ECN 230   The Economics of International Trade

Exercise set 3. Assignment 3

Problem: This assignment is designed to illustrate the economic and welfare implications of a market access restriction (i.e., an import tariff) both in terms of the partial equilibrium effects and some expected general equilibrium effects. Suppose the government in the net importing manufacturing country applies a tariff. Model the changes in equilibrium and analyze the economic effects of a policy change from free trade to restricted trade.

North's Manufacturing Market	South's Manufacturing Market
D_M: $Q_M = 601.2 - 120.48\ P_M$	D_M: $Q_M = 738.922 - 107.778\ P_M$
S_M: $Q_M = -302.41 + 240.96\ P_M$	S_M: $Q_M = -159.28 + 71.856\ P_M$

3.1.   The initial situation is the free trade partial equilibrium solution from assignment 2.

Free trade partial equilibrium

North's manufacturing market					South's manufacturing market				
$[P_M]_W$	$[Q_S]_1$	$[Q_D]_1$	$[Q_T]$	V_T	$[P_M]_W$	$[Q_S]_1$	$[Q_D]_1$	$[Q_T]$	V_T

3.2.   Now, the government in the importing country applies an ad valorem tariff of 75%. Ignore the possibility for retaliation. Derive the new excess demand function with the tariff.

New excess demand function	Excess supply function
$[ED_M]^1 =$	$ES_M =$

3.3.   Determine the new world price, $[P_M]_W{}'$, the domestic price, $[P_M]_D$ in the importing country, the new quantity traded, $[Q_M]_T{}'$, the value of trade, $[V_M]_T{}'$, and the new domestic market situations in the manufacturing sectors in each country, i.e., $[Q_S]'$ and $[Q_D]'$.

Equilibrium under a 75% tariff on the manufactured good

North's manufacturing sector					South's manufacturing sector					
$[P_M]_W{}'$	$[Q_S]_1{}'$	$[Q_D]_1{}'$	$[Q_M]_T{}'$	$[V_M]_T{}'$	$[P_M]_W{}'$	$[P_M]_D$	$[Q_S]_1{}'$	$[Q_D]_1{}'$	$[Q_M]_T{}'$	$[V_M]_T{}'$

3.4.   Construct a 3-panel diagram showing the market changes from free trade to restricted trade.

3.5.   Analyze the welfare effects of the import tariff using free trade as the benchmark. Identify the areas in your model that represent the welfare changes in consumer surplus, ΔCS, producer surplus, ΔPS, change in government revenue, ΔG, and the change in net social welfare, ΔNSW. What is the ΔNSW in the world? Explain.

Welfare analysis of a tariff

	Importer	Exporter	Change in NSW in the world
Welfare analysis			
ΔCS			
ΔPS			
ΔG			
ΔNSW			

3.6. Concepts related to tariffs for class discussion:

    3.6.1. What is the specific tariff equivalent of the ad valorem tariff? That is, what per unit tax results in the same economic and welfare effects? What is the quota equivalent of the tariff?

    3.6.2. Is this the maximum revenue-generating tariff? That is, is there a different tariff rate that generates more revenue for the government?

    3.6.3. Is this an example of an optimal tariff? Explain. What would it mean for the tariff to be considered a "strategic import policy" on the part of the importing government?

    3.6.4. Would you expect retaliation from the part of the exporting country? Explain. What action could the exporting country take? Would or could it result in a welfare improvement in the exporting country?

3.7. Recall that each country has an agricultural sector that competes with the manufacturing sector. So, the change in the nominal price of the manufactured good, $[P_M]_W'$, will affect the relative price of the goods, $[P_A]_W/[P_M]_W'$. You have only solved a partial equilibrium problem and do not have specific information on how the tariff on the manufactured good affects the agricultural sector. However, you can deduce how the trade effect on the international manufacturing market affects the relative prices of the goods (i.e., P_A relative to P_M) in the markets of both economies. To do this, use the offer curve analysis to show: (1) the initial equilibrium of quantity traded, $[Q_A]_T$ for $[Q_M]_T$, (2) the initial terms of trade (TOT), (3) the new equilibrium quantity traded, $[Q_A]_T'$ for $[Q_M]_T'$, and (4) the new terms of trade, TOT_1.

Optional: A more advanced general equilibrium solution would be the use of the H-O-S framework. Relying on the use of the H-O-S model, show the direction of the changes in a general equilibrium context as a result of the tariff's effect on relative prices, production, consumption, trade and welfare. Do this for each country separately.

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