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An Assessment of May 2008 Proposals for the DDA

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Abstract:

Using a dynamic and sectoral model of the world economy (MIRAGE), we simulate the impacts of the May 2008 drafts circulated by the WTO in the course of the DDA negotiations, augmented by a modest outcome of the negotiation in services. The liberalisation of tariffs is implemented at the granular level of 5,000 products in order to take into account exceptions, flexibilities as well as the non linear design of the formulas. A reduction in domestic support as well as the phasing out of export subsidies are taken into account. We identify a USD 43 bn gain when agriculture and industry are liberalised, and a USD 70 bn gain when a 10 percent reduction of protection in services is added (dollars of 2008). These 43 and 73 bn would add to the world GDP every year in the medium term as compared with a situation without agreement. Half of these gains would be reaped after 5 years of implementation only. Using this criterion of GDP, all regions of the world gain to this deal.

Introduction

The multilateral negotiation engaged in Doha in November 2001 has reached a very critical point. Draft proposals (''draft modalities'') have been finalised by the chairmen of the agricultural and Non Agricultural Market Access (NAMA) committees. The 19 May 2008, Crawford Falconer, chairman of the agriculture negotiations, circulated a revised draft modalities and Don Stephenson released the same day the revised draft negotiating text for the NAMA. On this basis, a Ministerial should start the 21st of July, aiming at completing an agreement.

The two documents are highly technical and complex, pointing to the imagination of negotiators to find a politically acceptable deal. Starting with very simple modalities, such as the use of a non linear formula of tariff cut applied to every tariff line, instead of a negotiation product by product, is a very convenient design. When properly calibrated, such measure can indeed be very aggressive on tariff peaks, and accordingly strongly reduce induced distortions. However, exceptions have to be introduced to cope with internal resistance in negotiating countries. As a compensation, additional import commitments (e.g. tariff rate quotas) must be introduced; alternatively, or as a complement, a minimal average cut might be requested. The latter can be calculated as the average of the cuts, or as an average cut. Lastly, this average can be computed before or after the designation of exceptions. All in all, we end up with an intricate design: the consequences of such agreement, leading to cuts differing by country and by product can certainly not be assessed without resorting to a quantitative and detailed representation of the world economy. This note aims at providing such assessment of the impact of these ultimate proposals on the world economy.

1- How the two ''draft modalities'' have been modelled

The state of the art lies in the measurement of border protection at the most detailed level affordable, and in the computation of actual liberalisation resulting from a tariff-cutting formula. Bound and applied duties (whether ad valorem, specific, mixed or compound) have to be measured at the HS-6 product level (the most disaggregated level for which harmonised information exists). We rely here on such approach, extended to integrate in one and the same exercise a liberalisation in agriculture, manufactures and services. This shock on actual protection being precisely quantified at the country, product and year level, it must be introduced in a Computable General Equilibrium (CGE) model of the global economy, after aggregation at the sectoral level.

The world economy is modelled here using MIRAGE, the CGE developed by the CEPII. As compared to previous studies released by the CEPII, some improvements have been introduced in this model,

notably to reproduce the changing patterns of household consumption when income per capita increases. Another improvement concerns the supply of agricultural products.

In the MIRAGE model the demand side is modelled in each region through a representative agent. Domestic products are assumed to benefit from a specific status for consumers, making them less substitutable to foreign products than foreign products between each other. Secondly, products originating in developing countries and in developed countries are assumed to belong to different (price or) quality ranges. Hence, the competition between products of different qualities is less tough than between products of similar quality. As regards the supply side of the model, producers use five factors: capital, labour (skilled and unskilled), land and natural resources. The structure of value-added is intended to take into account the well-documented skill-capital relative complementarity. The production function assumes perfect complementarity between value-added and intermediate consumption. The sectoral composition of the intermediate consumption aggregate stems from a nested CES function. For each sector of origin, the sector bundle that allows determining the origin of products has the same structure for final and intermediate consumption.

Constant returns to scale and perfect competition are assumed to prevail in agricultural sectors. In contrast, firms are assumed to face increasing returns to scale in industry and services. In those sectors, competition is imperfect.

As regards the market clearing and the macroeconomic closure, capital good is accumulated every year as the results of investments in the most profitable sectors, but it cannot change its sector affectation once it has been installed. Natural resources are considered to be perfectly immobile and may not be accumulated. Both types of labour are assumed to be perfectly mobile across sectors, whereas imperfect land mobility is modelled with a constant elasticity of transformation function. Production factors are assumed to be fully employed; accordingly, negative shocks are absorbed by changes in prices (factor rewards) rather than in quantities. All production factors are immobile internationally. With respect to macroeconomic closure, the current balance is assumed to be exogenous (and equal to its initial value in real terms), while real exchange rates are endogenous.

As regards data, MIRAGE relies on GTAP. Tariff data on goods comes from MAcMap HS6, hence at the most granular level of the international trade classification of products. Tariff equivalents of services barriers are based on two different works: Park (2002) and the Australian Productivity Commission (Warren, 2000).[1]

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[1] Starting from the original data obtained with the two methodologies, two separated data sets are built. In both cases we aggregate original estimations by sector and by country/geographical area, using the value of total demand for this service at market price as a weighting scheme. Data on the demand of services were the one used in the model. At the geographical level, when no data for a specific country is available, a weighted average of the estimations for the other countries belonging to the same area or all the countries available is used.

