Monopoly

Chapter 15

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Introduction

What is a monopoly?

- All of us right now are on a PC and we are all probably either using a Microsoft or Apple OS
- When these companies designed their OS, they got copyright from the government
- Copyrights gives a company the exclusive right to make and sell their products and services
- Apple and Microsoft have a *monopoly* in the markets for iOS and Windows
- So far we've only studied models of competitive markets
- These models are not suitable for a monopolistic market
- In a competitive market, there are many buyers and sellers that no one buyer or seller can influence the price--- *price takers*
- In a monopolistic market, the firm has the power to influence the market price--- *price makers*

Introduction (cont.)

- In a competitive market, a firm chooses the quantity to produce by setting the $MC = P = MR$
- In a monopolistic market, the firm charges a price higher than the MC
- Firms in monopolistic and competitive markets want to maximize profit
- The self-interested producers in a competitive market will lead to the best outcome for everyone
- The self-interested producers in a monopolistic market will lead to an outcome that is often not in the best interest of society
- The government can intervene by breaking up monopolies or preventing a firm from acquiring more market power, which will lead to a better outcome
- An example of this is the breakup of Standard Oil in 1911 by the US Supreme Court

How does a firm become a monopoly?

Why monopolies Arise?

- A firm is a *monopoly* if it is the sole seller of its product and if its product doesn;t have any close substitutes
- The main reason why monopolies arise is the *barriers to entry*
- A monopoly will always be the sole seller of a good or service if no other firm can enter the market

The three reasons behind barriers to entry:

1. *Monopoly resources*: A key resource required for production is owned by a single firm

2. *Government regulation*: The government gives a single firm the exclusive right to produce some good or service

3. *The production process*: A single firm can produce output at a lower cost than can a larger number of firms

Monopoly Resources

- The simplest way for a firm to control a market is if it owns a key resource

Example: water supply in a small town

- If 12 residents in the town have working wells, then the model of a competitive market can explain the behavior of firms
- If there's only one supplier of water because they own the only water source, then the owner will hold monopoly power

A classical example of a monopoly from owning key resources is DeBeers. The company owned 80% of all diamond supply

- It is rarely the case that a monopoly will arise as a result of owning a key resource

Government-Created Monopolies

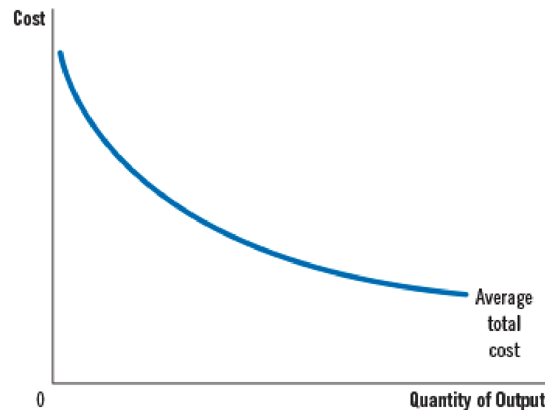
- In many cases, a company will hold monopolistic power because the government gave it the exclusive right to sell some goods or services
- Examples of this are patents and copyrights
- When a pharmaceutical company discovers a new drug, it'll patent
- The patent gives the company the exclusive right to produce and sell a drug
- When a novelist writes a book, they can also copyright their book
- Both the pharmaceutical company and the novelist will charge higher prices than would've been the case in a competitive market
- But, by allowing the pharmaceutical company to profit off of drugs and the novelist off of writing, the patent laws encourage the company and the novelist to produce more drugs and novels
- The costs of patent laws are higher prices to consumers
- The benefits are the increased incentives to produce

Natural Monopolies

- An industry is a *natural monopoly* when a single firm can supply a good or service to the entire market at a lower cost than could two or more firms

Figure 1 **Economies of Scale as a Cause of Monopoly**

When a firm's average-total-cost curve continually declines, the firm has what is called a natural monopoly. In this case, when production is divided among more firms, each firm produces less, and average total cost rises. As a result, a single firm can produce any given amount at the lowest cost.



