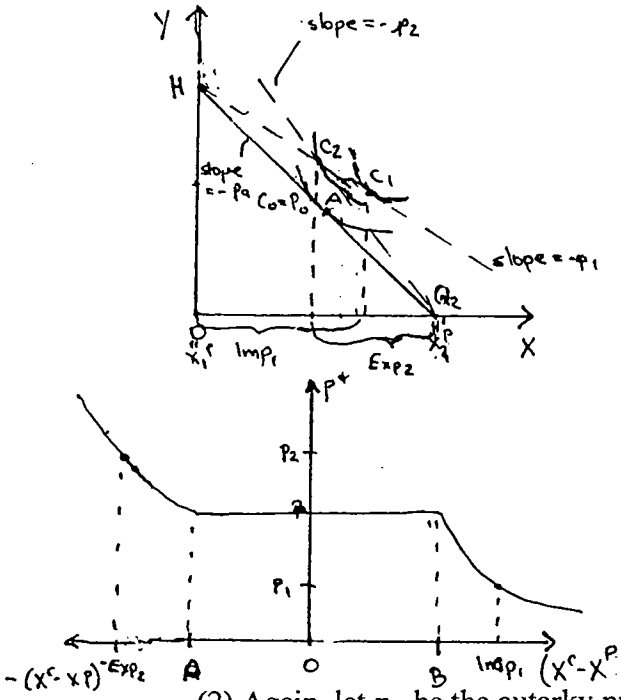
**Answer Key to Problem Set 1**

## I. Problems from the Reading Packet

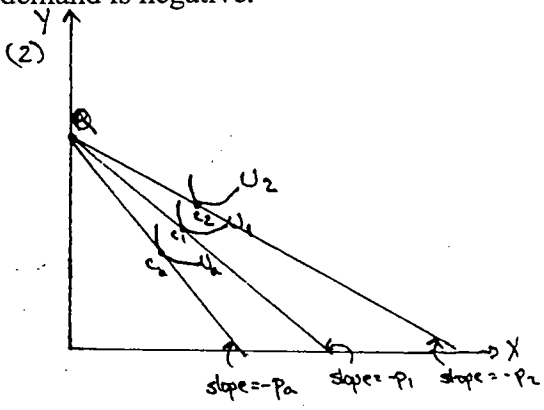
(1) Consider 2 goods (X,Y) and let the relative price $p_X/p_Y$ be denoted $p$
Suppose there are constant opportunity costs $a_X/a_Y$ that define the autarky price ratio $p_a$.
Graph 1 displays the PPF and Graph 2 depicts excess demand for good X:



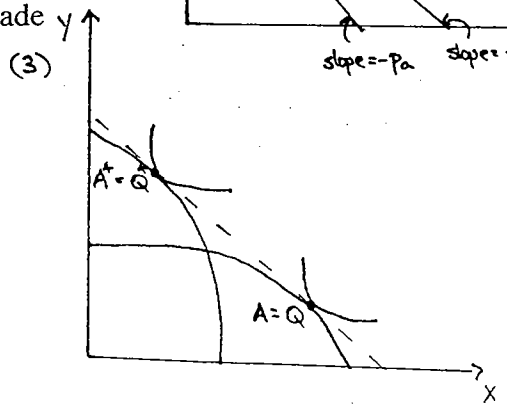

If the world price ratio p coincides with $p_a$, then producers will be indifferent about producing at any point along the PPF (since *MRT=p at all points on PPF*). Consumers, of course, will continue to consume at Co at this price. But since this Co can be reached by exporting X, importing X, or not trading at all, there will be a "flat" section at $p_a$. Notice that the distance OH' is identical to the distance AB.

