"AJAE Appendix for 'De-Regulation as (Welfare Reducing) Trade Reform: The Case of the Australian Wheat Board'"

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"Note: The material contained herein is supplementary to the article named in the title and published in the American Journal of Agricultural Economics (*AJAE*)."

Explicit Expressions for the Consumer Tax and Export Subsidy Equivalents

Consider the case of the domestic consumer tax equivalent for the STE with exclusive rights on both the domestic and export market as characterised in equations (8) and (9). To proceed, solve out for an explicit expression for y^{STE} from (9). From equation (6), solve for y that represents domestic sales in the private benchmark. Since y reflects the implicit consumer tax equivalent, set $y(t^e) = y^{STE}$ and solve for t^e. Detailing the consumer tax equivalent for this case as t^e_{JE} (where the subscript refers to the joint exclusive rights that characterised the pre-1989 situation with the AWB), the explicit expression is given by:

$$t^e_{JE} = \frac{n[\Lambda_3(2b+k) - k^2\phi_2][(a-f)\phi_3 - k(n+1)\Lambda_1] - \Lambda_2\Lambda_3(a-f-k\Lambda_4)}{n\phi_3[\Lambda_3(2b+k) - k^2\phi_2]}$$

where

$$\Lambda_1 = \phi_2(a_1^w - f - s^e_{JE}) - \gamma(B+K)(a_2^w - F) + K\gamma(A-F)$$
$$\Lambda_2 = \phi_3\phi_4 - k^2(n+1)\phi_2$$
$$\phi_1 = (b_1^w + K)(n+1)$$
$$\phi_2 = (m+1)[(b_2^w + K)(B+K) - K^2]$$
$$\phi_3 = \phi_1\phi_2 - \gamma^2 n(B+K)$$
$$\phi_4 = (b+k)(n+1)$$
$$\Lambda_3 = \phi_2(2b_1^w + k) - m\gamma^2(B+K)$$
$$\Lambda_4 = (a_1^w - f)\phi_2 - m\gamma(B+K)(a_2^w - f) + m\gamma K(A-F)$$

The trade distorting effect can be similarly derived by solving for x^{STE} from (9), x from (8), setting equal to each other and solving for s^e_{JE}, where the subscript refers to the exclusive rights that apply jointly in the domestic and export markets that characterised the pre-1989 situation. This expression is given as:

$$s_{JE}^{e} = \frac{\Sigma_1 \Lambda_6 - \Sigma_0 \Lambda_5 [1 - (b+k)k(a - f - t_{JE}^{e})}{\Sigma_0 n \phi_2 (b+k)}$$

where

$$\Sigma_0 = \phi_2 \phi_6 - (2b+k)m(B+K)\gamma^2$$

$$\Sigma_1 = \phi_7 \phi_2 - (2b+k)m\gamma(B+K)(a_2^w - f) + (2b+k)m\gamma K(A-F)$$

$$\Lambda_5 = n[\phi_2 (b+k)(a_1^w - f) - k(A-F)] - m\gamma(b+k)(B+K)(a_2^w - F) + \gamma K(b+k)(A-F)$$

$$\Lambda_6 = \phi_2 \phi_5 - nm\gamma^2 (b+k)(B+K)$$

$$\phi_5 = (n+1)[(b_1^w + k)(b+k) - k^2]$$

$$\phi_6 = (2b_1^w + k)(2b+k) - k^2$$

$$\phi_7 = (2b+k)(a_1^w - f) - k(a-f)$$

The consumer tax and export subsidy equivalents for the other cases can be derived in a similar manner.