

Measuring Domestic Implications of Tariff Cuts Under EU Entry Price Regime

Jesús Antón López e Ignacio Atance Muñiz
jantonlo@mapya.es



Paper prepared for presentation at the I Mediterranean Conference of Agro-Food Social Scientists. 103rd EAAE Seminar ‘Adding Value to the Agro-Food Supply Chain in the Future Euromediterranean Space’. Barcelona, Spain, April 23rd - 25th, 2007

**MEASURING DOMESTIC IMPLICATIONS OF TARIFF CUTS
UNDER EU ENTRY PRICE REGIME**

Jesús Antón López e Ignacio Atance Muñiz**

(jantonlo@mapya.es, iatancem@mapya.es)

Ministerio de Agricultura Pesca y Alimentación

Paseo de Infanta Isabel N° 1 . 28071 Madrid

Tel: 91 347 18 32 / 66 63

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Abstract:

The entry price regime in the European Union (EU) applies to several products, mainly fresh fruits and vegetables. The complexity of the system with endogenous applied tariffs makes the evaluation of different alternatives of tariff cuts more challenging than for other regimes. The challenge applies to academics with interest on estimating market impacts, to WTO negotiators that need to evaluate proposals and to policy-makers that may need to take decisions on options such as the declaration of a sensitive product. This paper develops a methodology to compare different tariff cuts alternatives, including the URAA method that implies reductions in the level of the entry price, constant entry price, and Tariff Rate Quotas expansion. Uncertainty about international prices plays a central role on the estimated impacts on market access of different options. Reducing the level of entry prices can have relatively large impacts on market access for some products. The sensitive product treatment with TRQs may generate larger market access than the normal treatment. The proposed methodology proves to be able to quantify the economic impacts of tariff cuts under EU entry price regime.

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1. Introduction

The European Common Market Organisation for the fruits and vegetables sector regulates trade with third countries using a combination of optional import licences, Common Customs Tariffs and an Entry Price Regime. The Entry Price Regime is applied to 4 vegetable products, 10 fruits and some grape processed products (see Table 1). The rules for the application of the entry price for fruit and vegetables are laid down in Regulation (EC) No 3223/94 (OJ L 337, 24.12.1994), as last amended by Regulation (EC) No 386/2005 (OJ L 62, 9.3.2005). Basically, the *ad valorem* duty (AT) is the only duty applied when a product is imported with a price over the entry price (EP), while the Maximum Tariff Equivalent (MTE) is charged as an additional duty when the import price is under 92% of the EP. For the intermediate cases, small specific additional duties are charged covering the gap among the import price and the EP.

Table 1: Products under the Entry Price Regime

CN Code	Product	Ad Valorem (AT, %)	MTE (€100kg)
07020000	Tomato	8.8 / 14,4	29.8
07070005	Cucumber	12.8 / 16	37.8
07091000	Globe artichokes	10.4	22.9
07099070	Courgettes	12.8	15.2
08051020	Sweet oranges, fresh	16	7.1
080520	Mandarins & Clementines	16	10.6
08055010	Lemons	6.4	25.6
08061010	Table grapes	8 / 11.5 / 14.1	9.6
080810	Apples	0 / 4 / 7.2	23.8
080820	Pears	0 to 10.4	23.8
08091000	Apricots	20	22.7
080920	Cherries	6 / 12	27.4
080930	Peaches & nectarines	17.6	13
080940	Plums & sloes	6.4 / 12	10.3
20096	Grape juice (Brix value < 30)	22.4 / 40	27 / 121 / 131**
220430	Other grape must	22.4 / 40	27 / 121 / 131**

Note: AV for most products varies among different periods of the year. In the same way, MTEs are not applied for several of these products in some periods of the year. AV and MTE for any product and specific date of the year can be obtained from Regulation

**: AV and MTE depends on the Brix value of the juice.*

*** : €/hl*

The Entry Price Regime constitutes a complex tariff system to be treated under the context of the WTO negotiations. Under the previous Uruguay Round Agricultural Agreement (URAA), tariff cuts for products under this regime consisted in a reduction of the AV and MTE according to general cuts agreed for agricultural tariffs and a decrease of the level of the EP of the same absolute amount than the MTE's reduction. This is what we refer in this paper as the URAA method.

