

Homework Problem #27

Imperfect Competition in the Market for Tickets to Movie Theaters

Introductory Discussion

The behavior of firms in an industry, and thus of the entire industry, is heavily influenced by the particular market structure in which they operate. Economists delineate four major market structures: perfect competition, pure monopoly, oligopoly, and monopolistic competition. In the real world of course sharp divisions are not always evident, and there are grey areas where oligopoly shades into monopolistic competition, etc. Your textbook has a much more detailed description of these market structures than we'll consider here. You might want to review the chapters on monopolistic competition and oligopoly as preparation for working on this problem.

One of the themes of this problem is how environmental circumstances, such as geographic location, influence market structure. A second theme is how firms interact in different environments, and a third theme is how the elasticity of demand that an individual firm faces is influenced by these factors. In this problem you will work out a number of computations and answer several questions designed to illustrate several facets of these themes using the vehicle of the market for entertainment, specifically, **going out to the movies**. You will also work out the details of price discrimination, a policy often practiced by theaters (and airlines) in situations where firms find that all buyers do not have to be charged the same price.

In doing this analysis you will need to construct a marginal revenue (MR) curve from an associated demand curve. See HW #24 on p. 154 above or recall that total revenue (TR) is defined as price times quantity, and that marginal revenue is the ratio of the change in revenue to a change in quantity. Thus in symbols we have:

$$TR = P \times Q \quad \text{and} \quad MR = \Delta TR / \Delta Q$$

If there is a change in Q , this will change TR directly, but ΔQ also changes TR indirectly through changes in the price. For the firm in a competitive environment this second influence is inconsequential, but firms in other market conditions have to consider this indirect effect. We could summarize the change in TR as:

$$\Delta TR = P \times \Delta Q + \Delta P \times Q$$

Dividing both sides of this expression by ΔQ gives a new way of writing marginal revenue:

$$MR = P + (\Delta P / \Delta Q) \times Q$$

Note that the expression $\Delta P / \Delta Q$ is nothing more than the slope of the demand curve. In Part II below you'll use linear demand curves that have a formula like $P = a - bQ$, where the symbol "a" represents the intersection of the demand curve with the price axis, and "-b" represents the slope of the demand curve. By substituting these ideas into the previous equation we can write a new expression for marginal revenue:

$$MR = a - bQ - bQ = a - 2bQ$$

What we have here is a line like the demand curve, only twice as steep. Another way to look at this is that the marginal revenue curve is located halfway between the vertical axis and the demand curve. **Use this idea in the graphs of Part II to find the rate of output where marginal revenue is equal to marginal cost.**

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(LAST) (FIRST)

Applications - Part I

Consider two markets for movie entertainment. One market is in a town of 25,000 people where two theaters offer movie entertainment. Another is in a city of 2 million where there are numerous theaters offering such entertainment. Suppose further that each theater is a separate firm and that they never show the same movie at the same time.

A. What sort of market structure would best characterize these markets?

town: _____ city: _____

Briefly explain your reasoning:

B. What could you say about the relative size of the price elasticity of demand faced by an individual theater owner in the city market compared to the small town market? Explain how you reached your conclusion.

C. What influence would the presence of alternative entertainment possibilities (nightclubs, museums, concerts, etc.) have on these elasticities? Explain briefly.

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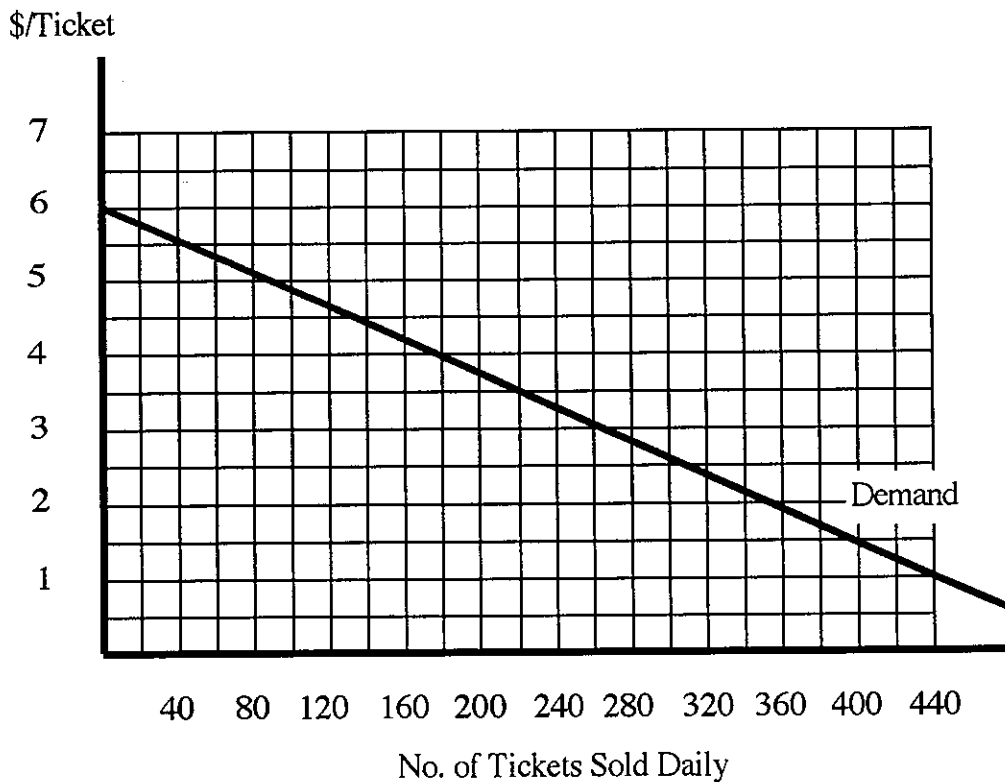
Applications - Part II