Natural Monopolies (cont.)

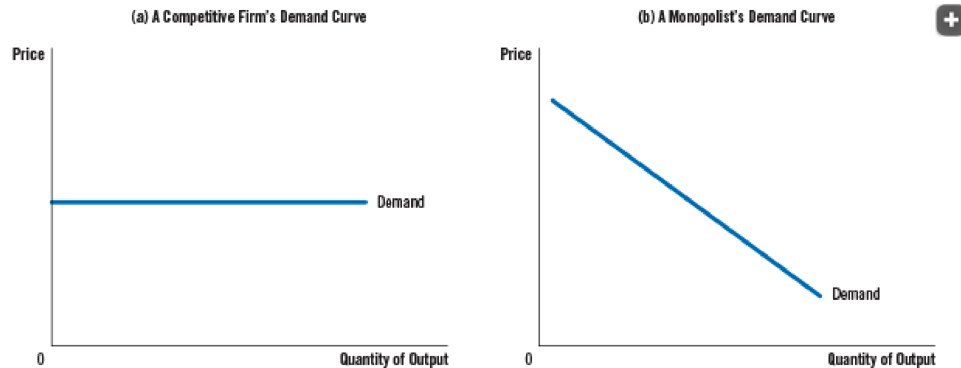
- An example of a natural monopoly is a social media company
- Once the company invested in writing the code and buying servers, it will not incur more costs from more users
- A natural monopoly is not concerned with new entrants to the market
- A market with a natural monopoly is unattractive to enter because the new firm cannot achieve the same low costs that the monopoly enjoys

How Monopolies Make Production and Pricing Decisions

Monopoly vs Competition

Figure 2 **Demand Curves for Competitive and Monopoly Firms**

Because competitive firms are price takers, they face horizontal demand curves, as in panel (a). Because a monopoly firm is the sole producer in its market, it faces the downward-sloping market demand curve, as in panel (b). As a result, the monopoly has to accept a lower price if it wants to sell more output.



A Monopoly's Revenue

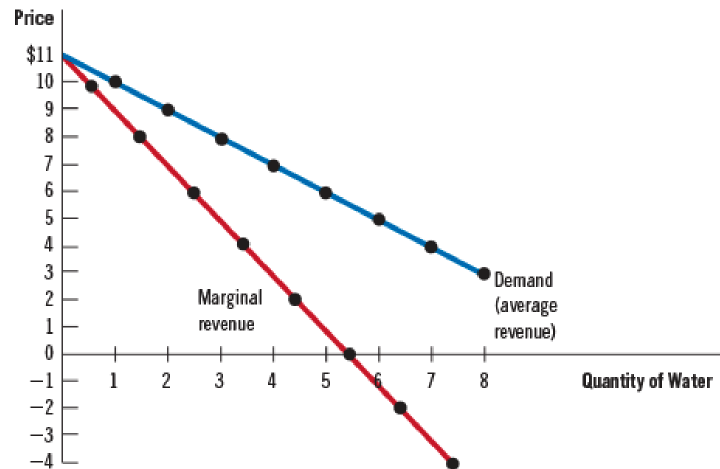
Table 1 **A Monopoly's Total, Average, and Marginal Revenue**

(1) Quantity of Water (Q)	(2) Price (P)	(3) Total Revenue ($TR = P \times Q$)	(4) Average Revenue ($AR = TR/Q$)	(5) Marginal Revenue ($MR = \Delta TR/\Delta Q$)
0 gallons	$11	$ 0	—	
1	10	10	$10	$10
2	9	18	9	8
3	8	24	8	6
4	7	28	7	4
5	6	30	6	2
6	5	30	5	0
7	4	28	4	−2
8	3	24	3	−4