Under current Doha Round negotiations, the issue of how to apply future agreed tariff cuts to products under the Entry Price Regime has not been discussed yet. A first objective of this paper is to develop a methodology to measure the impacts of the different options of tariff cuts that could be applied to these products.

On the contrary, Doha Round agricultural negotiations have been largely devoted to the issue of "sensitive products". All parts involved in the negotiations agree that members could designate some of their products (defined by their tariff lines) as "sensitive product". This declaration would lead to smaller tariff cuts but a creation or increase of Tariff-Rate Quotas (TRQs). However, large differences exist among the delegations' proposals for sensitive products in relation with the number of tariff lines that could be declared sensitive, the proportion of reduction of tariff cuts and the level of the expansion of TRQs. These differences can be observed in the document corresponding to the draft proposal for modalities on agriculture discussed but not agreed in Geneva on July 2006 (WTO, 2006).

The European Commission made its own proposal for the treatment of sensitive products under its October 2005 offer on the Doha World Trade talks (EC, 2005). The proposal included the designation of up to 8% of total tariff lines as sensitive products and reduced of tariff cuts of one third to two thirds of the corresponding non-sensitive tariff cut. The increase in TRQ, expressed as a percentage of current imports of the tariff

lines in question, would result from the division of the tariff cut deviation, expressed in percentage points, by the effective border protection¹, adjusting the result by a coefficient of 0.8. Under this context, the second objective of this paper is to evaluate how effective is the EC proposal for sensitive products in the case of products under the Entry Price Regime.

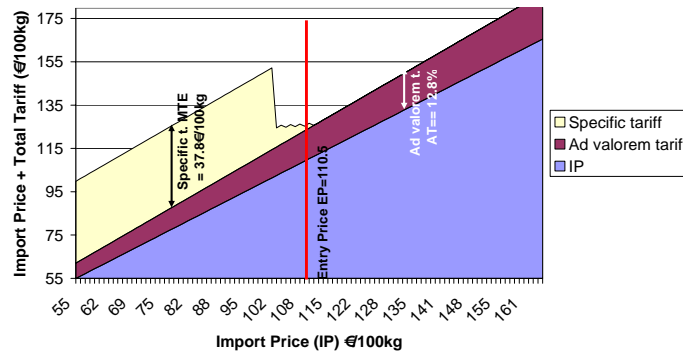
The rest of the paper is organised as follows. Section 2 discusses the economics of the Entry Price Regime while section 3 describes the methodology developed to address the issue of tariff cuts for products with entry price in a context of uncertain import prices. Section 4 presents the results of the use of this methodology to measure potential impacts of tariff cuts options with some examples. Section 5 assesses the EC proposal for sensitive products and TRQs expansions under the EP regime using the methodology explained in section 3 plus an extension exposed in Annex 1. Finally, section 6 provides main conclusions from our research.

2. The Economics of the Entry Price Regime

The entry price system is defined by the level of entry price (EP) and the level of the Maximum Tariff Equivalent (MTE) which is triggered when the price of imports (IP) falls below 92% of the entry price. The MTE is the specific tariff (ST) to be paid on the top of the *ad valorem* tariff (AT) which is paid by all imports regardless their import price. In between 100% and 92% of the entry price, there are four equal intervals with increasing specific tariff that cover the difference between the import price and the entry price. The system is represented in Figure 1 with a kinked tariff profile (cucumbers from 1 March to 30 April are used as an example). If some trade occurs, domestic prices should equal the sum of the import price plus the *ad valorem* and the specific tariff.

¹ Tariff cut deviation / (1+AVE), with AVE=*Ad Valorem* Equivalent tariff according to an agreed WTO method of calculation.

