted what seemed at the time a marathon (7 years, 7 months) from inception to signing. WTO negotiators have missed every deadline set by ministers and summiteers; this record of futility has led some observers to propose dropping the whole venture. We believe that would be a big mistake. Resurrecting a new WTO negotiation with a different set of negotiating objectives would be difficult to sell to most WTO members; instead, the death of Doha would likely propel a new wave of preferential trade pacts and severely fracture the multilateral trading system.

Our analysis shows that the Doha Round can still be successfully concluded with a concerted push by the major trading nations. Contrary to the Doha doomsayers, the potential gains from proposals now on the table are significant, albeit not sufficient to close a deal. With additional effort, particularly by the G-20 members in the Services negotiations, WTO countries can put together a Doha package that is both ambitious and balanced between the interests of developed and developing countries.

This study has examined gains from different topics that are at varying levels of completeness and certainty in the Doha Round talks. The tariff and subsidy cuts in Agriculture and NAMA are written into the current negotiating modalities; the gains in these areas are thus the foundation of a Doha Round liberalization package. The gains from additional sectoral negotiations in chemicals, electronics/electrical goods, and environmental goods are more problematic. Agreements in these sectors will likely emerge in some form; however, the country participation, product coverage, and depth of

liberalization in each sector are uncertain. We assume, for the purpose of our calculations, optimistic but plausible scenarios for each of the sectors.

The Services negotiations, perhaps the lynchpin of the Round, currently do not establish new market access. Our calculations of potential gains in Services are thus based on a dose of wishful thinking, recognizing that, unless the current offers for liberalizing Services barriers are improved, the Doha Round will probably not reach a successful conclusion. The Trade Facilitation negotiations have been among the most productive in the Round. Our estimated gains from improved Trade Facilitation, however, are only partially tied to the negotiations. Most of the gains ultimately depend on faithful implementation of reform, so our calculations could just as easily underestimate as overestimate the potential benefits.

For agricultural products, the tariff cuts prescribed by the current negotiating modalities create new market access. US and EU applied tariffs would be almost halved (1.3 percent down to 0.7 percent for the United States and 6 percent down to 3.4 percent for the European Union). Developing-country applied tariffs decline slightly; this is actually a significant accomplishment given the high levels of “water” between bound and applied agricultural tariffs in most developing countries. Agricultural tariff cuts contemplated in the Round, along with new caps on tariff rate quotas, export subsidies, and domestic subsidies, would increase world exports by \$17.1 billion (this figure is scaled-up from our sample of 22 countries, see table 2).

On the whole, tariffs on NAMA products are low. Pre-Doha average applied tariffs in the European Union, Japan, and the United States are all less than 2 percent. Average applied tariffs are less than 8 percent in Brazil, India, and China. Low initial

applied tariffs make the task of creating new market access in NAMA more challenging—the average applied tariff cut in our sample is only 0.6 percentage points (from an average tariff of 2.4 percent to a level of 1.8 percent). Since NAMA trade is so vast, however, the trade gains are also large, despite the small tariff cuts. In total, we estimate annual scaled-up world exports will increase by \$50.6 billion from the NAMA formula cuts (table 2) . Moreover, any reduction in bound tariff levels, even if bound rates remain above applied rates, reduces the risk of backsliding into protectionist policies.

The potential trade and GDP gains from NAMA sectoral agreements—liberalization that would go *above and beyond* the NAMA formula cuts—could be much greater. We estimate the impact of eliminating tariffs in electronics/electrical goods and in environmental goods across the 22 countries covered in this study. We also estimate the impact of *free* trade (i.e., substantial tariff cuts and tariff harmonization) in chemicals across the same countries. A sectoral agreement in chemicals would increase scaled-up world exports (table 2) by \$15.8 billion. An electronics/electrical goods sectoral agreement would boost world exports by \$49.2 billion, and an environmental goods sectoral agreement would boost world exports by \$5.9 billion. All told, we estimate the three sectoral agreements would increase annual world exports by an additional \$70.9 billion above the trade spurred by the formula cuts. In Services, current proposals are deficient and unlikely to promote trade and investment (Gootiiz and Mattoo 2009). To be sure, the proposals are a small step forward from the Uruguay Round commitments, but Services offers need to be substantially improved to generate real gains. The July 2008 “signaling exercise” gave some indication that countries would be willing to liberalize

further, but substantive new offers have not yet been submitted. We estimate that the possible gains from meaningful liberalization of Services barriers are large. A 10 percent reduction in the tariff equivalent of applied Services barriers would increase annual scaled-up world exports (table 2) by an estimated \$55 billion.

