

TABLE 6.2

World protection of agricultural products at the HS2 level

HS2 chapter #	Sector description	World average ¹	Simple average ²	>20 percent	>40 percent
				(percent)	
1	Live animals	12.6	12.9	12.3	4.1
2	Meat and edible meat offal	38.5	27.7	41.8	13.7
3	Fish and crustaceans	6.7	15.8	30.8	4.8
4	Dairy, eggs, honey and ed. products	37.4	23.2	30.1	15.1
5	Products of animal origin nsp.	4.6	10.2	17.8	2.1
6	Live trees and other plants	7.7	20.0	16.4	6.2
7	Edible vegetables and certain roots and tubers	13.6	20.2	28.8	7.5
8	Edible fruits and nuts, peel of citrus/melons	14.7	21.0	40.4	8.9
9	Coffee, tea, maté and spices	6.4	15.4	23.3	4.1
10	Cereals	25.4	13.9	15.1	6.8
11	Milling industry products	27.4	16.4	21.2	6.2
12	Oil seeds/misc. grains/med. plants/straw	5.6	7.5	8.2	1.4
13	Lac., gums, resins and other veg. saps and extracts	4.5	7.3	7.5	0.7
14	Vegetable planting materials	5.9	8.1	6.8	1.4
15	Animal or vegetable fats, oils and waxes	19.3	16.0	25.3	6.2
16	Edible preparation of meat, fish, crustaceans, etc.	14.4	22.9	39.7	8.9
17	Sugars and sugar confectionery	47.8	22.9	43.8	10.3
18	Cocoa and cocoa preparations	6.4	17.1	29.5	4.8
19	Preparations of cereals, flour, starch or milk	15.7	17.2	28.8	2.1
20	Preparations of vegetables, fruit, nuts, etc.	16.5	22.9	41.8	8.9
21	Miscellaneous edible preparations	15	18.3	28.8	4.8
22	Beverages, spirits and vinegar	23.6	55.7	65.1	33.6
23	Residues from food industries, animal feed	10.4	8.7	8.2	0.7
24	Tobacco and manufactured tobacco substitutes	30.1	54.1	52.1	21.2

Source: Authors' calculations based on MACMAP-HS6 version 2. Year 2004.

Notes: ¹ Average tariff computed following the MACMap-HS6 methodology (see Boumelassa, Laborde, and Mitaritonna 2009).

² Simple arithmetic average.

TABLE 6.3

Tariff escalation: applied tariffs evaluated

Sectors	Group of exporters			World
	High-Income Countries	Middle-Income Countries	Least-developed Countries	
	<i>(in percent)</i>			
All	18.2	20.0	14.5	18.9
Beverages and spirits	16.1	23.0	29.4	18.1
Candies processed	11.8	16.3	33.8	13.6
Chemicals, semi-finished manufactures	9.9	16.9	18.8	11.0
Cocoa semi-processed	4.5	3.9	3.1	4.2
Dairy processed	38.7	42.4	24.4	39.2
Eggs, honey, nuts and spices unprocessed	16.3	11.8	3.9	12.7
Fish unprocessed	7.2	6.0	n.a.	7.1
Flours and groats semi-processed	22.3	26.9	20.2	23.6
Flowers, plants, vegetable materials, etc.	6.9	6.1	6.6	6.6
Fruit and vegetables fresh or dried	11.0	16.1	18.5	13.8
Fruit and vegetables prepared or preserved	15.5	14.3	9.1	14.9
Fruit and vegetables semi-processed	11.0	13.7	4.2	12.6
Grains	19.6	31.9	32.2	24.7
Live animals	12.4	13.2	10.4	12.5
Meat, prepared or preserved and other meat products	31.1	40.8	18.1	33.6
Milk unprocessed and semi-processed	41.3	42.3	22.0	41.4
Oils and fats processed	9.8	14.7	18.9	13.1
Oilseed unprocessed and semi-processed	5.0	6.7	12.6	5.9
Other agricultural products processed	14.9	14.1	11.5	14.8
Other agricultural products semi-processed	5.5	5.1	1.4	5.3
Other agricultural product, unprocessed	5.0	6.9	4.6	5.6
Starch, flour products, condiments processed	15.8	18.2	23.4	16.3
Sugar semi-processed	38.1	57.9	50.7	51.0
Tea, coffee and cocoa processed	16.1	17.1	12.4	16.3
Tea, coffee and cocoa unprocessed	6.5	4.5	6.7	4.9
Tobacco manufactured	27.6	29.6	43.5	28.2
Tobacco unmanufactured	24.9	31.0	25.5	28.3

Source: Authors' calculations based on MAcMap-HS6 version 2. Year 2004. Reference group weighting scheme (see Boumelassa, Laborde, and Mitaritonna, 2009).

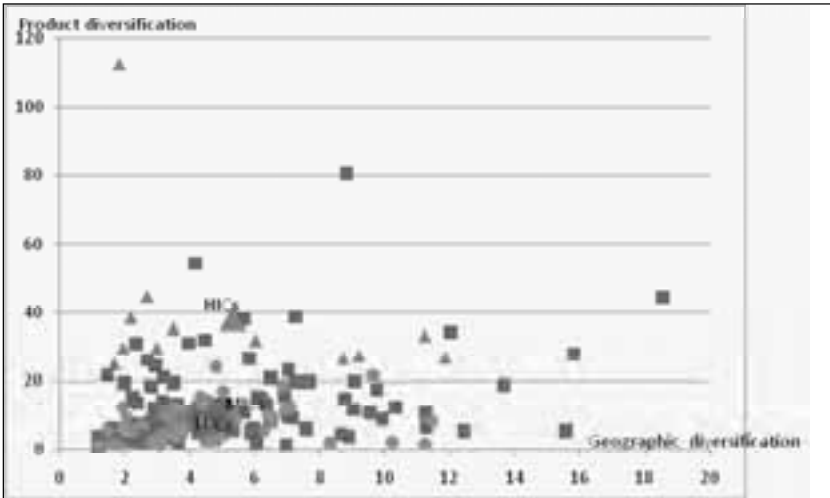
6.1.2 Some agricultural trade characteristics of developing countries

The group of developing countries brings together economies with vastly different potential in agriculture. We characterize developing countries' agricultural trade with the help of two trade indicators.

The first one is an indicator of agricultural export diversification represented by the inverse of the Herfindahl index computed at the HS6 level so the higher the index the more diversified the exports. Figure 6.5 plots the degree of agricultural export diversification in terms of products exported (vertical axis) and geographic destination (horizontal axis) for three groups of countries classified by income levels: HICs are represented by triangles, MICs by squares and LDCs by circles. The simple average for a group of countries is represented by a larger-size shape of the corresponding group (averages for MICs and LDCs are close to their acronyms).

