

PS#4 - Economics 352 – I.O. Wissink S05

1. Answer "True, False or Uncertain" and defend/explain if not true.
 - a) Economists are silly to say that profits are competed away in the long-run in monopolistically competitive firms because no one would bother to stay in the industry if it is not profitable for them to do so.
 - b) Under monopolistic competition, a firm's fixed costs will generally decline with increases in output.
 - c) If a monopolistically competitive firm raises its price from the price that maximizes profit (given its demand curve), total revenue will normally be expected to fall.
 - d) For a monopolistically competitive firm in long-run equilibrium, $p = mc = lratc$, i.e., zero profits are earned, and q is allocatively efficient.
 - e) In the long-run, profits must be greater or equal to zero for the monopolistically competitive firm.
 - f) Under perfect competition the industry demand curve is horizontal, whereas under monopolistic competition it is downward sloping.
 - g) Monopolistically competitive firms, in the long-run, are allocatively inefficient, but are productively efficient.
 - h) All monopolists can and do successfully engage in price discrimination.
 - i) If OPEC could include all oil producing countries in their cartel and could strictly enforce price and quantity targets, then the price of gasoline would be unlimited.
 - j) The incentive to cheat in a cartel will be greater when the cartel produces a homogeneous good.
 - k) A member of a cartel has no incentive to violate the rules of the cartel since the cartel equates marginal revenue to marginal cost, thereby maximizing the profit of each member.
 - l) Testing for short-run economic profit is a sure-fire way to test for if a firm has a significant amount of market power.
 - m) Testing for short-run losses is a sure-fire way to test for the existence of a perfectly competitive firm.
 - n) A firm with NO monopoly power must be perfectly competitive.
 - o) Testing for productive efficiency is a sure-fire way to test for the existence of a perfectly competitive firm, i.e., if the firm is productively efficient then we know for sure that it must be competitive.

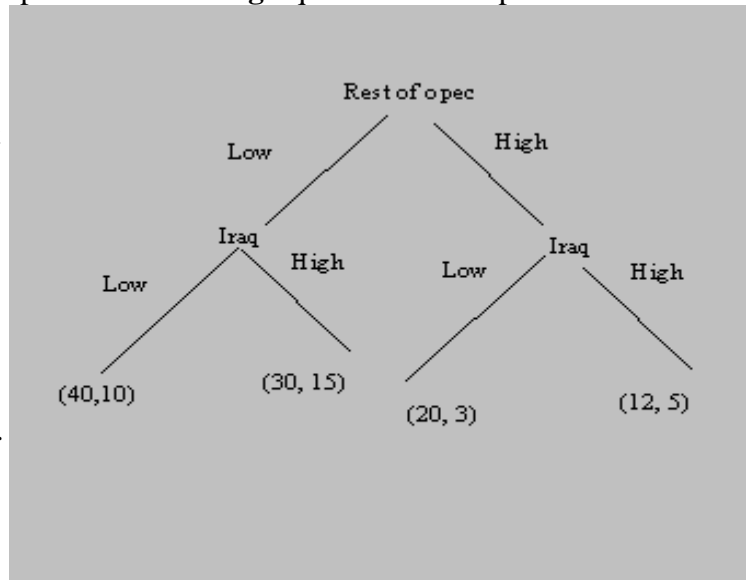
2. The Chrome Corporation is a monopolistically competitive firm with no fixed costs. Currently, in the short-run, it is producing x' units of output. At x' its marginal revenue equals \$4, its total revenue \$21, and its marginal revenue function is $mr = 10 - 2x$. At x' , its short run average total cost is at its minimum value. Assuming it is maximizing its profit at x' , what do each of the following equal.
 - a) the firm's output level;
 - b) the firm's price;
 - c) the firm's short-run average total costs;
 - d) the firm's total cost;
 - e) the firm's marginal cost;
 - f) the firm's short-run profit.

3. In a typical New York Times article entitled, "April Output by OPEC UP," the International Energy Agency reported that "oil production by OPEC rose to 18.2 million barrels/day in April from 17.7 m. barrels in March." Part of this increase was attributed to Iraq's refusal to sign the group's production sharing program and its subsequent increase in output to 2.6 m. barrels/day. OPEC's other 12 members however cooperated with their agreements and produced close to their agreed upon quota.

