

Problem set 1

Use a partial equilibrium, 2-country model to show how price differences will result in commodity trade between countries. For simplicity's sake, 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
$D_A: Q_A = 6500 - 500 P_A$	$D_A: Q_A = 11615.39 - 523.08 P_A$
$S_A: Q_A = -166.67 + 333.33 P_A$	$S_A: Q_A = 10269.23 + 246.15 P_A$

- 1.1. Step 1. Solve for the closed market (autarky) equilibrium in the agricultural sector of both North and South. Then, use the information to graph the domestic market situations of both countries.

Pre-trade equilibrium in North's ag market					Pre-trade equilibrium in South's 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. From the pre-existing equilibrium prices, one can deduce that North would be the net importer of the agricultural good and South would be the exporter. Step 2. Use the market information to derive the excess supply (of the exporter) and the import demand (of the importer). Step 3. Solve for the world price and the optimal trade equilibrium (quantity trade, Q_T , and the value of trade, V_T) and the new domestic market situation in each country, i.e., $[Q_S]_1$ and $[Q_D]_1$.

Free trade equilibrium from North's perspective					Free trade equilibrium from South's perspective				
Excess demand function					Excess supply function				
$[ED_A]_N =$					$[ES_A]_S =$				
$[P_A]_W$	$[Q_S]_1$	$[Q_D]_1$	$[Q_T]^*$	V_T	$[P_A]_W$	$[Q_S]_1$	$[Q_D]_1$	$[Q_T]^*$	V_T

- 1.3. Concepts for class discussion:

- 1.3.1. How do the results under 1.2 relate to the law of one price?
- 1.3.2. Suppose the traded good is frozen meat and that to trade meat there is fixed transportation cost per unit. At what cost per unit will transport cost prohibit trade? How would transportation costs of 1.5/unit affect trade volume and prices in both countries?
- 1.3.3. Does the transportation costs affect the general lesson of international trade? How do these results relate to the law of one price?