FIGURE 6.5

Agricultural product and market export diversification indicators – by country and group of countries – 2002-2004



Source: Authors' calculations based on BACI database (www.cepii.fr)⁸.

Notes: Triangles represent HICs; squares represent MICs; and circles represent LDCs

⁸ These statistics include intra EU-trade. Excluding this trade lowers the indicator of sector diversification of the EU, which remains the most diversified region in terms of products exported.

While all groups of countries are characterized by a large dispersion of the geographic diversification index, HICs and MICs are also relatively diversified in terms of products. LDCs' main feature is a low product diversification. This is true with respect to all products (LDCs rich in oil – Angola, Chad, Equatorial Guinea, Nigeria, Sudan, Yemen, Guinea-Bissau, Rwanda⁹ -- or in precious metals – Central African Republic, Congo DR, Mali, Burundi¹⁰ -- or metals –Mozambique in aluminum, Zambia in copper) but also for agriculture. In 2002-2004, 59.4 percent of Burkina Faso's total exports were cotton and 53.8 percent of Malawi's total exports were tobacco and manufactured tobacco substitute. In the same period three countries were highly specialized in the exportation of coffee: Ethiopia (32.4 percent of total exports), Madagascar (22.2 percent) and Uganda (25 percent); and of cacao: Sao Tome and Principe (27.8 percent), Ghana (34.1 percent) and Cote d'Ivoire (36.1 percent). Two were specializing in fish and crustaceans: Senegal (23 percent) and Namibia (20.1 percent), while 38 percent of total exports from Benin were cotton.

The second trade indicator is the net trade balance. Most trade distortions are imposed on the agricultural sector such that global liberalization would benefit net exporters and hurt net importers of agricultural commodities. Moreover, the food trade balance is an important indicator of the dependence of countries on the rest of the world for their food supply. Table 6.4 indicates net trade balances in agriculture and food for LDCs averaged over the 2002-2004 period, and Table 6.5 provides the same information for MICs.

About half of the LDCs are net importers of agricultural products (24 out of 49 LDCs represented in Table 6.4). Among net importers, 14 have a deficit greater than 3 percent of their Gross Domestic Product (GDP) and 5 have a deficit higher than 10 percent of GDP: Yemen, Maldives, Mauritania, Eritrea and Djibouti (ranked in increasing order)¹¹. On the surplus side only five countries have a significant surplus in agriculture (greater than 5 percent of GDP): Guinea-Bissau, Gambia, Comoros, Malawi and Sao Tome and Principe (ranked in increasing order).

In the case of LDCs, the net food trade balance reflects patterns that are similar to the net agricultural trade balance except for Malawi, which massively exports tobacco and tobacco products, and Burkina Faso, which exports cotton.

MICs exhibit the same heterogeneity: 56 out of 109 countries experience a net agricultural trade deficit and 24 have a deficit greater than 3 percent of GDP. For 12 MICs this deficit is higher than 5 percent of GDP: Albania, Dominica, Grenada,

⁹ Most of these countries' exports are concentrated in HS2 chapter 27: "Mineral fuels, oils, waxes and bituminous sub".

¹⁰ Most of these countries' exports are concentrated in HS2 chapter 71: "Pearls, stones, precious metals, imitation jewelry, coins".

¹¹ It is expected that a small country will experience a large deficit in agriculture and/or food because presumably it is more specialized.

Georgia, Armenia, Mongolia, Saint Lucia, Suriname, Seychelles, Bosnia and Herzegovina, Jordan and Saint Kitts and Nevis.

Conversely, 23 MICs have a net agricultural trade surplus greater than 3 percent of GDP. This surplus is especially high for Ecuador, Papua New Guinea, Belize, Uruguay, Uzbekistan, Fiji, Argentina, Moldova, Costa Rica, Guyana, Zimbabwe, Paraguay, Côte d'Ivoire and Swaziland.

Among net agricultural exporters, some countries have a very small net food trade surplus (Swaziland, Moldova, Uzbekistan) and some countries are food-deficit (Zimbabwe and Tajikistan).

TABLE 6.4

Net agricultural trade balance – LDCs (2002-2004 average)

Country	Food Trade Balance	Agriculture Trade Balance	Country	Food Trade Balance	Agriculture Trade Balance
Afghanistan	1.4	1.9	Liberia	2.0	4.3
Angola	-3.9	-5.3	Madagascar	4.7	4.4
Bangladesh	-2.8	-3.9	Malawi	0.5	16.7
Benin	-6.6	-2.8	Maldives	-11.5	-13.6
Bhutan	-1.9	-1.9	Mali	-2.3	3.3
Burkina Faso	-1.5	4.8	Mauritania	-17.8	-21.9
Burundi	-2.0	-2.1	Mozambique	-4.3	-3.0
Cambodia	-1.8	-4.6	Myanmar	1.3	0.6
Cape Verde	0.2	0.3	Nepal	-1.4	-2.1
Central African Republic	-2.0	-1.2	Niger	-2.8	-4.0
Chad	-0.5	0.7	Rwanda	-0.3	-0.7
Comoros	8.6	9.9	Samoa	2.7	3.3
Congo (Democratic Rep.)	-3.0	-3.3	Sao Tome and Principe	17.3	18.0
Djibouti	-24.3	-30.6	Senegal	-7.1	-7.0
East Timor	1.0	1.1	Sierra Leone	1.5	2.5
Equatorial guinea	-1.1	-2.2	Solomon islands	-0.2	-1.4
Eritrea	-23.5	-24.4	Somalia	3.6	4.1
Ethiopia	0.6	1.0	Sudan	-1.0	-0.7
Gambia	7.9	9.0	Tanzania	0.0	1.2
Guinea	1.3	1.4	Togo	-4.8	-5.1
Guinea-Bissau	9.5	7.7	Uganda	1.1	2.8
Haiti	0.6	0.8	Vanuatu	1.8	0.8
Kiribati	3.1	3.4	Yemen	-10.1	-10.7
Lao People's Democratic	-1.4	-3.5	Zambia	-0.6	1.4
Lesotho	-0.7	-1.4			

Source: Authors' calculations based on BACI and CHELEM databases (CEPII, Paris).

Note: Net trade balance as a percentage of GDP=100*(Total exports – total imports)/GDP.