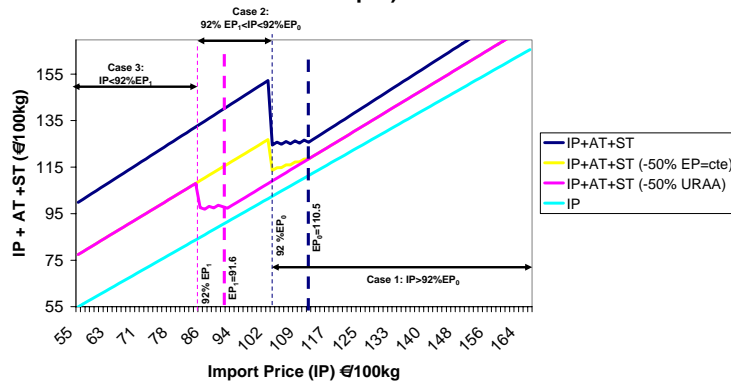
Figure 1: EU Cucumber MFN tariff (March /April)



It could be thought that the specific tariff attached to this entry price regime does not provide protection when the import price is above the entry price (EP) in the right-hand side of the vertical line in Figure 1. But in a world with price uncertainty this is not true. International prices and import prices are uncertain and would be better represented by a random distribution at any given time. In this context production decisions will not be taken on the basis of *ex post* observed domestic prices (DP), but on *ex ante* expected prices. Thus, cuts in the EP or in the MTE of the entry price regime can potentially generate changes in the distribution of IP and in the corresponding distribution of applied tariffs and expected domestic prices. The parameters of the entry price regime can influence domestic prices even when no specific tariff is applied due to high import prices.

How do tariff cuts affect the regime? Figure 2 represents some of the three types of effects associated with tariff cuts under an entry price regime. First, a reduction in the tariff levels MTE or AT directly affects the tariff paid at each price, and therefore the corresponding expected price, even if the MTE is not effectively paid. A reduction of the rates of MTE and AT directly reduces the price gap that can be maintained between domestic and import prices (downwards movement in Figure 2). This happens to different extents at any potential import price.

Figure 2: Example of tariff cuts: cucumber (March / April)



Second, the level of the entry price modifies the range of prices that would have to pay the specific tariff: a reduction in the EP reduces the expected tariff and has an impact on the expected domestic price even if, at the end of the day, no specific tariff is paid. This is represented in Figure 2 by a leftwards movement of the vertical kink at EP.

Third, a change in the level of the entry price may have a direct influence on the prices of imports arriving to the border, whose distributions would normally move in the same direction: exporters from other countries may adjust their prices to the level of EP in order to avoid or reduce the tariff paid². This effect is harder to represent in the graph, but it would imply a leftward movement of the mass of the distribution of prices when EP is cut.

The entry price regime would be made a bit more complex if in addition a Tariff Rate Quota (TRQ) would be working with further reduced tariff rates as foreseen in some WTO negotiation proposals for sensitive products. These additional imports would put further downwards pressure on domestic prices. In this context, Price response would depend on the import demand elasticity. Section 5 will try to quantify

² This effect is consistent with the results of Chemnitz and Grethe (2005) about the existence of an economic rent in the side of Moroccan exporters of tomatoes to the EU. However in this case (and in some others) preferences to third countries make more complex the economic analysis of MFN tariff reductions (see Garcia Alvarez-Coque et al. 2006 addressing this issue). Also in relation with this effect, Berbel (1987) describes how the regime favours exporters to organise their trade flows in order to avoid maximum tariffs.

impacts of TRQs expansions for sensitive products in comparison with normal cuts for non-sensitive products.

