**On-line Appendix**

**Y. Decreux and L. Fontagne, What next for multilateral trade talks? Quantifying the role of negotiation modalities**

**Section A: Description of the scenarios concerning trade in goods**

Scenarios are inspired by the status of the DDA negotiations before Bali and aim to reproduce the complexity of the design of negotiations characterized by too-complex modalities.

**A.1. Modalities for agricultural tariffs**

The three pillars for agricultural products are protection at the border (tariffs), internal support and export subsidies. Export subsidies are phased out. In relation to internal support, the green box is not affected by reductions; they apply to measures in the orange box, but the difficulty is that caps are defined in nominal terms. Accordingly, inflation (and economic growth) will make these commitments tighter and this must be taken into account. With 2% inflation, and according to our baseline economic growth, the rate of support will have to be reduced by 40% in Europe by 2025 to respect the current commitments regarding domestic support. We apply this target to the EU-27, the European Free Trade Agreement (EFTA) countries and the USA.

Tariff rate quotas (TRQs) are important. Reduced tariffs apply to many lines within quotas (inside tariff), with the outside tariff providing greater protection. This is related to the selection of exceptions. When agriculture tariff lines are classed as sensitive, an additional tariff quota must be opened. Industrial countries have the possibility of limiting the tariff cut to two-thirds of what it would be based on the simple use of tiered formulas, and of compensating for this by a small quota. Alternatively, they can choose to halve the cut and open a larger quota or keep only one third of the cut and open a large quota. Modelling the expansion of quotas should be done at the HS6-level, but this is very demanding in terms of computing resources.[[1]](#footnote-1) In order to avoid explicitly modelling quotas, we use the outside tariff under the assumption that the expanded quota will quickly be filled as a result of growth in world demand. Given the time horizon considered in our exercise, for most sectors this will be the case. We assume also that countries choose the last option (a one-third cut).

Tariffs are reduced in bands, using two different schemes depending on the development level of importers (Table A-1). The higher the initial bound tariff, the larger will be the cut. Importantly, since agricultural tariffs are often specific (in dollars per unit, not percentage of the value), AVEs are defined and cut. We cut the AVEs present in MAcMap. We rely on the HS6 tariffs. As exceptions are defined at the tariff line level, it allows more efficient use of flexibilities. This affects the proposals, which allow an additional 2% of HS6 products to be classed as sensitive for countries where protection is defined at the HS6 level. This is in line with previous estimations based on a list of selected products in the EU from the 2,200 Combined Nomenclature 8-digit (CN8) agricultural codes (out of 677 HS6 positions). We add this 2% to all countries that were conceded sensitive products in agriculture.

**Table A-1: Reduction rates for agricultural tariffs in our central scenario**

|  |  |
| --- | --- |
| **Developed countries** | **Developing countries** |
| Initial bound tariff | Reduction rate | Initial bound tariff | Reduction rate |
| AVE ≤ 20% | 50% | AVE ≤ 30% | ⅔ × 50% |
| 20% < AVE ≤ 50% | 57% | 30% < AVE ≤ 80% | ⅔ × 57% |
| 50% < AVE ≤ 75% | 64% | 80% < AVE ≤ 130% | ⅔ × 64% |
| AVE > 75% | 70% | AVE > 130% | ⅔ × 70% |

We introduce exceptions and flexibilities,. The first exception concerns **tariffs on tropical products:** they are reduced more severely in developed importing countries. Second, **maximum tariffs** are defined. No bound tariff can be above 100% after implementation of the formula, with the exception of the sensitive tariffs defined below.

**Tariff escalation** is a situation where tariffs increase down the value added chain, that is, when transformed products are afforded more protection than raw materials. This tariff escalation is reduced in our scenarios. In practice, for transformed products, the tariff cut must refer to the band that is immediately above (e.g. 64% if a 57% cut is normally due) if there is a difference in the bound tariffs between the raw and the transformed product larger than 5 percentage points. In the higher band, a 6 pp additional reduction is applied. However, after this additional reduction, the tariff on the transformed product has a lower bound which is the tariff of the raw product. For computing convenience, we make the assumption that these mechanisms are applied before the choice of sensitive products. The cuts in the model for the few processed product lines classed as sensitive may be larger than negotiators can agree about.

