

Exercise set 3. Assignment 4

Problem: This assignment is designed to illustrate the economic and welfare implications of a policy affecting export competition (i.e., an export subsidy) both in terms of the partial equilibrium effects and some expected general equilibrium effects. Suppose the government in the net exporting agricultural country applies an export subsidy. Model the changes in equilibrium and analyze the economic effects of a policy change from free trade to subsidized trade.

North's Agricultural Market	South's Agricultural Market
$D_A: Q_A = 2160 - 120 P_A$	$D_A: Q_A = 4400 - 600 P_A$
$S_A: Q_A = 1000 + 40 P_A$	$S_A: Q_A = 3400 + 1400 P_A$

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

Free trade partial equilibrium

North's agricultural market					South's agricultural market				
$[P_A]_W$	$[Q_S]_1$	$[Q_D]_1$	$[Q_T]$	V_T	$[P_A]_W$	$[Q_S]_1$	$[Q_D]_1$	$[Q_T]$	V_T

4.2. Now, the government in the exporting country applies a specific subsidy of 0.27 per unit. Ignore the possibility for retaliation. Derive the new excess supply function with a subsidy.

Excess demand function	Excess supply function
$[ED_A] =$	$[ES_A]^1 =$

4.3. Determine the new world price, $[P_A]_W'$, the domestic price, $[P_A]_D$ in the exporting country, the new quantity traded, $[Q_A]_T'$, the value of trade, $[V_A]_T'$, and the new domestic market situations in the agricultural sectors in each country, i.e., $[Q_S]_1'$ and $[Q_D]_1'$.

Equilibrium under a specific export subsidy of 0.27 on the agricultural good

North's agricultural sector					South's agricultural sector					
$[P_A]_W'$	$[Q_S]_1'$	$[Q_D]_1'$	$[Q_A]_T'$	$[V_A]_T'$	$[P_A]_W'$	$[P_A]_D$	$[Q_S]_1'$	$[Q_D]_1'$	$[Q_A]_T'$	$[V_A]_T'$

4.4. Construct a 3-panel diagram to show market changes from free trade to subsidized trade.

4.5. Analyze the welfare effects of the export subsidy 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 an export subsidy

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

- 4.6. Concepts related to export subsidies for class discussion:
- 4.6.1. What is the ad valorem export subsidy equivalent to the specific export subsidy? That is, what percent rate of an export subsidy results in the same economic and welfare effects? What is the export quota equivalent of the export subsidy?
- 4.6.2. Is this an example of an optimal policy? Explain. What would it mean for an export subsidy to be considered a “strategic export policy” on the part of the exporting government?
- 4.6.3. Would you expect a retaliatory policy response by the importing country? Explain. What action could the importing country take? Would or could it result in a welfare improvement in the importing country?
- 4.7. Recall that each country has a manufacturing sector that competes with the agricultural sector. So, the change in the nominal price of the agricultural good, $[P_A]_w'$, 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 export subsidy on agricultural exports affects the manufacturing sector. However, you can deduce how the trade effect on the international agricultural 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 export subsidy's effect on relative prices, production, consumption, trade and welfare. Do this for each country separately.