TABLE 6.5

Net agricultural trade balance – MICs (2002-2004 average)

Country	Food Trade Balance	Agriculture Trade Balance	Country	Food Trade Balance	Agriculture Trade Balance
Albania	-4.3	-5.2	Croatia	-1.7	-1.8
Algeria	-4.1	-4.5	Cuba	-1.5	-1.0
Anguilla	2.7	4.2	Dominica	-4.0	-5.5
Antigua and Barbuda	-3.7	-3.5	Dom. Republic	-1.1	-0.9
Argentina	6.7	9.3	Ecuador	6.0	5.8
Armenia	-6.1	-6.4	Egypt	-2.7	-3.1
Aruba	2.3	4.1	El Salvador	-1.7	-2.4
Azerbaijan	-3.7	-3.6	Fiji	6.7	8.4
Bahamas	-2.9	0.8	French Polynesia	0.5	0.6
Bahrain	-4.0	-4.9	Gabon	-2.1	-2.5
Barbados	-3.9	-3.7	Georgia	-6.5	-5.9
Belarus	-0.2	-1.3	Ghana	2.6	1.2
Belize	7.8	6.5	Gibraltar	0.5	0.7
Bermuda	-1.4	-2.3	Grenada	-4.3	-5.7
Bolivia	1.0	3.6	Guatemala	2.8	2.5
Bosnia and Herzegovina	-7.6	-10.1	Guyana	15.4	14.0
Botswana	-1.7	-2.2	Honduras	4.6	4.3
Brazil	2.7	3.4	India	0.3	0.4
Brunei Darussalam	-3.2	-4.1	Indonesia	1.4	1.1
Bulgaria	0.6	0.8	Iran	-1.2	-1.5
Cameroon	1.3	1.8	Iraq	0.9	1.1
Chile	2.2	2.7	Jamaica	-3.0	-2.9
China	0.1	0.0	Jordan	-9.6	-11.4
Colombia	1.8	1.5	Kazakhstan	0.3	0.5
Congo	-4.0	-4.5	Kenya	4.3	4.3
Costa Rica	10.6	10.3	Korea, D. P. Rep.	0.3	0.4
Côte d'Ivoire	17.7	18.2	Kuwait	-2.0	-2.2

Source: Authors' calculations based on BACI and CHELEM databases (CEPII, Paris).

Note: Net trade balance as a percentage of GDP=100*(Total exports – total imports)/GDP).

In this section, we have been able to give evidence that developing countries form a very heterogeneous group in terms of protection and trade patterns. Regarding protection, some regions have a pattern of high protection while others are more moderate or highly diverse. Agriculture is usually more protected than non-agriculture, and this is particularly true in OECD countries. A significant number of developing countries face very high protection on their agricultural exports, and it can be all the more negative that these countries are usually highly concentrated in their exports. Furthermore, developing countries can be hurt by the presence of substantial tariff escalation. While a large number of LDCs and MICs are net agricultural and food importers, few countries have a trade deficit that exceeds 5 percent of GDP and nearly a fourth of MICs experience a trade surplus in agriculture and food.

6.2 The relative impacts of market access versus domestic support on agriculture in developing countries: An overview of model-based assessments

Economic literature on the potential impact of agricultural liberalization on developing countries has been prolific since 2000. In particular, assessments of the effects of trade liberalization using CGE models have multiplied. Increased access to economic data, increased efficiency in calculation time, and development of the Global Trade Analysis Project (GTAP) network explain this proliferation.

Without being exhaustive, our survey reviews 13 CGEM assessments of the impact of full trade liberalization on the world from 1999 to 2005 (Table 6.6)¹². In spite of substantial differences between the models, it is possible to extract from these studies various conclusions of key importance:

- i. Full trade liberalization is beneficial although the gains are modest. The world welfare gains estimated by these studies range from 0.2 percent (Dessus, Fukasaku, and Safadi 1999) to 0.9 percent (World Bank 2002 scenario 1). When the CGE supposes that trade openness is linked to total factor productivity, the gains are even higher, ranging from 1.4 percent (World Bank 2004 scenario 2) to 3.1 percent (Dessus, Fukasaku, and Safadi 1999). Although they show that welfare increases at the world level, not all countries or economic agents benefit. For example, in the Cline (2004) study, Malaysia, Mexico and China are potential losers; in Hertel and Keeney (2005) study, the Philippines, Bangladesh and Mozambique, as well as the regional groups labeled rest of Latin America and rest of Sub-Saharan Africa, are potential losers of full trade liberalization.

¹² This section is largely inspired by Bouet (2008).

- ii. Liberalizing agriculture is the main source of expected gains, accounting for about two thirds of global gains. This stems from the fact that a major part of current trade barriers and nearly all export subsidies and domestic support are in agriculture¹³. The studies in Table 6.6 show that, in most cases, agriculture liberalization contributes to two-thirds of the gains from trade.
- iii. Tariffs are by far the main source of distortions. Consequently, they account for more than 90 of expected benefits from full liberalization (Van der Mensbrugghe and Beghin 2005; Anderson, Martin, and Van der Mensbrugghe 2005, Francois, Von Meijl, and Van Tongeren 2005; and Hertel and Keeney 2005).
- iv. Developing countries could be significant beneficiaries of these reforms. Given their relatively small GDP, the percentage change in real income is higher than for richer countries. Thus, trade reform can be seen as progressive because it relatively benefits the real income of poor countries more (The World Bank 2002 and 2004; and Van der Mensbrugghe and Beghin 2005).
- v. Liberalizing trade policies of developing countries is a major issue and is predicted to contribute about half of expected benefits (The World Bank 2002 and 2004; and Francois, Von Meijl, and Tongeren 2005).

TABLE 6.6

Results from CGE model-based assessments of trade liberalization: percentage contribution to world welfare gains.

	Dessus, Fekasaku and Safadi (1999)	Dessus, Fekasaku and Safadi (1999)	Anderson et al. (2000)	The World Bank (GEP 2002) 1	The World Bank (GEP 2002) 2	The World Bank (GEP 2004) 1	The World Bank (GEP 2004) 2	Cline (2004) 1	Cline (2004) 2	Van der Mensbrugghe and Beghin (2005)	Anderson, Martin and Van der Mensbrugghe (2005)	Francois, Von Meijl and Tongeren, (2005)	Hertel and Keeney (2005)
	(in percent)												
Role of agriculture in total gains	na	na	65	69	71	66	69	57	na	69	63	65	66
Role of tariffs in total gains	na	na	na	Na	na	Na	na	na	na	99	93	91	95
Share of developing countries in total benefits	22	38	43	52	65	55	67	38	47	56	30	8	26
Role of developing countries policies in total gains	na	na	45	55	66	62	62	44	na	na	45	58	na

Source: Bouët 2008.