**Sensitive products** are a fundamental element of flexibility. Countries can choose tariff lines that will be less subject to liberalisation provided that multilateral tariff quotas at a limited tariff rate are open (the size of the quota increase is an increasing function of the degree of flexibility). The tariff reduction can be reduced by one-third, one half or two-thirds. We do not model quotas explicitly due to numerical constraints. We make the assumption that countries choose the highest level of flexibility and reduce their tariffs by one-third of the “normal” reduction for sensitive products. Developed countries are conceded 4% of sensitive products. Since this mechanism is more favourable to countries defining their sensitive products at the tariff line level (they can target products better), countries that define them at the HS6 level are conceded 2% more sensitive products. Because we work at the HS6 level, we adopt this assumption and select 6% sensitive HS6 lines for developed countries. Developing countries are conceded one third more sensitive products (see special products below regarding our assumption).

The more protected countries (defined as countries where more than 30% of tariffs are in the upper bound) are conceded 2% additional sensitive lines. We apply this rule (Table A-2). In our database, only EFTA is affected (Iceland, Switzerland and Norway). Canada and Japan asked for more lines in exchange of more generous tariff quotas. We consider that the proposal made by Canada during the DDA negotiation is fully implemented, and that half of the Japanese request is accepted. We select the sensitive products using the method proposed by Jean, Laborde and Martin (2008): we chose the lines where the product of the value of imports and the difference between the AVE after normal and sensitive treatment is largest.

A **minimal cut** is imposed on tariffs: each country must have a simple average cut of 54%. In practice this threshold is not binding for developed countries when the other rules are enforced. A **maximal cut** is also considered: each developing country has an upper cap on its liberalisation in agriculture: the average cut cannot be larger than 36% (30% for Venezuela) after implementation of the special products (see below). If the tariff cut is too large, it is reduced proportionally to approach the objective.

**Small and vulnerable economies**: the tariff cut can be moderated by 10 percentage points. Congo, Cote d’Ivoire and Nigeria are not on the official list of affected countries, but we adopt the consensus view that they would benefit from this provision.

**Recently acceded members**: these countries have already reduced their tariffs to comply with accession conditions. This applies particularly to China. Such concession to China would probably no longer be accepted would a Round of multilateral negotiations be concluded. The effort for recently acceded members is reduced. They can moderate their cuts by 10 percentage points. Also, tariff lines bound below 10% are exempt from tariff reduction. These two provisions are cumulative. **Very recently acceded members**, small size recently acceded members and countries in transition will not reduce their agricultural tariffs. Georgia becomes part of this list for agricultural products only (it is a recently acceded member for the NAMA).

**Special products:** this flexibility is open to developing countries only. They do not open quotas in compensation. Accordingly, we make the assumption that developing countries do not rely on sensitive products. Developing countries can have 5% of their tariff lines excluded from any tariff cut and 7% of tariff lines (8% for recently acceded members) can have a reduced cut. We model this at the HS6 level thus adding 2% of lines to apply the principle referred to above. On average, the tariff rate reduction for special products must be 11% (10% for newly acceded members): for reasons of simplification we apply this rate to every special product except the 7% of HS6 positions with a zero tariff rate.

**Maximal cut for small and vulnerable economies:** after application of special products, the average tariff cut cannot be larger than 24%. We reduce all tariff cuts proportionally if one economy does not respect this cap.

**Surinam:** This member of the Caribbean Community (CARICOM) has a more open tariff structure than its partners in the agreement. In order to not destabilise this agreement, it is exempted from tariff reductions.

**Turkey:** there is no special treatment for Turkey in principle. However, we have to consider that tariffs applied by Turkey will adjust to EU tariffs for manufactured agro-food products, through application of the customs union.

**Least Developed Countries:** These countries may be asked to bind, but not to reduce their tariffs. As we work with bound tariffs, this has no implications for our exercise.

**Table A-2: Percentage of sensitive products for developed countries in agriculture in our central scenario**

|  |  |
| --- | --- |
| Developed countries | Number of sensitive products (HS6 positions) |
| EU, USA, Australia, New-Zealand | 6% = 41 HS6 products  |
| EFTA, Canada | 8% = 54 HS6 products  |
| Japan | 9% = 61 HS6 products  |

**A.2. Modalities for the NAMA negotiations**

All NAMA products are affected by reductions of **bound tariffs**. Unbound tariff lines must be bound using the applied tariff and adding 25 percentage points. Countries with a very small proportion of bound tariffs are conceded special treatment.

Developed countries apply the **Swiss formula** with a coefficient of 8%; **developing countries** also apply the Swiss formula, but there is some room for manoeuvre. Developing countries are conceded sensitive products for a certain percentage of the lines, for which the tariff cut may be halved or zero. Developing countries can choose between 20% or 22% for their Swiss formula.

