EU & Hong Kong: Technical note on the derivation of the TRQ expansion formula
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MAP - Brief
Monitoring Agri-trade Policy

The derivation of the TRQ expansion formula

1) The Framework Agreement requires that "substantial market access" has to be achieved for every product, including those declared as a "sensitive product". Yet in order to assess what level of TRQ expansion would be needed to compensate for a lower tariff cut for sensitive products, the market mechanisms involved after the tariff cut has been implemented also need to be understood and considered.

2) Effective tariff cuts, even lower tariff cuts, affect the level of protection of a certain product and may generate the need to classify it as sensitive, depending on the impact of the most relevant variable for trade negotiations, that is the level of imports of the product in question.

3) Imports are affected by the drop in the effective border protection for different reasons:

a) because the implied import price plus duty is lower after the cut than before it (own-price effect);

b) because declining tariffs, and therefore prices, of substitute products imply more competition (cross-price effect);

c) because the increasing gap between decreasing production and increasing consumption resulting from lower prices implies more imports.

4) The above factors all generally result in more imports. However, only the implied import price is relevant for the treatment of sensitive products, since it is only the level of tariff cut of the product in question that changes when a product is declared sensitive.

5) Assume the following terminology: tariffs are expressed by AVE, imports by M, P_0 represents the import price before tariff; letters i, f and s denote levels of respective variables for the initial situation, and the situation after the full tariff cut and the lower tariff cut if a product is declared sensitive, respectively. Finally, TRQ stands for tariff rate quota and D expresses changes in the level of the initial parameters.

6) The treatment of sensitive products would result in *substantial market access that would still be lower than that granted by the result of the full tariff cut* if the following holds:

a) $DM_s + DM_{TRQ} < DM_f$, or, equivalently,

b) $D_{TRQ} < DM_f - DM_s$

i.e. the increase in imports through TRQ expansion should be lower than the difference of the change in imports resulting from the two alternative tariff cuts.

7) Since 6b expresses an inequality, it can be rewritten as an equality if:

a) $D_{TRQ} = a \times (DM_f - DM_s)$, where a is a number smaller than 1.

Parameter a reflects the degree of market access that would result from the combined effect of lower tariff cut and TRQ expansion, expressed as a percentage of the market access resulting from the full tariff cut.

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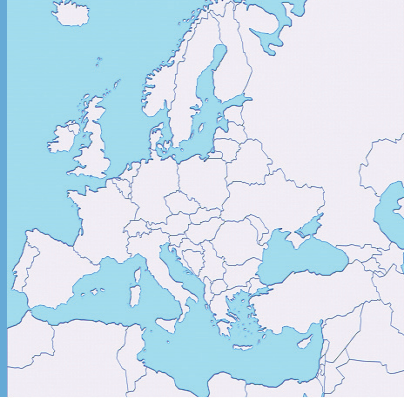

8) The *difference in imports* ($DM_f - DM_s$) for a product assuming the full or the reduced tariff cut *depends on the difference in prices* ($DP_f - DP_s$) resulting from the respective tariff cuts. This relationship is an inverse one; when prices fall, imports would increase and vice versa. However, for simplicity, the following derivation assumes an import demand elasticity of minus one and that expressions are in absolute terms. This yields the following:

a) $DP_f - DP_s = [(P_f - P_i) / P_i] - [(P_s - P_i) / P_i]$.

However,

b) $(P_f - P_i) / P_i = \{[P_o \times (1 + AVE_f)] - [P_o \times (1 + AVE_i)]\} / [P_o \times (1 + AVE_i)]$
$= [P_o \times (AVE_f - AVE_i)] / [P_o \times (1 + AVE_i)]$
$= (AVE_f - AVE_i) / (1 + AVE_i) = DAVE_f / (1 + AVE_i)$, where $DAVE_f$ is the change in AVE in the full tariff cut.

Similarly,

c) $(P_s - P_i) / P_i = DAVE_s / (1 + AVE_i)$, where $DAVE_s$ is the change in AVE in the reduced tariff cut.

Substituting terms in 8a and rearranging results in the following formula:

d) $DP_f - DP_s = [DAVE_f / (1 + AVE_i)] - [DAVE_s / (1 + AVE_i)] = [(DAVE_f - DAVE_s) / (1 + AVE_i)]$
$= [DAVE / (1 + AVE_i)]$, where DAVE is the deviation from the full tariff cut.

9) Therefore, 7a can be written as:

$DTRQ = a \times [DAVE / (1 + AVE_i)]$

More concretely, the required level of TRQ expansion, *measured as a percentage of current imports*, is a function of *the ratio of the tariff cut deviation to the initial import price plus duty*.

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