¹³ Large gains in world welfare are expected from liberalization in services, but these estimates should be viewed with caution.

The most convergent conclusion of these studies is the role of tariffs: tariff liberalization contributes by more than 90 percent to an increase in world welfare. Other types of analysis confirm this point of view. For example, Hoekman et al. (2003) assess the relative impact of tariffs and domestic support policies on the exports and welfare of developing countries through a partial equilibrium model in which the impact of a 50 percent global reduction in agricultural tariffs is compared to a 50 percent cut in domestic support. They find that in welfare terms, tariffs matter significantly more than subsidies: tariff reductions generate welfare gains that are substantially greater than reductions in support policies.

Similarly, a more recent study by Tockarik (2005) estimates that world welfare gains from agricultural liberalization by developed countries are nearly 10 times greater when tariffs are removed than when subsidies are removed. Developing countries would reap 88 percent of the world welfare gains generated by their own agricultural policy liberalization.

Different explanations of the relative prominent role of market access vs. domestic support can be provided:

- i. Tariffs directly hinder trade. They are implicitly a distortion affecting consumption and production; the economic theory of protectionism underlines that it is equivalent to the combination of a consumption tax and a production subsidy (Corden 1977, Vousden 1990). On the other hand, domestic support is for the major part only a production subsidy;
- ii. Tariff is a distortion more prominently adopted in agriculture.

«most countries apply tariffs to all agricultural products, not just those that are subsidized...» and “because of high tariff peaks in OECD countries and because developing countries also use tariffs to protect domestic production”, it follows that “any comparison of the effect of reducing tariffs on all agricultural goods with a reduction in support policies would conclude that tariffs are more important for developing countries » (Hoekman et al., 2003).

According to the GTAP database estimates of support to global agriculture and processed food in 2001, direct domestic subsidies amounted to \$US 97 billion, import barriers to \$US 691 billion and export subsidies to \$US 61 billion. It follows that in 2001 import barriers represented 81.4 percent of total support to agriculture in all countries (see Anderson et al., 2006). Furthermore, because domestic support is partly decoupled it is less distortive;

- iii. Tariff dispersion is high not only in terms of products but also in terms of partners (because of regional agreements, preferential schemes and tariff rate quotas). According to the Harberger Triangle effect, the welfare loss due to a tariff increases with the square of the tariff rate, so the cost of protection would increase with the level of dispersion;

- iv. The relative cost of market access vs. domestic support increases the higher the demand elasticity and the lower the supply elasticity. In agriculture, demand elasticity is low, but supply elasticity is also low because of many inhibiting factors. In many studies the elasticity of demand for agricultural products is overestimated. This leads to an overestimation of the market access gains. Indeed, taking the example of Japan, a large, heavily protected market, model results lead to import surges driven by increase in demand. However, the probability of seeing such a rise is limited due to saturation effects of the food markets. The liberalization of this market will still benefit the local consumers and will lead to market share reallocation across exporters, but will have limited trade creation effects.

Nevertheless, the modelling techniques used to represent both pillars (tariffs and domestic support) are different and subject to different limitations. Modelling tariffs in a CGEM are straightforward, in most cases using an *ad valorem equivalent* very close to the real policy. Treatment of specific tariffs and TRQs may be tricky, but improvements in the quality of data have helped to tackle these issues. On the contrary, modelling domestic support policies is much more challenging. Agricultural policies use different tools and are very heterogeneous. They combine statutory and contingent measures and cover various form of subsidies (on factors, inputs, production), with or without conditionality. Their representation in most CGE models, in particular worldwide models, is incomplete and imperfect. For instance, the degree of coupling of some direct payments is still a source of intense debate among academics (see de Gorter, 2009 and Skully, 2009 on this issue), and therefore the effective level of distortions of the WTO “green box” payments, assumed to be non-distortive, is delicate to assert. In particular, none of the usually adopted CGE models include the incidence of these policies on the production decisions of the farmers through wealth effects and risk behaviour. Last, the interaction between domestic support and border protection is poorly represented. Simulating trade liberalization scenario without considering production quota, linked to “blue box” payment for instance, will overestimate the gains of trade liberalization: partial liberalization will only reduces domestic prices and quota rents without creating new trade flows and reallocation of factors. Femenia and Gohin (2007) illustrate these different issues and show that, depending on the assumption made, the hierarchy between domestic support and market access pillars can be reversed.

Most of the recent CGEM studies reviewed in this section on the effects of full trade liberalization conclude similarly on a number of points. They all show that world welfare increases from liberalization, although the benefits are small. The gains are not distributed evenly across countries and some countries may lose. More relevant to this paper, they maintain the relative importance of tariff removal over domestic support reforms in generating welfare gains from trade liberalization at the world level and for developing countries.

6.3 Alternative scenarios and methodology

Building on the evidence presented, we analyse the impact of market access restrictions vs. domestic support using the MIRAGE CGE model of the world economy, with protection data coming from the MACMap-HS6 database. We simulate a Doha Development Agenda (DDA) scenario, first as it has been defined through the July 2008 agenda, and second by excluding domestic support from the liberalization process. The same approach is applied to a full trade liberalization scenario. The remainder of this section offers a methodological overview followed by a detailed description of each scenario.

6.3.1 Methodology

Tariff reform is implemented at the HS6 product level using the MACMap-HS6v2.1 database (Laborde, 2008) of bound and applied tariff data for 2004 (for 5,113 products, 170 importing countries, and 208 exporting countries)¹⁴. We add several updates to take into account all major changes that occurred up to 2008, the starting date of our simulation, including major regional trade agreements (RTA), new WTO members (such as Ukraine), and the trade policy consequences of ongoing domestic reforms (such as the EU sugar trade reform). All trade policy scenarios are implemented on a yearly basis according to their respective timeline.

The political economy model developed by Jean, Laborde, and Martin (2008) is used, in which sensitive products are selected for implementing the Doha scenario. The model is extended to define the binding strategy of 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 basis for defining the new bound tariffs, in particular for countries that benefit from wide flexibilities to achieve their new binding coverage goal (for example, Small and Vulnerable Economies-SVEs, LDCs and initially low-binding countries). In such cases, we replace the applied tariff in the base year, 2004, by the highest tariff during the period 1995-2006 to compute the political cost of any new commitments (see equation 6 in Jean, Laborde, and Martin 2008). In this case, the DDA modalities (WTO 2008) define the overall constraints faced by each country. Finally, when WTO members liberalize under the DDA, market access remains unchanged for non-WTO members.