Since protection in services rely on regulatory measures leading to no tariff revenue to the importing country, it translates here into export taxes. Liberalising services is therefore expected to lead to large gains for the liberalising countries, whereas gains for the exporting countries are second order ones.

Since the available data (in GTAP-7 and in MAcMap-HS6 V2) describe the 2004 economy, we first run a "pre-experiment" introducing the changes accruing to the world economy between 2004 and 2008. In 2008 (and in the subsequent years, depending on the calendar of phasing out of the protection) the scenario described below is implemented. We finally compare the situation of the world economy in 2009, 2010… 2025, with and without such liberalisation. The reference situation over the whole period is defined by the trajectory of the world economy until 2013 as forecasted by the IMF, and from 2013 onwards by the CEPII (Poncet, 2006). Population (active and total) is taken form ILO forecasts. We calibrate Total Factor Productivity for every region of the world economy in order to reproduce the forecasted GDPs, taking populations as exogenous variables. Lastly, simulations of the shock are performed by using these TFP changes as exogenous variables of the model.

For the NAMA as well as for agriculture, we model yearly tariff cuts at the product (HS6) and country level, before aggregating into the regional and sectoral decomposition of the model (23 sectors and 17 regions in the world economy: see Appendix 1). In addition, we model the reduction in internal support for agricultural products, as well as the phasing out of export subsidies. Lastly, in absence of precise information on potential liberalisation in services and given the lack of ambition of negotiators in this field, we make the assumption of a 10% reduction of protection, overall. Detail on how the proposals have been precisely modelled is provided in Appendix 2: we introduce flexibilities, special and sensitive products, exempt the LDCs from tariff reductions, consolidate the unbound tariffs, etc. in order to mimic the potential outcome of the Round, as suggested by the two Draft Modalities.

As a result, for industrialised countries a Swiss formula with a coefficient 8 is linearly implemented in 5 years starting in 2009 for industrial products. Special and differential treatment leads to less ambitious tariff cuts for developing countries. A Swiss formula with a coefficient 22 is linearly implemented in 8 years starting in 2009 for industrial products in the case of developing countries. Unbound lines are consolidated before the tariff reduction formula applies. Small and Vulnerable Economies are supposed to avoid any reduction on newly consolidated tariff lines. On the top of this, flexibility is allowed for 10% of the number of NAMA tariff lines (bounded to 10% of the total value of NAMA trade). For the corresponding HS6 positions, the actual cut is half the cut that would come out of the Swiss formula. Countries have the option to select only 5% of tariff lines up to 5% of trade

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However, when a missing country belongs to a geographical area for which there is original data available we eventually use only original data to compute the average. Finally, to get the tariff equivalents used in our simulations, we compute a simple average of the values contained in the two comparable data sets.

value, and apply no cut at all to these lines. However we assumed that they don't use this possibility. Since we do not have the list of products chosen by developing countries, we select the HS6 headings for which the product of the tariff cut on the applied MFN tariff obtained with the Swiss formula, times total imports in 2004, would be the largest. Additional departures from this general scheme are conceded to recently and very recently acceded members of the WTO, as well as to the so-called ''Paragraph 6 Annex b'' countries having a limited consolidation of their NAMA tariff lines.

As for agriculture, we start by phasing out export subsidies by 2013, based on a linear implementation. Distorting domestic support is cut by 60% of current AMS commitments for the US and 75% of current AMS commitments for the EU. The latter reduction in farm support is linearly implemented in 5 years. As regards market access in agricultural products, developed economies reduce their protection using an aggressive tiered formula, with tariff reductions ranging from 50% to 70% of the initial bound tariffs, depending of the initial consolidated level. Applied tariffs may be reduced by less however, as a result of the consolidation margin. In addition, a commitment to reduce tariffs on average by 54% is imposed, after the list of sensitive products has been defined. When tariff cuts do not reached this target, a further homogenous cut is applied. Each country can define a list of sensitive products comprising 5% of HS6 headings, selected on the basis of a similar criterion of the cut on MFN applied tariff, multiplied by trade in 2004. A smaller tariff cut associated to the opening or enlargement of a TRQ is permitted for the corresponding products: since we do not model the quotas in this version of MIRAGE, we simply implement a tariff cut equal to 2/3 of what it would have been for a standard product, but we do not simulate any quota increase. These tariff cuts are linearly implemented in 5 years. Here again a specific and differential treatment is conceded to developing economies. The bands are more ambitious, and the coefficients of reduction in each band are only 2/3 of the ones applied for industrialised countries. In addition, 5% of the total number of tariff lines are exempt from any cut and 11% of the total number of tariff lines are imposed a 15% tariff cut only. HS6 headings are chosen on the basis of the criterion already presented. As opposed to the minimum tariff cut for developed economies, here a maximum of 36% after taking account of all flexibilities is introduced. Would the reduction obtained after applying the tiered formula be higher, then all cut ratios would be reduced so as to obtain 36% on average. A linear implementation in 8 years is considered.

The last key component of the special and differential treatment relates to the 97% initiative, by which developed economies concede a zero quota zero tariff access to LDCs exports in agriculture as well as in industry. The impact of such measure is however limited since the EU has already its Everything But Arms (EBA) programme, the US the AGOA one for African countries, while Japan and Norway for instance have programmes too.

