

KANSAS STATE UNIVERSITY
Economic Analysis For Business

Problem Set 4
Professor J. Warren

Economics 815
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1. Suppose that the Department of Justice (DOJ) approves all mergers that are not expected to result in an increase in the price of the product. Let the market demand function be given by $P(Q) = 20 - Q$. Suppose that the market is competitive pre-merger and the cost function is given by $C(Q) = 12Q$. The market will be controlled by a monopolist post-merger and $C(Q) = xQ$, where $x > 0$. For what values of x will the DOJ approve the merger?
2. The market demand function is given by $Q = 24 - P$, where Q is output and P is price.
 - a) What price would a profit-maximizing monopolist charge if $C(Q) = F + Q^2$, where $F > 0$ represents fixed costs? What are the monopolist's profits if average fixed costs in equilibrium are equal to 4?
 - b) How much better/worse off would consumers be if the competitive outcome prevails in this market? [Assume the same cost function as in part a)]
 - c) Suppose the cost function is now given by $C(Q) = 2nQ$, where the positive integer n is the number of firms participating in this market. Suppose that the competitive outcome prevails for all $n > 1$. If consumers could choose the number of firms participating in this market, what value of n would they choose? Provide a clear economic rationale for your answer.
3. A monopolist serves an aggregate market with a demand function given by $Q = 36 - 2P$. This market can be partitioned into submarkets 1 and 2 with submarket demand functions given by $Q_1 = 16 - 1/2P_1$ and $Q_2 = 20 - 3/2P_2$. Marginal cost is constant and equal to 4. Determine the profit-maximizing monopolist's uniform aggregate price. What is the corresponding level of profits? What prices will the monopolist choose under third-degree price discrimination? What is the corresponding level of profits? What level of profits does the monopolist realize under third-degree price discrimination if resale cannot be prevented?
4. The Department of Justice (DOJ) is charged with overseeing mergers in the United States to determine if they are in the *public interest*. A merger is considered in the *public interest* if consumers' surplus does not fall as a result of the merger. The DOJ is currently considering the merits of a merger between TWA and Ozark airlines. Currently, TWA and Ozark fly the same routes and the market is perfectly

competitive. The market demand for airline travel is given by $Q = 32 - 2P + q$, where Q is quantity demanded, P is price, and q is an index of service quality. In addition, both airlines currently use the same production function which is given by $Q = \min\{2K, L\}$. The airlines claim that they will realize greater efficiencies if allowed to merge. This implies that the production function for air travel post-merger will be given by $Q = x \min\{2K, L\}$, where $x > 1$. Suppose that $r = 4$ and $w = 3$, and the pre-merger service quality index is $q = 4$.

- a) Suppose that the market for air travel is a monopoly following the merger between TWA and Ozark. Also assume that $x = 5/4$ and q remains constant at 4. How much better/worse off are consumers as a result of this merger?
- b) Suppose that the market for air travel remains perfectly competitive following the merger and that $x = 5/4$. For what values of q will the DOJ approve this merger?
- c) Continue to assume that the market for air travel remains perfectly competitive following the merger. Suppose that the DOJ has evidence that on average service quality declines by 25% following a merger. For what values of x will the DOJ approve this merger?