ASSESSING THE POTENTIAL COST OF A FAILED DOHA ROUND

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After 15 years of negotiations, WTO members have not reached a final agreement on the Doha Round liberalization modalities.¹ Conflicts still exist on several issues regarding the commitments that both developed and developing countries should make. For instance, the United States is still reluctant to tackle the issue of domestic support to the cotton sector, and India and other developing countries wish to avoid restrictions, such as the anti-concentration clause, on their ability to use flexibility in nonagricultural market access (NAMA) negotiations. Beyond these very specific elements of disagreement, it seems that the incentives to conclude the Doha Round are weak. Because large market access gains have already been achieved in the manufacturing sectors of developed-country markets (Martin and Messerlin 2007), the impetus that existed in previous multilateral negotiations has vanished. In addition, the remaining issues are not only more difficult to negotiate, but the political costs are high and the gains are more difficult to assess. For developed countries, liberalizing agricultural markets remains a very complex issue. At the same time, developing countries want to maintain protection in manufacturing and, based on nascent industry considerations, to avoid making new commitments regarding services. Last, regional and bilateral liberalizations have reduced the market access gains expected by key players and have fostered resistance to multilateral liberalization that will erode existing preferences. Therefore, the longer the negotiations last, the weaker are the incentives to conclude a successful round.

In parallel, impact assessments using a Computable General Equilibrium (CGE) model have provided increasingly accurate quantitative information concerning the gains and losses associated with the DDA in particular, thanks

1 This chapter was originally published as an article in *World Trade Review* (Bouët and Laborde 2010).

to the improved quality of data.² Great improvements have been achieved since the Uruguay Round assessment, where a lack of information on tariffs led to an overestimation of potential gains. However, improved information has shown that the gains from the Doha Round are lower than expected (Bouët 2008), since the models now capture the fact that applied tariffs are in most cases lower than their most favored nation (MFN) bound level, due to both binding overhang (the gap between MFN bound and applied rates) and preferences (the gap between MFN and bilateral applied rates). In addition, the implementation of trade scenarios has become more and more precise, adding details and including numerous flexibilities and exceptions that exist, limiting the scope of liberalization (Jean, Laborde, and Martin 2008).

The shrinking gains associated with the DDA (see Anderson, Martin, and van der Mensbrugghe 2005; Decreux and Fontagné 2006; Bouët, Mevel, and Orden 2006) have led both economists and policy makers to state that the real gains go far beyond tariff-reduction effects and can be found outside the standard model. For example, gains in productivity, the liberalization of services, and trade facilitation are still weakly represented in CGE exercises but may account for a large share of the positive effects of a successful round. Moreover, even if applied tariffs are not cut, the simple fact that tariff lines are bound and that the existing binding overhang is reduced has a significant value because it provides a more stable trade environment.

The goal of this chapter is not to uncover additional benefits associated with the DDA, but to reexamine the value of an agreement by considering potential gains and losses in a moving landscape of trade policies. Traditional impact studies have assessed the potential gains of the Doha negotiations by comparing the consequences of the negotiation modalities to the status quo baseline. Therefore, the cost of failed negotiations has been seen as just an opportunity cost representing the unrealized gains. This approach, however, may have underestimated the real costs associated with the failure of the DDA. Such a drastic event would make the business-as-usual scenario uncertain because the status quo is not a long-term perspective for trade policies. The current trend of multilateral trade liberalization may not survive this failure, and the global public good provided by the WTO that helps to free trade in a stable and less-distorted environment may vanish. Therefore this chapter compares the effects of a DDA scenario with other relevant alternatives.

2 It is more questionable whether the CGE models themselves have improved significantly in terms of incorporation of new theory.

Aside from the DDA scenario, we study four protectionist scenarios that are characterized by different orders of magnitude and different approaches. Throughout the chapter we take into account the commitments enforced through the current trading system that limit WTO members' capacity to impede international trade—in particular, through binding border protection. We develop a new database of historical world protection that prevailed from 1995 to 2006. This allows us to examine by how much tariff barriers have decreased since the creation of the WTO and to determine the maximum tariff during this period of time that will be the basis of a protectionist scenario. We also use the MACMapHS6v2 database (Laborde 2008) on applied and bound protection in 2004 to define another protectionist scenario characterized by the implementation of the highest protection authorized by the current multilateral system. We implement these different tariff scenarios in the MIRAGE model of the world economy in order to evaluate the economic consequences of these cooperative and protectionist outcomes.³ The difference between cooperative and protectionist scenarios represents a potential reduction of US\$2,261 billion in trade (in constant terms) if we refer to bound tariffs, and US\$1,170 billion if we refer to maximum tariffs implemented between 1995 and 2006.⁴

Another point of view is to consider the WTO agreement as a “preventive” scheme against potential trade wars. This is why we undertake a comparison between a resort to protectionism when the DDA is implemented and a resort to protectionism when the DDA is not implemented. The comparison shows that this trade agreement could prevent the potential reduction of trade by US\$809 billion. Therefore it acts as an efficient multilateral “preventive” scheme against the adverse consequences of trade “beggar-thy-neighbor” policies. The reference scenario for this figure is a situation where countries adopt bound duties, whereas if we consider a situation where countries adopt the highest tariffs implemented between 1995 and 2006, world trade would be reduced by a supplement of US\$581 billion. These new findings clearly demonstrate the potential cost of a failed Doha Round. As stated by WTO Director-General Pascal Lamy in his speech at the Lowy Institute in Sydney on March 2, 2009: “The Doha Round is the most effective way to further

3 MIRAGE (Modelling International Relationships in Applied General Equilibrium) is a multicountry, multisector dynamic CGE model, developed initially at the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) in Paris. A full description of the model is available in Decreux and Valin (2007).

4 Throughout this chapter, we evaluate one scenario by the deviation from the baseline for the 2020 horizon. We compare two scenarios by comparing these two deviations.

constrain protectionist pressures by reducing the gap between bound commitments and applied policies” (Lamy 2009).

The chapter is structured as follows. The first section details the motivation of this study. Next, the methodology is described. The chapter then presents the results of all scenarios, both in terms of level of border protection and in terms of economic impact. The final section concludes.

Background

This section provides a detailed background of this study. If we undertake a new assessment of the Doha scenario, based on the last draft modalities discussed next, we also evaluate completely different trade scenarios that are aimed to estimate the potential cost of a worldwide resort to protectionism. Are these latter scenarios realistic? First, we consider the wave of protectionist and “beggar-thy-neighbor” policies adopted since early 2008 and conclude that there is no straightforward evidence that the threat of trade wars has increased. Second, we examine historical data on world protectionism and point out that trade policies offer a moving landscape, in the long-term as well as in the medium-term. Third, we proceed to a review of the economic literature in order to understand the rationale for these up-and-down variations in applied protection.

Has Protectionism Recently Increased?

It has often been stated that since September 2008, rising protectionism has occurred among WTO members, mixing increases in MFN duties, non-tariff barriers, and the proliferation of antidumping duties (see, for example, Baldwin and Evenett 2008, 2009). Border measures, like nonautomatic licensing requirements by Argentina or tariffs on steel products by India, have recently been implemented. Numerous bailout measures, apparently related to the banking and financial crisis, have also been adopted and contain protectionist measures like the “Buy American” provision included in the US stimulus package agreed on in February 2009.⁵ All these measures that in one way or another subsidize domestic firms are questionable in terms of their compatibility to the WTO law (see Bhagwati and Panagarya, in Baldwin and Evenett

5 On September, 16, 2009, the Global Trade Alert (2009) website listed 573 “red” measures adopted throughout the world during the 2008–2009 global downturn: that is to say, measures that have been implemented and that are *almost certainly* discriminating against foreign trading interests.

2008), especially if they survive the crisis. The WTO authorizes domestic subsidies when aimed at restructuring businesses, promoting innovation, and/or assisting displaced workers (Hufbauer and Schott 2009). However, some of these measures are weakly linked to the financial crisis, especially some trade policy modifications that were initiated in early 2008 and fully implemented at the end of the year. Regarding the WTO, all border measures are compatible since tariff increases respect the bound commitments. Some bailout measures may be WTO-compatible, if temporary. The US “Buy American” provision violates the WTO Government Procurement Agreement under which Canada, the 27 European Union (EU) countries, Hong Kong, Iceland, Israel, Japan, Korea, Liechtenstein, Norway, Singapore, Switzerland, and the United States have to open procurement to competition from firms based in the signatory countries (Hufbauer and Schott 2009). This obligation is not extended to all WTO members; firms from Brazil, China, and India cannot complain about this provision.

While bailout and restructuring measures may be understood as an attempt to circumvent the disastrous economic impact of the banking and financial crisis, the recently increasing adoption of beggar-thy-neighbor protectionist policies is not obvious. Most of the figures pointing out a multiplication of increased import tariffs or antidumping procedures do not make any temporal comparisons (like a report to the Trade Policy Review Body [TPRB] by the WTO staff; WTO 2009) or compare it with 2007 as a year of reference. The *Recession and Protectionism ‘Within the Rules’: Risks to the Multilateral Trade System*—a monthly newsletter of the Institute for the Integration of Latin America and the Caribbean (INTAL 2009)—states that “according to the information from the International Trade Centre (ITC) and the WTO, during the first half of 2008 the number of antidumping cases rose by 40%.” The newsletter, however, does not specify if the reference is the first half of 2007, and it does not provide medium-term references. Gamberoni and Newfarmer (2009) affirm that “after a period of slowdown, the number of antidumping cases (both investigations initiated and imposition of duties) surged in 2008, especially in the second half of 2008. Compared to 2007, antidumping initiations grew by 15% and findings with imposition of duties grew by 22%.” Again, we do not know if 2007 is the right comparison. In addition, during a period of economic crisis, exporting firms are prone to reduce their prices to support demand. This leads mechanically to an increase of antidumping investigations without requiring a more protectionist attitude by policy makers.