2-   Overall results

We start in Table 1 by considering the overall impact of our simulation. The long run effect of such trade liberalisation in goods amounts to 0.09 percent of world GDP, or USD 43 bn of 2008. The increase in world exports will be limited overall to USD 144 bn of 2008, as a result of the series of flexibilities introduced. Even a very conservative assumption of a 10 percent liberalisation in services, would increase these gains in GDP by half. In dynamic terms, half of the gains would be reaped after 5 years in the case of products liberalisation only, or after 3 years would the liberalisation in services also take place.

Table 1: percentage deviation from the baseline in 2025

	Agric + NAMA	+ services
Exports (vol)	1.32	2.20
World GDP (volume)	0.09	0.14

These gains in GDP are presented at the regional or country level in Table 2 (see the country aggregation in Appendix). In dollar terms, the EU is reaping 32% of the world gains, and even 40% when services are liberalised. All regions or countries record an increase in the volume of their GDP, and all gain to the addition of services on the basis of this criterion.

Table 2: Deviation from the baseline in 2025, GDP, USD mn

Region	Agric + NAMA	+ services
ANZ	991	1 297
ASEAN	2 606	3 640
Canada	264	836
ChinaHK	466	1 915
EFTA	6 306	7 061
EU27	13 832	28 258
Japan	4 043	5 358
KorTai	2 063	2 775
Mexico	1 290	1 445
NAf	734	874
RoW	2 704	4 319
Russia	71	179
SSA	18	125
SthAm	3 554	4 051
SthAsia	1 045	1 824
Turkey	277	316
US	2 982	5 870
Total	43 244	70 145

Beyond changes in the volume of GDP, countries may individually be affected by terms of trade changes and by benefits or losses in terms of efficiency. For instance, Korea and Taiwan will benefit from sizeable terms of trade gains, as well as gains in terms of efficiency. The latter come from a further specialisation in sectors where the two countries are advantaged, leading to more varieties supplied to the consumer. As a consequence, welfare gains in percentage terms will be larger than gains in terms of GDP for these two countries (0.31% and 0.42% welfare gains in 2025 without and with liberalisation of services, as opposed respectively to 0.17% and 0.23% GDP gains at the same horizon). Such outcome is however not guaranteed and depends in particular on the participation of the country (or region) to the multilateral liberalisation. In our exercise, three regions exhibit less favourable outcomes. For Canada, North Africa and Sub-Saharan Africa, the tiny GDP gains identified here vanish in terms of welfare. For Canada and North Africa, terms of trade losses are key to understand this phenomenon. The case of Sub-Saharan Africa, which is a very sensitive issue in the Round, is more complex and deserves additional comments. It must be kept in mind that the region does not, or only little, liberalise overall, due to the combination of the presence of LDCs, Paragraph 6 Annex b countries and other flexibilities. Despite a slight amelioration of their terms of trade, SSA countries become relatively less efficient (as compared to the world market competitive conditions), in certain sectors due to decreases in the world prices for the corresponding products. Domestic production shrinks, leading to increased average costs and reduced variety offered to the local and foreign consumers. This is observed mainly for Textile, which production decreases by almost 10%.

The gains in GDP for all regions referred to above are associated with limited specialisation of these regions. Job displacement across agriculture and other sectors, is especially limited (Table 3). The most affected region is the EFTA, with a 3.6 percent decrease in agricultural employment at the 2025 horizon. The decrease observed in Japan and in the EU is less pronounced – only 1.7 and 1.6 percent respectively. By contrast, a 2.6 percent increase in agricultural employment is recorded in New Zealand and Australia, 1.3 percent in Canada and 1.4 percent in South America. All these changes are very smooth given the time horizon considered, and should be second order effects, as compared to the "natural" evolutions of this sector (population ageing in Europe etc.). Lastly, it should be stressed that compensatory evolutions in services or manufacturing take place. Their magnitude, in percentage terms, remains however tiny, given the disproportionate shares of theses sectors in countries like Europe, as compared to agriculture.

Table 3: Percent change in employment in 2025

	Agric employment		Non agric employment	
	A+N	A+N+S	A+N	A+N+S
ANZ	2.60	2.60	-0.14	-0.14
ASEAN	0.13	0.11	-0.01	-0.01
Canada	1.28	1.28	-0.02	-0.02
ChinaHK	0.22	0.21	-0.03	-0.03
EFTA	-3.60	-3.63	0.05	0.05
EU27	-1.61	-1.64	0.06	0.06
Japan	-1.68	-1.68	0.02	0.02
KorTai	0.01	0.00	-0.00	-0.00
Mexico	0.69	0.70	-0.07	-0.07
NAf	0.77	0.74	-0.16	-0.15
RoW	0.65	0.64	-0.06	-0.06
Russia	0.25	0.24	-0.03	-0.02
SSA	0.27	0.24	-0.17	-0.15
SthAm	1.38	1.41	-0.10	-0.11
SthAsia	0.04	0.04	-0.01	-0.01
Turkey	0.10	0.10	-0.02	-0.02
US	0.02	0.03	-0.00	-0.00

3- Detailed impacts on factor incomes

Such changes in specialisation naturally leads to changes in factor incomes as the result of the different factor proportions in the different activities. In Table 4, we report changes in returns to factors in the different regions in the long run. We distinguish Capital, Land, Skilled labour, Unskilled Labour employed in agriculture, Unskilled Labour in other sectors. In countries specialising in agriculture, such as Australia, New Zealand, or Canada, as well as in South America, the return to land is increasing by at least 3 percent in the long run. Unskilled wages increase in similar proportions in all these countries, with the exception of Australia and New Zealand, where the impact is twice as large as a result of tensions on the labour market. The opposite evolution is recorded in countries shifting from agriculture to industry and services such as Japan and the EU: the return to land is reduced by 5 to 6 percent in the long run, while unskilled wages in agriculture decrease by 3 percent. In the EFTA, this evolution is magnified.

