Midterm Exam No. 2
July 30, 2003

Answer all questions, in blue book. Plan and budget your time. The questions are worth a total of 80 points, as indicated, and you will have 80 minutes to complete the exam.

1. [20 points] In the (standard) Specific Factors Model, analyze the effects on factor prices of an increase in the relative price of good X. That is,
    a. [14 points] Show how a rise in the price of good X, holding the nominal price of good Y constant, would change the market equilibrium values of the
        i.   nominal wage
        ii. nominal rental on capital employed in X
        iii. nominal rental on capital employed in Y
        iv. real wage
        v.   real rental on capital employed in X
        vi. real rental on capital employed in Y
    Use the usual Specific Factors diagram to help you get your results, together with other relationships that you know must hold, but also be sure to say explicitly what you have found and why.
    b. [4 points] Which of your answers would be changed if it were the nominal wage that were fixed, instead of the nominal price of Y?

2. [22 points] Consider a small open economy that, in the absence of any policy, would export good Y.
    a. [4 points] Of the following four policies,
        i.   A production tax on X
        ii. A consumption tax on X
        iii. A production tax on Y
        iv. A consumption tax on Y
    which policy, if large enough, could cause the country to export good X instead of exporting Y? Note: You do not necessarily need to draw any diagrams for this part, unless you find that it helps you to find the answer.
    b. [6 points] Let the relative price of X on the world market be p^*, and the country's relative price of X in autarky be p^A. For just **one** of the policies you've identified in part (a) (if there were more than one), suppose it were set equal to the percentage difference between p^* and p^A. Show that this would **not** be enough to reverse the pattern of trade.
    c. [6 points] For the same policy you chose in part (b), draw and explain an equilibrium in which the policy **does** reverse the pattern of trade.
    d. [6 points] Without doing any formal analysis for this part of the question, but drawing on what you know from our various models, who gains and who loses from the policy that you've illustrated in part (c)?

3. [18 points] We have argued that when an industry in a country is imperfectly
   competitive, then trade can provide an additional, "pro-competitive" benefit, over and
   above the gains from comparative advantage, to the extent that it forces producers to
   behave more like perfect competitors. But what if trade drives them out of business?
   Are there still gains from trade? And if there are, how do these compare to what
   would have happened with perfect competition? To answer this question, first
   a. [4 points] show and explain an autarky equilibrium in which one sector is a
      monopolist, and then
   b. [4 points] open to free trade at a world price such that all production in that sector
      ceases.
   c. [4 points] Show whether there are gains from trade, and
   d. [6 points] show how these gains or losses compare to what would have happened
      with trade if the sector had been perfectly competitive.

4. [20 points] Use the External Increasing Returns to Scale (EIRS) Model, from lecture
   and the handout, to answers the questions below. Use, for each, both the tools of the
   model *and* an explanation in words. As in the handout and in lecture, let the
   increasing returns good be *M*=machines and the constant returns good be *F*=food, and
   let the Home country have a larger labor force than the Foreign country.
   a. [6 points] Why, if two countries are otherwise identical, does the one with the
      larger labor force have a lower relative autarky price of machines?
   b. [6 points] Why, if these two countries open to free trade, will the larger country
      expand production of machines, and the other contract production of machines?
   c. [8 points] Assume a new free trade equilibrium in which the larger country does
      indeed produce more *M* than does the smaller country, as they started to do in part
      (b). In fact, assume that Home produces *only M* and Foreign produces only *F*,
      and further that the equilibrium relative price of *M* is above the autarky price in
      Foreign. Which of these countries gains more from trade, and why?