A Monopoly's MR and Price

Figure 3 **Demand and Marginal-Revenue Curves for a Monopoly**

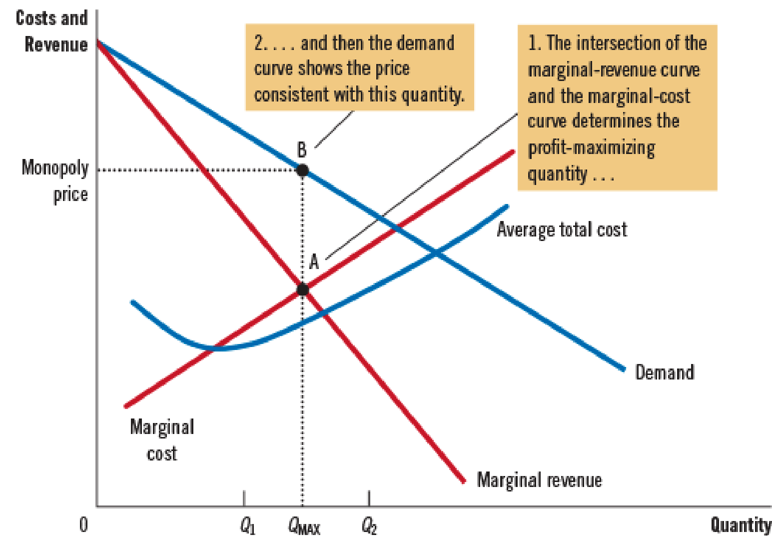
The demand curve shows how the quantity sold affects the price of the good. The marginal-revenue curve shows how the firm's revenue changes when the quantity increases by 1 unit. Because the price on *all* units sold must fall if the monopoly increases production, marginal revenue is less than the price.



Profit Maximization

Figure 4 **Profit Maximization for a Monopoly**

A monopoly maximizes profit by choosing the quantity at which marginal revenue equals marginal cost (point A). It then uses the demand curve to find the price that will induce consumers to buy that quantity (point B).

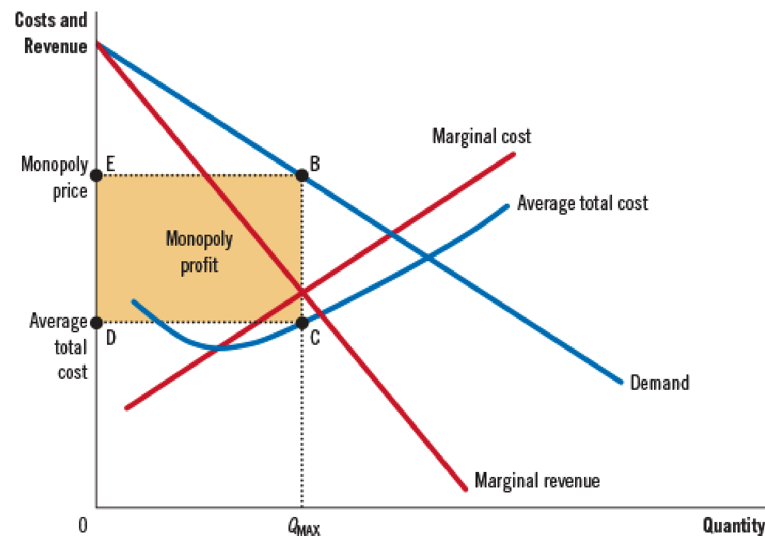


A Monopoly's Profit

$$\text{Profit } = (P - ATC) \times Q$$

Figure 5 **The Monopolist's Profit**

The area of the box BCDE equals the profit of the monopoly firm. The height of the box (BC) is price minus average total cost, which equals profit per unit sold. The width of the box (DC) is the number of units sold.



Summary

Table 2 Profit-Maximizing Rules for a Monopoly Firm

1. Derive the MR curve from the demand curve.
2. Find Q at which $MR = MC$.
3. On the demand curve, find P at which consumers will buy Q.
4. If $P > ATC$, the monopoly earns a profit.

Why doesn't a monopoly have a supply curve?