3. From tariff cuts and TRQs to domestic price reductions: A methodology under international price uncertainty

In this section we develop a simple methodology in order to measure how tariff cut proposals would be transmitted into domestic price reductions. The first step is building a distribution of import prices using available information. The best information available in the EU for this purpose is the SIV (Standard Import Values) daily prices. The daily mean and variance of SIV prices in the corresponding months during the last two years are calculated. These are used as the mean and variance of the corresponding import prices. It is then assumed that prices are distributed normally:

$$IP \propto N(E[VGI], V[VGI])$$

The second step consists on calculating the impact of the entry price on the expected domestic price by adding up the calculated expected import price and the expected total duty. Entry prices are assumed to generate a truncation on the normal distribution of import prices so that imports tend to arrive at prices above entry prices. The new distribution will have a higher mean and a lower variance. These new values of mean and variance of import prices are calculated using the methodology developed by Chavas and Holt (1990). From the import price distribution, probabilities of prices being in given intervals are calculated and, using the specific tariff regime formula, the corresponding expected total specific tariff is also calculated. *Ad valorem* tariff is converted into a specific equivalent by multiplying *ad valorem* rate by expected import price. Finally expected domestic price $E[DP]$ is calculated by adding up the augmented mean of import prices, the expected total specific tariff and the specific equivalent of the *ad valorem* tariff.

The third step repeats the procedure in step two after a tariff cut is applied, and a new expected domestic price is obtained. New entry prices (if assumed to be cut) generate a new truncation on the distribution of import prices. So a lower expected import price is calculated. From the import price distribution, the corresponding new expected total specific tariff is also calculated. *Ad valorem* tariff is converted into a specific equivalent by multiplying *ad valorem* rate by expected import price. The new expected domestic price $E[DP_n]$ is the sum of the new expected import price, and the expected new total specific tariff and the specific equivalent of the *ad valorem* tariff. We define the price reduction as:

$$dp_n = \frac{E[DP_n] - E[DP_0]}{E[DP_0]}$$

An additional fourth step is proposed whenever we add a TRQ on the top of the entry price regime if the product is declared as sensitive. This step allows for comparing tariff cuts with quota expansions. This comparison requires the use of an elasticity for the demand of imports “ ε ”. We can then calculate the expansion of market access (percentage change in imports) as a function of this elasticity:

$$m_n = \varepsilon * dp_n ;$$

And we can compare it with the quota expansion under other tariff cut to be considered, for instance, for sensitive products:

$$m_s = \varepsilon * dp_s$$

Then we can compare the expansion of imports under sensitive product regime (lower tariff cuts plus a TRQ) with the expansion of imports under the normal regime of only tariff cuts:

$$m_{TRQ} + m_s < m_n \Leftrightarrow m_{TRQ} < \varepsilon * dp_n - \varepsilon * dp_s \Leftrightarrow \varepsilon > \frac{m_{TRQ}}{dp_n - dp_s}$$

Therefore a threshold elasticity can be calculated as $\hat{\varepsilon} = \frac{m_{TRQ}}{dp_n - dp_s}$. We use import data taken from Data ComExt for this purpose. If import demand has an elasticity larger than this $\hat{\varepsilon}$, then the product would obtain smaller market access under the sensitive formula as compared to the normal formula. If there is lack of knowledge about the magnitude of the import demand elasticity for all products, this threshold elasticity can be used as an indicator to rank products according to their degree of effectiveness of the sensitive product option: lower value of the threshold elasticity implies larger probability of reducing market access by declaring the product as sensitive.

4. Protection impacts of tariff cuts under entry price regime

For the time being WTO negotiations have not enter into discussing how the potentially agreed tariff cuts would be applied in the case of the entry price regime. We consider here two obvious alternatives. In both cases we suppose that cuts will be applied to both the MTE and in the *ad valorem* duty:

- Option 1: Additionally the entry price EP will be cut by an amount equal to MTE cut. This is Uruguay Round (URAA) method.
- Option 2: Cut in the MTE and in the *ad valorem* duty with no change in entry price.

Does it make a big difference in protection the reduction or not of entry prices? To answer this question we will use the methodology developed in section 3 to quantify these differences in some examples. Previous Figure 2 shows the shape of the EU tariff protection for cucumbers in March / April before any cut (initial) and after a 50% cut (according to EC October 2005 proposal in WTO negotiations with an initial *ad*

valorem equivalent or AVE of 76%) with the reduction of entry prices (URAA method) and without it (EP kept constant).

