THE TARRIFS INCIDENCE ON SMALL COUNTRIES

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Abstract: Whatever the possible "potential gains" from free trade, almost all the countries in the world have maintained tariff barriers to trade. Consider a small country unable to influence its terms of trade. A tariff usually reallocates the factors of production into the protected sector and shifts domestic demand away from the imported commodity, thereby reducing the country's imports.

Whatever the possible "potential gains" from free trade, almost all the countries in the world have maintained tariff barriers to trade. The only difference among countries has been the degree and the coverage of tariff protection.

A tariff is a tax on imports of a commodity that makes the foreign commodity more expensive to domestic consumers and producers. A tariff usually reallocates the factors of production into the protected sector and shifts domestic demand away from the imported commodity, thereby reducing the country's imports.

Once the Uruguay Round agreement has been implemented, average tariffs on manufactured goods for the OECD countries will be about 2%. However, tariff barriers are still significant in agriculture, and anti-dumping duties, which are equivalent to tariffs, may be quite substantial. Also, the analysis of tariffs provides the basis for the analysis of other types of trade barriers.

Consider a small country unable to influence its terms of trade. Figure one shows a partial equilibrium analysis of the situation under free trade where the supply of imports from the rest of the world is perfectly elastic at the world price since the country is small. Price in the domestic market is equal to the world price with consumption D_1 and domestic production S_1 with the residual demand supplied by imports.

Figure two shows the effect of introducing a tariff on the small country in figure one. The tariff shifts the supply of imports from the rest of the world upwards since the world price is unchanged. There is now a perfectly elastic supply of imports at the price $P_w(1+t)$. Hence, the domestic price of the good will increase to $P_w(1+t)$, consumption will fall to D_2 while domestic production increases to S_2, and imports will be reduced.

The welfare effect of the tariff is: Consumer surplus is reduced by A+B+C+D due to the higher price paid by consumers. Producer surplus increases by A due to the higher domestic production and higher price.

Government revenue increases by C due to the tariff revenue collected on imports. The net effect is a welfare reduction of B+D.

The production distortion arises because the marginal cost of the additional domestic production exceeds the world price at which the good could have been imported. Similarly, the consumption distortion D arises because consumption falls and the marginal valuation of this consumption exceeds the world price.

Since any tariff leads to a welfare loss (as does an import subsidy), the optimal tariff for a small country is equal to zero.
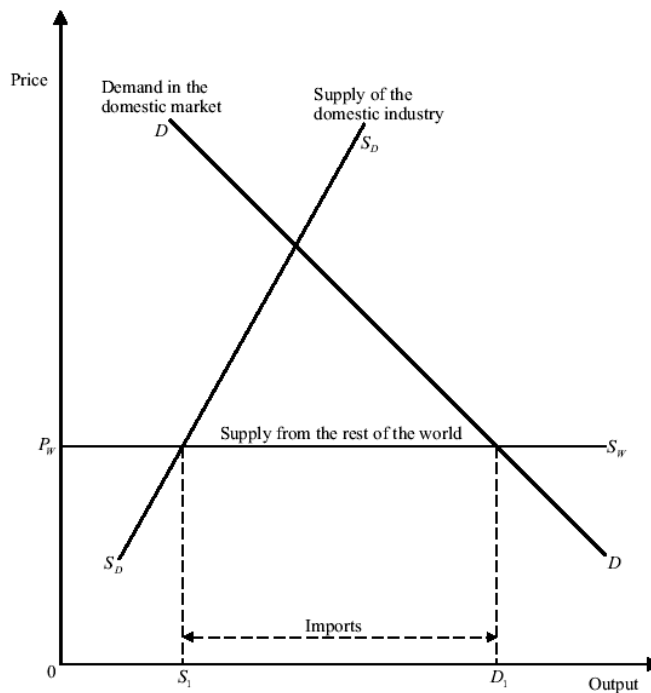
Figure 1: Free Trade in Partial Equilibrium Analysis

General Equilibrium Analysis

For a more rigorous analysis of the effects of a tariff, the neo-classical general equilibrium model can be used. Under free trade, the country faces world prices so produces at P and consumes at C (the trade triangle is not drawn but it can be seen that the country imports X and exports Y).

The introduction of a tariff increases the relative price of X in the domestic market so production shifts to P' with more X and less Y produced than under free trade. The country has to trade in the world market at world prices so its budget constraint is given by the world price line through P', but consumers face domestic prices in the domestic market. Hence, consumption must be at a point such as C' on the budget constraint where domestic prices are tangential to the community indifference curve. Since the country is on a lower community indifference curve, welfare is lower than under free trade. As in the partial equilibrium analysis, there is a production distortion and a consumption distortion.

The production distortion occurs because the value of national income at world prices is lower than under free trade (U to U'') while the consumption distortion occurs because consumers face distorted prices rather than world prices (U '' to U').
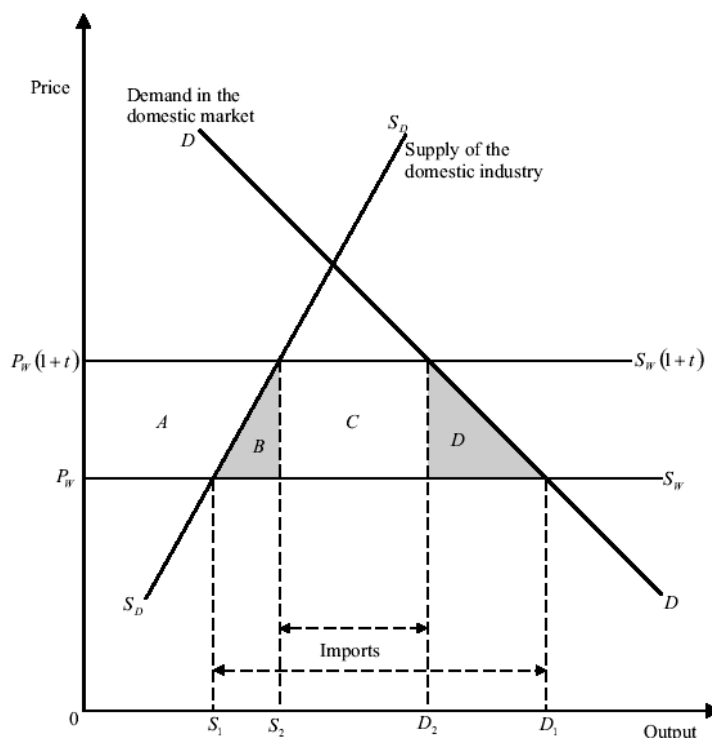
Figure 2: Tariff in Partial Equilibrium Analysis

