Wednesday, October 18, 2023

Understanding Monopoly

Introduction to Microeconomics: Econ 304K

Monopolies have market power

In this chapter, we explore another market structure: monopoly. Monopolists enjoy market power for their specific product, but they cannot force consumers to purchase what they're selling. By the law of demand, when a monopolist charges more, people buy less. If demand is low enough, a monopolist may even experience a loss instead of a profit; but on the other hand, when demand is high, and on top of that is inelastic, a monopolist is sometimes able to earn massive profits.

The typical result of monopoly is higher prices and less output than we find in a competitive market.

In this chapter, we explore the conditions that give rise to monopolies, how they work, and what can be done about the problem they create.

Big Questions

- **What are monopolies created?**
  - Monopoly is a market structure characterized by a single seller that produces a well-defined product with no good substitutes.
  - Monopolies operate in a market with high barriers to entry, the chief source of market power.
  - Monopolies are created when a single seller supplies the entire market for a particular good or service.
- **How much do monopolies charge, and how much do they produce?**
  - Monopolists are price makers who may earn long-run economic profits
  - Like perfectly competitive firms, a monopolist tries to maximize its profits. To do so, it uses the profit-maximizing rule, MR = MC, to select the optimal price and quantity combination of a good or service.
- **What are the problems with and solutions for monopoly?**

- From an efficiency standpoint, the monopolist charges too much and produces too little; because the monopolist's output is smaller than the output that would exist in a competitive market, monopolies lead to deadweight loss.
- Government grants of monopoly power encourage rent seeking, or the use of resources to secure monopoly rights through political process.
- There are three potential solutions to the problem of monopoly. First, the government may break up firms that gain too much market power in order to restore a competitive market. Second, the government can promote open markets by reducing trade barriers. Third, the government can regulate a monopolist's ability to charge excessive prices.
- When the costs of government involvement in regulating a monopoly are greater than the efficiency gains that can be realized, it is better to leave the monopolist alone.

How are monopolies created?

As we explained in Chapter 3, a monopoly exists when a single seller supplies the entire market for a particular good or service. Two conditions enable a single seller to become a monopolist. First, the firm must have something unique to sell—that is, something without close substitutes. Second, it must have a way to prevent potential competitors from entering the market.

Monopolies occur in many places and for different reasons. **Monopoly power**, which is a measure of a monopolist's ability to set the price of a good or service.

A monopolist operates in a market with high **barriers to entry**, which are restrictions that make it difficult for new firms to enter a market. As a result, monopolists have no competition nor any immediate threat of competition. High barriers to entry insulate the monopolist from competition, which means that many monopolists enjoy long-run economic profits. There are two types of barriers to entry: natural barriers and government-created barriers.

Natural barriers

Some barriers exist naturally within the market. These include control of resources, problems in raising capital, and economies of scale.

Control of resources

The best way to limit competition is to control a resource that is essential in the production process. This extremely effective barrier to entry is hard to

accomplish; but if you control a scarce resource, other competitors will not be able to find enough of it to compete.

Problems in raising capital

Monopolists are usually very big companies that have grown over an extended period; even if you had a wonderful business plan, it is unlikely that a bank or a venture-capital company would lend you enough money to start a business that could compete effectively with a well-established company. Lenders provide capital for business projects when the chance of success is high, but the chance of a new company successfully competing against an entrenched monopolist is not high. Consequently, raising capital to compete effectively is difficult.

Economies of Scale

In ***Chapter 8***, we saw that economies of scale occur when long-run average costs fall as production expands. Low cost units and the low prices that follow give some larger firms the ability to drive rivals out of business. In an industry that enjoys large economies of scale, production costs per unit continue to fall as a firm expands. Smaller rivals then have much higher average costs that

The Characteristics of Monopolies
One seller
A unique product
High barriers to entry
Price making

prevent them from competing with a larger company; as a result, firms in the industry tend to combine over time. These mergers lead to the creation of a **natural monopoly**, which occurs when a single large firm has lower costs than any potential smaller competitor.