Within the 20% Swiss option, there are two possibilities:

* Lower than formula cuts are authorized for up to 14% of tariff lines provided that the cuts are no less than half the formula cuts. These tariff lines must not exceed 16 percent of the total value of a Member's non-agricultural imports. For countries choosing this possibility (Argentina, Brazil, Columbia, Mexico, South-Africa) we apply half the cut.
* Formula cuts can be avoided for up to 6.5% of NAMA tariff lines provided they do not exceed 7.5% of the total value of imports. We apply full exemption of the tariff cut, within the mentioned limits (6.5% and 7.5%), for countries choosing this possibility (China, Egypt, Indonesian, Morocco, Malaysia, Philippines, Thailand).

Within the 22% Swiss option, there are two possibilities:

* Lower than formula cuts for up to 10% of tariff lines provided that that these cuts are no less than half the formula cuts. These tariff lines must not exceed 10% of the total value of a Member's non-agricultural imports.
* No cut for up to 5% of NAMA tariff lines provided they do not exceed 5% of the total value of imports. We apply full exemption of the tariff cut, within the mentioned limits (5% and 5%), for India only.

**South-Africa** receives special treatment. This member of the South-African Customs Union (SACU) has a more open tariff structure than its partners in the regional agreement. In order not to destabilise this agreement, South-Africa is conceded a 25% coefficient in the tariff formula. The rest is unchanged.

Sensitive products have to be selected. Compared to agricultural products we chose a different method to define **sensitive products for the NAMA**. Weighting the difference in tariffs by imports would lead to saturation in the upper cap in terms of trade affected (10%), without using the full range of tariff lines. Hence, we do not weight these differences.

An **anti-concentration clause** is introduced. Developing countries must apply the general formula to at least 9% of the tariff lines and 20% of their imports in each of the HS2 chapters.

Members of the Mercado Comun del Sur **(MERCOSUR)** regional agreement will all apply the same tariff cuts, even though Uruguay and Paraguay could be considered Small and Vulnerable Economies. For simplicity, we select sensitive products on the basis of Brazilian tariffs (tariff structures do not differ widely in the region) and apply them to each national tariff structure separately.

A recently acceded member, **Oman,** is conceded the possibility of not reducing its tariffs below 5%. In exchange, Oman must apply the Swiss formula with a coefficient of 22%, with 10% of sensitive products limited to products with a tariff of 5%.

**Small and vulnerable economies** will not apply the Swiss formula. They must simply cap the average of their bound tariffs below a cap depending on the initial average of their bound tariffs. If the initial average is below 20%, these countries reduce the tariff on 95% of their tariff lines, by 5%, or apply an average 4.75% reduction to their bound tariffs. In practice, this means that Georgia is the only country that has to reduce its tariffs, and it is below the 20% threshold. However, Georgia country has a very small proportion of bound tariffs and must apply the previously mentioned clause (applied plus 25 percentage points). For simplicity, we reduce all bound tariffs for this country by 5%, and keep 5% of sensitive lines.

Finally, we consider that tariffs applied by **Turkey** will adjust to the EU ones on all manufactured goods except steel, through application of the customs union.

**Sectoral initiatives** are also accounted for. For chemical products tariffs are set to 0 in 5 years in developed countries. There is still a SDT[[2]](#footnote-2) as developing member countries can bind 4% of national chemical tariff lines at 4% and are conceded a 10 years period for phasing out their tariffs. For machinery products, tariffs are set to 0 in 4 years in developed countries. Developing countries can bind up to 4% of national industrial tariff lines at 5% and are conceded 7 years to phase out tariffs. For electronic products tariffs are reduced to 0 in 3 years by developed countries, developing members can bind up to 5% of national electronics tariff lines at 5%, and must phase out their tariffs within 5 years. For environmental goods, the published list of goods for which tariffs could be set to zero is used.

**Section B: Modelling the sectoral proposals**

There are two possible approaches. One would is to define sectors where sensitive products cannot be chosen. The other is to push forward the liberalisation in certain pre-defined sectors, for example with a zero tariff initiative. In both approaches, products concerned by sectorals cannot be selected as sensitive, so that sensitive products will accrue to other industries. As a consequence, even though sectorals increase overall liberalisation, they cannot be strictly speaking considered as only additional cuts in some sectors: tariffs in other sectors will be cut slightly less. This has to be kept in mind when analysing detailed results as compared to the benchmark simulation. Sectors of interests are chosen based on the lists circulated during the DDA negotiations.

We adopt the following strategy for the three categories of products concerned by the sectorals.