Unskilled wages is positively affected in the ASEAN, in Korea and Taiwan, in China, in Japan. This is also the case of EFTA, probably due to a gain in purchasing power driven by reduced prices. The only undesirable outcome is certainly the (limited) impact on unskilled wages outside agriculture in Sub-Saharan Africa; but it is largely compensated by a larger increase in unskilled wages in agriculture, where a large fraction of the active population is employed. In Australia and New Zealand, as well as

in South America, wage increases in agriculture spill over to other sectors for similar categories of qualifications.

As for skilled workers, wages increase everywhere (with the exception of Canada where there are stable) when liberalisation in agriculture and services are combined. While these gains are increased with the liberalisation in services, they remain modest however: 0.7 percent in the ASEAN, 0.6 percent in Korea and Taiwan, 0.5 percent in Japan, 0.4 percent in the EU, etc.

Table 4: Percent change in real factor incomes in 2025

	Capital		Land		Skilled		Unskilled agriculture		Unskilled other	
	A+N	A+N+S	A+N	A+N+S	A+N	A+N+S	A+N	A+N+S	A+N	A+N+S
ANZ	0.23	0.28	3.78	3.80	0.15	0.22	5.96	6.02	0.37	0.44
ASEAN	0.14	0.23	0.42	0.45	0.49	0.70	0.76	0.87	0.47	0.62
Canada	0.15	0.22	2.94	2.98	-0.01	0.09	2.66	2.77	0.04	0.14
ChinaHK	0.19	0.21	0.84	0.88	0.15	0.26	0.74	0.82	0.25	0.34
EFTA	0.05	0.24	-29.20	-29.21	1.30	1.50	-6.34	-6.22	0.89	1.08
EU27	0.02	0.16	-5.42	-5.47	0.21	0.35	-3.17	-3.11	0.15	0.27
Japan	0.13	0.15	-6.78	-6.73	0.38	0.46	-3.16	-3.10	0.23	0.29
KorTai	-0.06	-0.01	0.20	0.26	0.48	0.61	0.46	0.58	0.45	0.58
Mexico	-0.02	0.06	1.28	1.30	0.17	0.18	1.56	1.63	0.03	0.08
NAf	-0.29	-0.19	2.62	2.54	0.29	0.39	1.87	1.91	0.01	0.12
RoW	-0.18	-0.08	2.22	2.27	0.27	0.42	1.43	1.55	0.01	0.14
Russia	-0.21	-0.16	0.36	0.33	0.09	0.10	0.51	0.47	-0.04	-0.05
SSA	-0.53	-0.48	0.36	0.31	0.26	0.38	0.68	0.61	-0.19	-0.17
SthAm	-0.01	0.05	3.17	3.26	0.30	0.35	3.23	3.37	0.22	0.31
SthAsia	-0.09	-0.03	0.28	0.40	0.20	0.33	0.18	0.32	0.08	0.22
Turkey	0.00	0.07	0.09	0.07	0.07	0.04	0.26	0.27	0.02	0.03
US	-0.02	0.02	-2.28	-2.25	0.09	0.13	0.09	0.15	0.05	0.10

4- Detailed impact on sectoral outputs

Beyond the macroeconomic approach, it is worth examining the detailed impacts on sectors and regions.

In Table 5, we accordingly examine the changes in exports of the different regions in the different sectors, corresponding to the "mercantilist" approach eventually adopted by negotiators.

In agriculture, the major changes in relative terms occur in the Dairy sector. Australia and New Zealand increase their exports by half, while the EU reduces its exports by a fourth. It should be kept in mind however that international trade in Dairy products is rather limited; hence these percentages

apply to limited amounts. It is particularly important to stress this when it comes to percentages applying to tiny values, such as Japan for instance. More significantly, swings are recorded for Meat. Here the regions that reduce their exports are the EU, Russia and EFTA. These reductions are limited however. Accordingly, the huge increases in exports simulated for certain countries such as New Zealand and Australia, for instance, are associated with large increases in imports at the world level. Indeed, in addition to market shares shifts, we also have a large increase in world imports: figures for imports (not reported here) confirm this: Japanese imports increase by 73 percent, EU imports by 18 percent, Canadian imports by 17 percent, US imports by 9 percent. Cereal seeds are the third most affected sector: we obtain an 11 percent cut in EU exports, a 7 percent cut in US exports, leaving room for new exporters.

Outside agriculture, Textile and garments is a sector where market positions will be largely affected. Canada, Mexico, but also Sub Saharan Africa will face reductions in their exports, up to 20 percent in the latter case, while Asia will continue to progress, with a 22 percent increase in the long run for China and even a 24 percent increase for Korea and Taiwan. Turkey will be negatively affected by this new competition. The next most affected sector is automobile: Asia will manage to increase a lot its exports, noticeably Japan and Korea.