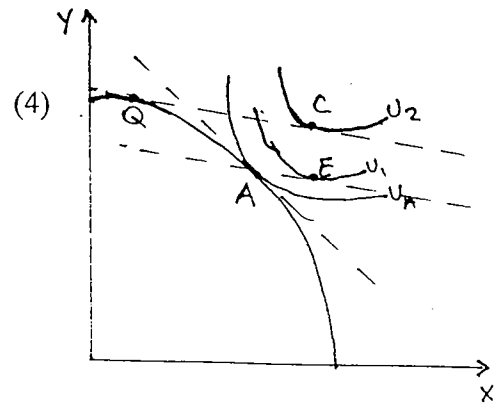
As usual, at prices $p$ below the auarky price, producers will want to produce less X (in this case they specialize completely in Y right away) and consumers will want to consume more of it--so the excess demand curve is downward sloping beyond point B. The opposite holds for prices above the autarky price: producers specialize in X, and consumers consume less (because it is becoming more expensive)→excess demand is negative.

(2) Again, let $p_a$ be the autarky price ratio and consider two world price ratios, $p_1$ and $p_2$ such that $p_2 < p_1 < p_a$. From the diagram it is clear that $U_2 > U_1 > U_a$ (i.e. welfare increases as $|p_a - p_{world}|$ increases).




(3) In this case the countries cannot gain from trade because the autarky price ratios are the same:



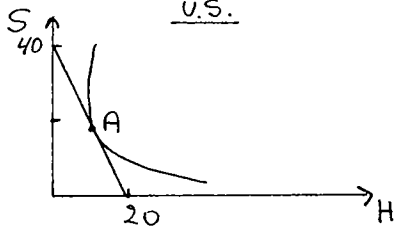



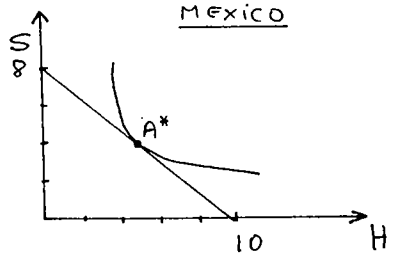
**II. Ricardian Model**

Consider a model with two countries (Mexico and the United States ), two goods (Hats and Shoes) and one input (Labor). The total labor endowment in each country is 40 hours. The production technologies are specified by the following unit labor requirements:

| | United States | Mexico(*) |
|---|---|---|
| Hats | 2 | 4 |
| Shoes | 1 | 5 |

a) Graph the PPF's for the US and Mexico on two graphs (put Shoes on the vertical-axis) and show the autarky production and consumption bundles chosen.




b)

Which country has a lower opportunity cost of producing hats? Justify.

Mexico does since the opportunity cost of producing hats (in terms of Shoes) in Mexico is $a^*_H / a^*_S =$ 4/5 while in the United States is $a_H / a_S =$ 2/1 .

Which country has a comparative advantrage in the production of Shoes?. Justify

The United States has a comparative advantage in the production of shoes since:

$a_S / a^*_S =$ 1/5 is smaller than $a_H / a^*_H =$ 2/4 .

c) Suppose that before NAFTA (the North American Free Trade Agreement, signed between the US and Mexico in 1993), the US and Mexico did not trade these two goods. What was the relationship between the autarky relative prices of Shoes ($P_S/P_H$) in the US and Mexico?

The autarky relative prices of shoes in terms of hats are lower in the US than in Mexico since:

$$(p_S / p_H)^{US} = \tfrac{1}{2} < (p_S / p_H)^{Mexico} = 5/4$$

d) Suppose that after the NAFTA agreement was signed and free trade occurs between the two countries, the world relative price of Hats is 1.5 (i.e. $P_H/P_S = 3/2 = 1.5$).

( i ) What is the pattern of trade?

US exports shoes (since it has a comparatrive advantage in shoes) and Mexico exports hats (since it has a comparative advantage in hats).

( ii ) Did the US and Mexico enjoy welfare improvements or losses after NAFTA? (Use a diagram for aech country to respond to this question).

Both countries are better off since they are able to achieve a higher indifference curve under free trade. Alternatively, they are better off because under free trade each country's consumption possibility frontier is larger.