[Figure 6.1](#) indicates trade disputes handled by WTO from 1995 (first quarter) to 2009 (second quarter). As seasonal variations are large, they are cumulated on four consecutive quarters. Of course, there is a lag between the time when a protectionist measure is implemented and the time when a complaint is filed. Therefore the observed increase in the number of trade disputes during the last quarter of 2008 might reflect the increase of antidumping procedures noted in early 2008. In that case, this is not unique as the same phenomenon occurred in 2000 and 2002. Moreover the cumulated number of trade disputes in four consecutive quarters has decreased in the first quarter of 2009 and is under the level attained in the same quarter in 2007 and 2005. There is no indication of a recent surge in protectionism. It should be noted, however, that reliable information is difficult to gather. For example, the WTO staff makes references to protectionist measures but concedes that “the information on changes in trade policies and trade-related policies contained in this report has been collected by the Secretariat from a variety of public and official sources. In some cases it has been possible to verify the information through formal channels, but in most cases it has not” (WTO 2009).

The Moving Landscape of Trade Policies

It is often stated that pressure for protectionism is cyclical. Although this statement is rather difficult to support with concrete evidence, it can be easily demonstrated that protectionism has been cyclical in rich countries from the end of the eighteenth century to the mid-twentieth century. [Figure 6.2](#) points out this “cyclicity” in the United States from 1891 to 1940. The US tariff has followed a liberalizing path from 1940 until now. This trend can be found in France (see Messerlin 1985) and other European countries (Bairoch 1995 or Irwin 1992, among others).

Does this conclusion apply to all countries throughout the world? It is difficult to say because no historical database on applied protection exists at the world level. In addition, a decreasing national average can hide increases in tariffs at the product level. This is why we examine the frequency of tariff increases at the HS6 (Harmonized System–6 digit) level from one year to the other in 164 countries between 1995 and 2006 using the TRAINS (Trade Analysis and Information System) database ([Table 6.1](#)).⁶ We calculate the *ad valorem* equivalent (AVE) of MFN applied protection (*ad valorem* duties and

6 TRAINS is an information system developed by UNCTAD (2016) at the HS-based tariff line level covering tariff, para-tariff, and nontariff measures as well as import flows by origin for more than 160 countries.

FIGURE 6.1 Trade disputes handled at the World Trade Organization (WTO) Dispute Settlement Body, 1995–2009 (first quarter 1995–second quarter 2009, cumulated on four consecutive quarters)

Source: WTO (2008).

FIGURE 6.2 Amount of import duties divided by dutiable imports, United States, 1891–2001

Source: USITC, n.d.

specific duties) for each reporter on each HS6 product every year and the frequency of tariff augmentation, defined as the number of MFN tariff augmentations divided by the product of 12 years and the number of HS6 lines.

As the AVE of specific tariffs may vary due to modification of unit values and as we focus on discretionary variations of import duties, and not on variations of import duties induced by price inflation (or deflation), we neutralize

TABLE 6.1 Frequency of most favored nation (MFN) tariff augmentation, 1995–2006 (%)

Country or region	Nonagricultural market access (NAMA) (%)	Agricultural market access (AMA) (%)	All (%)
Sudan	32.6	32.1	32.6
Qatar	24.8	20.2	24.2
Kuwait	24.7	20.1	24.1
Madagascar	21.4	21.1	21.4
Switzerland	19.2	26.0	20.1
Rwanda	19.5	10.2	18.3
Uzbekistan	17.5	20.4	17.9
Kyrgyzstan	17.4	20.4	17.8
Argentina	17.3	15.6	17.1
Nicaragua	15.3	18.9	15.7
Sri Lanka	14.3	24.6	15.7
Paraguay	15.4	10.8	14.7
Morocco	14.3	17.1	14.6
Uruguay	15.4	9.0	14.5
Bhutan	11.5	24.0	13.2
Lebanon	12.7	13.3	12.8
Democratic Republic of Congo	12.4	14.4	12.7
Afghanistan	11.0	16.9	11.8
India	11.2	15.3	11.8
Czech Republic	11.8	3.4	10.7
Republic of Moldova	10.1	13.3	10.5
Nigeria	10.7	9.0	10.4
World	4.5	6.1	4.7
United States	2.1	13.3	3.6
EU15	1.8	14.6	3.5
Japan	0.7	8.1	1.7
China	1.2	1.8	1.3

Source: TRAINS and authors' calculations.

Note: The frequency of most favored nation (MFN) tariff augmentation should be defined as the number of augmentations/(12 years · number of HS6 products). EU15 = Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom.

the effect of unit value variations by assessing the AVE of specific duties, based on the 2004 year unit value, for every year from 1995 to 2006. [Table 6.1](#) identifies 22 out of 164 countries in the database for which the frequency of tariff increase has been greater than 10 percent in all sectors. It also shows the

TABLE 6.2 Percentage of most favored nation (MFN) tariff augmentation, 1995–2006, by groups of countries (%)

Sector	WTO	Non-WTO	Least developed countries (LDCs)	Non-LDCs	Middle-income countries (MICs)	Non-MICs	Organisation for Economic Co-operation and Development (OECD)	Non-OECD
All sectors	4.7	5.3	4.1	4.9	5.2	3.8	3.3	4.9
Nonagricultural sectors (NAMA)	4.5	5.0	4.1	4.6	5.0	3.5	2.6	4.8
Agricultural sectors (AMA)	6.0	7.0	4.3	6.6	6.2	5.8	8.4	5.8

Source: TRAINS and authors' calculations.

Note: The WTO membership is here defined as the status observed in 2005. It would have been better to take into account the exact date of membership, but the final access to WTO is systematically preceded by a period of observer status.

frequency calculated for agricultural and nonagricultural products at the world level as well as at the national level for the United States, the EU15, Japan, and China.⁷

At the world level the frequency of tariff augmentation in all sectors is significant, even if not very large: close to 4.5 percent. While this frequency was higher than 20 percent in the case of 5 countries (Sudan, Qatar, Kuwait, Madagascar, and Switzerland), it was 0 during this period for 11 countries: Cyprus, Eritrea, Gambia, Guinea, Haiti, Hong Kong, Macau, Mayotte, Palau, Slovakia, and Syria. In general, tariff augmentations are more frequent in the agricultural sector.⁸ But this is particularly true in rich countries like the EU15, the United States, Japan, but also Norway, and in middle-income countries, like Poland and Ukraine. In Norway, for example, from 1995 to 2006, while annual tariff augmentations occurred in only 0.2 percent of all nonagricultural cases, they were noted in 22 percent of agricultural cases.

[Table 6.2](#) displays the frequency of MFN tariff augmentation from 1995 to 2006 for countries based on whether they are WTO members (WTO) or not (non-WTO), whether they are classified as least developed countries (LDC) or not (non-LDC), middle-income countries (MICs) or not (non-MICs), or OECD (OECD) or not (non-OECD). Finally, these ratios are calculated for all sectors (All), and for nonagricultural sectors (NAMA) or agricultural sectors (AMA).

7 The EU15 is Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and the United Kingdom.

8 Due to the volatility in agricultural prices, governments adjust trade policies more frequently. Let us notice that this fact is consistent with the political economy model used when we design trade policy scenarios (Jean, Laborde, and Martin 2008).

The propensity to augment MFN tariffs is lower among WTO members than among non-WTO countries, as it is lower in industry than in agriculture. It appears that LDCs raise their MFN tariffs less frequently than the world average, while MICs do so more often.⁹ The propensity of OECD countries to augment their MFN tariffs is significantly low in industry but is relatively high in agriculture—higher than in MICs and LDCs.

Economic Crisis, Trade Wars, and Retaliations

The financial crisis ostensibly fostered demand for protectionism and could have led to new trade barriers, as occurred after the October 1929 crisis. A parallel can easily be drawn between the 2008 situation and the one that existed then. In the early 1930s, unemployment was rising, fear of deflation prevailed, and a lack of public resources (which was more pronounced in countries that paid war reparations) prevented governments from remedying the economic crisis. Moreover, in 2008 as in 1930, the context of decreasing prices could have mechanically reinforced protection, as specific duties (defined as monetary amounts by physical units), which are numerous in agriculture, become more and more restrictive when world prices are down. In this type of economic context, protectionism is a tempting policy instrument for policy makers—it shortsightedly increases domestic prices and supports domestic activity, and it provides new public revenue. In the Republican platform of the 1928 presidential election, the tariff was presented as the “household remedy” (Isaacs 1948): that is to say, a policy that leads to higher domestic prices and increased economic activity.

But the role of the Smoot-Hawley Tariff Act and the subsequent tariff retaliations in the decline of trade after 1930 should not be overestimated: recent evaluations (Irwin 1998; Madsen 2001) show that discretionary increases in tariff rates explain only a minor part of the post-1929 contraction of trade. For example, Madsen (2001) estimates that real world trade declined from 1929 to 1932 by approximately 14 percent because of decreasing national incomes, 8 percent because of discretionary augmentations of tariffs, 5 percent because of deflation-induced tariff increases, and 6 percent as a result of nontariff barriers.

It is theoretically and empirically proven that trade openness is employment-creating and income-supporting in sectors in which an economy has a

9 These findings are consistent with previous works (Laborde 2008) that emphasize the fact that LDCs have less sophisticated trade policies than more developed economies, in particular due to the lack of administrative capacity.

comparative advantage, but has a negative impact on employment and incomes in sectors where the economy has a comparative disadvantage. This implies that trade openness leads to a restructuring of an economy that can be costly, and trade openness is more popular in times of economic growth. During economic recession, the job market provides fewer opportunities and any threat on existing jobs is negatively perceived—in particular, in countries with a limited social protection net and where adjustment costs are large. In time of stagnation, lobbying to increase protection above usual levels in sectors without comparative advantage tends to be strong, especially when sectors are small and geographically/socially homogenous (Olson 1965). This explains why demand for protection is so strong in the US sectors of automobile and textile and apparel, in the European sectors of agriculture and automobile, in the Japanese agricultural sector, and so on.