Trade Facilitation negotiations have been championed as one of the most successful subjects in the Doha Round. Over 70 provisions on topics ranging from publication standards to new restrictions on fees connected to importation and exportation have been put forward. These negotiations might go forward even if the Doha Round stalls. Quantifying the possible gains from each of the roughly 70 proposals is difficult if not impossible, so we turn to an estimate of potential gains from a modestly optimistic Trade Facilitation improvement scenario made by Wilson, Mann, and Otsuki (2005). Drawing from the work of these authors, we use conservative coefficients to calculate that exports by the 22 sample countries to others in that group could increase by \$86.8 billion if underperforming countries are brought up halfway to the global average in selected areas of Trade Facilitation (our “narrow definition” of reform). These trade gains would increase annual global *GDP gains* by roughly \$117.8 billion annually (table 3).

In general, our findings are broadly consistent with results from other notable studies. For Agriculture and NAMA, Decreux and Fontagne (2009) estimates a \$57 billion boost to world GDP in the year 2025, while Anderson, Martin, and van der Mensbrugghe (2006a) calculate a \$96 billion global gain by 2015.⁴⁶ Our \$63 billion global *GDP gain* is in the same ballpark. As well, Decreux and Fontagne (2009) estimate

⁴⁶ The \$96 billion global gain calculation from Anderson, Martin, and van der Mensbrugghe (2006a) is based on Scenario 7 in their paper.

a \$68 billion gain in world GDP for Services while our approximation is around \$45.5 billion (see table 3). Box 3 outlines the recent work of Laborde, Martin, and van der Mensbrugghe (2009a and 2009b) that sheds new light on measuring trade distortions and compares our results to their estimates. Broadly speaking, our calculations are conservative compared to the estimates made by those authors.

Box 3

Laborde, Martin, and van der Mensbrugghe (2009b) offer solutions to the central problem associated with using trade-weighted average tariff levels to measure the impact of trade distortions. The biggest problem with using a trade-weighted average is that the weight on a tariff line declines as the tariff increases, since imports are reduced. The result is that very high tariffs may have vanishingly small weights even when their trade-distorting impacts are large.

Laborde, Martin, and van der Mensbrugghe (2009b) approach this problem by focusing on the relationship between a tariff expenditure aggregator and a tariff revenue aggregator. The tariff expenditure aggregator on a certain set of goods is defined as the uniform tariff which, to maintain the initial utility level associated with consumption of goods in this set, requires the same level of expenditure on imported commodities in the group as the observed vector of disaggregated commodity-specific tariffs. The tariff revenue aggregator for that same set of goods is defined as the uniform tariff that will yield the same tariff revenue as the observed vector of disaggregated tariffs for those goods.

For a single country, the tariff expenditure aggregator and the tariff revenue aggregator can be introduced, respectively, into the expenditure function and the tariff revenue equation, and solved to find import weights that correspond to a uniform tariff. At a global level, however, the solution is not so easy because global supply might not equal global demand when hypothetical single-country uniform tariffs replace the actual differentiated tariff structure of each country. Here is an example: when the reduction of a high tariff in a country results in a more rapid decline in expenditures than in tariff revenues, the country experiences a gain in real income without any corresponding decrease in income elsewhere, even though global spending has dropped. This complication is resolved by drawing on Anderson (2009), who recognized that quantity indexes at domestic prices are different than quantity indexes at world prices.⁴⁷ An appropriate correction restores global market clearing and allows for the aggregation method to be applied in a global model.

⁴⁷ In Anderson's framework, expenditure on aggregate good j at domestic prices must equal expenditure on the good at world prices plus the revenue from the tariff.

