11 Monopoly

PRINCIPLES OF

MICROECONOMICS

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In this chapter, look for the answers to these questions:

- Why do monopolies arise?
- Why is $MR < \boldsymbol{P}$ for a monopolist?
- How do monopolies choose their ***P*** and ***Q***?
- How do monopolies affect society's well-being?
- What can the government do about monopolies?
- What is price discrimination?

Introduction

- A **monopoly** is a firm that is the sole seller of a product without close substitutes.
- In this chapter, we study monopoly and contrast it with perfect competition.
- The key difference:
  A monopoly firm has **market power**, the ability to influence the market price of the product it sells. A competitive firm has no market power.

Why Monopolies Arise

The main cause of monopolies is **barriers to entry** – other firms cannot enter the market.

Three sources of barriers to entry:

1. A single firm owns a key resource.

   E.g., DeBeers owns most of the world's diamond mines

2. The govt gives a single firm the exclusive right to produce the good.

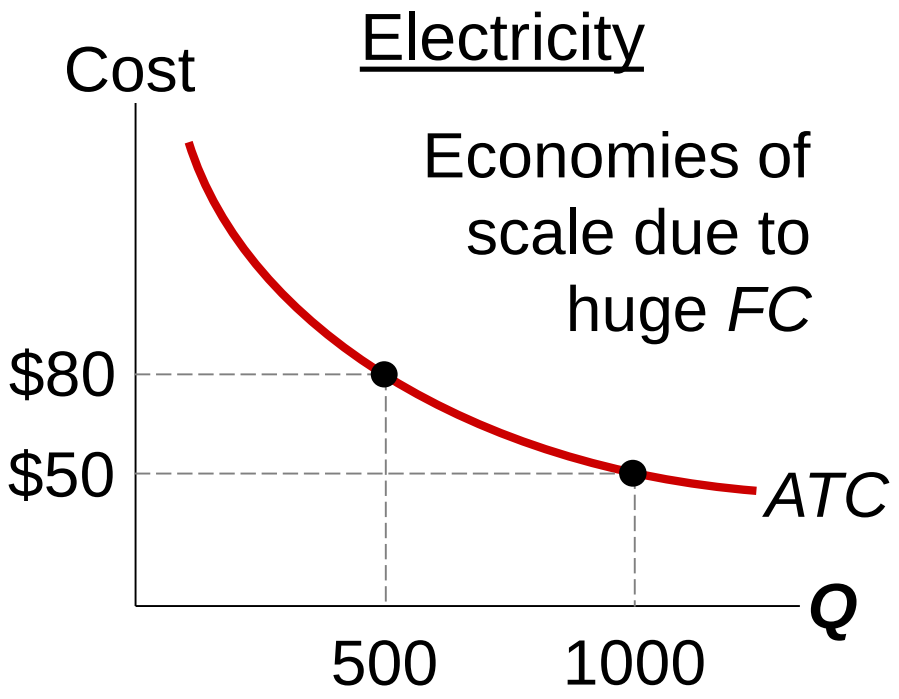
   E.g., patents, copyright laws

Why Monopolies Arise

3. **Natural monopoly**: a single firm can produce the entire market ***Q*** at lower *ATC* than could several firms.

Example: 1000 homes need electricity.

ATC is lower if one firm services all 1000 homes than if two firms each service 500 homes.



Monopoly vs. Competition: Demand Curves

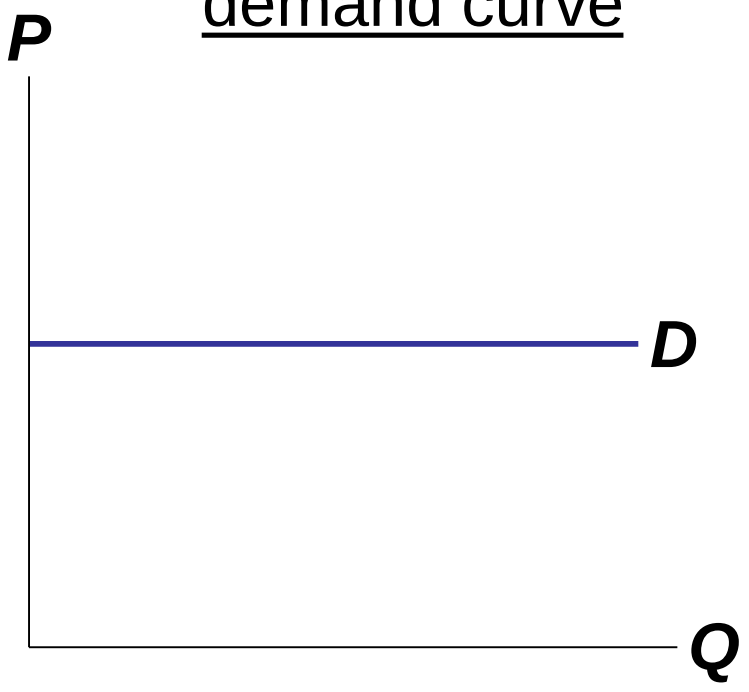
In a competitive market, the market demand curve slopes downward.

but the demand curve for any individual firm's product is horizontal at the market price.