Tariffs at the HS6 level are aggregated according to the geographical and sectoral aggregations listed in Annex 6.2 and using the reference group weighting scheme methodology (see Boumellassa, Laborde, and Mitaritonna, 2009) before

¹⁴ Slight modifications have been made to the MACMapHS6-v2.1 dataset: Malaysia's tariffs on tobacco products have been updated (lowered), marginal protection on Chinese cereal TRQs reduced and protection faced on sugar and banana by African, Caribbean and Pacific (ACP) countries in the EU market modified to better capture preference erosion mechanisms.

being implemented in the MIRAGE multi-country, multi-sector dynamic model. We assume perfect competition across all sectors. 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.

In each country a representative consumer maximizes a CES-LES (Constant Elasticity of Substitution – Linear Expenditure System) utility function under a budget constraint that allocates income across goods. The calibration procedure aims to reproduce reasonable price and income elasticities; the latter is a particularly important feature in a dynamic model to control the changes in demand for agricultural commodities led by economic growth. The origin of goods is determined by a CES (Constant Elasticity of Substitution) nested structure following the Armington assumption. In addition, Northern countries are supposed to produce higher-quality industrial goods than those supplied by Southern 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 labour and a composite of skilled labour and capital, applying less substitutability between the last two production factors. In agriculture and mining, production also depends on land and natural resources. Investment is savings-driven and the current account is assumed to be constant in terms of world GDP. The dynamics of the model come from both exogenous sources (increase in labour force and technical progress) and endogenous forces (capital accumulation and variation in land supply).

Macroeconomic data (such as world trade flows, production, consumption and intermediate use of commodities and services) are provided by the GTAP 7 database. Thirty-three countries are identified in the model, including seven high-income regions (Australia-New Zealand, Canada, EU – 27 countries, European Free Trade Association, Japan, Korea-Taiwan, USA), which map the main trade blocks. We focus on developing countries and isolate 26 developing regions/countries, in particular two LDCs (Bangladesh and Cambodia), and one region only composed of LDCs (called African LDCs: Madagascar, Malawi, Mozambique, Senegal, Tanzania, Uganda and Zambia; see Annex 6.2 for details).

The sectoral decomposition is highly detailed in terms of agriculture and agrifood business (13 sectors), since most of the protection is concentrated in these sectors (in particular in cereals, meat products and sugar). Non-agricultural sectors include ten industrial sectors and two service sectors¹⁵.

The model generates a baseline from 2008 to 2025, which depicts the world without any new multilateral agreement. In order to reflect the trade reforms implemented since 2004, the baseline data is updated with the following:

¹⁵ Sector and geographic decomposition are presented in Appendix 1, with correspondence to GTAP sectors.

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

Simulation results from various scenarios are reported for the year 2025 as percentage changes from the baseline. The analysis does not account for the surge in world prices of energy and food products between 2004 and 2008.

5.3.2 Alternative trade scenarios

The analysis in this study includes four scenarios:

- (i) DDA: Doha with domestic support reform
- (ii) DDAwoDS: Doha without domestic support reform
- (iii) FTL: Full trade liberalization with elimination of domestic support
- (iv) FTLwoDS: Full trade liberalization without elimination of domestic support

The DDA scenario represents a successful Doha outcome based on July 2008 modalities. Even if the general philosophy of progressive tariff-cut formulas for both agricultural and nonagricultural goods is simple, various 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 Mensbrugge 2008; and Berisha et al. 2008), this scenario implements all the details of these modalities in terms of market access, including tariff-cutting formulas, country and product flexibilities (sensitive and special products) as well as special provisions for tariff escalation, tropical products and long-standing preferences¹⁶. The scenario does not account for any changes in the sectoral initiative due to the lack of agreement on this issue.

For the duty-free-quota-free market access initiative for LDCs and OECD countries (excluding South Korea but including Mexico and Turkey), we assume a 3 percent exemption clause in terms of products¹⁷. Export subsidies are phased out by 2013 for developed countries. Concerning domestic support, this scenario includes the overall constraint on Overall Trade Distorting Support (OTDS) for the USA 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 USA will face a real constraint, forcing it to modify its production-distortive programmes¹⁸. 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 could start to decrease by 2011 to 50 percent of their original value by 2025 in order to be consistent with the final \$US 16.4 billion limit. Any domestic support reduction will impact all sectors in a uniform way. Since this paper focuses on tariffs and tariff changes across scenarios, we have neither introduced a programme-specific modelling of domestic support policies, nor a political economy model aimed at explaining how domestic support reduction across commodities will be handled.

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.

6.4 Results

6.4.1 Impact on protection and market access

At the world level, the DDA scenario reduces overall protection by 22 percent relative to the baseline, from 4.6 percent to 3.6 percent (Table 6.7).

¹⁶ A full description of the modalities implemented in this study is provided in Laborde, Martin, and van der Mensbrugge (2008). This scenario is based on the July 2008 Modalities (WTO documents TN/AG/W/4/Rev.3, TN/MA/W/103/Rev.2).

¹⁷ This scenario mimics Scenario F in Berisha et al. (2008).

¹⁸ The recent CAP reform allows the EU to largely reallocate the domestic programme to the green box.

Table 6.7 compares by groups of countries the protection applied on imports and faced by exports between the baseline and the DDA scenario. Under the DDA scenario, applied protection is cut by one-third for HICs and one-tenth for MICs, a significant achievement when compared to previous GATT rounds.

TABLE 6.7

Protection applied on imports and faced by exports by groups of countries

	Protection applied on imports		Protection faced on exports	
	Baseline	DDA	Baseline	DDA
High-Income Countries				
Agricultural products	15.6	10.3	16.1	11.9
Industrial goods	2.2	1.4	3.8	3.0
All sectors	3.0	1.9	4.6	3.6
Middle-Income Countries				
Agricultural products	18.3	17.6	17.1	13.8
Industrial goods	7.9	7.0	4.0	3.0
All sectors	8.6	7.8	4.6	3.6
Least-Developed Countries				
Agricultural products	11.6	11.6	9.9	8.2
Industrial goods	9.2	9.2	3.9	2.7
All sectors	9.8	9.8	4.0	3.2
World				
Agricultural products	16.4	12.6	16.4	12.6
Industrial goods	3.9	3.0	3.9	3.0
All sectors	4.6	3.6	4.6	3.6

Source: MAcMap-H56v2.1, TRAINS, and authors' calculations (reference group weighting scheme).

Note: Figures in the baseline column may differ slightly from Table 5.1 and Appendix 1 figures due to the trade policy changes implemented in the baseline.