The key parameter that the authors assume to carry out their aggregation calculations is the elasticity of substitution between products identified by tariff lines. The elasticity of substitution is often defined as the ratio of the change in quantities demanded for two inputs in a production function with respect to the change in the ratio of prices for the two inputs.⁴⁸ In this context, the demand for inputs normally reflects their marginal product in making the final good. The elasticity of substitution can also be interpreted as the degree to which two goods (or two services) can be substituted for one another in consumption as the price ratio between them changes.⁴⁹ As an example, suppose two goods are demanded at quantities x and y when their prices are p_x and p_y . The elasticity of substitution, σ , between these goods would then be defined as:

$$\sigma = -\frac{d\left(\frac{x}{y}\right) \div \frac{x}{y}}{d\left(\frac{p_x}{p_y}\right) \div \frac{p_x}{p_y}} = -\frac{yp_x}{xp_y} \frac{d\left(\frac{x}{y}\right)}{d\left(\frac{p_x}{p_y}\right)} \quad (1)$$

In equation (1), d is the change operator; for example $d\left(\frac{x}{y}\right)$ means the change in x relative to y . The negative sign in equation (1) serves to express σ values as positive values, since an increase in the $\left(\frac{p_x}{p_y}\right)$ price ratio normally means a decrease in the $\left(\frac{x}{y}\right)$ quantity ratio. It is usually assumed that the elasticity of substitution remains constant over a wide range of price ratios. Laborde, Martin, and van der Mensbrugghe (2009b) considered σ values of 2 and 5. In our judgment, a σ value of 2 is conservative, and we are inclined to accept the higher value of 5.

Applying their aggregation approaches, with an elasticity of substitution equal to 2, the authors estimate that the benefits of global trade liberalization are increased by at least 50 percent, compared with estimates based on standard trade-weighted tariff averages (the sort we use in our calculations). With an elasticity of substitution equal to 5, the authors estimated that GDP gains for the world would total \$161 billion from the

⁴⁸ Deardorff's Glossary of International Economics. 2001. Definition: Elasticity of Substitution. Available at <http://www-personal.umich.edu/~alandear/glossary/> (accessed on December 16, 2009).

⁴⁹ Business Dictionary.com. 2009. Definition: Elasticity of Substitution. Available at <http://www.businessdictionary.com/> (accessed on December 16, 2009).

Doha formula cuts just for agriculture and NAMA, even if some goods are exempted from the formula cuts (Laborde, Martin, and van der Mensbrugghe (2009a), Table 10). When flexibilities are not allowed, the GDP gains leap to \$271 billion (Laborde, Martin, and van der Mensbrugghe (2009a), Table 10).

Below is a comparison between our estimates of the global GDP gains resulting from agriculture and NAMA tariff cuts (\$63 billion, not allowing for flexibilities) and the estimates made by Laborde, Martin, and van der Mensbrugghe (2009a), with and without flexibilities, and allowing for lower and higher elasticity of substitution values. In this table, the estimates made by Laborde, Martin, and van der Mensbrugghe (2009a) are expressed as a percentage of our estimate of \$63 billion. Their calculation for the GDP gains from Doha liberalization, not allowing for flexibilities, is \$93.5 billion; by comparison our figure is \$63 billion. We conclude from this comparison that our calculation of the payoff from agriculture and NAMA liberalization are conservative.

	Sigma = 2	Sigma = 5
Doha formula tariff cuts, not allowing flexibilities	156%	330%
Doha formula tariff cuts, but allowing flexibilities	93%	221%

Moreover, our findings contradict the critics who argue that the world should trash the Doha Round because the payoff is too small. The potential gains are significant, but the current Doha package is neither ambitious enough nor balanced enough to garner political support in major economies. This is why, for example, US and EU officials have had so much difficulty securing private sector support for the prospective deal. The service industries—almost ignored for the first 8 years of talks—are openly skeptical. Accelerating the request/offer negotiations in Services, at least among the G-20 countries, is a prerequisite in our view for forward progress on the Doha agenda.

The challenge today is to break the impasse in Geneva and translate the lofty G-20 mandate to conclude the Doha Round into concrete, new offers by the G-20 countries to reform their trade distorting practices. For the United States, this means above all tightening its discipline on farm subsidies, bringing its cotton programs into compliance with WTO obligations, and topping up its offer on duty-free quota-free (DFQF) treatment for the least developed countries. In similar fashion, the European Union will have to offer tighter discipline on farm subsidies and deeper cuts in farm tariffs, as well as broader commitments to reform trade and investment in Services.

At the same time, major developing countries like Brazil, India, and China will have to up the ante in terms of offers on liberalizing NAMA sectors, Services, and Trade Facilitation. In addition, they will have to place limits on their recourse to special agricultural safeguards under the SSM, yet preserve the legitimate policy space for supporting subsistence farmers. Because its rates are already low, China can afford to substantially cut many of its NAMA applied tariffs without harming its competitive position. Brazil and India also can augment their NAFTA tariff offers to eliminate “water” in their bindings and create new trade opportunities.