The firm can increase ***Q*** without lowering ***P***,

so *MR* = ***P*** for the competitive firm.

A competitive firm's demand curve



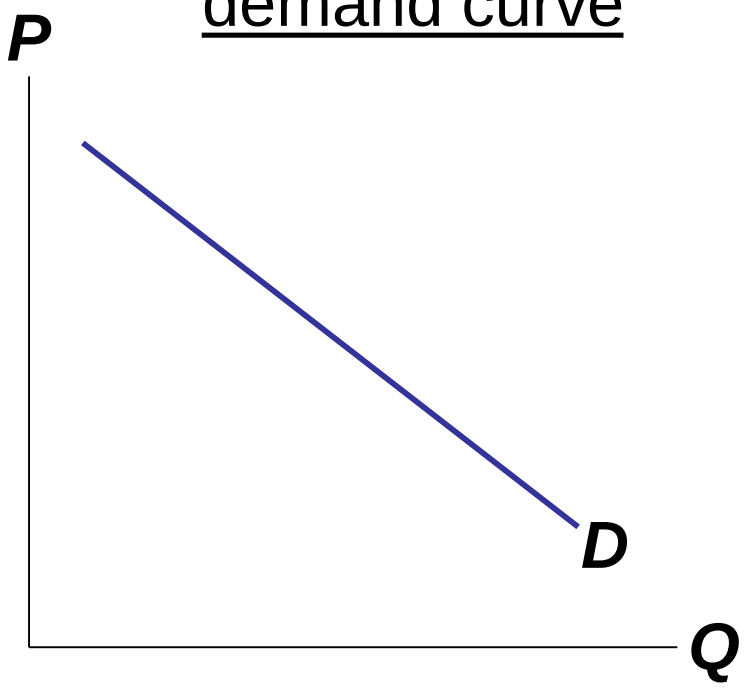
Monopoly vs. Competition: Demand Curves

A monopolist is the only seller, so it faces the market demand curve.

To sell a larger ***Q***, the firm must reduce ***P***.

Thus, *MR* ≠ ***P***.

A monopolist's demand curve



ACTIVE LEARNING 1:
A monopoly's revenue

Moonbucks is the only seller of cappuccinos in town.

The table shows the market demand for cappuccinos.

Fill in the missing spaces of the table.

What is the relation between ***P*** and ***AR***? Between ***P*** and ***MR***?

Q	***P***	***TR***	***AR***	***MR***
0	$4.50		n.a.	
1	4.00			
2	3.50			
3	3.00			
4	2.50			
5	2.00			
6	1.50			

