

Exercise set 3. Assignment 1

Objective: This exercise set is designed to illustrate the economic and welfare implications of trade liberalization and trade policy intervention, both in a partial and general equilibrium context. In solving for the equilibrium solutions, students are expected to apply various trade concepts and economic principles introduced in class and in the readings.

Problem: Given the market information below, use a partial equilibrium, 2-country model to show how price differences motivate international trade and affect economic change. Assume that the good in question (say meat) is identical in both countries, there are no transportation or other marketing costs, there is no government policy or domestic regulations that serve as a barrier to trade, and that the good is denominated in one currency (no exchange rate issues).

Suppose that the internal markets for agricultural products in North and South, respectively, are expressed mathematically in the table below.

North's Agricultural Market	South's Agricultural Market
$D_A: Q_A = 2700 - 120 P_A$	$D_A: Q_A = 4300 - 200 P_A$
$S_A: Q_A = 1900 + 40 P_A$	$S_A: Q_A = 3700 + 200 P_A$

- 1.1. *Step 1.* Solve for the closed market (autarky) equilibrium in the agricultural sector of North and South to determine the internal price, $[P_A]^*$, and quantities supplied, $[Q_S]^*$, and demanded, $[Q_D]^*$. Note: the solution will be of use in the subsequent assignments.

Pre-trade partial equilibrium

North's agricultural market					South's agricultural market				
$[P_A]^*$	$[Q_S]^*$	$[Q_D]^*$	$[Q_T]$	V_T	$[P_A]^*$	$[Q_S]^*$	$[Q_D]^*$	$[Q_T]$	V_T
			0	0				0	0

- 1.2. *Step 2.* Identify the net agricultural importer and exporter from the pre-trade equilibrium prices. Derive excess demand (ED) of the importer and excess supply (ES) of the exporter.

Excess demand function	Excess supply function
$ED_A =$	$ES_A =$

- 1.3. *Step 3.* Solve for the free trade equilibrium (equate ED_A and ES_A). Determine the world price, $[P_A]_W$, quantity traded, Q_T , the value of trade, V_T , and the new domestic market situations in each country, i.e., $[Q_S]_1$ and $[Q_D]_1$.

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

- 1.4. *Step 4.* Construct the 3-panel diagram showing the market changes from pre-trade to free trade.
- 1.5. Concepts for class discussion:
- 1.5.1. How do the results under 1.3 and 1.4 relate to the law of one price? What is arbitrage and how does this concept apply in this case?
 - 1.5.2. Suppose the good is frozen meat and that to trade meat there is fixed transportation cost per unit (€/kg). At what cost per kg would transport costs prohibit trade?
 - 1.5.3. How does a transportation cost of €1.75/kg affect prices and the volume of trade?
 - 1.5.4. Do the transportation costs affect the general lesson of international trade? Explain in terms of the law of one price?
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