If our recommendations are followed, the Doha Round package would be ambitious and well balanced for all participants, and could yield potential annual world GDP gains of between \$164.9 billion and \$282.7 billion. Importantly, the overall package would benefit the developing countries more than the developed countries in terms of percentage *GDP gains* (1.3 percent versus 0.3 percent, as shown in table 3). “Topping up” along these lines would generate more than four times the size of *trade* and *GDP gains* than Agriculture and NAMA formula cuts alone. Note, however, that the larger

gain reported in this study depends on negotiating ambition rising well above levels observed to date. But even if only half the sectoral gains we contemplate are achieved, the outcome would be substantial.

While this figure represents optimistic thinking on our part, it is not a “pie-in-the-sky” number. It may take a decade to reach gains of this magnitude once negotiations are concluded, because concessions will be implemented gradually and Trade Facilitation reforms will take time to become routine. But the scenarios used in our calculations are straightforward. Agriculture and NAMA modality agreements can be translated into binding commitments and topped up with additional tariff cuts resulting from sectoral negotiations. New rules on Trade Facilitation can set the stage for reform on the ground. Reducing applied Services barriers by 10 percent will take long hours at the negotiating table but can be achieved with the right combination of “sticks and carrots.” All told, the prize is well worth a major push by world leaders.

REFERENCES

- Anderson, James E. 2009. Consistent Trade Policy Aggregation. *International Economic Review*, Volume 50, Issue 3 (August): 903-27
- Anderson, Kym, Will Martin, and Dominique van der Mensbrugghe. 2006a. Market and Welfare Implications of the Doha Reform Scenarios. In *Agricultural Trade Reform and the Doha Development Agenda*, eds. Kym Anderson and Will Martin. London: Palgrave Macmillan (co-published with the World Bank).
- BEA (Bureau of Economic Analysis). 2009. US International Transactions Accounts. Washington: US Department of Commerce. Available at www.bea.gov. (accessed May 21, 2009).
- Bhala, Raj. 2009. Resurrecting the Doha Round: Devilish Details, Grand Themes, and China Too. *45 Texas International Law Journal*, Issue 1.
- Bouët, Antoine, Yvan Decreux, Lionel Fontagné, Sébastien Jean, and David Laborde. 2008. Assessing Applied Protection across the World. *Review of International Economics* 17.
- Bradford, Scott, Paul L Grieco, and Gary Hufbauer. 2005. The Payoff to America from Global Integration. In *The United States and the World Economy*, ed. C Fred Bergsten. Washington: Institute for International Economics.
- Brown, Drusilla K., Kozo Kiyota, and Robert M. Stern. 2005. *Computational Analysis of the Free Trade Area of the Americas (FTAA)*. Discussion Paper 528. Gerald R. School of Public Policy, University of Michigan. Available at <http://fordschool.umich.edu> (accessed June 15 2009).

- Cline, William R. 2004. *Trade Policy and Global Poverty*. Washington: Institute for International Economics.
- Decreux, Yvan, and Lionel Fontagné. 2006. A Quantitative Assessment of the Outcome of the Doha Development Agenda. *CEPII Working paper* 2006-10.
- Decreux, Yvan, and Hugo Valin. 2007. MIRAGE, Updated Version of the Model for Trade Policy Analysis, Focus on Agriculture and Dynamics. *CEPII Working Paper* 2007-15.
- Decreux, Yvan, and Lionel Fontagné. 2008. An Assessment of May 2008 Proposals for the DDA. *CEPII Study Report* 2008-01.
- Decreux, Yvan, and Lionel Fontagné. 2009. Economic Impact of Potential Outcome of the DDA. *CEPII Study Report* 2009-01.
- Dreyer, Iana, and Brian Hindley. 2008. *Trade in Information Technology Goods: Adapting the ITA to 21st Century Technological Change*. ECIPE Working Paper 06/2008. European Centre for International Political Economy.
- Eglin, Richard. 2008. The Doha Round Negotiations of Trade Facilitation. In *Global Enabling Trade Report 2008*. World Economic Forum. Available at www.weforum.org (accessed on July 1, 2009).
- European Commission. 2008. The Information Technology Agreement: Memo. In *Trade Issues*. Available at <http://ec.europa.eu> (accessed on June 15, 2009).
- ECORYS Nederland BV. 2009. *Non-Tariff Measures in EU-US Trade and Investment – An Economic Analysis*. Report prepared for the European Commission, Directorate-General for Trade (December 11). Rotterdam.

