

1 Monopolies

Market Power The ability of a firm to charge a price above marginal cost and earn a positive profit.

Monopolists have market power, so they do not take prices as given. Instead, price is a function of the quantity they produce $\Rightarrow p = p(q)$.

$$R = p(q) \cdot q$$

$$MR = \frac{\partial R}{\partial q} = p(q) + \frac{\partial p(q)}{\partial q} \cdot q = p(q) \cdot \left(1 + \frac{1}{\varepsilon}\right)$$

Marginal revenue is:

Positive if demand is elastic	$\Rightarrow \varepsilon < -1$
Equal to price if demand is perfectly elastic	$\Rightarrow \varepsilon = -\infty$
Negative if demand is inelastic	$\Rightarrow -1 < \varepsilon \leq 0$

A monopolist still sets $MR = MC$, but they then set the price according to the *demand* curve, *not* according to the marginal revenue curve.

Lerner Index The ratio of the difference between price and marginal cost to the price.

$$\frac{p - MC}{p} = -\frac{1}{\varepsilon} \in [0, 1]$$

Natural Monopoly A situation in which one firm can produce the total output of the market at lower cost than several firms could.

\Rightarrow Quantity demanded is such that long run average average cost is decreasing.

2 Exercises

1. You and some of your fellow economics students have noticed that no matter how many times a professor tells students to bring a scantron, there will always be some students who come to an exam without one. Using the tools from Dr. Bushnell's ECN 100 class, you start selling scantron forms before exams. Your cost of selling scantrons is $C(q) = 36 + 4q^2$ and demand for scantrons by forgetful students is $q(p) = 120 - 4p$.
 - (a) Suppose that all of the economics students are competing to sell scantrons to the students who have forgotten a form. How many scantrons will be sold by each firm under perfect competition?
 - (b) What will the equilibrium price be?
 - (c) How many students will be selling scantrons?
 - (d) After learning about cartels, you want to apply this knowledge to the real world. You and your fellow students decide to collude and attempt to act as a monopoly. If there are the same number of students in the cartel as there were in part (c), what is your aggregate supply curve?
 - (e) How many scantrons will you sell as a cartel?
 - (f) What is the price that you will sell scantrons at?
 - (g) What was your profit under perfect competition? If the cartel's production is split up amongst each student equally, what are your profits under collusion?
 - (h) Are you better or worse off under collusion? Is society better or worse off under collusion? What is the change in welfare?
2. You have started a business for every Californian's new favorite drink, kombucha. Your brand (Kombooya) competes directly with a brand that markets to mothers (Mombucha). The total market demand for kombucha is given by $p(Q) = 840 - 5Q$, where $Q = q_1 + q_2$. Each firm has a cost function equal to $C(q) = 50 + 3q^2$.
 - (a) What is Kombooya's best response function to the quantity produced by Mombucha?

- (b) What is Mombucha's best response function to the quantity produced by Kombooya?
- (c) How much will each firm produce in equilibrium?
- (d) What will the price of kombucha be in equilibrium?