MONOPOLY

Chapter 13

CHAPTER CHECKLIST

1. Explain how monopoly arises and distinguish between single-price monopoly and price-discriminating monopoly.
2. Explain how a single-price monopoly determines its output and price.
3. Compare the performance of single-price monopoly with that of perfect competition.

CHAPTER CHECKLIST

4. Explain how price discrimination increases profit.
5. Explain how monopoly regulation influences output, price, economic profit, and efficiency.

LECTURE TOPICS

- Monopoly and How It Arises
- Single-price Monopoly
- Monopoly and Competition Compared
- Price Discrimination
- Monopoly Policy Issues
How Monopoly Arises

Monopoly arises when there are:

- No close substitutes
- Barriers to entry

No Close Substitutes

If a good has a close substitute, even though only one firm produces it, that firm effectively faces competition from the producers of substitutes.

Barriers to Entry

Anything that protects a firm from the arrival of new competitors is a barrier to entry.

There are two types of barrier to entry:

- Natural
- Legal

Natural Barriers to Entry

Natural monopoly exists when the technology for producing a good or service enables one firm to meet the entire market demand at a lower price than two or more firms could.

One electric power distributor can meet the market demand for electricity at a lower cost than two or more firms could.

Figure 13.1 shows a natural monopoly.

1. Economies of scale exist over the entire LRAC curve.
2. One firm can distribute 4 million kilowatt hours at a cost of 5 cents a kilowatt-hour.
13.1 MONOPOLY AND HOW IT ARISES

3. This same total output costs 10 cents a kilowatt-hour with two firms, and 15 cents a kilowatt-hour with four firms. One firm can meet the market demand at a lower cost than two or more firms can, and the market is a natural monopoly.

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Legal Barriers to Entry

Legal barriers to entry create legal monopoly.

A **legal monopoly** is a market in which competition and entry are restricted by the concentration of ownership of a natural resource or by the granting of a public franchise, government license, patent, or copyright.

A firm can create its own barrier to entry by buying up a significant portion of a natural resource.

**A Public Franchise**

An exclusive right granted to a firm to supply a good or service.

Example: The U.S. Postal Service’s exclusive right to deliver first-class mail.

A government license controls entry into particular occupations, professions, and industries.

**Patent**

An exclusive right granted to the inventor of a product or service.

**Copyright**

An exclusive right granted to the author or composer of a literary, musical, dramatic, or artistic work.

In the United States, a patent is valid for 20 years.
13.1 MONOPOLY AND HOW IT ARISES

Monopoly Price-Setting Strategies

A monopolist faces a tradeoff between price and the quantity sold.
To sell a larger quantity, the monopolist must set a lower price.
There are two price-setting possibilities that create different tradeoffs:
  • Single price
  • Price discrimination

Single Price

A single-price monopoly is a firm that must sell each unit of its output for the same price to all its customers.
DeBeers sell diamonds (quality given) at a single price.

Price Discrimination

A price-discriminating monopoly is a firm that is able to sell different units of a good or service for different prices.
Airlines offer different prices for the same trip.

13.2 SINGLE-PRICE MONOPOLY

Price and Marginal Revenue

Because in a monopoly there is only one firm, the firm’s demand curve is the market demand curve.

  • Total revenue
    – The price multiplied by the quantity sold.
  • Marginal revenue
    – The change in total revenue resulting from a one-unit increase in the quantity sold.

Figure 13.2 on the next slide illustrates the relationship between marginal revenue and demand.
13.2 SINGLE-PRICE MONOPOLY

The table also calculates total revenue and marginal revenue.

When the price is $16, the quantity demanded is 2 haircuts an hour.

When the price falls to $14, the quantity demanded increases to 3 haircuts an hour.

1. Total revenue lost on the 2 haircuts previously sold is $4.
13.2 SINGLE-PRICE MONOPOLY

2. Total revenue gained on 1 additional haircut is $14.

3. Marginal revenue is $10--$14 minus $4.

The marginal revenue curve slopes downward and is below the demand curve. Marginal revenue is less than price.

Marginal Revenue and Elasticity

Recall the total revenue test, which determines whether demand is elastic or inelastic.

If a price fall increases total revenue, demand is elastic.

If a price fall decreases total revenue, demand is inelastic.

Use the total revenue test to see the relationship between marginal revenue and elasticity.
13.2 SINGLE-PRICE MONOPOLY

Figure 13.3 (a) illustrates this relationship.