Implementation of the July 2008 package gives better access to HICs markets: from 3.0 percent down to 1.9 percent in all sectors, but from 15.6 percent to 10.3 percent in agriculture. On the other hand, the change in applied protection by MICs, from 8.6 percent down to 7.8 percent in all sectors and from 18.3 percent down to 17.6 percent for agricultural products, is small. It is nonexistent for LDCs.

It is worthwhile examining which groups of countries are most severely affected by this scenario in terms of access to foreign markets. In relative terms, the DDA scenario manages to deliver homogeneous market access gains, with an average decrease of about 20 percent of 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 to 3.2 percent for LDCs. But in absolute terms in agriculture the DDA scenario gives more to HICs (-4.2 percent, from 16.1 percent down to 11.9 percent), then to MICs

(-3.3 percent, from 17.1 percent down to 13.8 percent), while the gain in access to foreign agricultural markets for LICs is minor (only -1.7 percent, from 9.9 percent down to 8.2 percent). This is a key element to be taken into consideration when evaluating how this agreement could boost poor countries' agricultural exports.

6.4.2 Economic impacts

The MIRAGE CGE model is used to assess the economic impact of the various scenarios by 2025 and identify the role played by tariff reductions and domestic support.

Economic impacts at the global level

Table 6.8 presents the global results from all scenarios expressed as percentage changes relative to the baseline in 2025. Under the DDA scenario, which includes only the tariff liberalization and domestic support discipline components of the DDA agenda, world trade increases only slightly, by 1.94 percent (US\$ 319 billion), and world real income by US\$ 51 billion in 2025. This confirms the findings in Decreux and Fontagné (2006) and in Bouet, Mevel, and Orden (2006). In the current study the gains are slightly lower because it starts from a baseline with already reduced tariffs resulting from the numerous RTAs implemented before the DDA. It is noteworthy that developing countries' agro-food exports are less favoured by this liberalization than rich countries' agro-food exports (+4.3 percent vs. +6.1 percent). This is a direct consequence of the more pronounced improvement in access to foreign agricultural markets for HICs, as noted earlier.

The impact of domestic support liberalization is assessed by comparing the results on trade and welfare between the DDA (with domestic support reform) and the DDAwoDS (without domestic support reform) scenarios. The contribution from domestic support liberalization under the DDA scenarios is very small in the case of welfare, and is negative in terms of trade: world exports increase more when domestic support is not removed. This is explained by the maintenance of export subsidies that clearly support agro-food exports¹⁹.

Welfare is not affected by domestic support reform under the Doha scenarios, which looks normal as the Doha Round does not succeed in significantly cutting the applied level of subsidies, while under full trade scenarios, the world experiences small gains from liberalizing domestic support (Table 6.8): under this scenario domestic support is effectively cut, contrary to what happens under the DDA scenario. The share of tariff removal in total welfare benefits from liberalization

¹⁹ In our scenarios a trade reform, either DDA or FTL, consists of cuts in tariffs, domestic subsidies and export subsidies, while the sensitivity analysis, either DDAwoDS or FTLwoDS, consists only of cuts in tariffs.

TABLE 6.8.

Global results under various scenarios: changes relative to the baseline in 2025

Changes from baseline	DDA	DDAwoDS	FTL	FTLwoDS
	<i>(in percent)</i>			
Exports (vol) ^(a)				
World	1.94	1.97	13.59	13.52
Agro-food	5.05	5.65	52.26	54.30
Industry	2.07	2.07	13.37	13.22
North agro-food	6.13	7.68	39.09	49.10
South agro-food	4.27	4.20	61.89	58.06
North industry	2.43	2.41	10.75	10.32
South industry	1.75	1.76	15.78	15.89
Welfare				
World	0.08	0.08	0.58	0.55
North	0.08	0.08	0.61	0.59
South	0.08	0.09	0.49	0.43
	<i>(in \$US billions 2004 constant)</i>			
Exports				
World	319	323	2227	2217
Agro-food	42	46	430	447
Industry	267	266	1719	1699
Welfare				
World	51	51	378	361
North	36	39	288	280
South	16	17	97	87

Source: Model simulation results.

Notes: ^(a) excludes EU-Trade and includes services.

is very high (0.55/0.58=95 percent), which confirms the review of literature undertaken in Section 3. However, it is important to recall that the diversity in domestic support programmes from one sector to the other is not well taken into account in this kind of evaluation.

Implementation of full trade liberalization contributes to a substantially higher increase in developing countries' agricultural exports than in rich countries' ones (+62 percent vs. + 40 percent). It is related to MICs' high performance due to initial protection faced by their agricultural exports. Domestic support does not have a significant impact on industrial trade, while removing these distortions increases the rate of growth of poor countries' agricultural exports and decreases that of rich countries. This was widely expected, as domestic support is concentrated in rich countries and agriculture. However the contribution of a removal of domestic support to poor countries' agricultural exports is about 15 times less -58.06/(61.89-58.06) than a complete tariff liberalization.

Economic impact at the country level

In this subsection we focus on the impact of various scenarios on countries'

macroeconomic variables. In order to simplify the presentation, we focus on 20 countries/zones instead of 33.

Table 6.9 illustrates how various scenarios affect countries' exports in value. The impact of the Doha agreement is not substantially different from results obtained in previous assessments.

Under DDA, most countries increase exports, with the exception of Bangladesh, Rest of South Asia and Rest of Sub-Saharan Africa. Domestic support liberalization has very little effect on the changes, although it is slightly more beneficial for most countries, except Canada, EFTA, and Mexico.

TABLE 6.9

Effects on exports by countries under various scenarios: changes relative to the baseline in 2025

Regions	DDA	DDAwods	FTL	FTLwods
	<i>(in percent)</i>			
Argentina	0.64	0.62	8.61	7.64
Australia and New Zealand	2.90	2.77	15.67	14.89
Bangladesh	-4.20	-4.18	44.10	44.43
Brazil	2.34	2.28	24.20	22.91
Canada	0.56	0.59	3.46	3.64
China	3.81	3.81	17.26	17.08
EFTA	0.41	0.50	7.37	7.64
EU 27	2.65	2.72	12.84	12.74
India	1.77	1.76	44.58	43.81
Japan	2.52	2.53	10.34	10.32
Korea and Taiwan	3.17	3.18	16.47	16.46
Mexico	0.98	1.01	8.66	8.46
Middle East and North Africa	0.76	0.79	11.35	11.32
Rest of East Asia	1.01	1.02	15.27	15.22
Rest of LAC	0.86	0.88	20.17	19.84
Rest of South Asia	-2.29	-2.24	21.45	20.95
Rest of Sub-Saharan Africa	-0.35	-0.30	30.67	29.56
Thailand	3.18	3.17	20.31	20.15
Turkey	0.60	0.59	9.57	9.23
United States	1.81	1.83	7.78	7.85

Source: Model simulation results.

