

Problem set 2

Using the H-O-S model, show the economic transformation that occurs when the two countries move from a pre-trade situation to free trade. Determine the gains from trade given the following information. Maintain the standard H-O-S assumptions discussed in class. Be neat and label your graphs properly.

Suppose that the internal markets for agricultural products in North and South, respectively, are expressed mathematically as:

North's Agricultural Market	South's Agricultural Market
$D_A: Q_A = 6500 - 500 P_A$	$D_A: Q_A = 11615.39 - 523.08 P_A$
$S_A: Q_A = -166.67 + 333.33 P_A$	$S_A: Q_A = 10269.23 + 246.15 P_A$

Suppose that the internal markets for manufactured products in North and South, respectively, are expressed mathematically as:

North's Manufacturing Market	South's Manufacturing Market
$D_M: Q_M = 8571.43 - 571.43 P_M$	$D_M: Q_M = 6000 - 400 P_M$
$S_M: Q_M = 3428.57 + 571.43 P_M$	$S_M: Q_M = 666.67 + 133.33 P_M$

Suppose that there are observable points along the production possibilities curves: PPC^S (0A,2500M) and (13000A,0M); PPC^N (0A,7500M) and (4000A,0M). Assume all prices are denominated in the same currency.

Using the above information, graph and solve the problems to answer the following:

- 2.1 Step 1. Solve for the pre-trade prices and the corresponding quantities of agricultural and manufactured goods produced (Q_A , Q_M) and consumed (C_A , C_M), in North and South.

Pre-trade equilibrium in North's ag market					Pre-trade equilibrium in South's market				
$[P_A]^*$	$[Q_A]^*$	$[C_A]^*$	$[Q_A]_T$	$[V_A]_T$	$[P_A]^*$	$[Q_A]^*$	$[C_A]^*$	$[Q_T]$	V_T
			0	0				0	0
Pre-trade equilibrium in North's manu mkt					Pre-trade equilibrium in South's manu mkt				
$[P_M]^*$	$[Q_M]^*$	$[C_M]^*$	$[Q_M]_T$	$[V_M]_T$	$[P_M]^*$	$[Q_M]^*$	$[C_M]^*$	$[Q_T]$	V_T
			0	0				0	0

- 2.2 Step 2. Graph the 3-panel diagrams depicting the partial equilibrium market situations for the agricultural and manufactured goods markets.

- 2.3 Step 3. Derive the excess supply and demand curves. Solve for the world prices (i.e., the terms of trade) and the corresponding quantities of agricultural and manufactured goods produced (Q_A , Q_M), consumed (C_A , C_M), the volume traded ($[Q_A]_T$, $[Q_M]_T$), and value of trade ($[V_A]_T$, $[V_M]_T$), between the two countries. Step 4. Use the new market information and plot it on the partial equilibrium model that you graphed in Step 2.

Free-trade equilibrium in the agricultural sector from North's perspective					Free trade equilibrium in the agricultural sector from South's perspective				
Excess demand function					Excess supply function				
$[ED_A]_N =$					$[ES_A]_S =$				
$[P_A]_W$	$[Q_A]_I$	$[C_A]_I$	$[Q_A]_T$	$[V_A]_T$	$[P_A]_W$	$[Q_A]_I$	$[C_A]_I$	$[Q_A]_T$	$[V_A]_T$
Free trade equilibrium in the manufacturing sector from North's perspective					Free trade equilibrium in the manufacturing sector from South's perspective				
Excess supply function					Excess demand function				
$[ES_M]_N =$					$[ED_M]_S =$				
$[P_M]_W$	$[Q_M]_I$	$[C_M]_I$	$[Q_M]_T$	$[V_M]_T$	$[P_M]_W$	$[Q_M]_I$	$[C_M]_I$	$[Q_M]_T$	$[V_M]_T$

- 2.4 Step 5. Graph the general equilibrium results from parts 3.1 through 3.3 for North and South in isolation using the H-O-S framework. Identify the pre-trade prices and the TOT, the trade triangles, and pre-trade and with-trade production and consumption points. Also use the information provided on the production possibilities curves.

	Pre-trade prices				Trade prices		Quantity traded	
	North		South		World	TOT P-ratio	Volumes	M/A ratio
	Prices	P-ratio	Prices	P-ratio				
Agri mkt								
Manu mkt								