1. Over the range from 0 to 5 haircuts an hour, marginal revenue is positive.
   A price fall increases total revenue, demand is elastic.

2. At 5 haircuts an hour, marginal revenue is zero and demand is unit elastic.
3. Over the range 5 to 10 haircuts an hour, marginal revenue is negative.
   A price fall decreases total revenue, demand is inelastic.

Over the range from zero to 5 haircuts an hour, marginal revenue is positive and total revenue increases as output increases.

Figure 13.3 (b) shows the same information about marginal revenue as steps running along the total revenue curve.

Over the range from 5 to 10 haircuts an hour, marginal revenue is negative and total revenue decreases as output increases.

The blue line is the total revenue curve.
Total revenue is maximized at 5 haircuts an hour.
4. Total revenue is maximized at 5 haircuts an hour, where marginal revenue is zero and demand is unit elastic.

Flipping back to Figure 13.3 (a),

5. Marginal revenue is zero at maximum total revenue.

The relationship between marginal revenue and elasticity implies that a monopoly never profitably produces an output in the inelastic range of its demand curve.

Output and Price Decision

To determine the output level and price that maximize a monopoly’s profit, we study the behavior of both revenue and costs as output varies.
Table 13.1 summarizes the information we need to maximize profit.

<table>
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<tr>
<th>Price (dollars per hour)</th>
<th>Quantity demanded (haircuts per hour)</th>
<th>Total revenue (dollars)</th>
<th>Marginal revenue (dollars per haircut)</th>
<th>Total cost (dollars)</th>
<th>Marginal cost (dollars per haircut)</th>
<th>Profit (dollars)</th>
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</table>

Figure 13.4 shows a monopoly’s profit-maximizing output and price.

- The total cost curve is $TC$.
- The total revenue curve is $TR$.
- Economic profit is the vertical distance between the total revenue curve and the total cost curve.

1. Maximum profit is $12 an hour at 3 haircuts an hour.

Figure 13.4(b) shows the firm’s profit-maximizing output and price decision.

- The average total cost curve is $ATC$.
- The marginal cost curve is $MC$.
- The demand curve is $D$.
- The marginal revenue curve is $MR$. 

Figure 13.4(c) shows the firm’s profit-maximizing output and price decision.

- The average total cost curve is $ATC$.
- The marginal cost curve is $MC$.
- The demand curve is $D$.
- The marginal revenue curve is $MR$. 

Figure 13.4(d) shows the firm’s profit-maximizing output and price decision.

- The average total cost curve is $ATC$.
- The marginal cost curve is $MC$.
- The demand curve is $D$.
- The marginal revenue curve is $MR$. 

13.2 SINGLE-PRICE MONOPOLY

Economic profit is maximized when marginal cost (MC) equals marginal revenue (MR).

The price is determined by the demand curve (D) and is $14.

Average total cost is determined by the ATC curve and is $10.

13.3 MONOPOLY AND COMPETITION

**Output and Price**

Compared to a perfect competition, a single-price monopoly produces a smaller output and charges a higher price.

Figure 13.5 illustrates this outcome.

In perfect competition, the market demand curve is $D$. The market supply curve is $S$.

1. The competitive industry produces the quantity $Q_C$ at price $P_C$. 
The demand curve, $D$, is the demand for the monopoly's output.

The monopoly's marginal revenue curve is $MR$.

2. A single-price monopoly produces the quantity $Q_M$ at which marginal revenue equals marginal cost and sells that quantity for the price $P_M$.

Is Monopoly Efficient?

Resources are used efficiently when marginal benefit equals marginal cost.

Figure 13.6 shows the inefficiency of monopoly.

1. In perfect competition, the equilibrium quantity, $Q_C$, is the efficient quantity because at that quantity, the price $P_C$ equals marginal benefit and marginal cost.

2. The sum of consumer surplus and
3. Producer surplus is maximized.

4. In a single-price monopoly, the equilibrium quantity, $Q_M$, is inefficient because the price, $P_M$, which equals marginal benefit, exceeds marginal cost.

Underproduction creates a deadweight loss.

5. Consumer surplus shrinks.

6. Part of the producer surplus is lost but the producer surplus expands.

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**Is Monopoly Fair?**

Monopoly is inefficient because it creates a deadweight loss.

But monopoly also redistributes consumer surplus.

The producer gains, and the consumers lose.