The interdependence of trading partners should increase the probability of a trade war, thanks to the adoption of retaliatory measures: governments do not correctly anticipate that protectionism will initiate a cycle of world retaliation and counterretaliation, as was the case with the United States in 1930 and also in 2007–2008 when, in the middle of the food crisis, governments implemented export bans and export restrictions in successive rounds of retaliation and counterretaliation. There exists an economic theory of retaliation and two of its conclusions are worthwhile:

- Large countries can benefit from a trade war while small countries always lose (Johnson 1953). This point has been recently raised by Soesastro (in Baldwin and Evenett 2009) when he states that the largest economies will likely be more tempted by protectionism than small ones. Small countries are more dependent on international trade and could be severely damaged by a trade war. Large economies like the EU or the United States are much more independent and can benefit from the adoption of import tariffs that could substantially decrease the world prices of their imports.
- Trade wars may be long and damaging when countries do not identify who is at the origin of the process; and conversely, countries have to be “nice” in order to reestablish trade cooperation as quickly as possible (Axelrod 1981).

Finally, there is another factor that should contribute to rising protectionism. The failure of the DDA mainly comes from disagreements between rich and emerging countries: between India and the United States on the Safeguard Special Mechanism (SSM) in agriculture, between the United States and West Africa on cotton, and between the EU and Brazil on tariff

reduction in agriculture, to name a few examples. This clearly defines a line of demarcation that could be the basis of future trade disputes. While there is no strong evidence of rising protectionism today, trade policies can still be changed by policy makers as a reaction to a particular economic situation. Current economic conditions could contribute to a complete change of mood in terms of trade policies implemented. In fact, even the post–World War II period, which is a remarkable period of history in terms of trade policies becoming freer and freer, trading partners, including WTO members, frequently augmented tariff protection when needed. This is especially true for middle-income countries in all sectors and OECD countries in agriculture.

Alternative Scenarios and Methodology

Based on this background, this chapter aims to compare the gains of trade cooperation with protectionist alternatives and to examine how a negotiated DDA can protect the world trading system from a rise in protectionism. With this objective, we implement different scenarios and compare the following:

- the implementation of the December 2008 package with different protectionist scenarios (elimination of binding overhang; and implementation of the highest MFN tariff applied during the 1995–2006 period for each importing country at the product level); and
- the implementation of these protectionist scenarios in a situation where the DDA is not implemented and the implementation of these scenarios in a situation where the DDA is implemented. This element shows how a new trade negotiation will prevent the world trading system from trade wars.

These assessments are carried out using the MIRAGE CGE model of the world economy, with protection data coming from the MAcMapHS6 database and a new historical database on MFN applied protection. The remainder of this section offers a methodological overview followed by a detailed description of each scenario.

Methodology

Data treatment

Tariff reform is implemented at the disaggregation level of the MAcMapHS6v2.1 database with bound and applied tariff data for 2004 (including

5,113 products, 170 importing countries, and 208 exporting countries) at the HS6 product level.¹⁰ We add several updates to take into account all major changes that occurred up to 2008, including major regional trade agreements (RTAs), new WTO members (such as Ukraine), but also the trade policy consequences of ongoing domestic reforms (such as the EU sugar trade reform). The TRAINS database was used to investigate tariff changes since 1995, and a special procedure was adopted to ensure comparability of MFN tariff rates between MACMapHS6 and TRAINS. For ensuring intertemporal comparison of nominal protection, all specific tariffs are converted using the reference group unit values from MACMapHS6v2.¹¹

However, WTO published detailed guidelines in order to know which reduction coefficient has to be applied on specific duties.¹² Therefore, in our design of the policy scenario and for the purpose of tariff reduction formula classification, the official guidelines to compute unit values are used. Simultaneously all trade policy scenarios are implemented on a yearly basis following relevant timelines in each case. The Doha scenario and the free trade agreements (FTAs) that are included in the baseline give countries the freedom to select products eligible to certain clauses: these are either the “sensitive products” or the “special products” clauses that allow rich and developing countries to choose a list of products that will be less liberalized, or the “exception” clause included in the duty-free quota-free (DFQF) regime that will be given by OECD countries to LDCs (this clause implied that OECD countries will have the right to exclude 3 percent of tariff lines from this regime), or the binding rules under which countries have to define a list of unbound tariff lines that have to be bound at the end of the round. As the rule is “no rule,” we have to define a criterion of selection of these products in our modeling. We

10 Slight modifications have been made on the MACMapHS6v2.1 dataset: Malaysia's tariffs on tobacco products are updated (lowered), marginal protection on Chinese cereal TRQs are reduced, and protection faced on sugar and bananas by ACP (Africa, Caribbean, and Pacific) countries in the EU market is modified to better capture preference erosion mechanisms.

11 This method (exporter's reference group unit value) implies that the unit value taken for the AVE calculation of specific tariffs is the median unit value of world exports by a group of countries similar—from the point of view of trade—to the exporting country. It is aimed at (1) reflecting the different restrictive impacts of a specific tariff on exporting countries according to their vertical specialization (the specific duty imposed by the EU on pork sausages, for example, has a different protectionist impact whether the partner exports low-price or high-price pork sausage); and (2) not exhibiting excessive volatility (see Bouët et al. 2008).

12 In agriculture WTO members negotiate on a reduction coefficient to be applied on tariffs defined by intervals: tariffs from x percent to y percent will be reduced by z percent. This does not specify by which extent specific duties (US\$ per ton, for example) will be reduced. These official guidelines describe in particular how AVE of specific duties have to be calculated to select the right reduction coefficient.

use the idea of the model developed by Jean, Laborde, and Martin (2008). It is based on a political economy approach where the government (common agent) gives protection to economic sectors (multiprincipals) against financial transfers and maximizes a function that includes national welfare and these financial transfers.

Concerning exemption clauses, as a result of this model, the government is supposed to select lines that maximize a political economy indicator—in particular, depending positively on the height of the tariff and the magnitude of imports. An extension of this model is used to define the choice of tariff lines to be bound by developing countries in the DDA scenario. Indeed, for a particular scenario when we combine tariff increases with the DDA implementation, it is very important to have a theoretical based approach to define the new bound tariffs, especially for countries (SVEs, small and vulnerable economies; LDCs; and initially low binding countries) that benefit from wide flexibilities to achieve their new binding coverage goal.¹³ The DDA modalities (WTO 2008) define in this case the overall constraints faced by each country. Finally, when WTO members liberalize under the DDA, we suppose that the market access remains unchanged for non-WTO members.

Tariffs are aggregated from the HS6 level to the model aggregation (see below) using the reference group weighting scheme methodology (Boumellassa, Laborde, and Mitaritonna 2009) and then implemented in the MIRAGE multicountry, multisector dynamic model.¹⁴ We assume perfect competition across all sectors.¹⁵ Based on standard and robust assumptions, it should be noted that the model may underestimate the positive effects of trade reform, particularly when such reform drives new investments, technology improvements, or important trade or production diversification. Macroeconomic data (such as world trade flows, production, consumption, and intermediate use of commodities and services) come from the Global Trade Analysis Project

13 The only difference with the approach defined in Jean, Laborde, and Martin (2008) is that in order to compute the political cost of any new commitments, we do not take into account the applied tariff in 2004 (the base year), but the highest tariff during the 1995–2006 period.

14 This weighting scheme (reference group) implies that we weight a tariff imposed by country r on a product i coming from s by the imports by a group of countries similar to r —from the point of view of trade—of product i coming from country s ; it is aimed at (1) reflecting the structure of country r 's trade; (2) avoiding the endogeneity bias arising from a bilateral trade weighting scheme (see Bouët et al. 2008).

15 The MIRAGE model makes possible an imperfect competition assumption, and it has been used in previous quantitative assessments. However, this hypothesis requires information about sector markups, number of firms, and magnitude of fixed costs, which is difficult to gather for developing countries. This is the reason why we preferred here to adopt a perfect competition hypothesis in all sectors.

(GTAP) 7 database (see Narayanan and Walmsley 2008 for a full documentation). Identified in the model are 27 regions (8 high-income regions), which map the main trade blocks. The sectoral decomposition is highly detailed in terms of agriculture and agri-food business (12 sectors), since most of the protection is concentrated in this sector. All other sectors are nonagricultural, including 13 industrial sectors and 2 service sectors.¹⁶

A Snapshot of MIRAGE

In each country a representative consumer maximizes a CES-LES (Constant Elasticity of Substitution–Linear Expenditure System) utility function under a budget constraint to allocate her (his) income across goods. The origin of goods is determined by a CES (Constant Elasticity of Substitution) nested structure following the Armington assumption.¹⁷ In addition, developed countries are supposed to produce high-quality industrial goods, as compared to those supplied by developing countries. On the production side, value-added and intermediate goods are complements under a Leontief hypothesis. The value-added is a CES function of unskilled labor and a composite of skilled labor and capital: it allows for including less substitutability between the last two production factors.

In agriculture and mining, production depends on land and natural resources. New capital is perfectly mobile across sectors while installed capital is immobile. Skilled labor is perfectly mobile across sectors, while unskilled labor is imperfectly mobile between agricultural sectors and nonagricultural sectors. Total employment is constant. Investment is savings-driven, and the real exchange rate is adjusted (through price adjustments) such that the current account is constant in terms of world gross domestic product (GDP). This last assumption is important in this study since tariff reductions (Doha scenario) and tariff increases (protectionist scenarios) will have positively correlated impacts on both imports and exports for every country.

Baseline

A baseline is implemented from 2008 to 2025, which depicts the world without a new multilateral agreement. Concerning trade reform, new agreements adopted since 2004 have been included in the baseline: they are listed in

¹⁶ Geographic decomposition is presented in Appendix 6.1. Sector decomposition is not given here as we do not make any comment on sector variables. This sector decomposition can be requested from the authors.

¹⁷ The MIRAGE model is based on GTAP Armington elasticities, which are low as compared to those used in other models (the World Bank's LINKAGE model, for example).