Government-created Barriers

The creation of a monopoly can be either intentional or an unintended consequence of a government policy. Government-enforced statutes and regulations, such as laws and regulations covering licenses and patents, limit the scope of competition by creating barriers to entry.

Licensing

In many instances, it makes sense to give single firm the exclusive right to sell a good or service. To minimize negative externalities, governments occasionally establish monopolies, or near monopolies, through licensing requirements. Licensing also creates an opportunity for corruption; in fact, in many parts of the world, bribery is so common that it often determines which companies receive licenses in the first place.

Patents and Copyright Law

Another area in which the government fosters monopoly is that of patents and copyrights. By granting patents and copyrights to developers and inventors, the

government creates monopolies; patents and copyrights create stronger incentives to develop new drugs and produce new music than would exit if market competitors could immediately copy inventions..the social benefits of patent law can be enormous.
After the patent or copyright expires, rivals can mimic the invention; this new competition opens up the market and provides dual benefits: wider access to the innovation and more sellers—both of which are good for consumers in the long run.
Nonetheless, many economists wonder if patents and copyrights are necessary or have unintended consequences. Sometimes copyright holders benefit more from exposure than from exercising their right to charge consumers. The point to remember is that copyright protection gives artists the right to decide how to distribute their work and what price to charge. It also gives them the ability to litigate when their work is stolen, illegally downloaded, or improperly used.
Though market-created and government-created barriers occur for different reasons, they have the same effect — they create monopolies. ***Table 10.1*** summarizes the key characteristics of monopolies. In the next section, we examine how the monopolist determines the price it charges and how much to produce, explaining the term "***price making***" listed in ***Table 10.1***.

How much do monopolies charge and how much do they produce?

Both monopolists and firms in a competitive market seek to earn a profit. However, a monopolist is the sole provider of its product and holds market power, thus, monopolists are price makers. A **price maker** has some control over the price it charges. As you learned in ***Chapter 9***, a firm in a competitive market is a price taker.

We can see the difference between price takers and price makers graphically in Figure 10.1. The demand curve for the product of a firm in a competitive market, shown in panel (a), is horizontal. When individual firms are price takers, they have no control over what they charge. In other words, demand is perfectly elastic—or horizontal—because every firm sells the same product; demand for an individual firm's product exists only at the price determined by the market, and each firm is such a small part of the market that it can sell its entire output without lowering the price.

In contrast, because a monopolist is the only firm—the sole provider—in the industry, the demand curve for its product, shown in panel (b), constitutes the market demand curve; but the demand curve is downward sloping, which limits the monopolist's ability to make a profit. The monopolist would like to exploit its market power by charging a high price to many customers. However, the law of demand, which identifies a negative relationship between price and quantity demanded, dictates otherwise. Unlike the horizontal demand curve of a firm in a competitive market, the downward-sloping demand curve of the monopolist has many price-output combinations. If market

FIGURE 10.1

Comparing the Competitive Fi

(a) Firms in a competitive
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price and output.

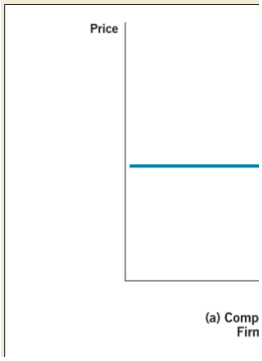


TABLE 10.2

book content

Calculating the Monopolist's Marginal Revenue

(1) Quantity of customers (Q) Formula:	(2) Price of service (P)	(3) Total revenue (TR) Q × P	(4) Marginal revenue per 1,000 customers (MR) Δ TR
0	$100	$0.00	
1,000	90	90,000	$90,000
2,000	80	160,000	70,000
3,000	70	210,000	50,000
4,000	60	240,000	30,000
5,000	50	250,000	10,000
6,000	40	240,000	−10,000
7,000	30	210,000	−30,000
8,000	20	160,000	−50,000
9,000	10	90,000	−70,000
10,000	0	0.00	−90,000

demand is more elastic, a monopolist will choose a lower price; as a result, monopolists must search for the profit-maximizing price and output.