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**Rent Seeking**

Rent seeking is the act of obtaining special treatment by the government to create economic profit or to divert consumer surplus or producer surplus away from others.

Rent seeking does not always create a monopoly, but it always restricts competition and often creates a monopoly.
To see why rent seeking occurs, think about the two ways that a person might become the owner of a monopoly:

- Buy a monopoly
- Create a monopoly by rent seeking

Rent Seeking Equilibrium

If an economic profit is available, a rent seeker will try to get some of it. Competition among rent seekers pushes up the cost of rent seeking until it leaves the monopoly earning only a normal profit after paying the rent-seeking costs.

Figure 13.7 on the next slide illustrates rent-seeking equilibrium.

1. Rent seeking costs exhaust economic profit.
A firm’s rent-seeking costs are fixed costs.
They add to total fixed cost and to average total cost.
The \( ATC \) curve shifts upward until, at the profit-maximizing price, the firm breaks even.
2. Consumer surplus shrinks.
3. The deadweight loss increases and might consume the entire economic profit.

13.4 PRICE DISCRIMINATION

Price discrimination selling a good or service at a number of different prices is widespread.
To be able to price discriminate, a firm must:
- Identify and separate different types of buyers.
- Sell a product that cannot be resold.

Discriminating Among Groups of Buyers
The firm offers different prices to different types of buyers, based on things like age, employment status, or some other easily distinguished characteristic.
This type of price discrimination works when each group has a different average willingness to pay for the good or service.

Price Discrimination and Consumer Surplus
The key idea behind price discrimination is to convert consumer surplus into economic profit.
To extract every dollar of consumer surplus from every buyer, the monopoly would have to offer each individual customer a separate price schedule based on that customer’s own willingness to pay.
Discriminating Among Units of a Good

The firm charges the same prices to all its customers but offers a lower price per unit for a larger number of units bought.

Profiting by Price Discriminating

Global Air has a monopoly on an exotic route.

Figure 13.8 shows a single price of air travel. As a single-price monopoly, Global maximizes profit by selling 8,000 trips a year at $1,200 a trip.

1. Global’s customers enjoy a consumer surplus—the green triangle—and
2. Global’s economic profit is $4.8 million a year—the blue rectangle.

Figure 13.9 shows how Global can profit from price discrimination. The $1,200 fare is available only with a 14-day advance purchase and a stay over a weekend. Other 14-day advance purchase tickets cost $1,400. A 7-day advance purchase ticket costs $1,600.

A ticket with no restrictions costs $1,800. Global sells 2,000 units at each of its four new fares. It’s economic profit increases by $2.4 million a year to $7.2 million a year, which is shown by the original blue rectangle plus the blue steps. Global’s customers’ consumer surplus shrinks.
13.4 PRICE DISCRIMINATION

**Perfect Price Discrimination**
Price discrimination that extracts the entire consumer surplus by charging the highest price that consumers are willing to pay for each unit.

Figure 13.10 illustrates perfect price discrimination:

1. Output increases to 11,000 passengers a year, and ...
2. Global’s economic profit increases to $9.35 million a year.

13.4 PRICE DISCRIMINATION

**Price Discrimination Efficiency**
With free entry into rent seeking, the long-run equilibrium outcome is that rent seekers use up the entire producer surplus.

13.5 MONOPOLY POLICY ISSUES

**Gains from Monopoly**

*Economies of Scale*
Economies of scale can lead to natural monopoly. More efficient to regulate natural monopoly than to break it up and make the industry competitive.

*Incentives to Innovate*
Monopoly might be more innovative than competition. Innovation can create a monopoly.
Regulating Natural Monopoly

Unregulated profit maximizing monopoly is inefficient.

Marginal cost pricing rule
A price rule for a natural monopoly that sets price equal to marginal cost.

Average cost pricing rule
A price rule for a natural monopoly that sets price equal to average total cost and enables the firm to cover its costs and earn a normal profit.

Figure 13.11 shows two possible outcomes of regulating a natural monopoly.

1. The unregulated natural monopoly produces 2 million cubic feet and sets the price at 20 cents a cubic foot.

2. With a marginal cost pricing rule, the price is 10 cents per cubic foot and the quantity produced is 4 million cubic feet per day. The firm incurs an economic loss.

3. With an average cost pricing rule, the price is 15 cents per cubic foot and the quantity produced is 3 million cubic feet per day. The firm makes a normal profit.