Appendix 6.2.¹⁸ This baseline serves as a point of comparison with all the scenarios. The results are reported for the year 2025. Results are presented as the difference for a macroeconomic variable in 2025 between the baseline and the scenario. Therefore this variation represents the unique impact of the policy shock described in the scenario. The analysis does not account for the surge in world prices of energy and food products between 2004 and 2008. However, exogenous increases in active populations are included in the model and each country's global factor productivity is affected such that GDP evolution, as described by the model, corresponds to the World Bank's GDP predictions.

Describing Alternative Scenarios

The five scenarios analyzed here include the Doha compromise, as described by the December 2008 modalities, and four protectionist alternatives. These are:

1. DDA: December 2008 modalities;
2. Up to Bound: Non-Free Trade Agreements (FTA) applied tariffs increased to existing bound levels;
3. Bound & DDA: Implementation of December 2008 modalities plus non-FTA applied tariffs increased to new, post-DDA, bound level;
4. Up to Max: Non-FTA applied tariffs increased to their last 10 years maximum level, capped by existing bound tariffs; and
5. Max & DDA: Implementation of December 2008 modalities plus non-FTA applied tariffs increased to their last 10 years maximum level, capped by new, post-DDA, bound tariffs.

The DDA Scenario

The first scenario represents a successful Doha outcome based on December 2008 modalities. After seven years of trade talks, market access modalities have reached a high level of sophistication. Even if the general philosophy is simple, with progressive tariff-cut formulas for both agricultural and nonagricultural goods, many flexibilities have been introduced with different degrees of special and differential treatment for different groups of developing countries. Following previous research (Laborde, Martin, and van der Mensbrugghe 2008; Berisha et al. 2008), this scenario implements all the details of these modalities in terms of market access including tariff-cutting

18 These "new" FTAs are additional to those already present in the GTAP 7 database.

formulas, country and product flexibilities (sensitive and special products), as well as special provisions for tariff escalation, tropical products, and long-standing preferences.¹⁹ The scenario does not account for any changes on the sectoral initiative due to the lack of agreement on this issue. For the duty-free quota-free market access initiative for least developed countries (LDCs) and OECD countries (excluding South Korea [Republic of Korea] but including Mexico and Turkey), we assume a 3 percent exemption clause in terms of products.²⁰ Export subsidies are phased out by 2013 for developed countries.

Concerning domestic support, this scenario includes the constraint on overall trade-distorting support (OTDS) for the United States and the EU. In contrast to most traditional exercises where domestic support commitments are translated in *ad valorem* or specific subsidy caps for current applied policies, we explicitly introduce the OTDS as an overall limit for domestic support spending for each year. In the dynamic context and due to the growth of production in the baseline, the initial agricultural subsidy rates, based on 2004 prices, may lead to a violation of the new commitments. In our simulation, it appears that only the United States will face a real constraint forcing it to modify its production distortive programs.²¹ With the reduction scheme of the OTDS on one hand, and the increasing production on the other, we estimate that subsidy rates of production and on some primary factors should start to decrease by 2011 and will have to be halved by 2025 down to the final US\$16.4 billion limit. Any domestic support reduction will impact all sectors in a uniform way. Since this chapter focuses on tariffs and tariff changes across scenarios, we have introduced neither a program-specific modeling of domestic support policies, nor a political economy model aimed to explain how domestic support reduction across commodities will be handled. Our goal here is to show that the new OTDS commitments, even if they do not drive domestic support reduction today, have a real value on the medium run. The consequences of this treatment are discussed in Appendix 6.3.

Due to the complexity of integrating other elements of the DDA agenda in the simulations, other sources of potential gains are omitted, such as liberalization in services, WTO rules, trade facilitation, and intellectual property rights.

19 A full description of the modalities implemented in this study is provided in Laborde, Martin, and van der Mensbrugghe (2008). This scenario is based on the December 2008 Modalities.

20 This scenario mimics Scenario F in Berisha et al. (2008).

21 The recent Common Agricultural Policy (CAP) reform allows the EU to largely reallocate domestic program funds to the Green Box.

Up to Bound Scenario

Two protectionist scenarios are analyzed to offer a contrasting picture with the DDA. The first option, the Up to Bound scenario, examines the possibility for WTO countries to increase their tariffs up to their Uruguay Round (UR) bound level in a five-year period (2009–2014). It assumes that the entire binding overhang will be eliminated. For unbound lines the existing average binding overhang is applied to compute new tariff targets.²² In this scenario, only MFN-applied rates and nonreciprocal, preferential rates are modified. The only nonreciprocal program that is maintained is the EU “Everything but Arms” initiative due to the way this program has been implemented and renewed in the EU legislation. Other nonreciprocal preferences given by rich countries to poor countries are removed.²³

This scenario represents a strong increase in protection by eliminating all unilateral liberalization but does not represent an open trade war between WTO members. Existing commitments are still respected.²⁴ On the one hand, this scenario may appear extreme since many developing countries bound their tariffs during the Uruguay Round, using a ceiling option, to levels that they have never and may never apply. Countries also apply zero tariffs on a large selection of raw materials and imported inputs even if the existing bound tariffs are strictly positive. On the other hand, Up to Bound is not the worst scenario that can be anticipated. Many countries have not bound their import tariffs yet and are not constrained today by any upward limitation. In our scenario, applying bound duties can underestimate in some cases the desire for high protection on some specific products. Moreover, antidumping duties and safeguard mechanisms can be activated and can restrict trade even in rich countries where binding overhang is inexistent or limited.

Bound & DDA Scenario

Two scenarios intend to measure the extent by which the implementation of the December 2008 package could reduce the potential cost associated with a

22 We estimate a linear relation for each country relating bound duties to MFN applied duties ($\text{Bound_Rate} = a \text{ MFN_rate} + b$), where Bound_Rate is an MFN bound duty and MFN_rate a MFN applied duty. Then we apply estimated parameters a and b on applied MFN rate to build theoretical bound tariffs for the unbound lines.

23 Examples of preferences removed are the US African Growth Opportunity Act, the US Caribbean Basin Initiative, the European GSP (given to non-LDCs), other GSPs from Japan, Norway. EPAs are supposed to be a reciprocal agreement: therefore they are not removed.

24 Even while adhering to their commitments, we may imagine that countries will use additional tools to increase their protection above bound levels by using contingent protection and by initiating litigation cases that would allow them to retaliate.

new trade war by lowering bound duties. Scenario Bound & DDA combines the DDA scenario and the Up to Bound scenario, but the bound duties that are used here are those derived from the December 2008 package. Therefore the difference between this scenario and the Up to Bound one represents the extent by which the DDA could reduce the capacity of WTO members to augment MFN tariffs. The treatment of unbound tariffs is very different in this scenario from the treatment in the Up to Bound case. Contrarily to the previous case, where an average binding margin was applied in a uniform way based on the existing binding overhang, in this scenario we apply the new DDA constraints in terms of binding rules based on the Jean, Laborde, and Martin (2008) political-economy approach combined with past trade policy behavior (see discussion elsewhere in this chapter). As previously, only MFN applied rates and nonreciprocal preferential rates are modified.

Up to Max Scenario

To adopt a more realistic protectionist scenario, historical data were used to determine the highest MFN applied protection rate implemented by every country during 1995 through 2006. In order to take into account bound tariffs implemented during the Uruguay Round (UR), the minimum between the historical maximum level and the existing bound tariffs was selected and applied to all relevant regions of origin, those for which no preference exists or for which we decided to remove a preference. This Up to Max scenario corresponds to a case whereby governments apply the most adverse trade policies of the past 10 years but still respect their UR commitments. On a historical basis, tariffs evolve as a response to changes in world prices, domestic production structure, and political pressures. In that sense this scenario is politically realistic. It is important to note that in all scenarios with increasing tariffs, the preferential tariffs protected by bilateral or regional agreements are unchanged.

Max & DDA Scenario

In this scenario the same combination (DDA plus a protectionist option) is adopted but the DDA scenario is combined with the Up to Max scenario. As new bound duties have been defined in the December 2008 package and as the tariff applied is the minimum between the highest duty applied during the 1995–2006 period and the newly defined bound duty, this scenario differs from the Up to Max scenario. The difference between them can represent the benefit from the DDA as a “preventive” scheme against trade wars. As previously, only MFN applied rates and nonreciprocal preferential rates are modified.

Results

Impact on Protection and Market Access

[Figure 6.3](#) displays the consequences of these five scenarios on average world tariffs (the baseline is also represented).

The Doha scenario will reduce world protection by 22 percent, from 4.6 percent to 3.6 percent. Moving to bound tariffs (the Up to Bound scenario) will nearly double the level of protection on average. The elimination of unilateral tariff reductions enacted during the past 10 years (the Up to Max scenario) has a more limited impact but still represents an increase of 41 percent in world tariffs compared to the baseline (from 4.6 percent to 6.4 percent). The implementation of the December 2008 package has a significant impact on potential future trade wars. If the DDA is not implemented, current protection can be doubled when countries resort to bound levels, while it increases by only 41 percent in case the DDA is implemented. Under the Max & DDA scenario, world protection increases by only 5 percent while it increases by 41 percent under the Up to Max scenario. These comparisons show the extent to which the implementation of the December 2008 package could avoid costly protectionism. World agricultural protection decreases by 23 percent if the December 2008 package is implemented, while it becomes 1.8 times higher if bound duties are applied. Comparison of world agricultural protection under a DDA (12.6 percent) and under a global resort to bound duties (29.4 percent) provides a scale of 1 to 2.33. When the reference is maximum duties applied in the 1995–2006 period, it is 1 to 1.63.

[Table 6.3](#) displays the results in terms of protection applied on imports by group of countries. The DDA scenario will cut the applied protection by one-third for HICs (from 3.0 percent down to 1.9 percent in all sectors, but from 15.6 percent to 10.3 percent in agriculture) and one-tenth for MICs (from 8.5 percent down to 7.8 percent in all sectors), a significant achievement when compared to previous GATT (General Agreement on Tariffs and Trade) rounds. It will also lock existing market access due to unilateral liberalization on an MFN or nonreciprocal preferences basis. Indeed, under the Up to Bound scenario, protection could increase by 48 percent in HICs, 132 percent in MICs, and 270 percent in LDCs compared to the current levels. Under the Up to Max scenario, protection in the same three groups of countries will increase by 23 percent, 56 percent, and 67 percent, respectively.