In Table 6, we take into account the combined impacts of changes in exports, imports and in the demand for every sector. The changes in production are deduced from these three components (we leave aside in our comments, EFTA where changes are magnified by the small economic sizes of the countries and their initial protection). Not surprisingly, Australia and New Zealand increase their output in Dairy by 22 percent and in Meat by 27 percent. On the contrary their textile industry shrinks (-17 percent). Other two-digit changes are observed for Canada (output gains in Meat, losses in Textile), in Japan (output gains in automobile, losses in Meat), in Korea and Taiwan (gains in Textile), in Mexico (losses in Textile), and in Sub-Saharan Africa (gains in Dairy). Elsewhere, production changes are smoother: for instance, the EU hardly records losses larger than 5 percent in individual agricultural sectors, while the only sizeable loss for the US is in Textile (-9 percent).

Table 5: Percent change in exports in the long run, by sector and region (2025, NAMA + Agric + Services)

Sector	ANZ	ASEAN	Canada	ChinaHK	EFTA	EU27	Japan	KorTai	Mexico	NAf	RoW	Russia	SSA	SthAm	SthAsia	Turkey	US
AnimProd	-3.8	2.4	2.3	0.5	32.0	2.8	6.2	0.5	7.9	-3.3	-3.8	-1.4	-1.7	-2.0	-1.4	-3.5	1.1
BusServ	3.4	3.9	7.1	4.0	7.5	6.8	3.1	3.2	5.6	9.1	5.3	5.9	5.5	3.6	3.7	6.3	6.3
CereSeeds	-1.4	8.7	5.1	10.2	15.2	-10.6	24.1	11.2	1.5	35.0	2.0	1.8	1.3	-0.1	9.3	24.7	-6.6
Chemicals	-1.7	2.7	-0.0	2.8	2.0	0.5	1.8	6.6	1.9	3.3	-0.7	-2.8	-2.6	-1.9	1.5	2.5	4.2
Communic	-0.3	-0.0	2.6	0.4	2.3	2.3	-0.5	-0.5	3.1	4.7	1.2	1.3	0.7	0.2	1.1	2.2	2.7
Crops	7.5	11.3	6.3	-0.8	22.3	-7.8	20.0	13.9	17.1	2.4	11.5	5.4	3.8	13.9	7.1	3.1	-0.8
Dairy	50.0	13.9	-62.8	16.9	-36.6	-25.8	99.8	72.6	86.2	48.6	-0.1	-4.1	20.0	9.9	11.2	98.2	4.7
ElectManuf	-1.9	0.4	3.3	0.6	2.5	1.1	-0.1	-2.7	2.6	4.7	-0.3	-1.5	-2.4	-1.6	0.9	1.2	3.2
Fin_Ins	1.0	1.3	4.3	1.5	4.5	4.0	0.7	0.3	5.1	5.9	2.4	2.9	2.2	1.5	2.8	3.7	4.0
Fishing	-0.5	1.3	0.4	3.1	2.2	0.7	5.2	2.6	2.7	1.7	0.6	-2.0	0.1	-0.1	4.7	0.9	2.1
Food	8.2	4.3	3.6	6.2	7.7	1.7	5.4	4.9	0.0	0.9	0.1	-1.8	-2.8	2.8	3.4	1.9	7.5
Forestry	-0.4	-0.3	1.0	-1.1	0.9	1.6	3.7	-0.2	1.3	7.3	-0.4	-0.6	-0.8	-2.2	-0.3	2.1	3.2
Machinery	-5.0	1.5	1.7	-0.2	2.5	1.6	-1.1	0.5	2.6	6.2	-1.1	-1.9	-2.9	-3.5	0.7	2.9	2.4
MeatFats	75.9	-2.1	38.0	20.0	-9.6	-8.4	6.2	17.4	57.7	153.7	-3.7	-8.6	8.2	18.7	9.4	29.8	28.4
Metal	-3.6	0.7	1.8	1.4	1.2	0.9	1.1	1.3	3.7	4.7	-0.2	-1.9	-2.0	-3.2	2.2	5.2	2.4
MotorVeh	-6.5	5.9	-4.0	-2.6	-1.7	-1.1	18.3	14.5	1.2	4.2	1.4	-2.3	-5.6	1.0	6.7	1.3	2.0
OthSer	-1.4	1.8	5.1	3.5	3.8	4.8	-2.7	-4.1	5.3	4.5	2.8	0.9	-2.1	1.0	-0.6	3.9	1.7
Paper	-0.9	1.8	1.4	0.9	-1.1	0.6	-0.3	2.1	2.2	3.4	0.4	-0.8	-1.1	-0.8	1.9	3.3	1.7
Primary	0.7	0.1	0.8	4.8	0.7	2.4	5.3	2.9	2.0	2.7	-0.1	-0.6	-0.6	-1.2	3.0	4.1	3.7
Textile	-9.3	5.7	-15.6	22.6	2.3	1.6	6.3	24.4	-24.0	-8.0	-4.0	-13.2	-20.8	-4.4	3.5	-8.4	1.9
TrspEqNec	-5.1	0.8	3.7	0.9	0.8	2.0	0.2	-1.6	4.7	8.2	0.1	-1.7	-4.5	-5.3	3.7	2.3	1.0
TrT	1.4	2.4	5.2	2.0	4.6	4.7	0.9	1.7	6.2	7.0	3.2	3.2	2.7	1.8	3.1	4.2	4.6
VegFruits	-1.2	2.7	2.2	11.7	-96.3	-0.5	20.6	4.1	2.0	-4.6	5.7	-1.6	-4.6	10.8	0.7	-2.4	-0.8

Table 6: Percent change in production in the long run, by sector and region (2025, NAMA + Agric + Services)