The profit-maximizing rule for the monopolist

A competitive firm can sell all it produces at the existing market price; but a monopolist, because of the downward-sloping demand curve, must search for the most profitable price. To maximize profits, a monopolist can use the profit-maximizing rule we introduced in **Chapter 9**: MR = MC. For the price-taking firm, MR is just the market price, full stop; for the monopolist, however, there's a calculation involved.

Table 10.2 shows the marginal revenue for a cable company that serves a small community. Notice the negative relationship between output (quantity of customers) and price in columns 1 and 2: as the price goes, the quantity of consumers goes up. Total revenue is calculated by multiplying output by price (TR $= Q \times P$). At first, total revenue rises as the price falls, once the price becomes too low ($\$40$), total revenue begins to fall. As a result, the total revenue in column 3 initially rises to $\$250{,}000$ before it begins to fall off; the final column, marginal revenue, shows the change (Δ) in total revenue. Here we see positive (thought falling) marginal revenue associated with prices between $100 and $50 (see the green dollar amounts in column 4). Below $50, marginal revenue becomes negative (see the red dollar amounts in column 4).

The change in total revenue reflects the trade-off a monopolist encounters in trying to attract additional customers, to gain additional sales, the firm must lower its price, but the lower the price is available to both new and existing customers. The impact on total revenue therefore depends on how many new customers buy the good because of the lower price.

Figure 10.2 uses the linear demand schedule from ***Table 10.2*** to illustrate the two separate effects that determine marginal revenue. First, there is **price effect**, which reflects how the lower price affects the revenue; but dropping the price also has an ***output effect***, which reflects how the lower price affects the number of customers.

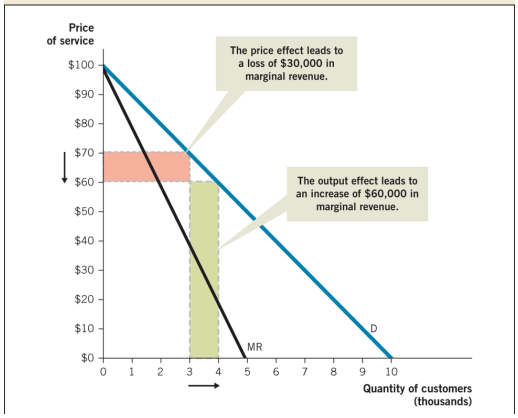
Lost revenue associated with the price effect are always subtracted from the revenue gains created by the output effect. There is a price effect whenever the price drops, the marginal revenue curve lies below the demand curve, therefore, in ***Figure 10.2***, the y intercept is the same for the demand and marginal revenue curves and the x-intercept of the MR curve is half of the demand curve's.

At high price levels — where demand is elastic— the price effect is small relative to the output effect, as the price drops, demand slowly becomes more inelastic. The output effect diminishes and the price effect increases, in other words, as the price falls, it becomes harder for the firm to acquire enough new customers to make up for the difference in lost revenue. Eventually, the price effect becomes larger than the output effect. This means that the marginal revenue curve will have the same y intercept as the demand curve and be twice as steep; as a result, marginal revenue becomes negative and dips below the x-axis, as shown by the MR curve in Figure 10.2. When the marginal revenue is negative, the firm cannot maximize profit; this outcome puts an upper limit on the amount the firm will produce; this outcome is evident in ***Table 10.2***: once the price becomes too low, the firm's marginal revenue is negative.

FIGURE 10.2

The Marginal Revenue Curve and the Demand Curve

A price drop has two effects. (1) Existing customers now pay less—this is the price effect. (2) New customers decide to purchase the good for the first time —this is the output effect. The relative size of the two effects, as shown by the red and green rectangles, determines whether the firm is able to increase its revenue by lowering its price. In this case, marginal revenue increases by $30,000.



Deciding how much to produce

In ***Chapter 9***, we explored the profit-maximizing rule for a firm in a competitive market. This rule also applies to a monopolist: marginal revenue should equal to marginal cost. However, there is one big difference: a monopolist does not charge a price equal to marginal revenue.