Let us consider first what we have named Option 1, thus reducing EP from EP₀ to EP₁. Since there is uncertainty about the price of imports (IP), three different cases can be distinguished. In case 1, the import price IP is above 92% of the entry price EP₀, and the tariff cut effectively applies only to the *ad valorem* component AT (and the reduced ST). On the contrary, in case 3, the IP is below 92% of the new entry price EP₁ and both tariffs (MTE and AT) would be effectively reduced by 50%.

But, what does it happen in the intermediate situations of the case 2? Here, the import price is in-between 92% of PE₀ and PE₁, and there will be an effective 50% reduction in the *ad valorem* tariff and an effective elimination of the MTE. In this case the effective reduction in duties can be much larger than the nominal 50% under the proposal. In general, this will be the case when calculating the expected tariff: the cut in expected tariff will be larger than the agreed tariff cut (see Table 2 for some examples of calculations of these cuts). Under the second option of not reducing the EP, case 2 vanishes and there is not a reduction in expected tariffs beyond the percentage cut calculated under the agreed formula.

Table 2: Effective versus nominal tariff cuts for products with Entry Price when import prices are in the case 2 situation (in-between 92% of PE₀ and PE₁)

<i>Product</i>	<i>AVE (Band)</i>	<i>Nominal (agreed) cut</i>	<i>Effective cut</i>
Tomato	48,2% (II)	45%	90%
Cucumber	75,9% (III)	50%	92%
Lemon	46,4% (II)	45%	92%

Differences among both options of tariff cuts can be illustrated with our example for cucumbers. The nominal reduction in total duties can vary from 7€/100kg for high import prices under case 1 (about 5% of domestic price) to 45€/100kg for lower import prices under case 2 (about 35% of domestic price). If entry prices were not cut, the maximum nominal cut could be 26 €/100kg (about 20% of domestic price) for low

prices under case 3. These numbers already show that the difference between the two options can potentially be large.

TABLE 3: Expected duties under alternative hypotheses: Cuts in Entry Prices (URAA) versus Constant Entry Prices

		Lemons June-Oct		Tomatoes Oct-May		Cucumber Nov-May	
		VEP=VMTE		VEP=VMTE		VEP=VMTE	
		(URAA)	EP=cte	(URAA)	EP=cte	(URAA)	EP=cte
INITIAL	Expedted Import Price VGI	59,2	59,2	66,4	66,4	87,7	87,7
	Entry Price	53,5	53,5	46,1	46,1	44,9	44,9
	Expected total duty	6,6	6,6	3,0	3,0	5,9	5,9
NORMAL CUT	Cut in Expected total duty	4,5	3,0	2,0	1,4	4,5	3,0
	% cut in expected duty	68%	45%	66%	45%	75%	50%
	% cut according to formula	45%	45%	45%	45%	50%	50%
	Cut in Expected Import Price	1,0	0,0	1,3	0,0	2,4	0,0
	Total cut as % of DP	8,3%	4,5%	4,8%	2,0%	7,3%	3,2%
SENSITIVE CUT	Cut in Expected total duty	2,5	1,0	0,8	0,5	2,0	1,0
	% cut in expected duty	38%	15%	27%	15%	33%	17%
	% cut according to formula	15%	15%	15%	15%	17%	17%
	Cut in Expected Import Price	0,7	0,0	0,5	0,0	1,0	0,0
	Total cut as % of DP	4,8%	1,5%	1,9%	0,7%	3,2%	1,1%
	TRQ Expansion % (Formula)	16,4%	16,4%	16,3%	16,3%	15,2%	15,2%
TRQ Expansion (1000 tons)	21,0	21,0	34,3	34,3	1,4	1,4	
THRESHOLD ELASTICITY		2,7	3,2	4,7	10,3	2,9	5,7