At the same time, the December 2008 package gives world exporters a “preventive” scheme against a potential rise in applied protection by MICs

FIGURE 6.3 World average tariffs by scenario, 2025 level

Source: MACMapHS6v2.1, TRAINS, and authors' calculations (reference group weighting scheme).

TABLE 6.3 Protection applied by category of countries (%)

Category	Baseline	DDA	Up to Bound	Bound & DDA	Up to Max	Max & DDA
High-income countries (HICs)						
Agricultural products	15.6	10.3	22.9	15.6	18.5	13.6
Industrial goods	2.2	1.4	3.3	2.1	2.8	1.6
<i>All sectors</i>	3.0	1.9	4.4	3.1	3.7	2.3
Middle-income countries (MICs)						
Agricultural products	18.3	17.6	40.8	33.4	24.9	23.0
Industrial goods	7.9	7.0	17.9	12.2	12.9	10.2
<i>All sectors</i>	8.6	7.8	19.8	14.0	13.3	10.9
Least developed countries (LDCs)						
Agricultural products	11.6	11.6	65.3	65.5	20.0	20.0
Industrial goods	9.2	9.2	31.4	34.2	16.5	14.3
<i>All sectors</i>	9.8	9.8	36.1	38.6	16.3	14.6
World						
Agricultural products	16.4	12.6	29.4	22.2	20.6	16.7
Industrial goods	3.9	3.0	7.6	5.3	5.7	4.2
<i>All sectors</i>	4.6	3.6	9.0	6.4	6.4	4.8

Source: MACMapHS6v2.1, TRAINS, and authors' calculations (reference group weighting scheme).

and LDCs: in the case of MICs, while protection can be augmented from 8.6 percent up to 14.0 percent (bound level) in case of implemented DDA, it can be augmented up to 19.8 percent today. As far as LDCs are concerned, if we compare the case of Up to Bound and Bound & DDA scenarios, we can see that tariffs will increase more in the latter case. Indeed, the flexibilities granted by the DDA modalities to bind tariffs will provide more freedom to increase tariffs than the homogenous binding overhang rate applied to build the Up to Bound scenario. By combining the political economy model in binding tariffs with the new rules, governments can achieve higher levels of protection than using a homogenous rate of binding overhang computed on existing bound tariff lines. This is consistent with the idea that the most sensitive products are the unbound ones.

[Table 6.4](#) displays how access to foreign markets is modified under the baseline and the various scenarios. It calculates an average duty faced when a group of countries (or the world) exports to the rest of the world, either in all sectors, or only in agriculture or in industry.

In relative terms, the Doha scenario manages to deliver homogeneous market access gains with an average decrease of about 20 percent in the tariffs faced by three groups of countries: from 4.6 percent to 3.6 percent for both HIC and MIC countries, and from 4.0 percent to 3.2 percent for LDCs. The other scenarios, however, have significantly different results. Though the two protectionist scenarios have similar effects for HICs and MICs (90 percent or exactly 97 percent and 93 percent, respectively under the Up to Bound scenario, and 40 percent or exactly 42 percent and 37 percent, respectively under the Up to Max scenario), the LDCs are more severely affected due to losses of nonreciprocal preferences (except on the EU market, where the EBA program is maintained), in particular, in the United States and Japan: protection faced by LDCs is nearly tripled. Consequently, the implementation of a DDA is of great interest for LDCs not only because it improves access to foreign markets (even if the price of that improved access is an erosion of preferences), but also because it locks unilateral schemes and in particular the most recent initiatives. It will forbid a potential rise of protection faced by their exports: based on the maximum protection faced during the 1995–2006 period, protection faced by LDCs' exports can raise from 4.0 percent to 7.3 percent if DDA is not implemented while it can increase up to only 4.7 percent if DDA is implemented.

Economic Impacts

The MIRAGE CGE model is used to assess the economic impacts of these different tariff and domestic support scenarios up to 2025.

TABLE 6.4 Protection faced by category of countries (%)

Category of country	Baseline	DDA	Up to Bound	Bound & DDA	Up to Max	Max & DDA
High-income countries (HIC)						
Agricultural products	16.1	11.9	28.5	21.1	20.3	16.1
Industrial goods	3.8	3.0	7.7	5.4	5.6	4.2
<i>All sectors</i>	4.6	3.6	9.0	6.4	6.5	5.0
Middle-income countries (MIC)						
Agricultural products	17.1	13.8	30.6	23.7	21.2	17.7
Industrial goods	4.0	3.0	7.5	5.0	5.9	4.0
<i>All sectors</i>	4.6	3.6	8.9	6.4	6.3	4.6
Least developed countries (LDC)						
Agricultural products	9.9	8.2	30.2	24.0	14.6	12.6
Industrial goods	3.9	2.7	9.4	6.2	9.0	4.5
<i>All sectors</i>	4.0	3.2	11.7	8.5	7.3	4.7
World						
Agricultural products	16.4	12.6	29.4	22.2	20.6	16.7
Industrial goods	3.9	3.0	7.6	5.3	5.7	4.2
<i>All sectors</i>	4.6	3.6	9.0	6.4	6.4	4.8

Source: MACMapHS6v2.1, TRAINS, and authors' calculations (reference group weighting scheme).

ECONOMIC IMPACTS AT THE GLOBAL LEVEL

[Table 6.5](#) indicates the global results of all scenarios for the world economy in 2025. Under the Doha scenario considered here, world trade is augmented by a mere 1.9 percent (US\$363 billion) and world real income by US\$59 billion in 2025. This confirms the findings of other studies (see Decreux and Fontagné 2006 or Bouët, Mevel, and Orden 2006), except that here the gains are slightly lower mainly because the baseline includes numerous RTAs that already reduce applied tariffs before the DDA implementation. However, these numbers are driven by the assumption that no major political shock will take place if the DDA is not signed. Such an assumption should be considered carefully.

In the case of the Up to Bound scenario, world trade would contract by 9.9 percent (US\$1,899 billion) and world real income by US\$353 billion. In the case of the less damaging Up to Max scenario, world trade would decline less, by 4.2 percent (US\$808 billion). While the increase in duties under the Up to Max scenario would especially impact agricultural exports (−9.4 percent), particularly harming developing countries' agricultural exports (−11.5 percent), the exports of industrial goods could also face a substantial reduction of 4.4 percent. In case of an implementation of the December 2008

TABLE 6.5 Global results led by tariffs and domestic support changes, change compared to the 2025 baseline

	DDA	Up to Bound	Bound & DDA	Up to MAX	Max & DDA
World exports in goods and services (%)^a	1.90	-9.93	-5.70	-4.23	-1.19
Agrofood	5.47	-20.26	-13.42	-9.36	-4.52
Industry	1.96	-9.77	-5.07	-4.36	-0.95
World welfare (%)	0.09	-0.51	-0.25	-0.19	-0.04
North	0.07	-0.32	-0.20	-0.14	-0.08
South	0.13	-1.00	-0.35	-0.32	0.06
World exports in goods and services (US\$ billions)^a	363	-1,899	-1,090	-808	-227
Agrofood	73	-269	-178	-124	-60
Industry	279	-1,389	-721	-621	-135
World welfare (US\$ billions)	59	-353	-169	-134	-26
North	33	-156	-100	-70	-37
South	26	-197	-69	-64	11

Source: Authors' calculations; MIRAGE simulations.

Note: Welfare changes are computed as the equivalent variation. Export volumes are defined using a Fisher index.

^aintra-EU trade flows are excluded.

package and a subsequent augmentation of protection to Up to Bound levels, the decrease of world exports would be only US\$1,090 billion, while it would be US\$1,899 billion if the DDA is not applied. In other words, according to this assessment, the DDA implementation can prevent a potential reduction of US\$809 billion of trade. If the rise in protectionism is the maximum protection applied during the 1996–2006 period, the DDA can prevent the potential reduction of US\$581 billion of trade.

ECONOMIC IMPACT AT THE COUNTRY LEVEL

Here we focus on the impact of various scenarios on countries' macroeconomic variables. To simplify the presentation, we focus on 17 countries/zones instead of 27. [Table 6.6](#) illustrates how various scenarios affect countries' exports in value. The impact of the Doha Agreement does not provide any surprising effect as compared to previous assessments. A look at the protectionist scenarios, without the DDA implemented, reveals how some countries could be greatly affected by a global resort to protectionism. Brazil, for example, is particularly affected by an augmentation of protection: let us recall that the Up to Bound scenario implies an increase in world agricultural protection by 13 percentage points, while protection in industry increases only

TABLE 6.6 Variations in exports (value—intratrade excluded) by countries led by tariffs and domestic support changes, percentage of change compared to the 2025 baseline

Country or region	DDA	Up to Bound	Bound & DDA	Up to Max	Max & DDA
ASEAN LIC	2.1	−18.7	−30.8	−10.7	−5.3
ASEAN MIC	2.2	−16.3	−8.0	−8.1	−3.8
ANZCERTA	3.3	−9.4	−1.0	−3.0	1.4
Bangladesh	5.8	−51.8	−52.5	−9.6	−10.8
Brazil	4.0	−25.6	−7.4	−5.9	−0.7
Canada	0.5	−1.9	−1.7	−0.8	0.1
Central Africa	0.1	−28.9	−26.9	−7.1	−7.1
China–Hong Kong	4.7	−3.3	−1.2	−1.5	3.9
EU	2.9	−10.4	−5.4	−8.6	−4.6
India	1.8	−38.9	−12.7	−12.7	−3.1
Japan	3.2	−3.0	1.1	−1.7	2.1
Mexico	0.6	−13.2	−5.2	−3.6	−2.0
MENA	4.4	−11.8	−1.4	−5.1	−0.2
Pakistan	2.1	−42.0	−35.3	−27.6	−20.9
Turkey	0.6	−12.4	−7.8	−5.7	−4.7
United States	1.9	−2.9	−0.5	−1.0	1.0

Source: Authors' calculations; MIRAGE simulations.

