A NOTE ON OBTAINING ESTIMATES OF CROSS-ELASTICITIES OF DEMAND

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If we substitute from (6) and (7) into (5) we get:

$$\sum_j S_{rj}\, e^{r}_{jk} + S_{rk} = S_{rk}\,(1 - \eta_r) \qquad \begin{array}{l} r = 1,\ldots,m\ . \\ k = 1,\ldots,n_r \end{array} \qquad (8)$$

Thus, with the CES utility function, the sign of the modified Cournot aggregation condition is determined entirely by η_r, the elasticity of demand for the aggregate of the goods in the branch r. If the branch good, say clothing, is elastic, then η_r exceeds one, (8) is negative and weighted cross-elasticities cannot be large in relation to own elasticities. Contrary to the general case, the sign of (8) cannot change with the product k whose price is changing. Thus, even if an estimate of η_r is unavailable, if we have estimates of the values on the left hand side of (8) for all goods in the branch, the sign of the summation on the left must be the same for all goods in the branch. (In fact, we may solve for η_r from the shares and the elasticities on the left for any given price change.)

A Model of World Steel Trade

Consider a model of steel trade flows in which, for the purpose of modeling a restriction on imports, we group the world into three regions: South Korea (K); the regions that are restraining imports, the United States and the European Community (U); and the rest of the world (R). Following the Armington assumption we assume that consumers regard products from different regions as differentiated. Then let the r-th branch of the utility function (1) be steel, and the products within the branch be the products from K, U and R.

Thus, each region has three demand functions for steel in the form of