Sector	ANZ	ASEAN	Canada	ChinaHK	EFTA	EU27	Japan	KorTai	Mexico	NAf	RoW	Russia	SSA	SthAm	SthAsia	Turkey	US
AnimProd	-1.3	-0.7	5.7	0.1	-40.7	-2.2	-15.0	-0.2	0.9	0.0	-0.7	0.2	-0.1	4.6	0.0	-1.1	1.1
BusServ	-0.3	-0.2	0.0	-0.2	0.5	0.4	-0.4	-0.6	-2.1	0.8	0.2	0.9	1.1	-0.1	-1.6	-0.2	-0.1
CereSeeds	-0.0	0.3	5.1	1.0	-7.0	-2.9	-2.7	0.9	2.4	3.5	1.0	0.8	0.6	2.3	0.1	1.0	-3.4
Chemicals	-2.2	0.7	-0.4	-0.7	1.7	-0.0	0.3	2.6	0.2	-0.9	-0.6	-1.4	-1.4	-1.6	0.4	0.3	0.6
Communic	-0.1	-0.3	-0.0	-0.2	0.3	0.1	-0.2	-0.1	-0.0	0.4	0.1	0.0	-0.1	0.0	-0.1	-0.1	0.0
Crops	2.7	0.9	2.6	3.9	-9.7	-3.6	-6.5	1.4	1.0	1.0	4.0	0.6	1.2	4.7	0.4	0.1	-2.3
Dairy	21.8	6.3	-3.0	3.5	-7.2	-5.1	-1.0	0.6	1.4	9.9	2.1	1.4	14.4	0.9	0.2	1.1	1.0
ElectManuf	-1.3	0.3	1.7	0.1	1.5	0.5	0.2	-2.5	0.4	0.2	-0.3	-0.2	-1.1	-1.3	0.5	0.7	1.8
Fin_Ins	0.1	-0.3	-0.0	-0.2	1.0	0.2	-0.3	-0.2	0.3	-0.1	-0.3	-0.1	-0.1	-0.2	-0.2	-0.2	-0.0
Fishing	0.1	0.0	0.2	-0.0	0.3	-0.0	-0.4	-0.1	0.1	-0.0	0.0	-0.0	0.0	0.2	0.0	0.0	0.2
Food	2.1	0.6	0.6	0.0	-2.6	0.0	-1.4	-0.5	-0.1	-0.3	-0.3	-0.3	-0.6	0.9	0.2	0.1	0.3
Forestry	-1.0	-0.8	0.6	-0.8	-0.2	0.6	-0.9	-0.9	-0.9	-2.6	-0.5	-0.5	-0.4	-1.0	0.0	0.8	0.4
Machinery	-4.2	0.9	1.2	-1.2	2.2	1.0	-0.8	-0.4	1.5	2.6	-0.9	-1.3	-2.1	-2.3	0.1	1.5	0.6
MeatFats	26.8	-2.5	10.9	0.6	-59.7	-5.0	-24.9	-1.7	3.4	8.9	-0.2	1.2	1.3	8.5	0.8	-1.3	2.2
Metal	-3.1	-0.2	0.5	-1.0	0.9	0.3	0.6	-0.0	0.9	0.1	-0.3	-1.4	-1.5	-2.2	0.7	3.3	0.6
MotorVeh	-9.3	0.3	-4.1	-2.9	-0.2	-1.5	10.5	3.1	0.5	-2.5	-0.3	-0.6	-4.0	-2.6	1.1	0.9	-0.3
OthSer	0.0	0.1	-0.0	-0.1	0.6	-0.0	-0.0	0.1	0.1	0.3	0.4	0.2	0.6	0.3	0.2	0.0	-0.0
Paper	-0.3	-0.4	0.7	-0.3	-0.9	0.1	-0.5	-0.1	0.2	-1.6	-0.2	-0.4	-0.9	-0.4	-0.0	0.4	0.2
Primary	-0.3	-0.4	0.3	-0.9	0.6	0.9	-0.2	-0.2	0.8	0.7	-0.1	-0.2	-0.3	-0.8	-0.3	0.9	0.4
Textile	-16.7	2.4	-15.7	8.9	0.7	-0.9	-6.1	14.3	-10.8	-9.9	-4.4	-4.2	-9.5	-3.0	-0.7	-6.6	-9.1
TrspEqNec	-3.1	-0.0	2.1	-0.9	0.6	1.5	-0.4	-1.9	0.8	3.0	-0.1	-0.6	-3.3	-2.9	-0.4	1.7	0.3
TrT	0.2	0.1	0.3	-0.4	0.2	0.7	-0.5	-1.0	1.0	1.8	0.2	0.1	0.3	-0.0	-0.2	0.6	0.0
VegFruits	0.4	0.1	1.9	0.0	-24.9	-1.0	-0.5	-0.7	1.0	-0.3	0.4	-0.0	-0.6	3.8	0.1	-0.4	-0.9

5- Conclusion

Two draft modalities are on the table of the DDA negotiations. A detailed representation of their actual impact in terms of liberalisation of market access and reduction in farm support is proposed, taking into account the various formulas, exceptions and flexibilities contained in these two documents. We also add an hypothetical reduction of trade barriers in services, in absence of more detailed information on the possible outcome of the negotiations on these issues. This shock to the world economy is introduced in MIRAGE, a dynamic CGE model, and we compare the trajectory of the world economy until 2025 to a dynamic baseline in absence of final agreement in the Round. Results are detailed for 23 sectors and 17 regions of the world economy.