Note: ASEAN LIC = ASEAN low-income countries, ASEAN MIC = ASEAN middle-income countries, ANZCERTA (Australia New Zealand Closer Economic Relations Trade Agreement) = Australia and New Zealand group, MENA = Middle East and North African countries.

3.7 percentage points (see [Table 6.3](#)). Brazil's exports are especially reduced (−25.6 percent) under the Up to Bound scenario. If the DDA is agreed on, would Brazil be less hurt by a potential rise of protectionism? According to the findings here, if the DDA is implemented, Brazil's exports would be reduced by only 7.4 percent if bound duties were adopted after this agreement. The same mechanism is in play under the Up to Max and Max & DDA scenarios, but the magnitude is smaller.

Traditionally, assessments of the Doha Agreement conclude on a small effect for the EU and the United States. Our study leads to the same conclusion (for example, the increase in EU exports in 2025 is only 2.9 percent), but here we also assess the benefit of the DDA by comparing the cooperative scenario (DDA) with the protectionist one (the Up to Bound scenario, for example, results in a 10.4 percent decline of EU exports and 2.9 percent decline of US exports), or by comparing how the trade agreement prevents a reduction of exports related to increased protection (the difference between Up to

Bound and the Bound & DDA scenarios: 5 percent for the EU, 2.4 percent for the United States). [Table 6.6](#) illustrates that this new evaluation amplifies the importance of the DDA for these large economies.

Variation in exports is also explained by the macroeconomic closure of the model, which supposes that each current account has to remain constant. Under the Up to Bound and Up to Max scenarios, each country augments applied protection such that its imports decrease. This can imply an appreciation of the real exchange rate in order to keep the current account constant. While the DDA increases Bangladesh's overall exports by 3.7 percent (in value terms), they decrease toward the European Union (erosion of preferences) but increase substantially toward the United States (+10 percent), Japan (+514 percent), and Brazil (+33 percent). Concerning the protectionist scenarios, reductions in Bangladesh's exports are mainly explained by the substantial increase in protection applied on imports and the macroeconomic closure.

[Table 6.7](#) points out the welfare impacts of various scenarios. The Doha scenario implies gains for all regions except Mexico.²⁵ This loss can be explained by an erosion of preferences toward the United States and Canada in case of an agreed multilateral liberalization. In general, under the DDA scenario welfare gains are small; they are more significant for Brazil, Bangladesh, and the ASEAN MIC zone.

A rise of protectionism would mainly hurt MICs and LDCs. As already pointed out, in the case of the Up to Bound scenario, the relative loss of welfare is three times larger for developing countries than for developed countries (see [Table 6.5](#)). Asian developing countries are particularly affected (see the case of Bangladesh, India, and Pakistan in [Table 6.6](#)). The implementation of the DDA is important for these countries as a "preventive" action against the risk of trade wars—in particular, as far as India is concerned. We also note a few cases where increasing protectionism is beneficial. For instance, Canada takes advantage of increased preferential margins into the NAFTA markets while limited increases of its own tariff improve its terms of trade (optimal tariff argument) and imply small domestic distortions.

As illustrated by the Canadian case, tariff changes either implied by a country's own policy reform or by other countries' reform may have different, even opposite, effects on welfare. Decomposing the mechanisms that affect welfare is crucial to understanding the results. In particular, assessing the strength of the "what I do is what I get" argument is important. Indeed, in a context of global trade policy changes, a country will be affected by both

25 Nigeria and the rest of eastern Africa are also affected by a slight decrease in welfare.

TABLE 6.7 Variations in countries' welfare led by tariffs and domestic support changes, percentage of change compared to the 2025 baseline

Country or region	DDA	Up to Bound	Bound & DDA	Up to Max	Max & DDA
ASEAN LIC	0.4	-1.7	-1.3	-1.2	-0.1
ASEAN MIC	0.6	-1.3	-0.2	-0.4	-0.1
ANZCERTA	0.1	-0.2	-0.1	-0.1	0.0
Bangladesh	0.7	-2.0	-2.0	-0.6	-0.6
Brazil	0.3	-0.4	0.1	-0.1	0.2
Canada	0.0	0.0	0.1	0.1	0.1
Central Africa	0.0	-0.0	0.2	0.8	0.8
China-Hong Kong	0.1	-0.5	0.2	-0.2	0.1
EU	0.1	-0.5	-0.4	-0.3	-0.2
India	0.0	-1.8	-0.8	-0.4	-0.1
Japan	0.2	-0.3	0.0	-0.1	0.1
Mexico	-0.1	-1.7	-0.6	-0.2	-0.1
MENA	0.1	-0.6	-0.2	-0.2	-0.0
Pakistan	0.2	-2.1	-2.2	-2.0	-1.7
Turkey	0.1	-0.6	-0.3	-0.4	-0.3
United States	0.0	-0.2	-0.1	-0.1	-0.0

Source: Authors' calculations; MIRAGE simulations.

Note: ASEAN LIC = ASEAN low-income countries, ASEAN MIC = ASEAN middle-income countries, ANZCERTA (Australia New Zealand Closer Economic Relations Trade Agreement) = Australia and New Zealand group, MENA = Middle East and North African countries. Welfare changes are computed as the equivalent variation.

changes in its own tariffs (domestic policy effect) and in its partner tariffs (foreign policy effect). Due to intracountry reallocation of resources, imported inputs, and model closure (fixed current account), it is difficult to distinguish “import-led effects” from “export-led effects.” Both domestic and foreign policy effects have negative and positive outcomes.²⁶ As previously stated, the main effects are as follows:

1. for domestic tariff increase:
 - a. positive effect on welfare related to the “optimal tariff” argumentation;
 - b. negative effect on welfare led by increasing distortions in domestic economy;

²⁶ Countries can also be affected by the tariffs of countries they do not trade with because these changes may affect world prices. This effect is taken into account in the “foreign tariff” increase and is less important than other effects.

2. for foreign tariff increase:
 - a. positive effect for exporters benefiting from preferences on increasingly protected markets;
 - b. negative effect for exporters facing increased barriers.

We use a new methodology aimed to decompose consistently these welfare effects (Laborde 2009), and we compute normalized relative effects of “domestic” and “foreign” reform. As is clear from [Figure 6.4](#), in the case of Up to Max scenario, we see that different countries respond differently to these conflicting effects. Several large countries (Canada, ASEAN, Brazil, India, EU27, and others) can benefit from their own tariff increases, as opposed to small countries for which a resort to high tariffs will be negative. For most exporters, tariff increases on destination markets will have drastic negative effects and will dominate the welfare changes. This is particularly true for Asian countries (China and Japan, for instance) that have no preferential access. But for a few countries benefiting from large preferential access (Canada and Mexico), the overall rise in protection at the global level still delivers positive effects: the increased value of existing preferences outweighs the loss of market access in third countries.

Finally, we examine how factors’ real remuneration is modified under three scenarios: Doha, Up to Bound, and Bound & DDA ([Table 6.8](#)). The objective is only to illustrate how some productive factors are affected differently by a further liberalization of a country’s economy or a global resort to protectionism.

In agricultural countries like Australia/New Zealand or Brazil, productive factors related to agriculture (land, agricultural unskilled labor) should be clearly supportive of a Doha agreement and opposed to a global augmentation of protection to Up to Bound levels. In Brazil, for example, the real remunerations of land and agricultural unskilled labor increase by 4.8 percent and 4.2 percent, respectively, if a Doha agreement is signed, while they decline by 10.3 percent and 8.5 percent if the Up to Bound scenario is implemented. The DDA agreement also plays a valuable role for land and unskilled agricultural labor in these countries since under the Bound & DDA scenario their remuneration declines but to a lesser extent (1.6 percent and 1.8 percent in the case of Brazil). The same mechanism works in Asian MICs and Central Africa. In these poor countries, the WTO Doha agreement is also a beneficial scheme for poor people.

On the other side, in rich countries such as Japan, Korea, and the European Free Trade Area (EFTA) countries, land and agricultural unskilled

FIGURE 6.4 Relative impacts of foreign and domestic policies on welfare results, Up to Max scenario

Source: Authors' calculations; MIRAGE simulations.

Note: ASEAN LIC = ASEAN low-income countries, ASEAN MIC = ASEAN middle-income countries, ANZCERTA (Australia New Zealand Closer Economic Relations Trade Agreement) = Australia and New Zealand group, MENA = Middle East and North African countries.

labor should be supportive of increased protectionism while opposed to further liberalization.²⁷ In the case of the EU and the United States, any reform leads to a decline in the real remuneration of these factors. Indeed, for the agricultural sector in both regions, the Doha Round will have adverse effects (reduction in subsidies or protective tariffs), but a global resort to protectionism will also hurt their agricultural interests. In the case of the Up to Bound and the Bound & DDA scenarios, the negative effects are smaller. It is noteworthy that in rich countries (Australia/New Zealand, Canada, the EU, Japan, and the United States), skilled labor and capital should generally support increased multilateral trade openness as it increases their real remuneration and oppose increased protectionism as it reduces their real remuneration.

²⁷ EFTA and Korea are not included on [Table 6.8](#). These results can be requested from the chapter authors.