- Finger, K. Michael. 2007. Overview of Tariff Liberalization and World Trade for ITA Products, 1996-2005. Presentation at WTO ITA Symposium, March 28–29. Available at www.wto.org (accessed on June 15, 2009).
- Francois, Joseph, and Bernard Hoekman. 1999. Market Access in the Services Sectors. Unpublished Manuscript.
- Francois, Joseph, Bernard Hoekman, and Julia Woerz. 2007. Does Gravity Apply to Intangibles? Measuring Openness in Services. Unpublished Manuscript.
- Francois, Joseph, and Ganeshan Wignaraja. 2008. Economic Implications of Asian Integration. *Global Economy Journal*. The Berkeley Electronic Press. Volume 8, Issue 3, Article 1.
- Frankel, Jeffrey, and Andrew Rose. 2002. An Estimate of the Effect of Common Currencies on Trade and Income. *The Quarterly Journal of Economics*. The MIT Press. Volume 117, No. 2 (May): 437-466.
- Freund, Caroline, and Bineswaree Bolaky. 2008. Trade, regulations, and income. *Journal of Development Economics*. Elsevier. Volume 87, No. 2 (October): 309-321.
- Gootiiz, Batshur, and Aaditya Mattoo. 2009. Services in Doha: What's on the Table? Working Paper (April 15). Washington: World Bank Development Economics Research Group. Available at <http://econ.worldbank.org>.
- Haberler, Gottfried von. 1937. *The Theory of International Trade with its applications to commercial policy*. New York: The Macmillan Company.
- Hardin, Alexis, and Leanne Holmes. 1997. Services Trade and Foreign Direct Investment. *Industry Commission Staff Research Paper*, Production Commission Australian, AGPS, Canberra, November 1997.

- Hoekman, Bernard. 2000. The Next Round of Services Negotiations: Identifying Priorities and Options. *Multilateral Trade Negotiations: Issues for the Millennium Round*, St. Louis: Federal Reserve Bank of St. Louis.
- Howse, Robert, and Petrus B. van Bork. 2006. *Options for Liberalising Trade in Environmental Goods in the Doha Round*. ICTSD Issue Paper no. 2. International Centre for Trade and Sustainable Development. Geneva.
- Hufbauer, Gary Clyde, and Jeffrey J. Schott. 1985. *Trading for Growth: The Next Round of Trade Negotiations*. Policy Analyses in International Economics 11. Washington: Institute for International Economics.
- Japan. 2009. Japan's New Proposal. Mimeo transmitted to the authors on July 13, 2009 at the Peterson Institute for International Economics, Washington.
- Kee, Hiau Lee, Alessandro Nicita, and Marcelo Olarreaga. 2004. *Import Demand Elasticities and Trade Distortions*. World Bank Working Paper 3452. Washington: World Bank.
- Kirkpatrick, Colin. 2006. *Trade in Environmental Services: Assessing the Implications for Developing Countries in the GATS*. ICTSD Issue Paper no. 3. International Centre for Trade and Sustainable Development. Geneva.
- Krugman, Paul, and Maurice Obstfeld. 2003. *International Economics: Theory and Policy*. Boston, MA: Pearson Education, Inc.
- Laborde, David, Will Martin, and Dominique van der Mensbrugghe. 2009a. Implications of the 2008 Doha Draft Agricultural and Non-Agricultural Market Access Modalities for Developing Countries. Photocopy (November 27).

- Laborde, David, Will Martin, and Dominique van der Mensbrugghe. 2009b. Measuring the Benefits of Global Liberalization with Consistent Aggregators of Trade Distortions. International Food Policy Research Institute (IFPRI and World Bank. Photocopy (November 29).
- Mann, Catherine L., and Xuepeng Liu. 2009. The Information Technology Agreement: Sui Generis or Model Stepping Stone? In *Multilateralizing Regionalism*, eds. Richard Baldwin and Patrick Low. Cambridge: Cambridge University Press.
- Marquez, Jamie. 2005. *Estimating Trade Elasticities for US Trade in Services*. International Finance Discussion Papers, no. 836 (August). Board of Governors of the Federal Reserve System.
- Martin, Will, and Aaditya Mattoo. 2009. *The Doha Development Agenda: What's on the Table?* Working Paper (May 12). World Bank Development Economics Research Group. Available at <http://econ.worldbank.org>.
- Messerlin, Patrik A., and Erik van der Marel. 2009. Leading with Services" "The dynamics of transatlantic negotiations in Services. *GEM Policy Brief*, July 2009.
- METI (Japan Ministry of Economy, Trade, and Industry). 2009. Market Access for Non-Agricultural Products: Japan's Submission on 'Zero-for-Zero' and 'Harmonization.' Available at www.meti.go.jp/english (accessed on May 22, 2009).
- Novy, Dennis. 2009. Gravity Redux: Measuring International Trade Costs with Panel Data. *Working Paper, University of Warwick*.
- OECD (Organization for Economic Cooperation and Development). 2003. The Sources of Economic Growth in OECD Countries. Paris: Organization for Economic Cooperation and Development.