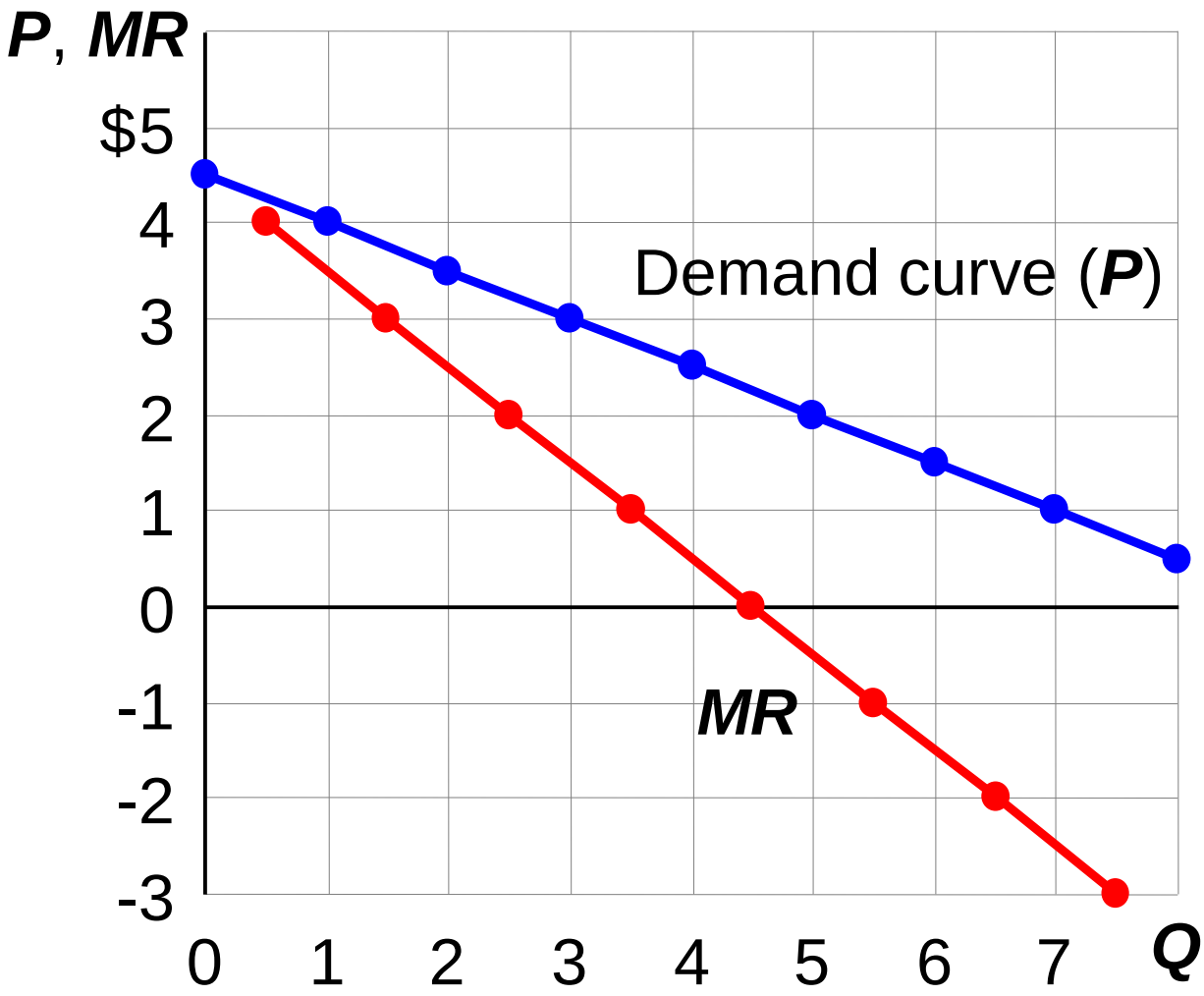
ACTIVE LEARNING 1:
Answers

Here, ***P*** = ***AR***, same as for a competitive firm.

Here, ***MR*** < ***P***, whereas ***MR*** = ***P*** for a competitive firm.

Q	*P*	*TR*	*AR*	*MR*
0	$4.50	$ 0	n.a.	
1	4.00	4	$4.00	$4
2	3.50	7	3.50	3
3	3.00	9	3.00	2
4	2.50	10	2.50	1
5	2.00	10	2.00	0
6	1.50	9	1.50	–1