Note: Intra-zone trade excluded.

Under FTL, all countries show increases in exports and the gains are much higher than under the Doha scenarios. Here, the contribution of the domestic support reform in export gains is more evident, in particular for countries Argentina, Australia and New Zealand, and Brazil. Still, most of the gains in exports are due to the tariff component of the liberalization.

In terms of product, full trade liberalization has a particularly strong impact on world exports of meat products, rice, sugar and dairy products (in relative terms). Most of the impact is once again obtained through tariff liberalization, while the contribution of domestic support reform is negative in the sugar and dairy products sectors. Other products that are significantly more exported under free trade are vegetable and fruit, wheat and vegetable oils and fats, but the increase is smaller than the first group of products.

Table 6.10 points to the negligible impact of domestic support under DDA in terms of affecting the welfare gains from trade liberalization. This is not surprising because the tariff cuts under the Doha scenarios (with and without domestic support reforms) are implemented on bound tariffs, so the economic impact is small, if any. On the other hand, under the full trade liberalization scenarios (FTL and FTLwoDS), tariff cuts are implemented on actual applied tariffs, leading to higher changes.

TABLE 6.10

Effects on welfare by countries under various scenarios: changes relative to the baseline in 2025

Regions	DoDS	Doha	FreeDS	Free
Argentina	0.05	0.05	0.62	0.20
Australia and New Zealand	0.07	0.05	0.76	0.61
Bangladesh	-0.30	-0.30	-1.51	-1.50
Brazil	0.23	0.22	1.10	0.84
Canada	0.01	0.02	0.18	0.13
China	0.09	0.09	-0.10	-0.12
EFTA	0.21	0.18	1.63	1.42
EU 27	0.09	0.09	0.67	0.65
India	0.03	0.03	1.11	1.01
Japan	0.19	0.19	1.13	1.17
Korea and Taiwan	0.23	0.23	2.17	2.28
Mexico	0.01	0.02	-0.21	-0.22
Middle East and North Africa	0.04	0.05	-0.05	-0.04
Rest of East Asia	0.16	0.16	0.31	0.25
Rest of LAC	0.10	0.10	0.17	0.06
Rest of South Asia	-0.23	-0.22	-0.15	-0.18
Rest of Sub Saharan Africa	-0.07	-0.05	0.84	0.50
Thailand	0.55	0.55	2.65	2.31
Turkey	-0.04	-0.04	0.99	0.88
United States	0.02	0.02	0.25	0.22

Source: Model simulation results.

As with exports, under full trade liberalization scenarios, the large agricultural exporters such as Argentina, Australia and New Zealand, and Brazil gain the most in welfare when domestic support is eliminated. The elimination of both import

tariffs and domestic support raises the world price of agricultural products due to higher demand on the part of former protected countries (mostly rich countries), resulting in the large agricultural exporter gains from increased agricultural exports and income.

Table 6.11 indicates how countries' agro-food production in volume is affected by various scenarios. While the DDA does not entail very significant changes in agro-food activity and while the inclusion of domestic support reform only implies marginal changes, the level of activity in agro-food sectors is much more pronounced in the case of full trade liberalization. Those that gain most are Brazil (+13.7 percent), Australia/New Zealand (+9.5 percent) and Thailand (+7.2 percent), while the main losers are Japan (-20.1 percent) and the EU (-11.6 percent). In the case of full trade liberalization, the inclusion or not of domestic support becomes a key issue.

The results under full trade scenarios clearly confirm, in accordance with earlier studies, the dominant contribution of tariff liberalization over domestic support in terms of exports and welfare gains.

TABLE 6.11

Effects on agro-food production in volume by countries under various scenarios: changes relative to the baseline in 2025 (percent change)

Regions	DDA	DDAwoDS	FTL	FTLwoDS
Argentina	-0.1	-0.1	2.4	1.7
Australia and New Zealand	2.0	1.7	9.5	8.2
Bangladesh	0.0	0.0	-5.3	-5.7
Brazil	1.9	1.8	13.7	12.6
Canada	0.2	0.4	-3.9	-2.0
China	-0.3	-0.3	-1.8	-1.4
EFTA	-0.9	0.1	-2.8	4.8
EU 27	-1.7	-1.5	-11.6	-10.1
India	0.2	0.2	2.3	2.7
Japan	-4.1	-4.2	-20.1	-19.6
Korea and Taiwan	0.9	0.8	4.0	4.7
Mexico	0.6	0.5	-1.7	-0.4
Middle East and North Africa	0.5	0.5	2.4	2.1
Rest of East Asia	0.0	0.0	1.6	1.0
Rest of LAC	0.7	0.7	5.2	4.4
Rest of South Asia	-1.8	-1.8	-5.3	-5.6
Rest of Sub Saharan Africa	0.1	0.0	1.7	1.1
Thailand	0.0	-0.1	7.2	6.1
Turkey	0.6	0.5	-2.1	-1.7
United States	0.3	0.2	-0.8	0.9

Source: Model simulation results.

6.5 Conclusion

Market access restrictions have been shown to be more distortive than domestic support on world welfare and on developing countries' agricultural trade. An import tariff is equivalent to a production subsidy and a consumption tax so it is more distortive than domestic support, especially if the latter is decoupled from production. Import tariffs are more widely used than domestic support, especially in developing countries, because in addition to providing protection to domestic producers, they contribute a large share of government fiscal revenue. Finally, tariff dispersion is more pronounced than domestic support dispersion, resulting in a higher level of economic inefficiency in the trade system.

We verify these premises focusing on agriculture and developing countries. First, this study provides an overview of the market access restrictions facing developing countries' agriculture. Market access restrictions vary across countries, and greatly impair nearly 30 developing countries. In rich countries, they are concentrated in the meat, dairy products, sugar and tobacco sectors, and in developing countries, in the beverage and tobacco sectors. Consequently, the composition of exports plays an important role in market access restrictions faced by developing countries, and diversification indicators show that LDCs have low product diversification, especially in agriculture. The trade status of countries also impacts on whether they will benefit from trade liberalization: about half of LDCs are net importers of agricultural and food products.

Tariff escalation is still sizeable and the importance of the "specific tariff" component makes protectionism volatile.