The small town market is illustrated in the diagram below, showing the best estimate of the demand curve for movie tickets. Suppose the marginal cost for each of the two theaters is constant at \$1.00. That is, each theater incurs additional cost of \$1.00 for each ticket it sells.

- A. What would be the outcome in this market if the two theaters form a cartel by entering into a price fixing agreement? Hint: What price would maximize their combined profit?

$P^* =$ _____ $Q^* =$ _____

The Small Town Movie Market



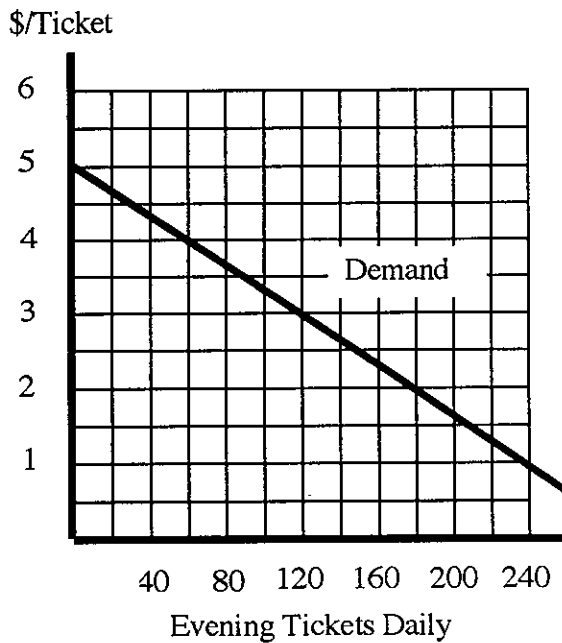
- B. What can you say about incentives each theater might have to cheat on the agreement?

Questions continued on page 164.

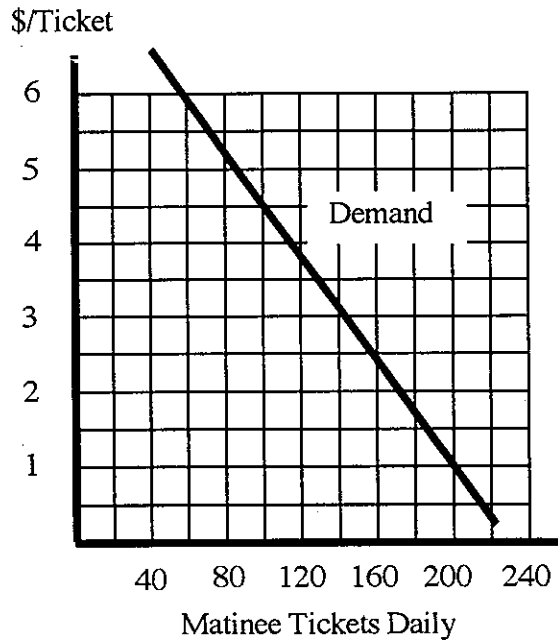
- C. Suppose the two theaters are successful in implementing the price-fixing agreement. With some market research the partnership of theaters finds that this apparent market is actually two markets, one for matinees and another for evening showings. Research revealed the diagrams below that portray these two markets. Now what will be the price fixing agreement? (Hint: Even though the markets may be distinct, the same films, screens and seats are used to produce entertainment, so the MC of a ticket is \$1.00 whether it's for a matinee or an evening show. Use this to find where the partnership maximizes profit in each of the markets separately.)

Matinee $P^* =$ _____ Evening $P^* =$ _____

Small Town Market for Matinees



Small Town Market for Evening Shows



- D. How much has this discovery improved their joint profit?

Profit has increased by \$_____.

- E. Why wouldn't a cooperative agreement like this be likely to evolve in the city's movie market?