Problem Set 2

Gains from Trade and the Ricardian Model

1. Use community indifference curves as your indicator of national welfare in order to evaluate the following claim: "An improvement in the terms of trade increases welfare only if the country increases its quantity of exports in response. If a country is unwilling or unable to increase exports when their price rises, then the price increase does it no good."

2. Consider an economy that does not produce goods, but is simply endowed with certain amounts of them, and in which the population consists of two groups: farmers who own only wheat and weavers who own only cloth. (Never mind that these people don't actually farm and weave – the names are just for convenience.) There are equal numbers of people in both groups, and they all share identical homothetic preferences for consuming wheat and cloth.

    a. Draw the production possibility frontier for this economy, and illustrate the autarky equilibrium.

    b. Is it possible to say who is better off in autarky, the farmers or the weavers? On what does that depend?

    c. Suppose now that the country opens up to free trade at a relative price of wheat that is higher than its autarky price. Show the new equilibrium.

    d. Construct the utility possibility frontiers for autarky and free trade, and indicate how the actual equilibria along these frontiers will compare. Who gains and who loses from trade? In what sense, if any, are there gains from trade in this case?

3. Which of the following characterize the Ricardian Model?

    a. Perfect mobility of factors across industries

    b. Perfect mobility of factors across countries

    c. Constant returns to scale

    d. The law of diminishing returns

    e. Identical technologies across industries

    f. Identical technologies across countries

    g. Cournot competition

    h. Perfect competition

4. Suppose that a small open economy has 200 workers and that its technology requires
    1 worker-hour per unit of food (thus 1 unit of food per worker-hour) and 3 worker-
    hours per unit of cloth (thus output per worker-hour = 1/3). In autarky, it employs
    100 workers in each of the two industries. With free trade, it faces world prices of
    $10 per unit of food and $20 per unit of cloth.

    a. Suppose that in autarky, workers in both industries are paid $8 per hour. What
        are the autarky prices of food and cloth?

    b. When the country opens to free trade, under the normal assumptions of the
        Ricardian model, what will it produce, import, and export? From the
        information given, can you determine the quantities of any of these? What is the
        country's national income with trade, measured in dollars?

    c. Suppose, contrary to the normal Ricardian Model assumptions, that when trade
        is opened, workers are unwilling or unable to change occupations, so that we
        continue to have 100 workers in each industry. What, then, is the national
        income of the country, in dollars, and how does it compare to the national
        income you got in part (b) when workers were mobile?

    d. What are the wages of the two groups of workers in part (c)?

    e. Does the country gain from trade in part (c)? Who gains and who loses within
        it?

5. Using the same assumptions at the start of problem 4, but returning to the usual
    assumption that labor can move between industries, suppose now that the wage of
    labor in the country in autarky had been $15 per hour instead of $8.

    a. Now what would be the autarky prices of Food and Cloth?

    b. When the country opens to free trade, what will happen? How will your answers
        to part (b) of problem 4 be changed?

    c. What is the wage of labor with free trade, in dollars?

    d. What has happened, as a result of trade, to the real wages of labor?

6. Use the 2-country Ricardian Model with free trade to work out the effects of the
    following changes (one at a time) on the Home country's terms of trade and welfare.
    Assume that the Home country has a comparative advantage in Food (the other good
    being Cloth), and that in the initial equilibrium, both countries specialize completely.
    You may assume, if it is helpful, that preferences are identical and homothetic in the
    two countries.

    a. An increase in the Foreign labor force.

    b. A increase, by the same percentage in both industries, in the Home country's
        productivity in producing both Food and Cloth.