Moonbuck's *D* and *MR* Curves



Understanding the Monopolist's *MR*

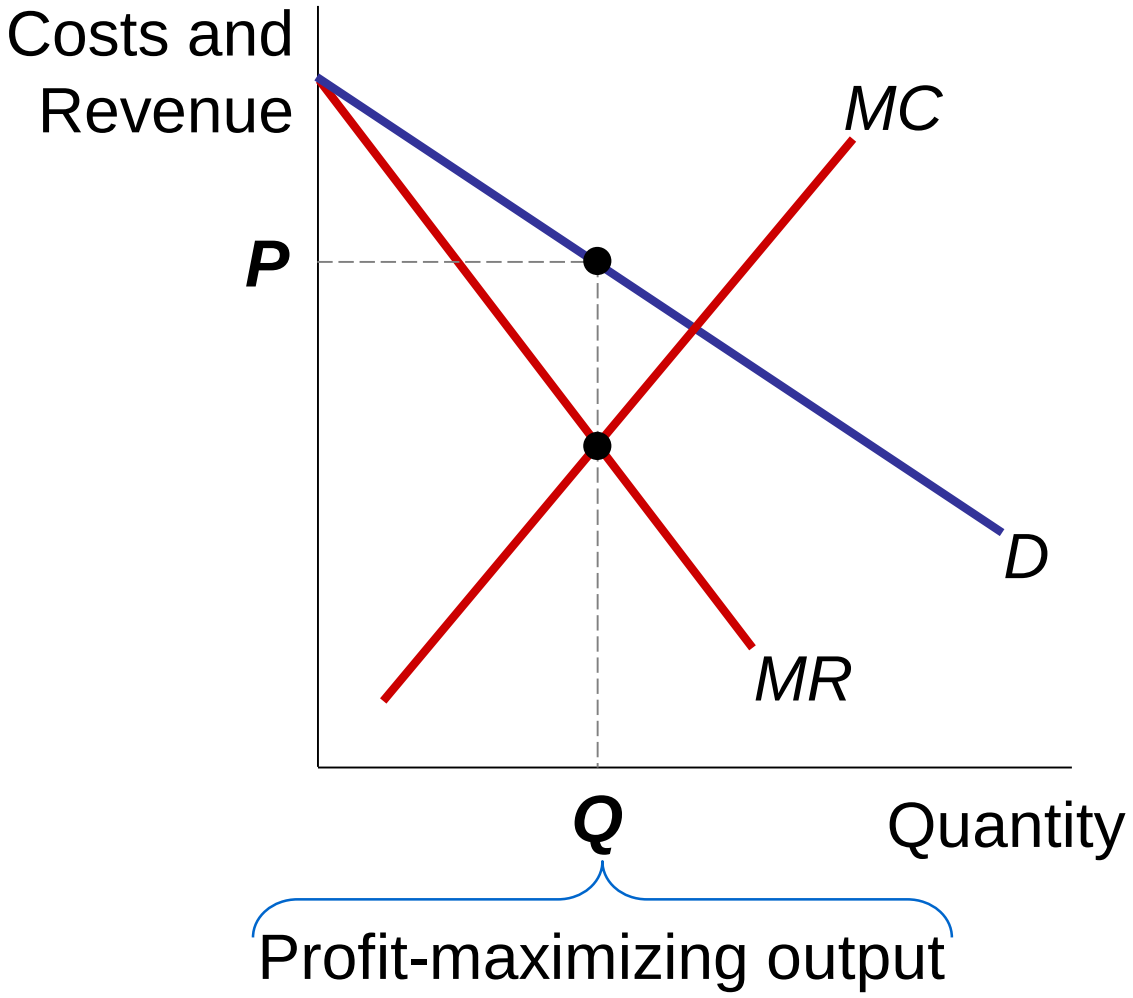
- Increasing ***Q*** has two effects on revenue:
  - The ***output effect***:
    More output is sold, which raises revenue
  - The ***price effect***:
    The price falls, which lowers revenue
- To sell a larger ***Q***, the monopolist must reduce the price on <u>all</u> the units it sells.
- Hence, *MR* < ***P***
- *MR* could even be negative if the price effect exceeds the output effect
  (*e.g.,* when Moonbucks increases ***Q*** from 5 to 6).

Profit-Maximization

- Like a competitive firm, a monopolist maximizes profit by producing the quantity where ***MR*** = ***MC***.
- Once the monopolist identifies this quantity, it sets the highest price consumers are willing to pay for that quantity.
- It finds this price from the ***D*** curve.

Profit-Maximization

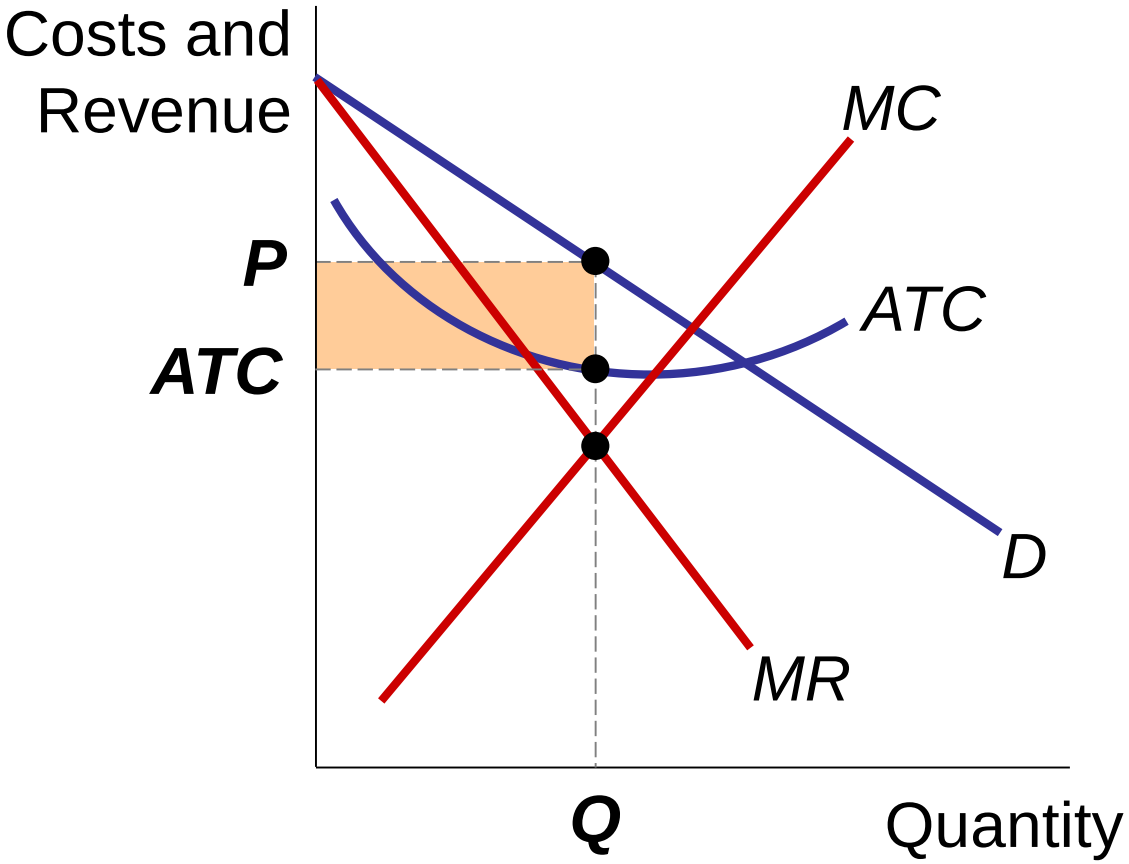
1. The profit-maximizing ***Q*** is where *MR* = *MC*.
2. Find ***P*** from the demand curve at this ***Q***.



