Technical Annex

**Alternative Market Access Scenarios in the Agricultural Trade Negotiations of the Doha Round**

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This document is the technical annex to the full paper “Alternative Market Access Scenarios in the Agricultural Trade Negotiations of the Doha Round” which is available separately.

**A1. Definition of the Market Access Scenarios**

1. Harbinson Approach – No Export Subsidies

The cut implemented is

\[ T_i = cT_0 \]  

(1)

where \( T_0 \) is the initial (bound) tariff, \( T_i \) is the rate after application of the formula, and \( c \) is the constant proportion of the original rate to which tariffs are to be reduced. For developed countries this scenario implies the following:
• 60% reduction if tariffs are greater than 90%;
• 50% reduction if tariffs are greater than 15% and equal to or smaller than 90%;
• 40% reduction if tariffs are equal to or smaller than 15%.

The reduction is smaller for developing countries:
• 40% reduction if tariffs are greater than 120%;
• 35% reduction if tariffs are equal or smaller than 120% and greater than 60%;
• 30% reduction if tariffs are equal or smaller than 60% and greater than 20%;
• 25% reduction if tariffs are equal or smaller than 20%.

2. Girard Approach – No Export Subsidies

With the Swiss formula, the new rate $T_1$ is given by

$$T_1 = \frac{T_a \cdot T_0}{t_a + T_0} \quad (2)$$

where $t_a$ is the national average of the bound rates within each band, and $T_0$ is the initial rate.

Formally, the “switching point” ($\tau$), below which cuts are smaller with the Swiss formula than with the linear formula, can be computed by equating the new tariffs resulting from (1) and (2):

$$c\tau = \frac{t_a \cdot \tau}{t_a + \tau} \Rightarrow \tau = \frac{t_a(1-c)}{c}.$$  \quad (3)

A2. The “Negotiation Game”

Let $S_i = (a_i^a, a_i^b, a_i^c, a_i^d)$ represent the set of all possible strategies that can be employed by agent $i$. Each player $i$ chooses some strategy $a_i \in S_i$ in order to maximise its payoff given the strategy of the other. A similar set of strategies, $S_{i+}$, exists for the other main player (denoted by $i+$). For a given strategy $a_{i+}$, government $i$ will choose $a_i^*$, which is one possible best response to $a_{i+}$, such that $EV_i(a_i^*, a_{i+}) \geq EV_i(a_i, a_{i+})$, for all $a_i \in S_i$. A Nash equilibrium is defined as the set of strategies $(a_i^*, a_{i+}^*)$ where $a_i^*$ is a best response of $a_i^*$ for country $i$, and $a_{i+}^*$ is a best response to $a_i^*$ for country $i+$. 