- a) Explain why oligopolists have an incentive to collude (i.e., what are the advantages to the oligopolists from cartelization?), and graphically describe how the cartel determines the cartel's profit maximizing level of output and target price. How are production quotas for the individual cartel members determined.

Suppose we could model this issue as a game between Iraq and the rest of OPEC. Each player has two strategies: **Low** quantities of oil production and **high** quantities of oil production. In "tree form" we can write this game as follows.

NOTE: The payoffs are written as (rest of OPEC's payoff, Iraq's payoff). Also note that the game is played simultaneously, that is neither the rest of OPEC nor IRAQ can observe the other country's strategy before choosing their own strategy.

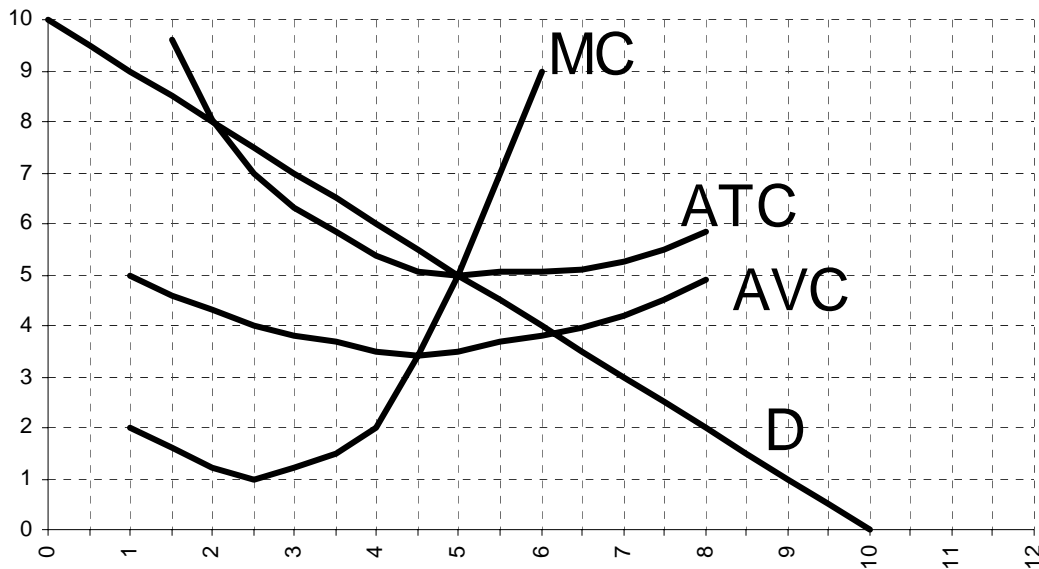


- b) Write the game in its "box" form, a.k.a. normal or matrix form.
- c) Do there exist any Nash equilibria to this game? If so what are they?
- d) If you were to advise the OPEC ministers, could you suggest an outcome that is better for **the group** than the outcome(s) you found above? Explain. What terms would you suggest be written into any contracts the two parties endorse. Is it necessary that these contracts be enforceable? Why or why not?
- e) Presumably, contracts like the one you suggested in your answer to part (h) are written up and signed by the OPEC countries, eventually. Why is it then, that we consistently observe oil selling at prices below the OPEC target price?
4. Suppose cartel members have lower (average and marginal) costs than non-cartel firms. Draw the residual demand curve facing the cartel. Show on the graph the cartel's profit-maximizing output and price. Could the cartel drive the other firms out of business and still make a profit? Under what conditions?
5. In a "Hotelling linear town" if all firms are required to charge the same fixed price and have location as the strategic variable, describe the equilibrium location of three firms.
6. Concentration ratios are typically a firm's share of domestic production. If the U.S. engages in increasingly more and more international trade, will such a concentration measure lose meaning? In what way?
7. Mr. Ithaca Video (IV) sells movies to Mr. Smith and his kid Ima Brat Smith. Suppose Mr. Smith's and Ima's demands are as follows:
Mr. Smith: $x_S = 10 - P$; Ima: $x_I = 8 - P$.

