It is a familiar principle that if a country imposes the optimum tariff on its imports, it will increase its welfare but reduce that of its trading partner. However, if the trading partner offers a transfer payment to induce the removal of the tariff on its exports, the welfare loss to the exporting country will be reduced, while the welfare of the importing country will remain the same as with an optimum tariff. The purpose of this note is to point out that the above proposition will not hold for the case in which a country imposes the maximum revenue tariff instead of the optimum tariff.

For purposes of illustration, alternative two-country scenarios are considered. Assume, first, that the home country is small and faces a perfectly elastic foreign offer curve. Suppose the home country imposes a maximum revenue tariff. Since the tariff will not change the international price line, the welfare of the foreign country is not affected in this case. However, if the foreign country offers a transfer payment to the home country to induce tariff removal, it will raise the home country's welfare at the expense of its own.

Next, assume that the home country is large and faces a less-than-perfectly elastic foreign offer curve. In this case, imposition of the maximum revenue tariff by the home country will decrease the welfare of the foreign country. However, if the foreign country offers a transfer payment to the home country in order to have the tariff removed, its welfare could decrease even more.

Figure 1, which utilizes the offer curve approach, identifies the exportable good X and importable good Y on the respective axes. OA and CB are the offer curves of the home country and foreign country, respectively. 01 is the equilibrium terms of trade and Q1, the equilibrium trading point. The welfare of the foreign country is represented by the foreign trade indifference curve τg.

If the home country imposes the maximum revenue tariff, its modified offer curve after the tariff (not drawn) will pass through Q2 where a revenue constrained curve RM is tangent to the foreign offer curve 00. After the maximum revenue tariff, the home country's welfare is represented by the home trade indifference curve (not drawn) which is tangent to line RQ2 at Q2. The new terms of trade is Q2. The welfare of the foreign country is decreased and is represented by the foreign trade indifference curve τf.

After the transfer payment, the origin for the offer curves of both countries is shifted to point R. Curve RS becomes the new offer curve of the home country. The new foreign offer curve will be R'b'. R'b' will pass through point M at which a foreign trade indifference curve, τf, is tangent to line RQ2 extended.

The new trading point after the transfer payment is at Qg at which offer curves RS and R'b' intersect. The welfare of the foreign country is now represented by the foreign trade indifference curve τg, which is tangent to the terms-of-trade line RQ2 at Q2. This shows that the foreign country is worse off from giving the transfer payment.
Point W is a point on the foreign offer curve RB'. It is the tangent point between price line RM (not drawn) and the foreign trade indifference curve tY. It is possible that the home offer curve RS intersects RB' at W. In this case, Q3 coincides with W and the foreign country will reach the same welfare level as that before the transfer payment. It is also possible for Q3 to lie below W. In this case, the foreign country will be better off in consequence of making a transfer payment.

Footnotes
2. For the offer to be acceptable to the home country, the transfer payment is assumed to be equal to the home country's tariff revenue under the maximum revenue tariff. It is also assumed that the foreign country does not raise its revenue for the transfer payment by a tariff on trade.
3. McCleary, James F., A Geometry of International Trade, (1962, George Allen and Unwin). In the present example, tariff revenue is measured in units of the exportable good. The conclusion will not be affected if the tariff revenue is measured in units of the importable good instead.
5. Curve RS is the locus of the tangent points between price lines (through R) and home trade indifference curves.
6. Curve RB' is derived in the same way as RS. It is the locus of the tangent points between price lines (through R) and foreign trade indifference curves.

Eastern Economic Journal, Volume XII, no. 2, April-June 1986

A Note on the Welfare Cost of a Tariff

James Cassing

It is a well known result in international trade theory that for a small country the imposition of a tariff diminishes the value of national income at world prices. Suppose, however, that in the short-run (SR) some factors are specific to particular industries. Then, an interesting question is whether or not in the long-run (LR) the reduction in national income at world prices -- and so the domestic welfare cost of the tariff -- will be greater or smaller than in the SR. Figure 1 illustrates the point at issue. An increase in the tariff will result in a short-run loss of output (valued at world prices) identified by the area ABCD, and a long-run loss equivalent to area ABC. But there is no presumption of which area is larger.

Two polar cases which assume a simple two-commodity world, quickly illustrate the issue. Suppose, first, that sectors produce outputs in fixed proportions. Then, unless all factors are mobile so that short-run cost is less than the long-run cost, a (sufficiently large) tariff increase cannot diminish national income at world prices. Alternatively, suppose both sectors have identical isoquants with constant returns to scale, and that the world price is unity. In the long-run a tariff cannot diminish national income at world prices since the long-run transformation curve is linear with slope unity. But, in the short-run, the tariff drives output interior to the long-run transformation set and so the tariff cost is higher than in the long-run.

In order to isolate the forces at work, we adopt the standard two factor two good, constant returns to scale model. Taking capital to be the industry specific factor, SR equilibrium is characterized by equations (1) - (3).

\[
\begin{align*}
\frac{\Delta X_2}{\Delta L_1} &= \rho \frac{2X_2(L_1, X_1)}{3(L_1)} \\
\frac{\Delta X_1(L_1, X_1)}{\Delta L_1} &= \mu \\
\frac{\Delta X_1(L_1, X_1)}{\Delta K_1} &= \tau
\end{align*}
\]

University of Pittsburgh, Pittsburgh, Pa. 15260. This paper has benefited from the helpful comments of Steve Husted, Jack Ohls, and two anonymous referees.