OECD (Organization for Economic Cooperation and Development). 2003. Quantitative Assessment of the Benefits of Trade Facilitation. *OECD*, TD/TW/WP(2003)31/FINAL.

OECD (Organization for Economic Cooperation and Development). 2008. Indicators of Product Market Regulation. *OECD Statistics*, OECD, Paris.

OECD (Organization for Economic Cooperation and Development). 2009. Methodology for Deriving the Services Trade Restrictiveness Index. Paper prepared for the OECD Experts Meeting on the STRI, Paris, 2-3 July 2009.

OECD (Organization for Economic Cooperation and Development). 2009. OECD.Stat Trade in Services Statistics Database. Paris. Available at <http://stats.oecd.org> via subscription (accessed May-June 2009).

Shepherd, Ben, and Sebastien Miroudot. Leveraging Trade in Services to Consolidate Global Economic Recovery: An agenda for the G-20. *GEM Policy Brief*, September 2009.

Simpson, John. 2009. A Tour of the Ongoing Work of the World Trade Organization on Trade Facilitation: The Trader's Perspective. In *Global Enabling Trade Report 2009*. World Economic Forum. Available at www.weforum.org (accessed July 9, 2009).

Vastine, Robert. 2008. Negotiating the Liberalization of Trade in Services in the WTO: Promise and Reality. The 17th Annual Frontiers in Service Conference, Center for Excellence in Service, University of Maryland, October 3.

Wang, Zhi, Shashank Mohan, and Daniel Rosen. 2009. Rhodium Group and Peterson Institute for International Economics. Photocopy.

Wilson, John S., Catherine L. Mann, and Tsunehiro Otsuki. 2005. Assessing the Benefits of Trade Facilitation: A Global Perspective. *World Economy* 28, no. 6 (June): 841–71.

World Bank. 2007. *International Trade and Climate Change: Economic, Legal and Institutional Perspectives*. Washington: World Bank.

World Bank. 2009. *Doing Business Report 2009*. Washington: World Bank Group. Available www.doingbusiness.org (accessed on July 13, 2009).

WTO (World Trade Organization). 2005. *Market Access for Non-Agricultural Products: Tariff Liberalization in the Chemicals Sector*. WTO Document TN/MA/W/58. Geneva.

WTO (World Trade Organization). 2008a. *World Trade Report 2008: Trade in a Globalizing World*. Geneva.

WTO (World Trade Organization). 2008b. *Services Signalling Conference: Report by the Chairman of the TNC*. WTO Document JOB(08)/93. Geneva.

WTO (World Trade Organization). 2008c. *Fourth Revision of Draft Modalities for Non-Agricultural Market Access*. WTO Document TN/MA/W/103/Rev.3. Geneva.

WTO (World Trade Organization). 2008d. *Revised draft modalities for Agriculture*. WTO Document TN/AG/W/4/Rev.4. Geneva.

WTO (World Trade Organization). 2009a. *Information Technology: Schedules of Concessions*. Geneva. Available at www.wto.org (accessed on June 15, 2009). WTO (World Trade Organization). 2009b. Information Technology: Schedules of Concessions. United States, files 182-00, 182-01, 182-02, 182-03, 182-04, 182-05. Available at www.wto.org (accessed on June 15, 2009). (Appears in Table E1).

WTO (World Trade Organization). 2009c. *WTO Negotiations on Trade Facilitations Compilation of Members' Textual Proposals*. WTO Document TN/TF/W43/Rev.19.

Geneva. (Appears in table E6).

Zahrnt, Valentin. 2009. How States Perceive the Costs of Trade Liberalization in the WTO. *Aussenwirtschaft* 64, Heft III, Sept.