

Economics 433: Advanced International Trade
Fall, 2006

Practice problems 1

Suggested Answers

1. **(15 minutes)** Consider a Ricardian model in which two countries (East and West) produce two goods using only labor. The marginal product of labor in each type of production is given by the chart below.

Workers needed per unit of output		
	<i>East</i>	<i>West</i>
Food (<i>F</i>)	1	$\frac{1}{4}$
Clothes (<i>C</i>)	1	$\frac{1}{2}$

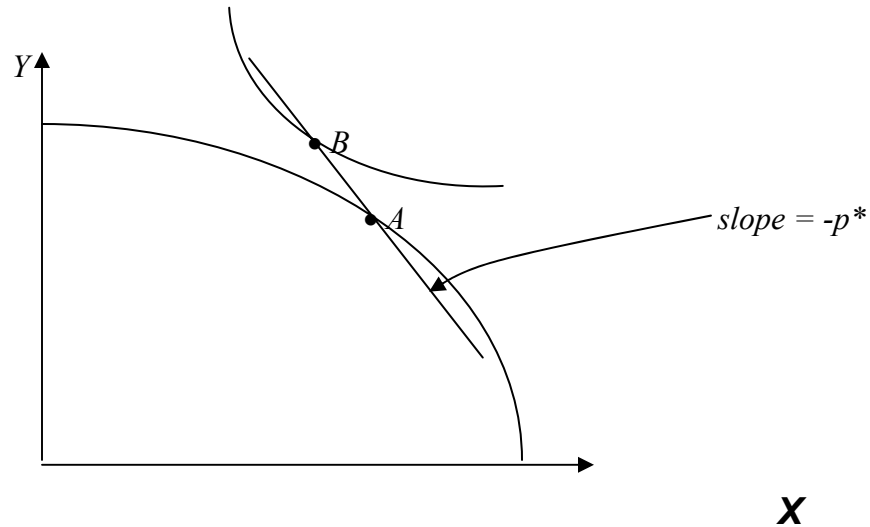
- a. List the goods in which *East* has an absolute advantage none. List the goods in which *West* has an absolute advantage F and C. List the goods in which East has a comparative advantage. C. List the goods in which West has a comparative advantage F.
- b. In autarky, what is the relative price of food in East? $(P_f^a / P_c^a)_{East} = \underline{1}$. In West? $(P_f^a / P_c^a)_{West} = \underline{1/2}$
- c. People in both countries insist on consuming one unit of food per unit of clothing, *regardless* of their relative prices. Are there gains from trade between these two countries? yes (yes, no). Briefly explain.

Trade will allow countries to move their production mix toward their comparative advantage (gains from This will increase the global supply of goods).

- d. Continue to assume that preferences are as described in part c above. To the extent that gains from trade occur, are they due to specialization, to exchange, or to some combination? **specialization** (specialization, exchange, combination). Briefly explain.

Given that consumers are completely unresponsive to relative prices (refer to part c above), there would be no gain from trade if the production mix didn't change. That is, there would be no gains from exchange. However, trade allows each country to move its production point toward its comparative advantage, generating gains from specialization.

2. **(10 minutes)** Consider an economy that produces two goods (X and Y) using two factors (K and L) and trades them at global price ratio $p^* = P_x^*/P_y^*$. Production functions and utility functions are homothetic, and the former exhibit constant returns. The production possibility frontier for this economy and one of the economy's community indifference curves are depicted below. Suppose that production takes place at point A and consumption at point B. Identify two reasons why the situation depicted below does not represent a competitive equilibrium.



Reason 1 and explanation:

Producers are not maximizing profits: The marginal rate of transformation (MRT) at point A is not equal to $-p^*$

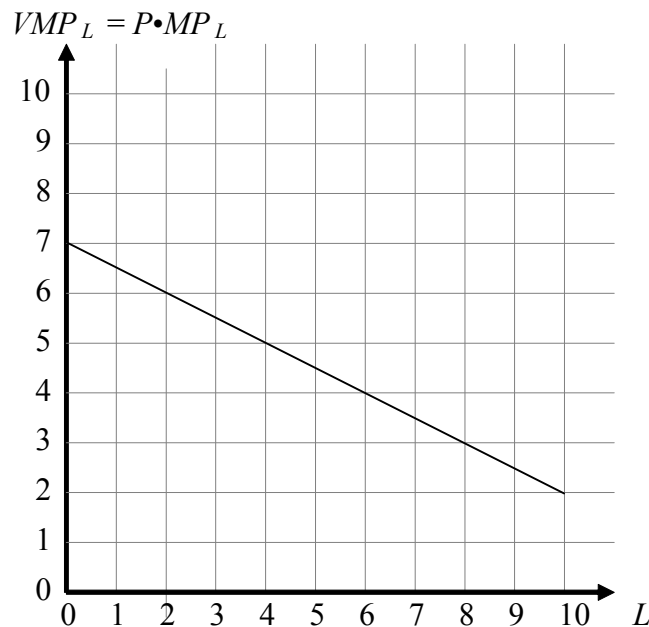
Reason 2 and explanation:

Consumers are not maximizing utility. The marginal rate of substitution (MRS) at point B is not equal to $-p^*$

3. Are there gains from trade between two identical countries? Explain.

There can be gains if one of the goods produced is subject to country-specific increasing returns to scale. Under these conditions, trade allows production of this good to be consolidated in one geographic location, and to thereby become more efficient. Greater efficiency leads to lower prices for everyone who consumes this good—abroad as well as in the producing country.