The Monopolist's Profit

As with a competitive firm, the monopolist's profit equals

(***P*** – ***ATC***) x ***Q***



A Monopoly Does Not Have an S Curve

A competitive firm

- takes ***P*** as given
- has a supply curve that shows how its ***Q*** depends on ***P***

A monopoly firm

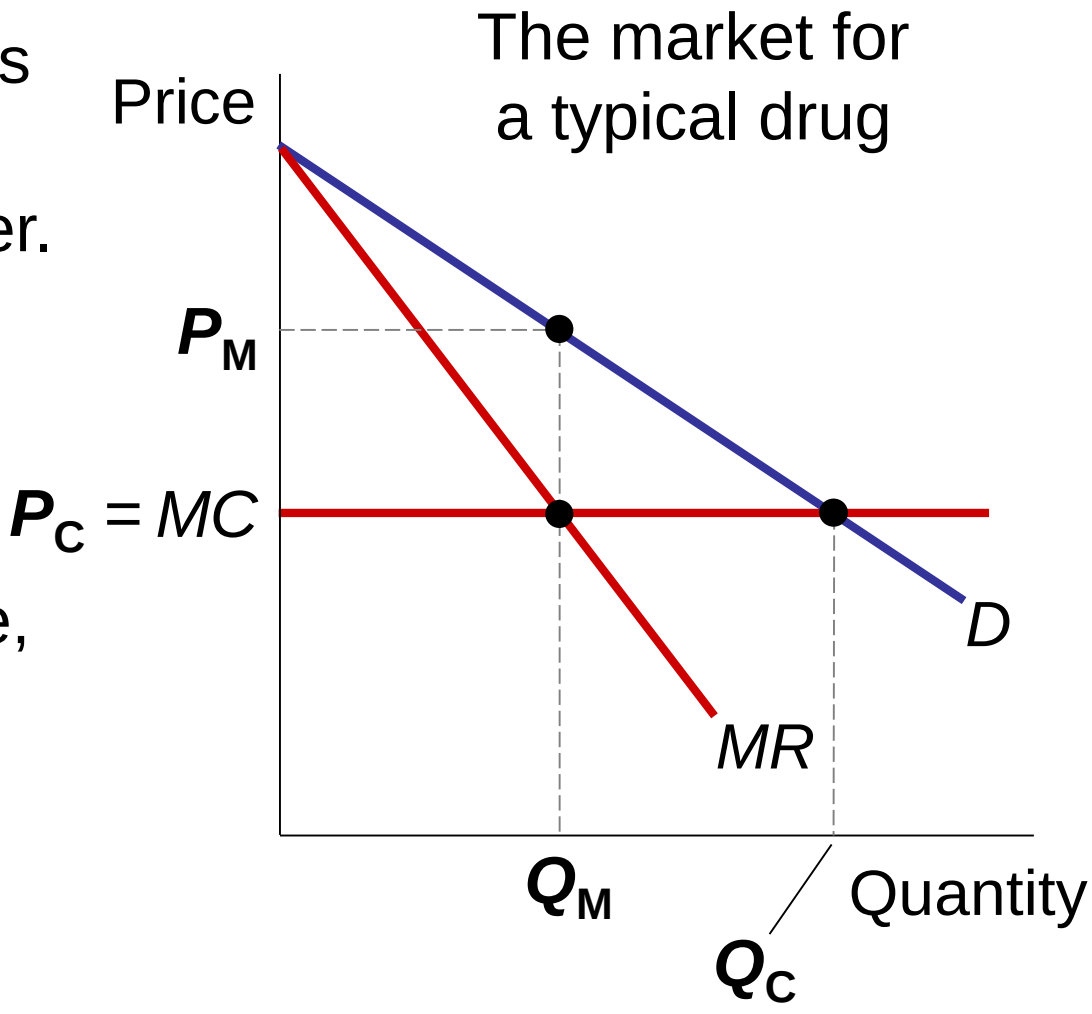
- is a "price-maker," not a "price-taker"
- ***Q*** does not depend on ***P***;
  rather, ***Q*** and ***P*** are jointly determined by *MC*, *MR*, and the demand curve.