Table 3 calculates expected impact on duties and domestic prices under the two options of treatment of entry prices. For instance, for lemons in June-October, under the first option URAA (see first column of data in Table 3), the expected duty is estimated to be reduced by the 68% applying the normal formula, well above the 45% reduction obtained from the formula in EC proposal. This is due to the fact that sometime prices are below entry prices and pay the specific tariff. If lemons were declared sensitive, the expected cut would be 38%, much larger than the 15% under the EC proposal reduction formula. On the contrary, if entry prices are not reduced (second column of data in Table 3), the expected duties are reduced by the same percentage that is derived from the formula: 45% or 15% if declared sensitive. Domestic prices are expected to fall by 8.3% in option 1 as compared to 4.5% in option 2 (if it is not declared as sensitive).

Table 3 also shows two other examples³. The expected cut on tariffs for tomatoes in October-May is 66% under option 1 (URAA) as compared to 45% in option

³ The numerical results are sensitive to the distribution of import prices SIV. For instance, Goetz and Grethe (2006) present orange VIS prices that are much higher than entry prices and, therefore, have only a marginal impact on market access.

2 (if normal) and 27% vs 15% (if sensitive). For cucumber November-May the expected cut on duties is 75% under option 1 (URAA) as compared to 50% in option 2 (if normal) and 33% vs 17% (if sensitive). These three examples show that reducing the EP by the same amount that the MTE (URAA method) can generate much larger reductions in expected duties than maintaining the entry price constant at current levels.

5. Sensitive product treatment: TRQ expansions

It is foreseen that under a potential WTO agreement the products declared as sensitive would be allowed for lower tariff cuts while opening new or additional TRQs to ensure some additional market access (WTO 2006). The design of this combination of lower tariff cuts plus the TRQ should permit some additional market access even for the products declared as sensitive. But does it imply smaller expansion of market access than under the formula for normal products? The methodology developed in section 3 allows to proof that the WTO proposal from the European Commission does not always guarantee lower market access under sensitive product treatment. Only under high enough demand elasticity and high enough initial tariffs (in terms of AVEs) sensitive product treatment generates lower market access (see Annex 1).

In the case of uncertain prices and products under entry price regime, effective expected prices and tariffs do not necessarily coincide with calculated AVEs. Then, the question becomes a bit more complex than in the case developed Annex 1 and it requires further numerical calculations as developed in section 3. Real data from last campaigns allows replacing calculated AVEs by expected tariffs to calculate the threshold elasticity that equals imports expansion under both treatments –normal and sensitive. This threshold elasticity becomes also an indicator for the degree of effectiveness of the “sensitive treatment” for each product, in terms of reducing market access as compared to the normal treatment.

TABLE 4: Sensitive treatment and the entry price of Lemons (€/100 kg)

		Nov-Abril	Mayo	Jun_oct	YEAR	Hypothesis June-Oct.
INITIAL	Expeted Import Price VGI	58,5	60,2	59,2		54,4
	Entry Price	46,2	42,2	53,5		53,5
	Expected total duty	4,8	3,9	6,6		20,0
NORMAL CUT	Cut in Expected total duty	2,7	1,8	4,5		
	% cut in expected duty	56%	45%	68%		
	% cut according to formula	45%	45%	45%		15,6
	Cut in Expected Import Price	0,3	0,0	1,0		6,4
	Total cut as % of DP	4,7%	2,8%	8,3%	7,1%	29,5%
SENSITIVE CUT	Cut in Expected total duty	1,2	0,6	2,5		
	% cut in expected duty	26%	15%	38%		
	% cut according to formula	15%	15%	15%		6,6
	Cut in Expected Import Price	0,2	0,0	0,7		2,8
	Total cut as % of DP	2,3%	0,9%	4,8%	3,9%	12,7%
	TRQ Expansion % (Formula)	16,4%	16,4%	16,4%	16,4%	16,4%
TRQ Expansion (1000 tons)	6,6	2,5	21,0	30,0	21,0	
THRESHOLD ELASTICITY		4,0	5,3	2,7	3,1	0,6

Table 4 shows how the threshold elasticity for three different periods of production of lemons is estimated to be 4 in November/April, 5.3 in May, 2.7 in June-October and 3.1 for the whole year. Of course these elasticities should be compared with empirically estimated values. But these relatively high elasticities already raise the question if the proposed EC formula for TRQ expansion under sensitive product may generate more market access than just applying the normal formula. This may make the option of declaring lemons as sensitive product not very attractive for the EC, even if this is a sector with increasing imports and declining domestic prices in the EU.