Figure 10.3 illustrates the profit maximizing decision-making process for a monopolist. We use a two-step process to determine the monopolist's profit:

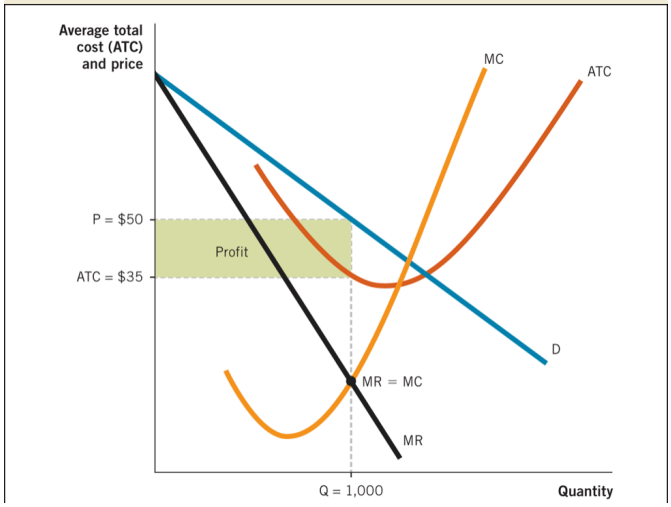
1. Locate the point at which the firm will maximize its profits: MR = MC

2. Set the price: from the point at which MR = MC, determines the profit maximizing output, Q. From Q, move up along the dashed line until it intersects with the demand curve (D). From that point, move horizontally until you come to the y-axis. This point on the y-axis tells us the price (P) the monopolists should charge. Notice that the monopolist's price (P) is greater than MC (P > MC); this result differs from the competitive outcome, where P = MC.

FIGURE 10.3

The Monopolist's Profit Maximization

The firm uses the profit-maximizing rule to locate the point at which MR = MC. This condition determines the ideal output level, Q. Because the price (which is determined by the demand curve) is higher than the average total cost curve (ATC) along the dashed line at quantity Q, the firm makes the profit shown in the green area.



Using this two-step process, we can determine the monopolist's profits; locate the average total cost, ATC, of making Q units. The difference between the price and the average total cost multiplied by Q tells us the profit (or loss) the firm makes. Any time the U-shaped ATC curve dips below the downward sloping demand curve, D, there is a way to earn positive economic profits.

Table 10.3 summarizes the differences between a competitive market and a monopoly. The competitive firm must take the price established in the market. If it does not operate efficiently, it cannot survive; nor can it make an economic profit in the long run. The monopolist operates very differently; because high barriers to entry limit competition, the monopolist may be able to earn long-run profits by restricting output. It operates inefficiently from society's perspective, and it has significant market power.

TABLE 10.3

The Major Differences between a Monopoly and a Competitive Market

Competitive market	Monopoly
Many firms	One firm
Cannot earn long-run economic profits	May earn long-run economic profits
Has no market power (is a price taker)	Has significant market power (is a price maker)
Produces an efficient level of output (because P = MC)	Produces less than the efficient level of output (because P > MC)

What are the problems with and solutions for, monopoly?

Monopolies can adversely affect society by restricting output and charging higher prices than sellers in competitive markets do. This activity causes monopolies to operate inefficiently, provide less choice, promote unhealthy form of competition known as **rent-seeking** (addressed in a later section), and make economic profits that fail to guide resources to their highest-valued use. Recall that market failure occurs when there is an inefficient allocation of resources in a market. Once we have examined the problems with monopoly, we will turn to potential solutions to the problem of monopoly.

The problems with monopoly

Monopolies result in an inefficient level of output, provide fewer choices to consumers, and encourage monopoly firms to lobby for government protection.

Inefficient output and price

From an efficiency standpoint, the monopolist charges too much and produces too little. This result is evident in Figure 10.4, which shows what happens when a competitive market (denoted by subscript C) ends up being controlled by a monopolist (denoted by the subscript M).