Chemical products are defined as NAMA products in HS chapters 28 to 39. The reference agreement is the Chemical Tariff Harmonisation Agreement (CTHA), which provides for a reduction in chemicals tariffs to 0%, 5.5% or 6.5% for these two Chapters. The products include inorganic and organic chemicals, fertilisers and plant protection chemicals, soaps and cosmetics, other chemicals and plastics.[[3]](#footnote-3) Tariffs are set to 0 in 5 years in developed countries. Developing members can bind 4% of national chemical tariff lines at 4%, provided that they do not exceed 4% of the total value of the Member's chemical products imports; this result is to be achieved in 10 years.

Next is machinery and then electronics. In these two sectors, the more ambitious option is to set the bound tariffs to zero. For machinery defined as agricultural equipment, construction equipment, power generating machinery and equipment and pumps, valves, compressors and filtration equipment tariffs are set to 0 in 4 years in developed countries. Developing countries can bind up to 4% of national industrial tariff lines at 5%, provided that they do not exceed 4% of the total value of the Member's industrial machinery imports; liberalisation is to be achieved in 7 years. For electronics tariffs are reduced to 0 in 3 years by developed countries, while developing members can bind up to 5% of national electronics tariff lines at 5%, provided that they do not exceed 5% of the total value of the Member's electronics imports and should reduce their tariffs in 5 years. This tariff cut concerns all developed countries (including Korea) and the following developing countries: Argentina, Brazil, Chile, Colombia, Peru, Paraguay, Uruguay, Mexico, China, India, Indonesia, Malaysia, Philippines, Taiwan, Thailand.

The simulation on environmental goods assumes a further liberalisation of environmental goods by a group of countries including developed and developing countries except small and vulnerable economies (but including Uruguay and Paraguay) and least developed countries. There is a published list of environmental goods for which tariffs could be set to zero; we assume a phasing out of the corresponding tariffs in one simulation, based on this list.

**Table A-3: Long run change in the volume of GDP:
sectorals and difference with central scenario, US$mn**

|  |  |  |
| --- | --- | --- |
|  | S5 | S5-S3 |
| Argentina | 890 | 1 |
| ASEAN | 15,730 | 2,754 |
| Australia & New Zealand | 1,870 | 154 |
| Brazil | 1,960 | -86 |
| Canada | 1,270 | -35 |
| Caribbean | 270 | 135 |
| China | 42,740 | 6,273 |
| EFTA | 7,820 | 151 |
| European Union | 33,980 | 3,245 |
| India | 4,610 | -2,321 |
| Japan | 15,680 | 1,912 |
| Korea | 5,410 | 896 |
| Mexico | 1,640 | 1,935 |
| North Africa | 1,260 | -20 |
| Rest of Africa (excl. South Afr.) | 6,040 | 20 |
| Rest of Mercosur | 930 | 45 |
| Rest of South America | 2,930 | 398 |
| Rest of South Asia | 1,370 | -38 |
| Rest of World | 7,430 | 44 |
| Taiwan | 6,040 | 1,513 |
| USA | 11,110 | 1,626 |
| World | 170,970 | 18,600 |

Note: First column shows changes in the volume of GDP under scenario 5. Second column shows the difference with our central scenario.

Source: Author’s calculation using MIRAGE

**Table A-4: Long run change in the value of exports (S3), percent**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Agriculture | Industry | Services |
| Argentina | 4.86 | -0.47 | 1.11 |
| ASEAN | 4.43 | 3.64 | -2.62 |
| Australia & New Zealand | 13.75 | 0.83 | 0.67 |
| Brazil | 8.75 | 0.72 | 1.15 |
| Canada | 7.62 | -0.59 | 2.52 |
| Caribbean | 6.26 | 1.21 | -0.17 |
| China | 9.63 | 3.03 | -0.28 |
| EFTA | 6.35 | 1.16 | 2.56 |
| European Union | 6.42 | 3.47 | 2.17 |
| India | 4.63 | 2.09 | 0.42 |
| Japan | 7.99 | 4.73 | -2.93 |
| Korea | 7.37 | 4.19 | -0.88 |
| Mexico | 6.36 | 0.77 | 3.20 |
| North Africa | 15.80 | 2.42 | 6.88 |
| Rest of Africa (except South Africa) | 3.81 | 1.88 | 2.63 |
| Rest of Mercosur | 9.63 | 1.37 | 3.47 |
| Rest of South America | 6.19 | 0.77 | -0.33 |
| Rest of South Asia | 4.46 | 2.11 | -0.99 |
| Rest of World | 2.90 | 0.36 | 2.49 |
| Taiwan | 3.69 | 2.75 | -1.54 |
| USA | -1.29 | 3.42 | 1.90 |

