

International Trade, Economics 181
Problem Set 3: Imperfect Competition
Due Date: November 7, Beginning of Class

1. For each of the following examples, explain whether this is a case of external or internal economies of scale:
 - (a) Most musical wind instruments in the United States are produced by more than a dozen factories in Elkhart, Indiana.
 - (b) All Hondas sold in the United States are either imported or produced in Marysville, Ohio.
 - (c) All airframes for Airbus, Europe's, only producer of large aircraft, are assembled in Toulouse, France.
 - (d) Hartford, Connecticut, is the insurance capital of the northeastern United States.
2. In perfect competition, firms set price equal to marginal cost. Why is this possible when isn't there are internal economies of scale?
3. Suppose the widget industry operates in the home country, such that each firm's sales of widgets is given by:

$$X = S \left[\frac{1}{n} - b(P - \bar{P}) \right]$$

where X is firm sales, S is total industry sales, n is the number of firms, P is the price charged by the firm, and \bar{P} is the average industry price. **Note** that if all firms charge the same price, then $X=S/n$.

(a) Suppose the pricing rule is $P = c + 1/(bn)$

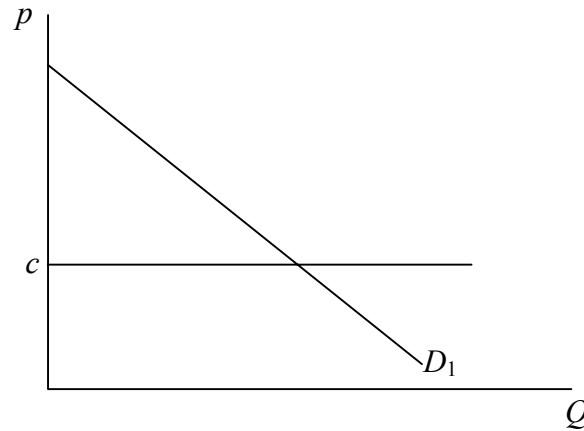
and the average cost is given by: $AC = c + n(F/S)$

where c is the marginal cost and F is the fixed cost. In economic terms, what is the no entry/no exit condition? Solve for the equilibrium number of firms (call it n_0).

(b) Graph the equilibrium situation. Now show **graphically** what happens if the market size **halves** (let's say because trade barriers between the home country and another country are erected) from S_0 to S_i ($S_i = 0.5 \times S_0$).

(c) Solve for the new number of firms (call it n_1) in terms of n_0 ? Using the pricing rule, solve for the new price level (in terms of n_0).

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



- Construct the profit-maximizing equilibrium for this monopolist.
 - 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.
 - Explain what your answer to part (b) could have to do with international trade.
5. 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 indifference curves.