Suppose IV's marginal cost is constant and equal to \$3 regardless of who he sells a movie to and

regardless of how many movies he sells. There are no fixed costs.

- a) If IV behaves as a simple profit maximizing monopolist, what price will he charge per movie? How many movies in total will he sell? How many movies does Mr. Smith buy? How many movies does Ima buy? How much profit will IV earn?
 - b) At the simple monopoly solution what is the own price elasticity of demand for Mr. Smith? For Ima? What kind of movies would you say IV is selling?
 - c) Suppose IV decides to split the market and practice third degree price discrimination. What price will he charge Mr. Smith and Ima per movie? How many movies in total will he sell? How many movies does Mr. Smith buy? How many movies does Ima buy? How much profit will IV earn?
 - d) Suppose IV splits the market and practices perfect or 1st degree price discrimination in each market. How many movies does he sell in each market and at what price(s)? Will there be any dead weight loss? Explain.
 - e) Instead of practicing perfect price discrimination by charging different prices, suppose IV decides to require a "movie club fee" and then he'll charge some set price per movie. That is, he implements a two-part tariff scheme for selling movies. How much would he charge Mr. Smith to join the movie club? How much would he charge Ima to join? What price would he charge the two of them per movie? How does the outcome with this approach compare to the outcome in part (d).
8. The graph below depicts the demand (D) and cost curves for a firm that sells clothing items over the internet. Suppose the firm currently does not price discriminate. However, the firm is deciding whether to purchase a dataset containing detailed information on their customers and software that would allow them to perfectly price discriminate. The cost of this dataset and software is \$8. Should the firm purchase the dataset and software?

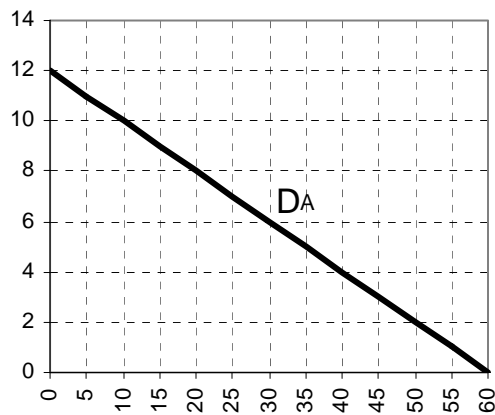


9. Suppose Polo currently has a retail store in Syracuse and a retail store in an outlet mall located in Waterloo (a 1 hour drive from Syracuse). For simplicity, assume that Polo only sells one particular shirt and the shirt is sold at both retail stores. Suppose Polo has two types of customers (Type A and Type B) and that all customers live in Syracuse. Assume that Polo cannot distinguish between Type A customers and Type B customers. Type A customers are willing to pay a maximum of \$100 for the shirt at the Syracuse retail store and Type B customers are willing to pay a maximum of \$90 for the shirt at the Syracuse retail store. There are 2,000 Type A customers and 1,000 Type B customers. Suppose the opportunity cost associated with

traveling to Waterloo is \$30 for Type A consumers and \$5 for Type B consumers. (Because both types live in Syracuse, assume the opportunity cost of buying the shirt at the Syracuse store is zero for both types.) Assume that Polo's marginal cost of the shirt is constant at \$10. What price should Polo charge for the shirt at its retail store in Syracuse and what price should Polo charge for the shirt at its retail store in the Waterloo outlet mall?

10. Suppose the demand for water coolers is from two types of individuals. There are **10** Type A individuals and **20** Type B individuals. Each type's individual demand curve is depicted on the graphs below (where q is the number of bottles of water per month). The company that rents the water coolers and provides the bottles of water **cannot** distinguish between type A and type B individuals. The marginal cost of a bottle of water is constant at \$2 and the company's monthly fixed costs are \$1000. Suppose the company that rents the water coolers and provides the bottles of water charges \$4 per water bottle and a monthly fixed fee (they call it rent for the cooler itself) that maximizes their profits. Calculate the company's profits from the optimal 2-part pricing scheme. (The optimal pricing scheme is the one that maximizes the company's profits. You must first determine the optimal fixed fee the company will charge given that the company charges \$4 per water bottle.)

Type A



Type B