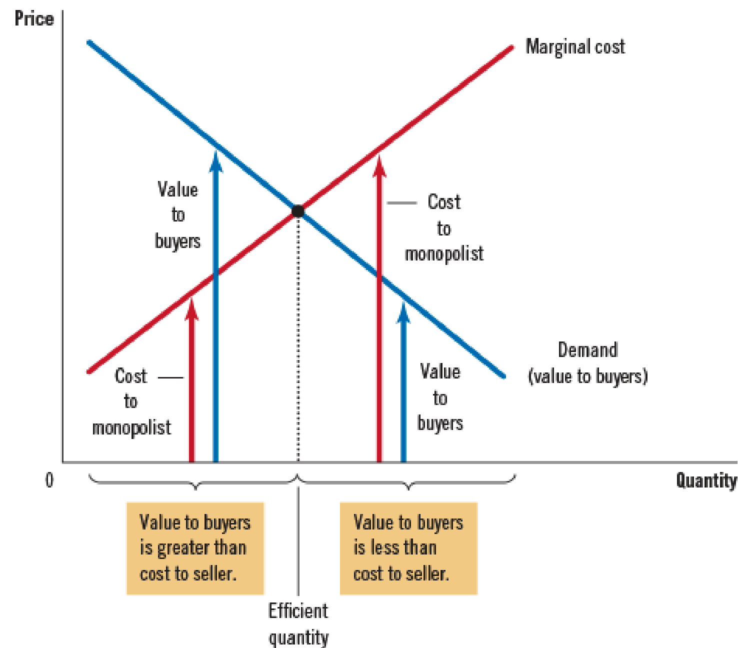
A monopoly is a *price maker*, so it's not meaningful to ask how much does a monopoly produce at any given price because it doesn't take the price as given

The Welfare Cost of Monopolies

Efficient level of output

Figure 7 **The Efficient Level of Output**

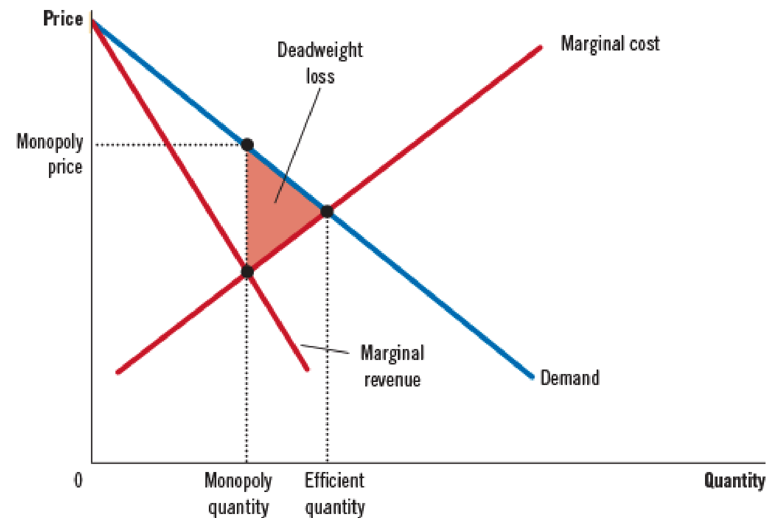
A benevolent social planner maximizes total surplus in the market by choosing the level of output where the demand curve and marginal-cost curve intersect. Below this level, the value of the good to the marginal buyer (as reflected in the demand curve) exceeds the marginal cost of making the good. Above this level, the value to the marginal buyer is less than marginal cost.



The Deadweight Loss

Figure 8 **The Inefficiency of Monopoly**

Because a monopoly charges a price above marginal cost, not all consumers who value the good at more than its cost buy it. Thus, the quantity produced and sold by a monopoly is below the socially efficient level. The deadweight loss is represented by the area of the triangle between the demand curve (which reflects the value of the good to consumers) and the marginal-cost curve (which reflects the costs of the monopoly producer).



The Monopoly’s Profit: A Social Cost?