FIGURE 10.4

When a Competitive Industry Becomes a Monopoly

(a) In a competitive industry, the intersection of supply and demand determines the price (P_C) and quantity (Q_C). (b) When a monopolist controls an entire industry, the supply curve becomes the monopolist's marginal cost curve. The monopolist uses MR = MC to determine its price (P_M) and quantity (Q_M). As a result, the monopolist charges a higher price and produces a smaller output than when an entire industry is populated with competitive firms.

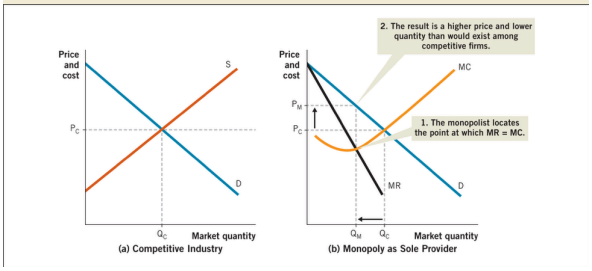
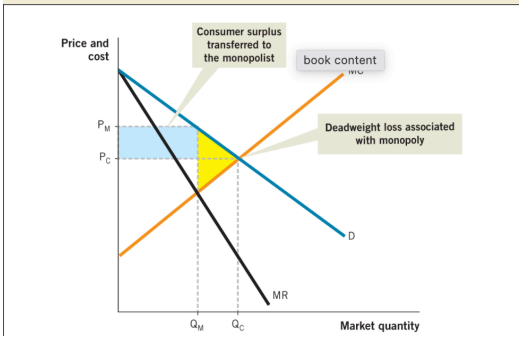


FIGURE 10.5

The Deadweight Loss of Monopoly

Because the profit-maximizing monopolist produces an output of Q_M, an amount that is less than Q_C, the result is the deadweight loss shown in the yellow triangle. The blue rectangle is the consumer surplus transferred to the monopolist.



Few choices for consumers

Another problem associated with monopoly is the lack of choice; have you ever wondered why cable companies offer their services in bundles? You can buy basic, digital, and premium packages, but one thing you cannot do is buy just the cable channels you want. This situation prevails because cable companies function like monopolies, and monopolies limit consumer choice; because the monopolist sells a good with a few close substitutes, it can leverage its market power to offer product features that benefit the monopolist at the expense of consumer choice. With a monopolist, there's is only one outlet: if you do not like the design, features, price, or any other aspect of the good provided, you have few [or no] other option.

Rent seeking

The term **rent seeking** was coined by Anne Krueger in 1974; it refers to the attempt to gain monopoly power through the political process, by using lobbying and other means to secure legal monopoly rights. Throughout this text, we have seen the desirable effects of competition: lower prices, increased efficiency, and enhanced service and quality. However, rent seeking in a form of competition that produces an undesirable result. When firms compete to become monopolists, there is one winner, without any of these benefits usually associated with competition.

This is a general rule: when lobbying is more profitable than creativity and productivity, typically companies that can afford to will prefer to lobby. If the lobbying succeeds, society can be adversely affected.

Solutions to the problem of monopoly

We have learned that monopolies do not produce as much social welfare as competitive markets do. As a result, public policy approaches attempt to address this problem. The policy solutions include breaking up the monopoly, reducing trade barriers, and regulating markets.

Breaking up the monopoly

Eliminating deadweight loss and restoring efficiency can be as simple as promoting competition. The government can help limit monopoly outcomes and restore a competitive balance; the government can accomplish this goal through anti-trust legislation. Anti-trust laws are designed to prevent monopoly practices and promote competition; the government has exercised control over monopoly practices since the passage of the Sherman Act in 1890, and the task currently falls to the Department of Justice.

Reducing trade barriers

Countries use **tariffs**, which are taxes on imported goods, as a trade barrier to prevent competition, and protect domestic business. However, any barrier—whether a tariff, a quota, or a prohibition—limits the possible gains from trade. For monopolists, trade barriers prevent rivals from entering territory; in the other hand, reducing trade barriers creates more competition, lessens the influence of monopoly and promotes efficient use of resources.