Tariffs and Income Distribution

In the Heckscher-Ohlin model, the Stolper-Samuelson theorem can be used to analyse the effect of tariffs on income distribution. Suppose that the import competing good X is labour intensive then a tariff on X will increase the relative price of the labour intensive good, X. This will increase demand for labour; hence, it will increase the real wage of labour in terms of both goods and reduce the real return to capital in terms of both goods. Labour unambiguously gains while capital unambiguously loses as a result of the tariff.

Note that the tariff will reduce the welfare of the country so the losses for capitalists outweigh the gains for labour. Even if the capitalists receive the tariff revenue they will still be worse off than under free trade.

Lerner Symmetry

Since only relative prices matter in a general equilibrium model, a tariff on the importable good, X, is equivalent to some export tax on the exportable good, Y. The effect of a tariff on relative prices in the domestic country is:

$$\frac{p_X^D}{p_Y^D} = \frac{p_X^W(1+t_X)}{p_Y^W}$$

An export tax reduces the price that exporters receive for their exports, so the effect of an export tax on the relative prices in the domestic country is:

$$\frac{p_X^D}{p_Y^D} = \frac{p_X^W}{p_Y^W/(1+t_Y)} = \frac{p_X^W(1+t_Y)}{p_Y^W}$$

A tariff and an export tax set at the same rate, *ad valorem* $t_X = t_Y$, will both result in the same relative prices in the domestic market and hence exactly the same equilibrium.

Since trade is balanced, when imports fall as a result of a tariff then exports will also fall. Similarly, when exports fall as a result of an export tax then imports will also fall. One implication of this result is that an import tariff combined with an equal export subsidy will have absolutely no real effect on an economy yet governments often pursue such policies.
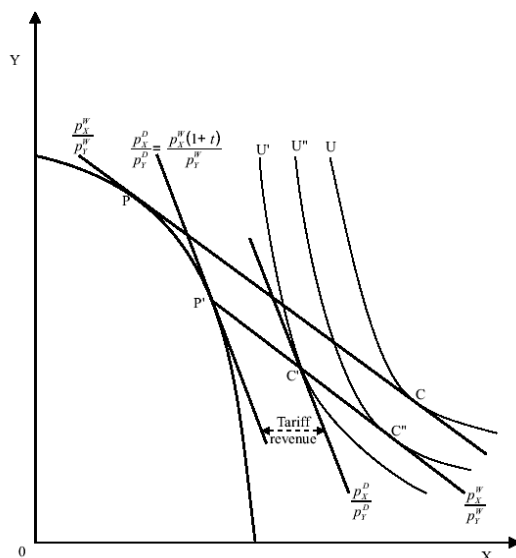

Figure 3: Tariff in General Equilibrium Analysis

Conclusions

Recently, there has been a great deal of discussion about the distribution of the welfare effects of protection across countries, but unfortunately, the debate has not generally been based on sound theoretical principles. On the one hand, some have argued that industrial country trade policies hurt developing countries more than their own countries (such as in agriculture), while others have argued that developing countries mainly hurt themselves as a result of their own trade barriers. Of course, a small country bears the entire burden of its own protection, since it cannot influence its terms of trade. Thus the question becomes: what can be said about tariff incidence in the small country case?

There are two ways of tackling the question of tariff incidence. One is to ask: What would be the distribution of the welfare effects across countries from a marginal change in the home country tariff? The second approach is to ask: What is the distribution of the cumulative welfare effects of a tariff change in the home country, perhaps relative to free trade, across countries? Regarding the first question, the welfare effects of a marginal change in the home country tariff are equalized across exporter and importer when the home tariff rate equals two divided by the elasticity of the foreign offer curve minus one. When the elasticity of the foreign offer curve is constant, the welfare effects are equal at twice the optimal tariff for the home country. Thus, the home country would be hurt more from a tariff increase if its actual tariff rate exceeded twice its optimal rate, while the foreign country would be hurt more if the home tariff were less than twice its optimal rate.

Regarding the cumulative welfare effects of a tariff in the home country relative to free trade, under appropriate assumptions, these are equalized across exporter and importer when the home country tariff equals four divided by the elasticity of the foreign offer curve minus one—four times its optimal tariff if the elasticity of the foreign offer curve is constant.

Looking at the question of tariff incidence from this perspective, the home country would be hurt more than the foreign country, relative to free trade, if its actual tariff rate exceeded four times its optimal tariff; if the home tariff is less than four times its optimal tariff, the foreign country is hurt more than the home country. These results suggest a method that can be used in practice to assess tariff incidence.

More generally, the agent imposing the tax is able to affect the net-of-tax price of the taxed product. These results also hold in assessing tax incidence in a closed economy, as well as in a two-country model of international trade.

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