TABLE 6.8 Variations in factor remunerations by countries led by tariffs and domestic support changes, percentage of change compared to the 2025 baseline

Country or region	Real return to capital			Real return to land			Skilled real wages			Unskilled real wages in agriculture			Unskilled real wages in nonagriculture		
	DDA	Up to Bound	Bound & DDA	DDA	Up to Bound	Bound & DDA	DDA	Up to Bound	Bound & DDA	DDA	Up to Bound	Bound & DDA	DDA	Up to Bound	Bound & DDA
ASEAN LIC	-0.2	-4.3	-8.8	0.9	-7.2	-8.8	0.4	-4.1	-7.6	0.8	-6.6	-8.9	0.4	-5.5	-9.4
ASEAN MIC	0.3	-5.4	-3.2	1.9	-6.7	-5.4	1.0	-6.1	-2.1	1.6	-7.5	-5.4	0.8	-7.4	-3.4
ANZCERTA	0.2	-0.4	0.1	3.3	-5.4	-1.6	0.2	-0.8	-0.2	3.3	-4.3	-0.8	0.1	-0.8	-0.2
Bangladesh	-0.5	-4.7	-4.8	6.8	10.8	10.8	-0.5	-6.0	-6.2	4.7	6.0	6.0	-0.9	-6.2	-6.3
Brazil	0.3	-2.0	-1.0	4.8	-10.3	-1.6	0.1	-0.5	0.2	4.2	-8.5	-1.8	-0.1	-2.0	-0.8
Canada	0.3	-0.2	-0.1	3.0	-3.8	-1.6	0.1	-0.2	0.1	1.9	-2.0	-0.2	0.1	-0.2	-0.1
Central Africa	0.0	-8.3	-8.1	-0.1	-4.5	-4.1	-0.0	1.4	1.8	0.0	-5.7	-5.1	-0.0	-2.6	-2.4
China-Hong Kong	0.1	-0.1	-0.6	0.7	-0.1	0.0	0.5	-0.9	-0.2	0.6	-0.2	-0.0	0.5	-0.6	-0.2
EU	0.2	-0.3	-0.1	-1.8	-0.1	-1.1	0.2	-0.8	-0.5	-1.9	-0.6	-1.3	0.2	-0.4	-0.2
India	-0.1	-2.9	-2.2	0.3	2.8	3.7	0.0	-5.3	-2.0	0.2	0.1	1.6	0.0	-4.4	-2.0
Japan	0.3	-0.0	0.0	-6.5	1.0	-2.4	0.5	-0.4	0.0	-5.2	0.8	-2.6	0.4	-0.3	0.0
Mexico	0.2	0.4	0.3	1.9	-1.1	-0.1	-0.1	-3.4	-1.2	1.3	-1.5	-0.3	-0.1	-2.6	-1.0
MENA	0.3	-1.6	-0.4	2.5	1.5	1.7	0.3	-2.4	-0.5	2.0	0.6	1.2	0.2	-2.0	-0.4
Pakistan	-0.2	-3.1	-1.9	0.7	0.8	1.1	0.1	-6.6	-7.6	0.6	-1.5	-1.2	0.1	-6.8	-6.7
Turkey	0.0	-2.9	-2.0	0.4	-0.0	-0.7	0.1	-1.4	-0.5	0.4	-0.6	-0.8	0.1	-2.0	-1.2
United States	-0.2	0.0	0.2	-5.8	-1.4	-0.6	0.1	-0.3	-0.2	-2.7	-0.7	-0.2	0.1	-0.2	-0.1

Source: Authors' calculations; MIRAGE simulations.

Note: ASEAN LIC=ASEAN low-income countries, ASEAN MIC=ASEAN middle-income countries, ANZCERTA (Australia New Zealand Closer Economic Relations Trade Agreement)=Australia and New Zealand group, MENA=Middle East and North African countries. Real returns to factor are computed as the nominal return deflated by the representative household price index.

The variations of real remuneration on labor and capital implied by these trade policies are less than those concerning land and agricultural unskilled labor: this is explained by differences in the degree of intersectoral mobility. These results are consistent with the traditional Heckscher-Ohlin-Samuelson framework.

What Is Really At Stake?

These figures allow for a clear reassessment of what is really at stake. A disagreement among WTO countries over the DDA would signal a failure of

international cooperation. If countries subsequently implement protectionist policies, the reduction could be much greater. This exercise clearly gives an insight of what could be lost as a result of the failure of the DDA. A simple comparison reveals a potential reduction of US\$1,171 billion in world trade. The failure of the DDA would not only prevent an increase of US\$363 billion in world trade, as a result of new commitments on tariffs and domestic support, but a worldwide move toward protectionism would contract world trade by US\$808 billion if we consider that the implementation of the highest duties applied during 1995 through 2006 is the realistic scenario to which countries would resort. If an implementation of bound duties is the relevant reference point, a failed Doha Development Agenda could mean that the “potential cost” of a trade war would be higher by US\$2,262 billion, in volume of annual trade by 2025.

Moreover, the DDA will not only increase trade; it will also reinforce binding commitments and reduce existing bound duties. In so doing, it will play its international public good role by making the trade environment more secure and decreasing the costs associated with potential trade wars. We concretized this idea by comparing the application of bound duties based on their current levels to the same policy based on the level of bound duties implied by the DDA: in that case this difference is up to US\$809 billion in terms of trade volume and US\$184 billion in terms of real income.²⁸ Strikingly, these conclusions are especially true for poor countries. In terms of real income, if we consider that the real value of DDA is measured by the “preventive” role that it plays, from a global value of US\$184 billion, US\$128 billion (about two-thirds) represent the benefits to developing countries (see [Table 6.5](#)). This explains why the DDA should be finally considered as a Development Round.

Conclusion

Recent studies assessing the potential impact of the DDA have concluded that there would be modest augmentation in world trade and world real income. This study, which is limited to tariffs and domestic support, does not invalidate such conclusions, but it examines the situation from a different perspective. The failure of a WTO agreement would be a clear sign of international noncooperation; it would launch trade conflicts and litigations (especially between high-income and emerging countries) and would be the first

28 Calculation is as follows: $184 = -169 - (-353)$ and $809 = -1090 - (-1899)$.

unsuccessful round despite the fact that it is the first to focus on development and the first launched by the WTO. In a period of economic stagnation, the risk is high that this failure would give WTO members the incentive to pursue protectionist policies. In that case, international trade will face a dreadful iceberg: the most visible consequence of not concluding the DDA, an opportunity cost of US\$363 billion of trade, will be outweighed by the immersed part—namely, a potential reduction of at least US\$1,171 billion in world trade if countries fail to reach an agreement and were to implement protectionist policies. Therefore, stakes in Geneva are very high and a WTO agreement is the best “preventive” scheme if world trade risks colliding with a protectionist reef. Finally, the DDA appears to be the closest and most promising step toward a global development agenda for a world in turmoil.

Bibliography

- Anderson, K., W. Martin, and D. van der Mensbrugghe. 2005. “Market and Welfare Implications of Doha Reform Scenarios.” In *Agricultural Trade Reform and the Doha Development Agenda*, edited by K. Anderson and W. Martin, 333–399. London: Palgrave Macmillan; Washington, DC: World Bank.
- Axelrod, R. 1981. “The Evolution of Cooperation.” *Science* 211 (4489): 1390–1396.
- Bairoch, P. 1995. *Economics and World History: Myths and Paradoxes*. Chicago: University of Chicago Press.
- Baldwin, R. E., and S. Evenett, eds. 2008. *What World Leaders Must Do to Halt the Spread of Protectionism?* London: Center for Economic Policy Research.
- . 2009. *Murky Protectionism and the Crisis*. Center for Economic Policy Research. Accessed 2009. www.voxeu.org/reports/Murky_Protectionism.pdf.
- Berisha, V., A. Bouët, D. Laborde, and S. Mevel. 2008. “The Development Promise: Can the Doha Development Agenda Deliver for Least Developed Countries?” IFPRI Briefing Note. Washington, DC: International Food Policy Research Institute.
- Bouët, A. 2008. *The Expected Benefits from Trade Liberalization: Opening the Black Box of Global Trade Modeling*. IFPRI Food Policy Review 8. Washington, DC: International Food Policy Research Institute.
- Bouët, A., Y. Decreux, L. Fontagné, S. Jean, and D. Laborde. 2008. “Assessing Applied Protection across the World.” *Review of International Economics* 16 (5): 850–863.
- Bouët, A., and D. Laborde. 2010. “Assessing the Potential Cost of a Failed Doha Round.” *World Trade Review* 9 (2): 319–351.

- Bouët, A., S. Mevel, and D. Orden. 2006. "More or Less Ambition in the Doha Round: Winners and Losers from Trade Liberalization with a Development Perspective." *The World Economy* 30 (8): 1253–1280.
- Boumellassa, H., D. Laborde, and C. Mitaritonna. 2009. *A Picture of Tariff Protection across the World in 2004: MAcMap-HS6, Version 2*. IFPRI Discussion Paper 903. Washington, DC: International Food Policy Research Institute.
- Decreux, Y., and L. Fontagné. 2006. *A Quantitative Assessment of the Outcome of the Doha Development Agenda*. CEPII Working Paper. Paris: Centre d'Etudes Prospectives et d'Information Internationale.
- Decreux, Y., and H. Valin. 2007. "MIRAGE, Updated Version of the Model for Trade Policy Analysis: Focus on Agriculture and Dynamics." CEPII Working Paper. Paris: Centre d'Etudes Prospectives et d'Information Internationale.
- Gamberoni, E., and R. Newfarmer. 2009. "Trade Protection: Incipient but Worrisome Trends." Accessed 2009. www.voxeu.org/index.php?q=node/3183.
- Global Trade Alert. 2009. Accessed September 16, 2009. www.globaltradealert.org/.
- Hufbauer, G. C., and J. J. Schott. 2009. "Buy American: Bad for Jobs, Worse for Reputation." PIIE Policy Brief N. PB09-2. Washington, DC: Peterson Institute for International Economics.
- INTAL (Instituto para la Integración de América Latina y el Caribe). 2009. "Recession and Protectionism 'Within the Rules': Risks to the Multilateral Trade System." INTAL Monthly Newsletter 150.
- Irwin, D. A. 1992. "Multilateral and Bilateral Trade Policies in the World Trading System: An Historical Perspective." In *New Dimension of Regional Integration*, edited by de J. de Melo and A. Panagarya, 90–119. London: Center for Economic Policy Research.
- . 1998. "The Smoot-Hawley Tariff: A Quantitative Assessment." *Review of Economics and Statistics* 80: 326–334.
- Isaacs, A. 1948. *International Trade: Tariffs and Commercial Policy*. Chicago: Richard Irwin.
- Jean, S., D. Laborde, and W. Martin. 2008. *Choosing Sensitive Agricultural Products in Trade Negotiations*. IFPRI Discussion Paper No. 788. Washington, DC: International Food Policy Research Institute.
- Johnson, H. G. 1953. "Optimum Tariff and Retaliation." *Review of Economic Studies* 21: 142–153.
- Laborde, D. 2008. "Mesures et détermination endogène des droits de douane." PhD thesis, Université de Pau et des Pays de l'Adour, France.
- . 2009. "Decomposition of Multilateral Trade Policy Shocks in a CGE." Unpublished, International Food Policy Research Institute, Washington, DC.