So there is no supply curve for monopoly.

Case Study: Monopoly vs. Generic Drugs

Patents on new drugs give a temporary monopoly to the seller.

When the patent expires, the market becomes competitive, generics appear.



The Welfare Cost of Monopoly

- Recall: In a competitive market equilibrium, ***P*** = *MC* and total surplus is maximized.
- In the monopoly eq'm, ***P*** > *MR* = *MC*
  - The value to buyers of an additional unit (***P***) exceeds the cost of the resources needed to produce that unit (*MC*).
  - The monopoly ***Q*** is too low – could increase total surplus with a larger ***Q***.
  - Thus, monopoly results in a deadweight loss.

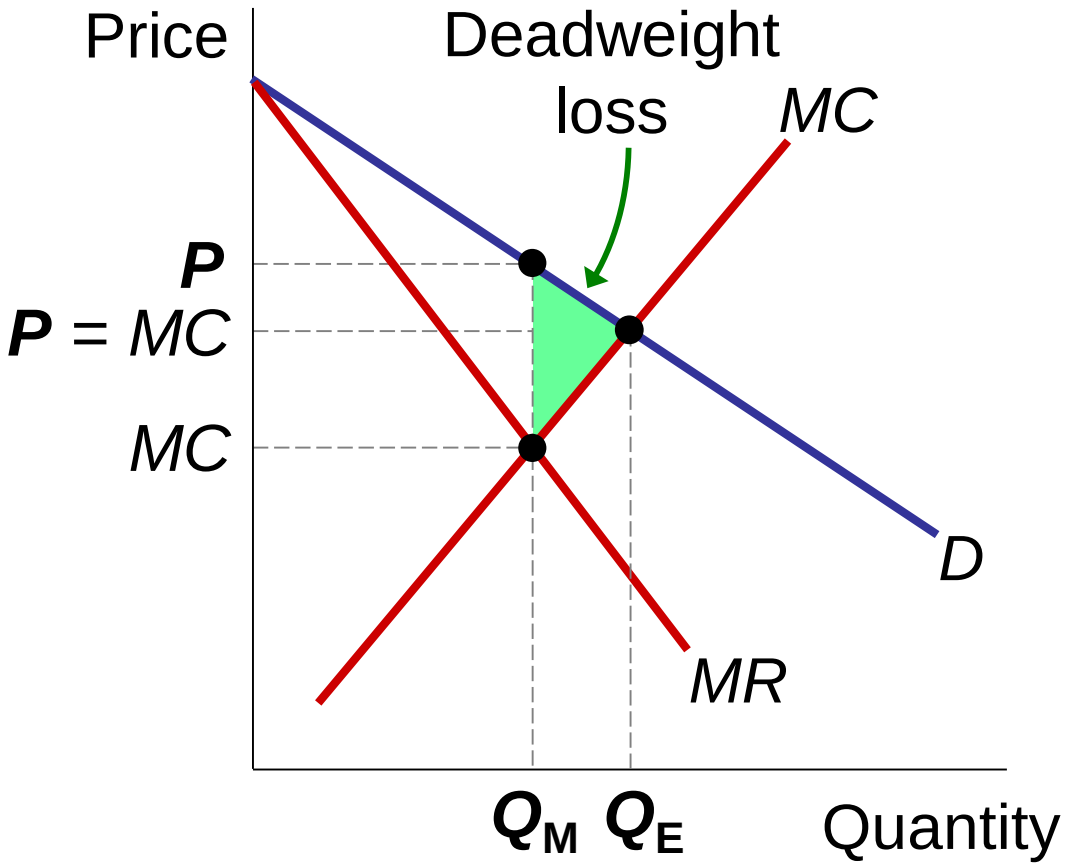
The Welfare Cost of Monopoly

Competitive eq'm:

- quantity = $\boldsymbol{Q_E}$
- $\boldsymbol{P} = MC$
- total surplus is maximized

Monopoly eq'm:

- quantity = $\boldsymbol{Q_M}$
- $\boldsymbol{P} > MC$
- deadweight loss



Public Policy Toward Monopolies

- Increasing competition with antitrust laws
  - Examples: Sherman Antitrust Act (1890), Clayton Act (1914)
  - Antitrust laws ban certain anticompetitive practices, allow govt to break up monopolies.
- Regulation
  - Govt agencies set the monopolist's price
  - For natural monopolies, $MC < ATC$ at all $\boldsymbol{Q}$, so marginal cost pricing would result in losses.
  - If so, regulators might subsidize the monopolist or set $\boldsymbol{P} = ATC$ for zero economic profit.

Public Policy Toward Monopolies

- Public ownership
  - Example: U.S. Postal Service
  - Problem: Public ownership is usually less efficient since no profit motive to minimize costs
- Doing nothing
  - The foregoing policies all have drawbacks, so the best policy may be no policy.

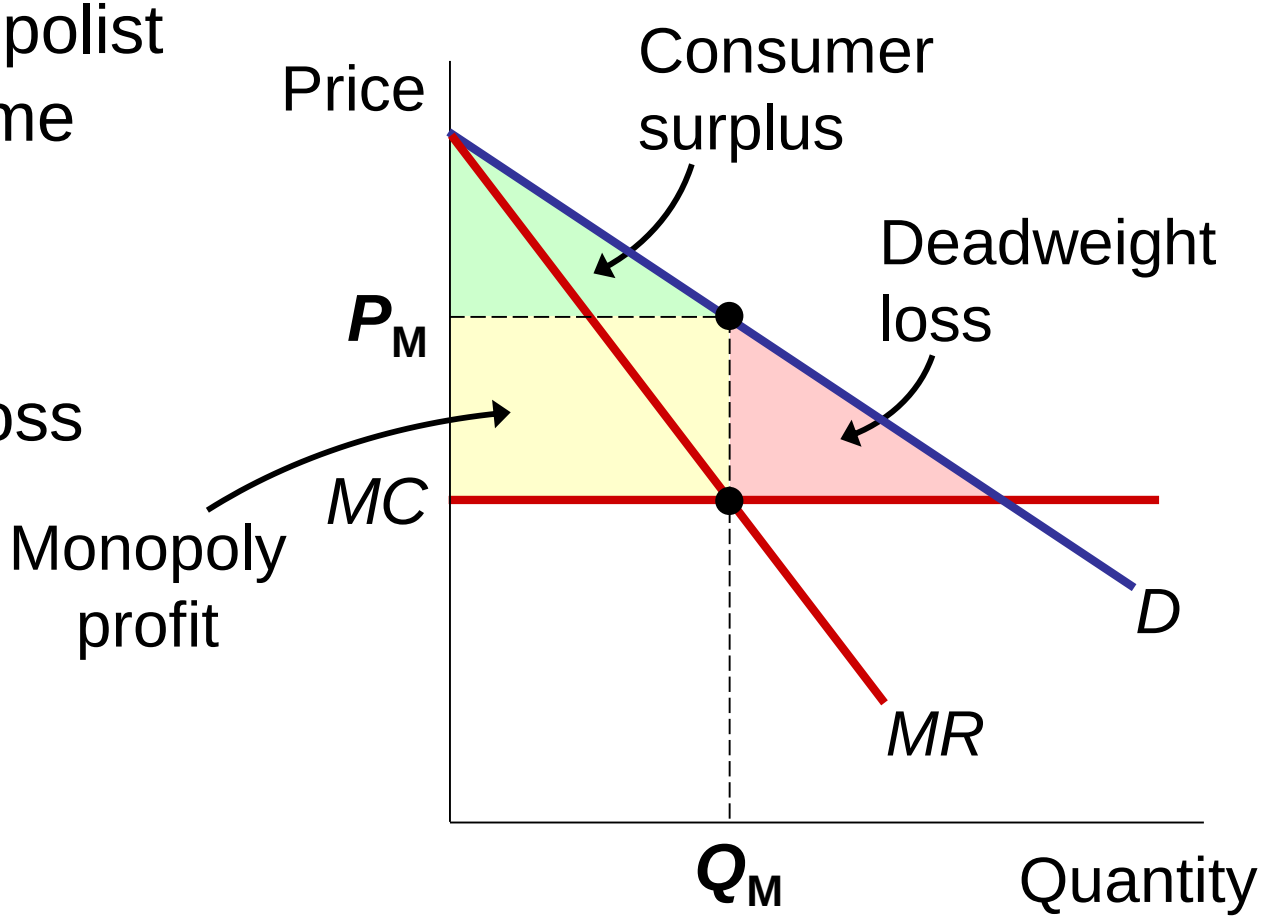
Price Discrimination