Given the political economy of the negotiations, various exceptions and flexibilities limit the aggressiveness of the Swiss formula for manufacturing and of the tiered formula in agriculture. A series of countries are also exempt from any liberalisation. Notwithstanding such constraints, the final mix of rules and exemptions submitted by the chair persons would lead to a non negligible impact on the world economy, and moreover to a positive outcome in terms of GDP for all its regions, if not a systematic welfare gain.

Our simulations point to a USD 43 bn gain when agriculture and industry are liberalised. A moderate liberalisation in services would add another USD 30 bn increase in world GDP (dollars of 2008) in the long run. These gains would add to the world GDP, every year in the medium term, as compared with a situation without agreement. Half of these gains would be reaped after 5 years of implementation only.

Considering these results, two warnings must be made. Firstly, the final outcome of the negotiation will include additional items, such as trade facilitation, not modelled here. We have shown in a previous exercise that related gains are large enough to overcome the slight welfare losses identified here for Sub-Saharan Africa. Secondly, the cost of *not* signing a final agreement is anything but the negative of the gains computed here. The loss of credibility of the WTO would put at risk the multilateral system, detrimental firstly to countries having a too limited economic size to impose their views to their economic partners. Also, a move towards regionalism and bilateralism would be unavoidable.

Appendix 1: regional and sectoral classification

The world economy is disaggregated in 17 regions and 23 sectors:

	Region	Composition
1	EU27	
2	USA	
3	Canada	
4	Japan	
5	ANZCERTA	Australia New Zealand
6	EFTA	Switzerland Norway Iceland Liechtenstein
7	Korea & Taiwan	
8	Mexico	
9	South America	
10	ASEAN	
11	China & Hong-Kong	
12	South Asia	Bangladesh India Pakistan Sri Lanka Afghanistan Bhutan Maldives Nepal
13	Russia	
14	Turkey	
15	North Africa	
16	Sub-Saharan Africa	Except South Africa
17	Rest of World	Central America and Caribbean Rest of Europe Rest of Former Soviet Union Middle East South Africa Rest of Oceania Rest of (East) Asia

	Sector	Description
1	Cereals	
2	Crops	Vegetal agriculture other than cereals
3	Animal agriculture	
4	Fishing	
5	Food industry	Food, beverage and tobacco
6	Forestry	
7	Energy primary sources	Coal, oil, gas
8	Minerals	
9	Metals	
10	Clothing and leather	
11	Chemistry	
12	Vehicles	All transportation equipment
13	Electronic	
14	Equipment	
15	Other manufacture	
16	Other energy	Petroleum products, gas, electricity
17	Water distribution	
18	Construction	
19	Trade	
20	Transport	
21	Communication	
22	Finance	
23	Business services	
24	Recreation and other services	
25	Public administration, health, education, defence	
26	Dwellings	

<div align="center">**Appendix 2**</div>

NAMA

Industrialised countries

Binding of unbound HS6 lines

General scheme: at the HS6 level
- if MFN (2001) ≤ 0.04, then Reference tariff = MFN (2001) + 0.3
- if MFN (2001) > 0.04, then Reference tariff = Max(MFN (2001) + 0.2, 0.04+0.3)

Swiss formula coefficient 8
Linear implementation in 5 years

Developing countries, except LDCs

Binding of unbound HS6 lines

General scheme: at the HS6 level
- if MFN (2001) ≤ 0.11, then Reference tariff = MFN (2001) + 0.3
- if MFN (2001) > 0.11, then Reference tariff = Max(MFN (2001) + 0.2, 0.11+0.3)

<u>This scheme determines initial bound tariffs for unbound lines, on which the formula is then applied</u>. However, as small and vulnerable economies (SVE) are exempt from this scheme and can freely determine their initial bound, it can be assumed that they will be able to escape from any actual cut of applied tariffs for these newly consolidated lines.

Swiss formula, coefficient 22
Linear implementation in 8 years

Flexibility

10% of the number of NAMA tariff lines. For these lines, the actual cut is half the cut that would come out of the Swiss formula. They should represent less than 10% of the total value of NAMA trade. Countries are given the option to select only 5% of tariff lines up to 5% of trade value, and apply no cut at all to these lines. However we assume that they don't use this possibility. The value of trade concerned by the flexibilities is to be computed based on 1999-2001 data or the most recent available data, up to the Members' decision.

Selection method for special products?

> We select the lines for which the product of the tariff cut on the applied MFN tariff obtained with the Swiss formula, times the total imports, would be the largest. The selection stops as soon as the 10% of trade threshold is reached. The value of trade is computed on the basis of 2002-2004 trade.

Exceptions to the standard scheme

Small and vulnerable economies (SVE)

- Can opt out of the Swiss formula, and choose instead:
- If the average of bound tariffs in 2001 ≥ 0.5 then average bound tariff reduced by 40%.
- If the average of bound tariffs in 2001 in [0.3, 0.5[, then average final bound tariff = 0.23 or average bound tariff reduced by 30%, whichever is the lesser reduction.

- If the average of bound tariffs in 2001 < 0.3, then average bound tariff = 0.17 (or unchanged if it was already below that level). Furthermore, 90% of NAMA tariffs are cut by at least 7.5%.

How we implement this?