- Laborde, D., W. Martin, and D. van der Mensbrugghe. 2008. "Implications of the 2008 Doha Draft Modalities for Developing Countries." Global Trade Analysis Project conference paper, Helsinki, June 12–14, 2008.
- Lamy, P. 2009. Speech delivered at the Lowy Institute for International Policy. March 2. Accessed 2009. www.wto.org/english/news_c/sppl_c/sppl117_e.htm.
- Madsen, J. B. 2001. "Trade Barriers and the Collapse of World Trade during the Great Depression." *Southern Economic Journal* 67 (4): 848–868.
- Martin, W., and P. Messerlin. 2007. "Why Is It So Difficult? Trade Liberalization under the Doha Agenda." *Oxford Review of Economic Policy* 23 (3): 347–366.
- Messerlin, P. 1985. "Les Politiques Commerciales et leurs Effets en Longue Periode." In *Le Protectionnisme*, edited by B. Lassuderie-Duchene and J.-L. Reiffers, 71–89. Paris: Economica.
- Narayanan, B. G., and T. L. Walmsley, eds. 2008. Global Trade, Assistance, and Production: The GTAP 7 Data Base. Center for Global Trade Analysis, Purdue University, West Lafayette, IN, US.
- Olson, M. 1965. *The Logic of Collective Action*. Cambridge, MA, US: Harvard University Press.
- UNCTAD (United Nations Conference on Trade and Development). 2016. Trade Analysis Information System. Accessed 2009. http://r0.unctad.org/trains_new/index.shtm.
- USITC (United States International Trade Commission). n.d. Database. Accessed 2009. <https://dataweb.usitc.gov/>.
- WTO (World Trade Organization). 2008. Revised Draft Modalities for Agriculture. TN/AG/W/4/Rev.3, WTO Secretariat, Geneva.
- . 2009. Report to the TPRB from the Director-General on the Financial and Economic Crisis and Trade-Related Developments, January, JOB(09)/2. Geneva.

Appendix 6.1 Geographic Decomposition

TABLE 6.A1 Regional aggregation

Country or region	GTAP7 code
Australia/New Zealand	nzl, aus
Bangladesh	bgd
Brazil	bra
Canada	can
Central Africa	xac, xcf
China and Hong Kong	hkg, chn
EU	roa, bgr, gbr, swe, esp, svn, svk, prt, pol, nld, mlt, lux, itu, lva, ita, irl, hun, grc, deu, fra, fin, est, dnk, cze, cyp, bel, aut
ASEAN MIC (middle-income countries)	tha, phl, mys
India	ind
Indonesia	idn
Japan	jpn
Republic of Korea	kor
ASEAN LIC (low-income countries)	xse, vnm, mmr, lao, khm, xea
Mexico	mex
MENA (Middle East and North African countries)	xnf, tun, mar, egypt
Nigeria	nga
Pakistan	pak
Rest of eastern Africa	xec, uga, eth
Rest of Latin America	xcb, xca, pan, nic, gtm, cri, xsm, ven, ury, per, pry, ecu, col, chl, bol, arg
Rest of OECD	xef, nor, che
Rest of the world	xws, irn, geo, aze, arm, xsu, kgz, kaz, xer, xee, ukr, rus, hrv, blr, alb, xna, xoc
Rest of South Asia	xsa, lka
Rest of SADC (Southern Africa Development Community)	zwe, zmb, tza, moz, mus, mdg
Rest of ECOWAS (Economic Community of West African States)	xwf, sen
South African Custom Unions	xsc, zaf, bwa, mwi
Taiwan, China, and Singapore	sgp, twn
Turkey	tur
United States	usa

Source: Authors.

Appendix 6.2 Recent Trade Agreements Included in the Baseline

1. Full free trade agreements (FTA) for ASEAN (Association of South East Asian Nations), CEMAC (Communauté Economique et Monétaire de l'Afrique Centrale for Monetary and Economic Community of Central Africa), COMESA (Common Market for Eastern and Southern Africa), and SADC (Southern Africa Development Community).
2. Economic Partnership Agreements (EPAs) between ACP (Africa, Caribbean, Pacific) countries and the EU.
3. Implementation of the EU-India, EU-ASEAN, US-Colombia, US-Oman, US-Bahrain, US-Morocco, US-Australia, Mercosur-Colombia, and China-Chile FTAs.
4. All ongoing WTO accession commitments, including those of most recent members (Ukraine, Cape Verde, Viet Nam).
5. Updated GSP (generalized system of preference) scheme of Japan in favor of LDC countries.
6. Modified bound tariffs on EU poultry.
7. EU enlargement to Romania and Bulgaria in 2007.
8. The end of the EU EBA ("Everything but Arms") transitory regime is implemented for protocol products (sugar, banana, and rice).

Appendix 6.3 Modeling the OTDS Constraint in a Dynamic Setting

As discussed in the chapter, we introduce OTDS capping in the dynamic model. Under the standard approach, domestic support is computed from base-year level and converted to an *ad valorem* equivalent (AVE).²⁹ This approach is unrealistic as the WTO constraint involves limiting the payments made in overall support expressed in US dollars. Taking into account the growth of production value in the agricultural sector will lead to a reduction in subsidy rates to respect the new WTO commitments.

²⁹ Since the current US domestic support is below new OTDS limits, it does not lead to reduction of current policies.

Table 6.A2 illustrates the consequences of this treatment. Focusing on agricultural production and exports, we see that:

- The EU is almost not affected by subsidy reduction thanks to the recent CAP reform and the large share of Green Box payments in the overall EU domestic support. US farmers are in the opposite situation, as the OTDS limits applied to the US farmers will benefit the EU producers and exporters. Overall, the EU production is less reduced by the DDA tariff reduction combined with the OTDS treatment than when it is not combined with the OTDS treatment (−1.17 percent versus −1.27 percent);
- The situation of Brazil is magnified compared to the EU one. In this case, the Brazilian production increases more with the OTDS treatment (+4.03 percent to +3.78 percent);
- US production is directly affected by domestic support reduction (−1.5 percent in agricultural and agribusiness production instead of +0.1 percent). We can even see that for some sectors, the gaps are reversed: from an expansion of the sugar (+1 percent) and wheat (+1.4 percent) sectors, we have a decline in production (respectively −4 percent and −5.5 percent).

TABLE 6.A2 Agricultural export and production variations under the Doha scenario, with and without dynamic OTDS constraints

	Brazil		EU		United States	
	Doha with constraint on OTDS	Doha without constraint on OTDS	Doha with constraint on OTDS	Doha without constraint on OTDS	Doha with constraint on OTDS	Doha without constraint on OTDS
Exports – Volume – 2025: % deviation from the baseline						
Agriculture and Agrofood	2.69	2.65	0.69	0.69	1.73	1.96
Beverage and tobacco	3.90	4.05	1.58	1.57	5.69	5.74
Cereals	−1.76	−3.93	−0.19	−0.87	−8.80	1.91
Food products	4.35	4.30	1.34	1.19	6.90	7.40
Cattle	−4.38	−5.97	2.50	1.67	−16.06	−0.32
Meat products	31.35	31.41	−1.75	−2.05	11.62	13.25
Milk and dairy products	69.66	68.54	−2.59	−3.06	−21.57	−15.70
Other agricultural products	1.46	0.09	4.18	2.99	−5.52	4.27
Paddy and processed rice	17.10	14.90	−7.38	−7.69	−6.21	2.96
Sugar	3.70	3.80	−25.58	−25.72	15.53	12.48

(continued)

TABLE 6.A2 (*continued*)

	Brazil		EU		United States	
	Doha with constraint on OTDS	Doha without constraint on OTDS	Doha with constraint on OTDS	Doha without constraint on OTDS	Doha with constraint on OTDS	Doha without constraint on OTDS
Exports – Volume – 2025: % deviation from the baseline						
Vegetables and fruit	–1.28	–3.11	–0.29	–0.74	–6.27	2.74
Wheat	–5.80	–7.30	6.42	4.63	–6.84	1.23
Production – Volume – 2025: % deviation from the baseline						
Agriculture and Agrofood	4.03	3.78	–1.17	–1.27	–1.50	0.10
Beverage and tobacco	–1.85	–1.69	0.02	0.03	0.17	–0.05
Cereals	0.43	0.45	0.28	0.28	–0.07	–0.04
Food products	3.88	3.30	–0.63	–0.86	–6.59	0.26
Cattle	0.98	0.92	–0.15	–0.18	0.17	0.41
Meat	12.07	12.07	–0.96	–1.11	–1.98	1.07
Milk and dairy products	14.40	14.43	–5.38	–5.49	1.00	1.26
Other agricultural products	1.94	1.90	–1.82	–1.89	–3.62	–2.57
Paddy and processed rice	0.79	0.15	–0.13	–0.56	–5.67	0.03
Sugar	0.30	0.21	–9.66	–9.99	–4.09	1.07
Vegetables and fruit	–0.14	–0.14	–0.00	–0.01	0.11	–0.04
Wheat	0.17	–1.79	1.59	1.12	–5.47	1.35

Source: Authors' calculations based on MIRAGE simulation.

Note: OTDS = overall trade-distorting support.