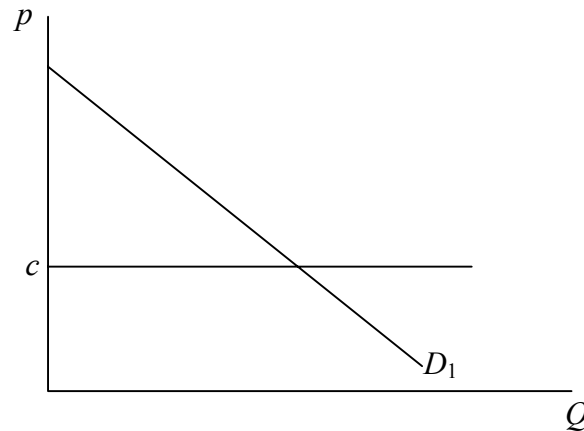


Problem Set 5

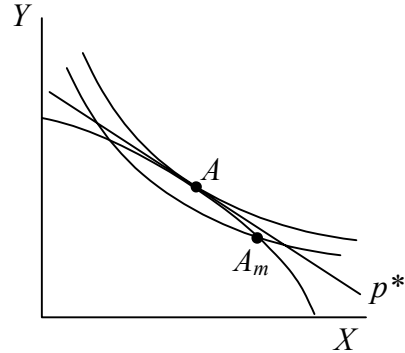
Imperfect Competition, Increasing Returns, etc.

1. Consider a monopolist in partial equilibrium who initially faces the demand curve D_1 shown below, and whose marginal cost is constant at c .



- a. Construct the profit-maximizing equilibrium for this monopolist.
 - b. Suppose now that the demand curve becomes everywhere more elastic, but continues to pass through the same price-quantity point that you found to be optimal in part (a). (That is, if the profit-maximizing monopolist was producing Q_1 and selling it for p_1 in part (a), quantity Q_1 still has price p_1 on the new, more elastic, demand curve.) Construct the new equilibrium for the monopolist and compare it to the old, in terms of quantity, price, and profit.
 - c. Explain what your answer to part (b) could have to do with international trade.
2. Explain why the gains from trade with imperfect competition may be larger than they are with perfect competition. Does it therefore follow that, if a country is going to trade in any case, it would be better off if its industries are imperfectly competitive instead of perfectly competitive, so as to enjoy those larger gains? Explain and illustrate using production possibility frontiers and community indifference curves.

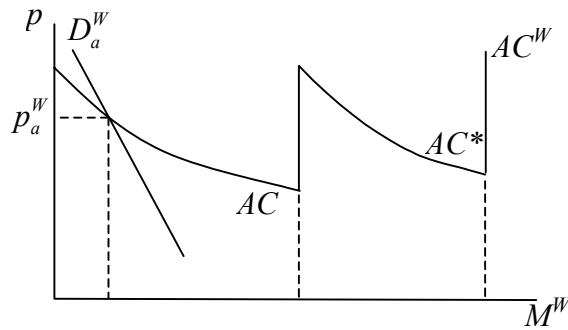
3. The graph below shows an economy in which industry Y is a monopoly that charges a markup over marginal cost of 50% (I know the graph is not drawn to scale), and autarky production and consumption take place at point A_m . (This is just like Figure 11.1 in the text, except that the monopoly here is in good Y instead of X , to give you practice.) Autarky equilibrium with a competitive Y industry would be at A . The country is small, and the world price is given by price line p^* , which happens coincidentally to be tangent to the PPF at A .



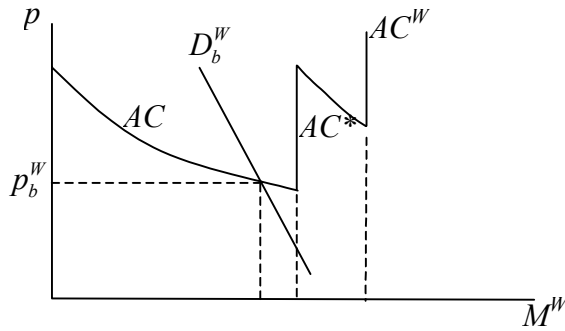
- a. How does the autarky relative price of Y paid by consumers compare to the free trade price?
 - b. If the country now opens to free international trade, the single producer of good Y in the country now becoming a price-taker at world prices, what will happen to production and consumption of X and Y , to the relative price of Y paid by consumers, to the profits of the firm that produces Y , and to consumer welfare?
 - c. Suppose, instead of opening to trade, the country's government were to pay a consumption subsidy of 50%. What would happen to the same variables asked about in part (b)?
 - d. Finally, suppose that the country were *both* to open to free trade *and* to pay a 50% subsidy on consumption of Y . What would happen then?
4. Consider an initial free-trade equilibrium in the External Increasing Returns to Scale (EIRS) model in which the Home country produces only M , the Foreign country produces only F , and the world relative price of M is about half way between the minimum average cost of Home and the maximum average cost of Foreign. Suppose now that the labor force in the Home country expands. (For simplicity, and probably incorrectly, assume the demand curve does *not* shift.) Find the effect on equilibrium price, and also on outputs and welfare in each country, under each of the following assumptions:
- a. The expansion is small enough that both countries continue to completely specialize.
 - b. The expansion is large enough that one country (which?) changes to producing both goods.

5. In the EIRS Handout, I pointed out that the model may possess multiple equilibria, and I showed in particular that if you interchanged the roles of Home and Foreign countries in Figure 6, you would get the alternative equilibrium shown in Figure 9, in which both the equilibrium price and the equilibrium pattern of specialization are quite different. Do the same sort of interchange for each of the equilibria shown below, in both of which Foreign does not produce good M , and determine whether in fact there exists another equilibrium in which Foreign does produce good M . If the answer is yes, then also compare levels of output, trade, and welfare in the two countries to their values in the other equilibrium.

a.



b.



6. Suppose the world consists of two countries, North and South, producing and consuming two goods, Food and Machines, where demand for Machines is income-elastic and demand for Food is income-inelastic. Production possibilities in North and South are the same, except that North is three times more productive than South, so that it can produce three times as much of either or both goods. Assume free trade between these countries,
 - a. Which country will export Food and which will export Machines?
 - b. Suppose that now South catches up to North in terms of productivity. How will this affect the welfare of consumers in North and South?
 - c. Suppose instead that South were able to eliminate North's productivity advantage, not by becoming more productive itself as in (b), but by somehow reducing North's productivity to South's level. How would this affect welfare in both countries?