- A monopoly firm does earn a profit under its market power.
- The firm's profit is not necessarily a problem for society
- The welfare in a market includes both producers and consumers
- One extra dollar paid by the consumer is an extra dollar received by the producer
- Total surplus equals the sum of consumer and producer surplus, this transfer from consumers to the owners of the monopoly does not affect the market’s total surplus
- So a monopoly's profit is not a social problem
- The problem is that a monopoly firm produces and sells a quantity of output below the level that maximizes total surplus
- The deadweight loss measures how much the economic pie shrinks
- If a firm is paying lobbyists to keep monopoly power
- The amount paid to lobbyists and the DWL is both a social loss that results in a reduced output

Price Discrimination

Definition

Price discrimination is the practice when a firm sells the same good to different consumers for different prices, even when the cost of producing the good is the same

A Parable about Pricing

- To understand why a monopolist would price discriminate, let's consider an example
- Imagine that you are the president of a Publishing Company
- Your best-selling author has just written a new novel
- To keep things simple, let's imagine that you pay the author a flat $2 million for the exclusive rights to publish the book
- Let's also assume that the cost of printing the book is zero
- Your profit is the revenue from sales minus $2 million
- Given these assumptions, how would you, as president, decide the book's price?
- The book attracts two types of readers: 100,000 die-hard fans who would pay $30, and 400,000 less enthusiastic readers who will pay up to \$5

A Parable about Pricing (cont.)

- There are two prices to consider: 30 and 5
- At \$30, you sell 100,000 copies and you make 1 million dollars in profit
- At \$5, you sell 500,000 copies and you make \\$500,000 in profit
- If it charges \$30, then 400,000 consumers aren't buying the book, which causes DWL
- Let's assume that the two types of readers are in two separate markets: 400,000 American readers and 100,000 Australian readers
- Now, you can charge two different prices in the two markets

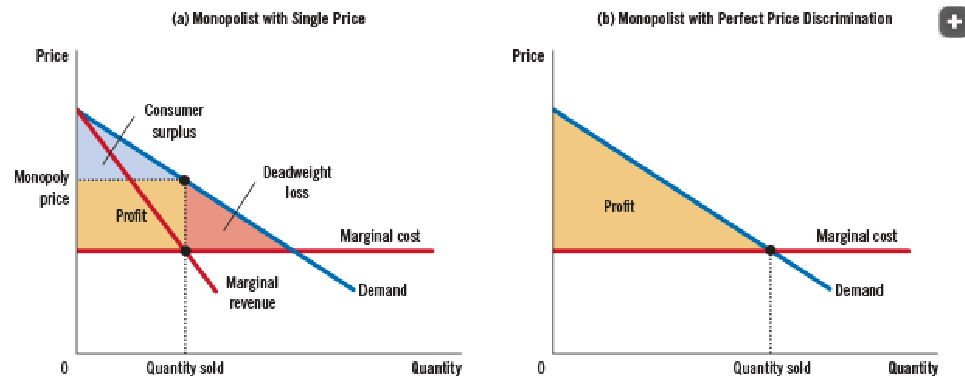
The Moral of the Story

1. Price discrimination is a rational strategy for a profit-maximizing monopolist
2. Price discrimination requires the ability to separate customers according to their willingness to pay
3. Price discrimination can raise economic welfare

The Analytics of Price Discrimination

Figure 9 **Welfare with and without Price Discrimination**

Panel (a) shows a monopoly that charges the same price to all customers. Total surplus in this market equals the sum of profit (producer surplus) and consumer surplus. Panel (b) shows a monopoly that can perfectly price discriminate. Because consumer surplus equals zero, total surplus now equals the firm's profit. Comparing these two panels, you can see that perfect price discrimination raises profit, raises total surplus, and lowers consumer surplus.



Examples of Price Discrimination

1. Movie Tickets: different prices for seniors and children

2. Airline Prices: Most airlines charge a lower price for a round-trip ticket between two cities if the traveler stays over a Saturday night. They do this to separate leisure travelers from business travelers

3. Discount Coupons

4. Financial Aid

5. Quantity Discounts

Public Policy toward Monopolies

Four ways to intervene

1. By trying to make monopolized industries more competitive
    - Using antitrust laws and blocking horizontal and vertical mergers
2. By regulating the behavior of the monopolies
    - The government can impose a price equals to a firm's MC
3. By turning some private monopolies into public enterprises
    - In the United States, the government runs the Postal Service
4. By doing nothing at all