> The alternative scheme offered to SVE appears as much less demanding than the Swiss formula if one considers as a criterion the effect on the average of bound tariffs. The only exception may be for countries characterised by an initial average bound tariff lower than 2 percent. Therefore we assume that all SVE apply the alternative scheme. Tariffs are cut using a unique reduction factor applied to the original tariff structure. In the third case, the 7.5% reduction is first applied to all but the 7.5% highest bound tariffs. If it is not enough to reach the 0.17 target, then a uniform tariff reduction is applied to the original structure instead.

New WTO members

List 1: Albania, Saudi Arabia, Armenia, Republic of Macedonia, Moldavia, Kyrgyzstan, Tonga, Vietnam
No liberalisation

List 2: China, Croatia, Equator, Georgia, Jordan, Mongolia, Oman, Panama, Taiwan
Benefit from a 2 year delay to start the implementation.

Exception to the standard scheme:

Countries for which consolidated lines cover less than 35% of non agricultural products (paragraph 6 annex b) can consolidate less than 100% of their lines, with a proportion depending on the initial proportion of tariff lines already consolidated.

Initial proportion	Final proportion
< 12% (List 1 below)	70%
12% - 25% (List 2 below)	75%
25% - 35% (None)	80%

List 1 (< 12%): Cameroon; Sri Lanka; Congo; Ghana; Kenya; Mauritius; Nigeria; Zimbabwe.
List 2 (12% - 25%): Cuba; Cote d'Ivoire; Suriname.

Average final bound tariffs = 0.285

How we implement this?

> The NAMA lines to be consolidated are chosen among those for which initial MFN tariffs are the lowest. Based on such assumption, the average of applied tariffs will always be below 0.285, so that consolidation will have no impact on applied tariffs.

Agricultural policy

Export subsidies

They are removed by 2013, following a linear implementation

Distorting domestic support

US: -60% of current AMS commitments
EU: -75% of current AMS commitments
In 5 years

Agricultural market access

We assume no further binding for tariffs that would not be bound. All formula apply only to lines that are already bound.

Industrialised countries

Bound tariff in]0, 0.2]	-50%
Bound tariff in]0.2, 0.5]	-57%
Bound tariff in]0.5, 0.75]	-64%
Bound tariff > 0.75	-70%

Sensitive products

5% of the total number of agricultural lines.
The agreement proposes a smaller tariff cut and/or the opening or enlargement of a TRQ (depending on the reduction of the cut that is chosen).

What do we propose?

> We implement a tariff cut equal to 2/3 of what it would have been for a standard product. We choose them among those for which product of the cut on the MFN tariff times total imports would be highest. We don't simulate any quota increase.

Minimal average cut

The average cut on bound tariffs has to be a minimum of 54% (after taking account of sensitive products). This average cut has to be understood as the simple average of percentage cuts, which differs from the cut of the simple average of consolidated tariffs. If the minimum has not been reached, a homogenous reduction factor is further applied to the final structure.

Implementation period

Linear implementation in 5 years.

Developing countries, except LDCs

Bound tariff in]0, 0.3]	2/3 of the cuts above
Bound tariff in]0.3, 0.8]	
Bound tariff in]0.8, 1.3]	
Bound tariff > 1.3	

Special products

5% of the total number of tariff lines: exempt from any cut
11% of the total number of tariff lines: -15%

How are they chosen?

> Many criteria are accepted for a product to qualify as special, according to Appendix F. Furthermore, it is likely that products corresponding to this criterion are highly protected. Therefore we can assume that there is enough flexibility in this scheme to allow developing countries to choose special products among those for which product of the cut on the MFN tariff times total imports would be highest.

Sensitive products

2/30 of the total number of agricultural lines.

The agreement proposes a smaller tariff cut associated with the opening or enlargement of a TRQ (depending on the reduction of the cut that is chosen).

What do we propose?

We assume that developing countries will not use this option and will rely only on special products, to avoid the opening of any TRQ.

Maximal average cut

The average cut on bound tariffs has to be a maximum of 36% after taking account of all flexibilities. If the reduction obtained after applying the tiered formula is higher, then all cut ratios will be reduced so as to obtain exactly 36% on average.

Implementation period

Linear implementation in 8 years.

Exception 1 to the standard scheme

Small and vulnerable economies
After the formula is applied, they add 0.1 to the final Bound tariff, without exceeding the initial level.

Exception 2 to the standard scheme

New WTO members

List 1 (see NAMA)
No liberalisation. For agriculture, Georgia belongs to the list of countries exempt from any cut.

List 2 (see NAMA)
Benefit from a 2 year delay to start the implementation. Furthermore they moderate their cut by 10 *ad valorem* percentage points in the top two bands, and by 5 percentage points in the bottom bands.

97% initiative

Industrialised countries will grant a duty free quota free access to LDCs for all but 3% of their tariff lines.

These tariff lines will be chosen as those corresponding to the highest in terms of tariff revenues from these countries.

Services

Negotiations of services liberalisation are made difficult due to the absence of a consensus on a method to quantify the degree of protection associated to regulatory measures. However, we can rely on some estimate to measure what would be the impact of improvements on this issue.

We propose to simulate a reduction of protection in the following sectors for all countries except LDCs:

Construction	-10%
Trade and transportation	-10%
Communication	-10%
Financial services and Insurance	-10%
Other business services	-10%
Recreation and other services	-10%
Distribution, environmental services, energy	0
Public administration / Defence / Health / Education	0
Dwellings	0