

MIDTERM EXAMINATION

INDUSTRIAL ORGANIZATION AND PUBLIC POLICY (Economics 640)

Spring 2009

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Instructions: There are two parts to this examination, weighted 40 points and 60 points, respectively. Write legibly and think carefully about your answers. You may find that graphical and/or mathematical analysis will assist you in answering some of these questions.

Part I. (40 Points) Short Answer and Analysis. Answer 4 (and only 4) of the following 6 questions.

1. Traveler's Express and Roadrunner, the only two shuttle services from Manhattan to Kansas City International Airport, merged recently. Yet the price of shuttle service has not changed. Suppose that the inverse demand function for shuttle service is given by $P = 66 - 2Q$. The post-merger cost function is given by $C(Q) = 2Q$. Assume that competitive pricing prevails pre-merger and monopolistic pricing prevails post merger. Determine the pre-merger cost function, $C(Q) = cQ$? That is, find the value of c ?
2. A monopolist sells two products with demand functions given by $Q_1 = 100P_1^{-2}P_2^\alpha$ and $Q_2 = 50P_2^{-3}P_1^\alpha$. In addition, suppose the monopolist's cost function is given by $C(Q_1, Q_2) = 4Q_1 + 2Q_2$. What are the monopolist's profit maximizing prices when $\alpha = 0$? What can you tell me about the monopolist's profit-maximizing prices when $\alpha < 0$. [You may assume that all Lerner indices are positive in equilibrium.] Provide the economic rationale for this finding.
3. Two firms in an industry announce their intentions to merge. News of this announcement causes the stock prices for the competitors of these two firms to increase? What might the Department of Justice infer from this development in terms of the merits of this merger? Provide a clear economic rationale for your answer.
4. Let the inverse demand function be given by $P(Q) = 24 - Q$ and let the cost function be given by $C(Q) = 4Q$. Suppose that the market is controlled by a monopolist. What is the (net) consumers' surplus when consumers are able to bribe the monopolist to price at the competitive level? [Assume zero transactions costs.]
5. Judge Richard Posner argues that the deadweight loss from monopoly understates the true social cost of monopoly. Briefly explain Posner's argument.

6. The market demand function is given by $Q = 20 - P$. A price change occurs that simultaneously raises revenue and increases consumers' surplus. What is the direction of the price change? What can you tell me about price in this market prior to the change? What can you infer about the price elasticity of demand before the price change?

Part II. (60 Points). Problems and Essay. Answer 2 (and only 2) of the following 3 questions.

1. Let the government's social welfare function be given by $W = CS + PS$, where W is social welfare, CS is consumers' surplus and PS is producer surplus. Let the inverse demand function be given by $P = 8 - Q + q$, where P is price, Q is output and q is measure of service quality. Let the pre-merger cost function be given by $C(Q) = 4Q$ and the post-merger cost function by $C(Q) = 4\theta Q$, where $0 < \theta \leq 1$. Also, assume that the competitive outcome prevails pre-merger, the monopoly outcome prevails post-merger and $q = 4$.
- Compute the pre-merger competitive output, competitive price, and level of economic welfare?
 - Provide an expression for the post-merger monopoly output and monopoly price?
 - Illustrate your results for parts a) and b) graphically.
 - For what values of θ is the merger welfare-enhancing?
 - How would your answer to part d) change, if at all, if quality declines from $q = 4$ to $q = 3$, post-merger?
2. This problem involves deriving an expression for deadweight loss from monopoly and explaining its significance. Suppose that market demand is linear and that marginal cost is constant and equal to c .
- Derive an expression for the deadweight loss from monopoly involving the distortion of price from marginal cost (t), the value of the market (V) and the price elasticity of demand (ϵ). What is true about the deadweight loss in a market when $\epsilon = 0$? Briefly explain the economic intuition for this result.
 - Provide a graphical depiction of the formula you derived in part a).
 - Suppose that Western Resources is the franchised provider of electric power in Kansas and is regulated by the Kansas Corporation Commission (KCC). Western Resources provides power in 3 distinct markets: industrial, business and residential. The demand functions for each of these 3 markets are given, respectively, by $Q^I = 2000 - 0.2P^I$, $Q^B = 1500 - 0.5P^B$ and $Q^R = 1000$, where Q^i and P^i , $i = I, B$ and R denote

the price and quantity of kilowatt hours, respectively. Suppose also that Western Resource's cost function is given by $C(Q^I, Q^B, Q^R) = 2000 + 2Q^I + 3Q^B + 4Q^R$. The KCC's objective is to set welfare-maximizing prices in each market subject to the constraint that Western Resources' profits are identically zero (i.e., total revenues = total cost). What prices will the KCC set? What is the economic intuition for your findings?

- d) How would your answer to part c) change if the demand function for the business market is instead given by $Q^B = 1500$?
 - e) What factors may cause the KCC to depart from these efficient prices?
3. The antitrust division of the Department of Justice (DOJ) is charged with enforcing the antitrust laws in the United States. One of their primary functions is to determine whether a proposed merger is in the public interest. This is a difficult task because the government frequently does not have the same type and quality of information (e.g., cost and demand data) that is available to the firm's themselves. Consequently, it may not be possible to conduct a rigorous welfare analysis for every proposed merger. Suppose that the DOJ proposes the following merger policy:

It is hereby enacted that any merger involving two or more firms is automatically approved provided that the firms involved in the merger agree to maintain price following the merger at levels no higher than the average market price that prevailed for a period of two years before the merger. This *price-cap* will be adjusted annually for inflation.

Provide a comprehensive analysis and critique of the DOJ's policy. This should include an assessment of whether the policy is in the public interest, what the economic welfare consequences of this policy might be, and any potential difficulties with this policy. You should explore all relevant dimensions in answering this question. You may rely upon the cases we discussed in class and in your readings, formal economic arguments, and any other logical arguments that you find useful.