The last column in Table 4 replicates the calculations for the period June-October under the hypothesis of 20% lower import prices and 20% higher standard deviation. In this case the threshold elasticity would be equal to 0.6, a much lower level that would make the sensitive product option more likely to generate less market access opportunities than under normal product. Lemon import prices are unlikely to be so low, but this “hypothesis approach” can be used as a complementary indicator to measure the degree of effectiveness of the “sensitive treatment” for each product. Threshold elasticities are also calculated in Table 3 (third block of rows) for tomatoes and

cucumbers, and they are systematically higher under the constant entry price method as compared to URAA.

6. Some conclusions

There are several open issues related with the application to entry price regimes of potential agreements to cut agricultural tariffs in the frame of WTO negotiations. Two main questions relate with the reduction or not of the entry price with the MTE, and the economic value of the EC proposal on sensitive products and TRQ expansion. These need to be analysed in an uncertainty price framework using available empirical information about border prices. This paper has developed a simple methodology to proceed in this direction in order to be able to quantify the economic meaning of different proposals in terms of their impact of market access.

According to our results, the URAA method of reducing entry prices with the Maximum Tariff Equivalent (MTE) would imply effective cuts in expected duties that go far beyond the nominal cuts in the agreed formula. The additional market access due to this provision could be very large whenever import prices are very near the entry prices.

The EC proposal for TRQ expansion for sensitive products can potentially generate market access that goes beyond the access generated by normal formula for non-sensitive products. This underlines that there is scope to exploit the trade-off between the number of sensitive lines that could be declared and the treatment that they will receive.

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Annex 1: A technical review of the EU proposal on TRQ expansion formula

This annex develops a simple model to understand the relative implications of sensitive versus normal product treatment under the EC proposal. Let us define the following variables:

$AVE=Ad Valorem$ Equivalent tariff in per unit terms (if 45%, then 0.45)

$m_n=\Delta M_n/M$ = Per unit change in imports under normal formula

$m_s=\Delta M_s/M$ = Per unit change in imports under sensitive product formula

$m_{TRQ}=\Delta TRQ_s/M$ = Per unit of imports expansion in TRQ for sensitive products

$ave_n=\nabla AVE_n/AVE$ =Per unit reduction in AVE under normal formula

$ave_s=\nabla AVE_s/AVE$ =Per unit reduction in AVE under sensitive product formula

ε =Elasticity of excess demand for imports

Assuming constant elasticity, it can be written:

$$m_n = \varepsilon * \frac{IP * \nabla AVE_n}{IP * (1 + AVE)} = \varepsilon * \frac{AVE * ave_n}{1 + AVE} ; \quad m_s = \varepsilon * \frac{AVE * ave_s}{1 + AVE}$$

And then:

$$m_n - m_s = \varepsilon * AVE * \frac{ave_n - ave_s}{1 + AVE}$$

The EC proposal includes TRQ expansion by:

$$m_{TRQ} = 0.8 * \frac{ave_n - ave_s}{1 + AVE}$$

Therefore the TRQ expansion will be smaller than the different in imports expansion under normal versus sensitive treatment only if elasticity and AVE are large enough:

$$m_{TRQ} < m_n - m_s \Leftrightarrow 0.8 < \varepsilon * AVE \Leftrightarrow \varepsilon > \frac{0.8}{AVE}$$

Therefore, the formula does not guarantee lower market access under sensitive product treatment. Only if the elasticity of import demand is above a threshold ($0.8/AVE$), declaration of sensitivity will imply lower market access.