Last, this study tests the conclusions from recent studies regarding the potential impact of an agreement concluded through the Doha agenda. In particular, the dominance of tariff protection relative to domestic support is assessed using MIRAGE, a multi-country multi-sector dynamic CGE model. To separate the effects of the two kinds of protection, we simulate the latest modalities of the DDA and full trade liberalization, both with and without domestic support reform.

At the global level, trade liberalization is beneficial but the benefits measured by changes in welfare are very small and at the national level not all countries benefit. In terms of market access, some countries lose preferential access from the current DDA, and welfare worsens for several countries.

More importantly, our findings support earlier assessments that tariffs are by far the main source of distortions and account for most of the expected benefits from trade liberalization. Leaving domestic support untouched barely changes the gains from trade liberalization, especially under the DDA. Although small, the impact of domestic support is more pronounced under full liberalization and at the national

level as this scenario really cut into the applied level of domestic support. This conclusion is valid both in terms of world welfare and of developing countries' agricultural exports.

Nevertheless, it should be noted that over the years, CGE global models have been instrumental in tracing the effects of trade liberalization, in great part because they have been able to capture the complexities of tariff protection. However, they have not been as successful in modelling domestic support, especially when decoupled from production. Consequently, assessing the contribution of domestic support to the benefits of trade liberalization remains imperfect.

References

- Anderson K., Francois J., Hertel T.W., Hoekman B., and W. Martin, 2000, Potential gains from trade reform in the new millennium, paper for the third annual conference on Global Economic Analysis, Monash University.
- Anderson K., Martin, W., and E. Valenzuela, 2006, The Relative Importance of Global Agricultural Subsidies and Market Access, *World Trade Review*, 5(3): 357-76, November.
- Anderson K., W. Martin and D. Van der Mensbrugge, 2005a, 'Market and welfare implications of Doha reform scenarios.', in K. Anderson and W. Martin, eds, 'Trade reform and the Doha Agenda', The World Bank, Washington DC.
- Berisha V., Bouet A., Laborde D. and S. Mevel, 2008 The Development Promise: Can the Doha Development Agenda Deliver for Least Developed Countries?, IFPRI Briefing Note, July, IFPRI.
- Bouet A., 2008, *The Expected Benefits from Trade Liberalization - Opening the Black box of Global Trade Modeling*, Washington DC, IFPRI Food Policy Review 8.
- Bouët A., Decreux Y., Fontagné L., Jean S. and Laborde, D., 2008, A consistent measure of applied protection, *Review of International Economics*, 16(5), 850-863.
- Bouet 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 consistent picture of the protection across the world in 2004: MACMAP-HS6 version 2". AgFoodTrade Working paper and IFPRI Discussion paper.

- Cline W.R., 2004, Trade policy and global poverty, Washington DC, Institute for International Economics.
- Corden W.M., 1977, *La theorie de la protection*, Paris, Economica.
- Decreux Y. and H. Valin, 2007, MIRAGE, Updated Version of the Model for Trade Policy Analysis: Focus on Agriculture and Dynamics, CEPII Working Paper No 15, October 2007.
- Decreux Y., and L. Fontagné, 2006, A Quantitative assessment of the Outcome of the Doha Development Agenda, CEPII Working Paper No. 10, May 2006.
- Dessus S., Fukasaku K. and R. Safadi, 1999, La liberalisation multilaterale des droits de douane et les pays en developpement, Centre de Developpement de l'OCDE, Cahier de Politique Economique n. 18.
- Disdier A.C., Fontagné L., Mimouni M. (2008), The Impact of Regulations on Agricultural Trade: Evidence from SPS and TBT Agreements, *American Journal of Agricultural Economics*, 90(2): 336–350.
- Féménia, F. and A. Gohin. (2007), The suspension of agricultural multilateral trade negotiations: does the European Union hold all responsibility?, in 'European Trade Study Group Conference'.
- Francois J., Van Meijl H. and F. Van Tongeren, 2005, Trade liberalization in the Doha development Round, *Economic Policy*, vol. 20, Issue 42: 349-391.
- de Gorter, H., 2009, Decoupled support – is it really less-distortionary – A review of recent evidence. In Social and Economic Development Department Workshop on Policies for Minimizing Distortionary Effects of Support to Agriculture, May 19-20, Rome, FAO.
- Hertel T.W. and R.Keeney, 2005, 'What's at stake: the relative importance of import barriers, export subsidies and domestic support', in Hertel T., and L.A. Winters, eds, '*Putting Development Back into the Doha Agenda: poverty impacts of a WTO agreement*', Washington DC: World Bank.
- Hoekman, B., Ng, F., and M. Olarreaga, 2003, Reducing Agricultural Tariffs versus Domestic Support: What's More Important for Developing Countries?, The World Bank, Policy Research Working Paper Series, n. 2918.
- Jean S., Laborde D. and Martin W., 2008, Choosing Sensitive Agricultural Products in Trade Negotiations, IFPRI Discussion Paper No. 788.

- Laborde, D., 2008, *Mesures et détermination endogène des droits de douane*, PhD thesis, Université de Pau et des Pays de l'Adour.
- Laborde, D., Martin, W. and D. van der Mensbrugghe, 2008, Implications of the 2008 Doha Draft Modalities for Developing Countries, *GTAP conference paper*.
- Skully, D., 2009, OECD policy and distortionary effects - A review of the linkages. In Social and Economic Development Department Workshop on Policies for Minimizing Distortionary Effects of Support to Agriculture, May 19-20, Rome, FAO.
- Tokarick, S. 2005. Who bears the cost of agricultural support in OECD countries? *The World Economy*, Vol. 28, No. 4 (April): pp. 573-593.
- _____. 2006. *Does import protection discourage exports ?* IMF Working Paper 06/20. Washington, DC: International Monetary Fund.
- Van der Mensbrugghe, D. and J.C. Beghin. 2005. Global agricultural reform: what is at stake?, in M.A. Aksoy and J.C. Beghin, eds., *Global agricultural trade and developing countries*, The World Bank, Washington DC.
- Vousden, N., 1990, *The Economics of Trade Protection*, Cambridge, Cambridge University Press.
- World Bank, The, 2002, *Global Economic Prospects and the Developing Countries: Making world trade for the world's poor*, The World Bank, GEP, 2002, Washington DC.
- World Bank, The, 2004, *Global Economic Prospects: Realizing the development promise of the Doha Agenda*, The World Bank, GEP 2004, Washington DC.
- World Trade Organization. 2008. Revised Draft Modalities for Agriculture - Fourth Revision. (TN/AG/W/4/Rev.4).
- World Trade Organization. 2008. Draft Modalities for Non-Agricultural Market Access (NAMA) - Third Revision. (TN/MA/W/103/Rev.3).