4. Consider a small open economy that produces a single good (X) using capital (K) and labor (L): $X = F(K, L)$. The good sells at price P in world markets, and the value of the marginal product of labor is graphed below.



- a) Assuming that there are 6 workers in this economy, what is the total *value* of output? $P \cdot X =$ 33 (You don't need to know the price of output or the capital stock to answer this question—they are reflected in the VMP_L graph.)

(Total value is the total value of the marginal product of the 6 workers, or the area under the VMP curve between $L=0$ and $L=6$.)

- b) If no foreign labor is available, how much does domestic labor earn? $w \cdot L =$ 24
 What is the wage rate? $w =$ 4 How much does capital earn? $r \cdot K =$ 9 If the capital stock is $K = 60$, what is the cost of capital? $r =$ $9/60 = 0.15$.

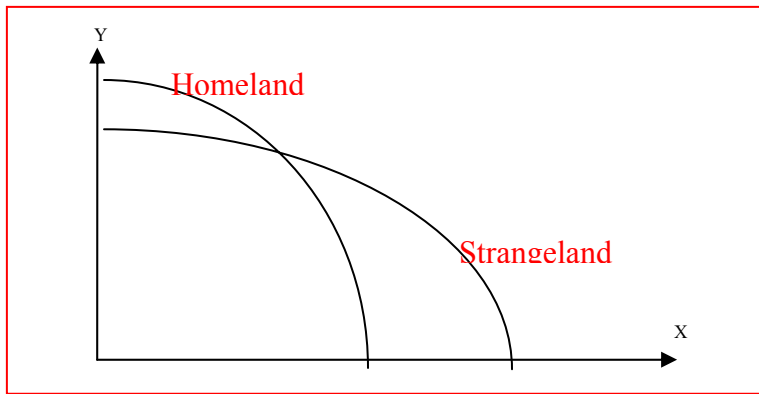
- c) Suppose now that it becomes possible to use foreign workers—i.e., to outsource labor—at the foreign wage rate of $w^* = 3$. How many foreign workers will this country use? 2. How many *total* workers will this country use? 8. What will the *total* value of production be? 40. How much will capital earn? 16 How much will domestic labor earn? 18 How much will foreign labor earn? 6.

- d) Using your answer to part (c), indicate who the winners and losers from outsourcing are. Winners capitalists Losers domestic workers Do the winners gain more than enough to compensate the losers for their losses? (yes, no) yes (Capitalists gain $16-9=7$; domestic workers lose $24-18=6$.)

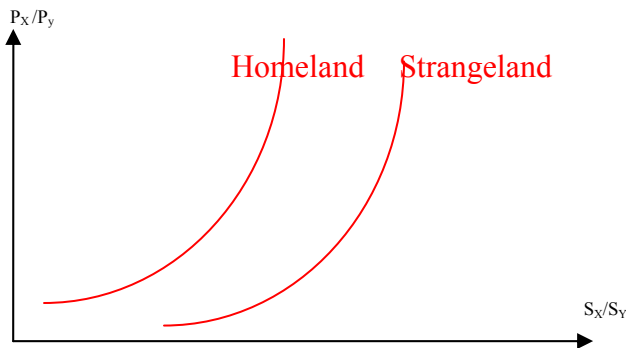
5. Consider a specific factors model with the following features:

- There are two countries: Homeland and Strangeland
- There are two goods: X and Y.
- Consumers in both countries have the same homothetic tastes.
- Each is produced with standard neoclassical technologies, but X is produced with land (N) and labor (L), while Y is produced with capital (K) and labor (L).
- Homeland and Strangeland have the same number of workers. However, homeland has lots of capital and not much land, while Strangeland has lots of land and not much capital.

a) Draw the production possibility frontiers for Homeland and Strangeland on the same graph below. (You do not have enough information to characterize their precise shape, but you do have enough information to qualitatively characterize their relative shapes.)



b) Draw the relative supply curves for each country on the graph below. (Again, you do not have enough information here to characterize their curvature or label points with numbers. The important thing is get their position relative to each other;.)



- b) If the countries trade with each other (and there are no other countries), which one will export X? Strangeland In each cell of the chart below, write “win,” “lose” or “ambiguous” to indicate how each group’s purchasing power is affected by trade (relative to autarky).

	In Homeland	In Strangeland
Land owners	Lose	Win
Capital owners	Win	Lose
Workers	Ambiguous	Ambiguous