Regulating markets

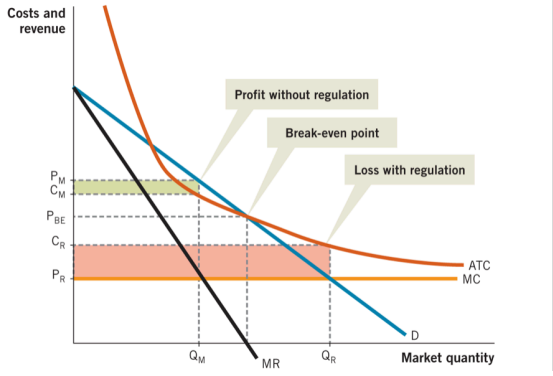
In the case of a natural monopoly, it is not practical to harness the benefits of competition. When a natural monopoly exists, the government may choose to use the marginal cost pricing rule, $P = \text{MC}$, to generate the greatest welfare for society; because the price is determined along the demand curve, setting $P = \text{MC}$ guarantees that the good or service will be produced as long as the willingness to pay exceeds the additional cost of production. ***Figure 10.6*** shows the difference in pricing and profits for a regulated monopoly and an unregulated natural monopoly; recall that a natural monopoly is characterized by economies of scale, which we

can idealize as a constant marginal cost that leads to a steadily dropping ATC curve, as in ***Figure 10.6***

FIGURE 10.6

The Regulatory Solution for Natural Monopoly

An unregulated monopolist uses the profit-maximizing rule MR = MC and earns a small profit, shown in the green rectangle. If the monopolist is regulated using the marginal cost pricing rule, P = MC, it will experience the loss shown in the red rectangle.



To maximize profits, an unregulated monopolist sets MR = MC and produces quantity QM at a price of PM; because PM is greater than the average total cost of producing QM units, or CM, the monopolist earns the profit shown in the green rectangle. If the firm is regulated and the price is set at marginal cost, regulators can set P = MC, and the output expands to QR (the subscript R denotes the regulated monopolist.)

A caveat about government oversight

Firms with a profit motive have an incentive to minimize the costs of production, because lower costs translate directly into higher profits. The government oversight and management of monopolies is problematic because there is fewer incentives to keep costs in check.

Consequently, the marginal cost pricing rule is not as effective as it first seems. Regulated firms and government-owned businesses do not have the same incentives to keep costs down; without the correct incentives in place, we would expect cost inefficiencies to develop.

Public policy can mitigate the power of monopolies, but, this outcome is not guaranteed. While monopolies are not as efficient as firms in competitive markets, this comparison is not always relevant; we need to ask how the inefficiency of monopoly compare with the inefficiencies associated with government involvement in the market. Good economists assess the benefits as well as the costs, so when the costs of the government involvement are greater than the efficiency gains that can are realized, the best solution to the problem of monopoly might be to do nothing.

Conclusion

It's tempting to believe that monopolies always earn a profit, but profit is not a guaranteed outcome. This monopolist controls the supply, not the demand, so monopolies occasionally suffer losses despite the advantages they enjoy. Still, many monopolies do make economic profit.

In this chapter, we examined the monopoly model and, along the way, compared the results under monopoly with results of the competitive model that we developed in the previous chapter. While competitive markets generally yield welfare-enhancing outcomes for society, monopolies often do the opposite; because monopolists do not produce an efficient outcome, government often seeks to limit monopoly outcomes and promote competitive markets.

Competitive markets and monopoly are market structures at opposite extremes. Indeed, we rarely encounter the conditions necessary for either a pure monopoly or a perfectly competitive market. Most economic activity takes place between these two alternatives. In the upcoming chapters, we examine monopolistic competition and oligopoly—two markets that constitute the bulk of the economy. Fortunately, fi you understand the market structure at the extremes, understanding the middle ground is straightforward. As we move forward, we will deploy the same tools we used to examine monopoly in order to understand monopolistic competition and oligopoly.