Source: Author’s calculation using MIRAGE

**Table A-5: Long run change in the volume of production (S3), percent**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Agriculture | Industry | Services |
| Argentina | 2.91 | -1.31 | 0.13 |
| ASEAN | 0.41 | 1.15 | 0.03 |
| Australia & New Zealand | 6.50 | -1.76 | -0.05 |
| Brazil | 3.48 | -1.18 | -0.03 |
| Canada | 2.55 | -0.71 | -0.00 |
| Caribbean | 0.78 | -0.26 | -0.04 |
| China | 0.07 | 0.41 | 0.18 |
| EFTA | -18.42 | 0.90 | 0.49 |
| European Union | -1.16 | -0.05 | 0.09 |
| India | 0.10 | 0.20 | 0.09 |
| Japan | -4.09 | 1.34 | -0.01 |
| Korea | -0.27 | 0.32 | -0.06 |
| Mexico | 0.56 | -0.38 | -0.06 |
| North Africa | 1.10 | -1.17 | 0.17 |
| Rest of Africa (except South Africa) | 0.29 | -0.02 | 0.48 |
| Rest of Mercosur | 0.79 | -0.41 | 0.22 |
| Rest of South America | 1.71 | -0.59 | 0.15 |
| Rest of South Asia | 0.26 | 0.39 | 0.05 |
| Rest of World | 0.13 | -0.12 | 0.10 |
| Taiwan | -0.10 | 0.78 | 0.14 |
| USA | -0.76 | 0.05 | 0.02 |

 Source: Author’s calculation using MIRAGE

**Table A-6: Regional aggregation**

|  |  |  |
| --- | --- | --- |
|   | **Region** | **Composition** |
| 1 | EU27 |   |
| 2 | USA |   |
| 3 | Canada |   |
| 4 | Japan |   |
| 5 | EFTA | Switzerland  |
|   | Norway  |
|   | Iceland  |
|   | Liechtenstein  |
|   |  |
| 6 | Australia & New Zealand |   |
| 7 | Korea |   |
| 8 | Taiwan |   |
| 9 | China |   |
| 10 | India |   |
| 11 | Rest of South Asia | Bangladesh  |
|   | Pakistan  |
|   | Sri Lanka  |
|   | Afghanistan  |
|   | Bhutan  |
|   | Maldives  |
|   | Nepal  |
| 12 | ASEAN |   |
| 13 | Mexico |   |
| 14 | Brazil |   |
| 15 | Argentina |  |
| 16 | Rest of Mercosur | Paraguay |
|   | Uruguay |
| 17 | Rest of South America | Peru |
|   | Bolivia |
|   | Equator |
|   | Colombia |
|   | Venezuela |
|   | Guyana |
|   | Suriname |
| 18 | Caribbean |  |
| 19 | North Africa | Morocco |
|   | Algeria |
|   | Tunisia |
|   | Libya |
|   | Egypt |
| 20 | Rest of Africa | except South Africa |
| 21 | Rest of World(incl. South Africa) | Rest of Europe |
|   | Former Soviet Union |
|   | Middle East |
|   | Rest of Oceania |

**Table A-7: Sectoral aggregation**



**Table A-8 Long run impact on primary and food products production, percent**



Source: MIRAGE – Authors’ calculations.

Note: Central scenario including agriculture, NAMA, services and trade facilitation

**Table A-9 Long run impact on manufactured products production, percent**



Source: MIRAGE – Authors’ calculations

Note: Central scenario including agriculture, NAMA, services and trade facilitation

**Table A-10 Long run impact on services production, percent**



Source: MIRAGE – Authors’ calculations

Note: Central scenario including agriculture, NAMA, services and trade facilitation

1. See Gouël et al. (2011) for an illustration. [↑](#footnote-ref-1)
2. This tariff cut concerns all developed countries (including Korea) but only a sub-sample of developing/emerging countries: Argentina, Brazil, Chile, Colombia, Peru, Paraguay, Uruguay, Mexico, China, India, Indonesia, Malaysia, Philippines, Taiwan, Thailand. [↑](#footnote-ref-2)
3. The 1995 agreement is plurilateral: Armenia, Australia, Bulgaria, Canada, Chile, Ecuador, EU, Hong Kong, Iceland, Japan, Jordan, Kirgizstan, Republic of Korea, Mongolia, New Zealand , Norway, Oman, Panama, China, Qatar, Singapore, Switzerland, Taiwan, Turkey, United Arab Emirates and the United States. [↑](#footnote-ref-3)