- Discrimination is the practice of treating people differently based on some characteristic, such as race or gender.
- **Price discrimination** is the business practice of selling the same good at different prices to different buyers.
- The characteristic used in price discrimination is willingness to pay (WTP):
  - A firm can increase profit by charging a higher price to buyers with higher WTP.

Perfect Price Discrimination vs. Single Price Monopoly

Here, the monopolist charges the same price (P_M) to all buyers.

A deadweight loss results.



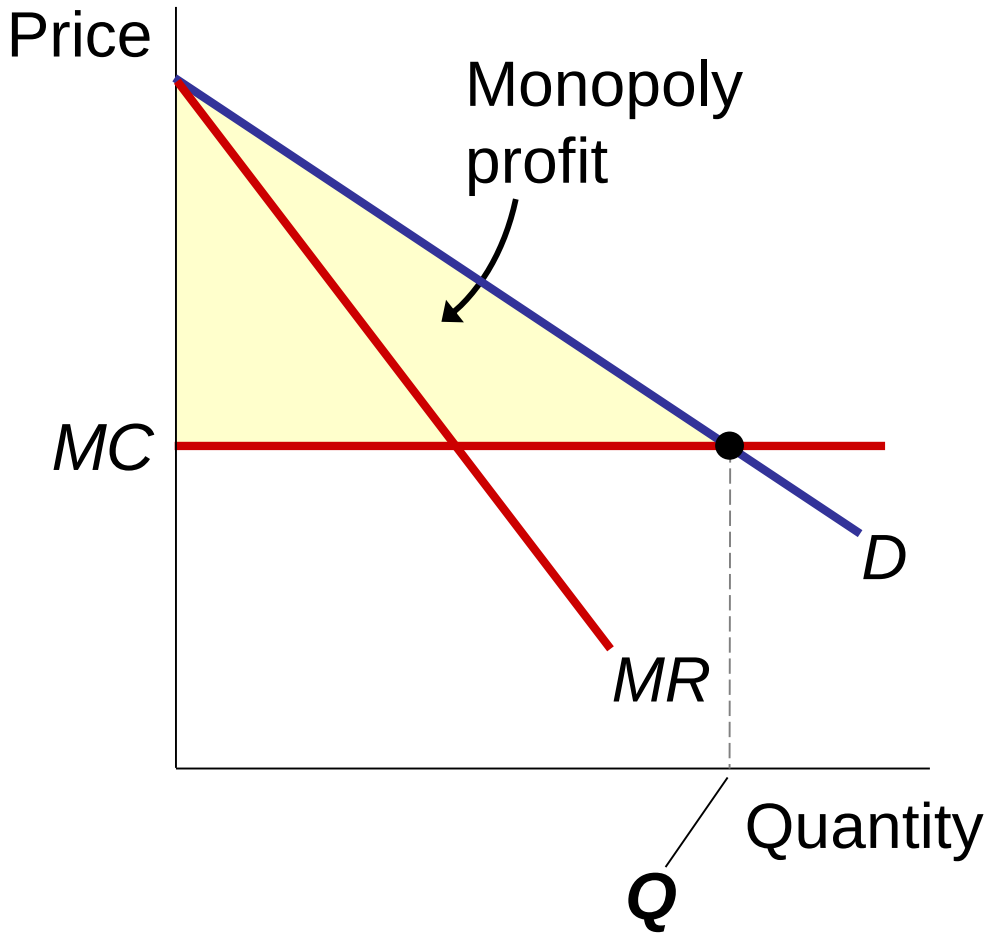
Perfect Price Discrimination vs. Single Price Monopoly

Here, the monopolist produces the competitive quantity, but charges each buyer his or her WTP.

This is called **perfect price discrimination**.

The monopolist captures all CS as profit.

But there's no DWL.



Price Discrimination in the Real World

- In the real world, perfect price discrimination is not possible:
  - no firm knows every buyer's WTP
  - buyers do not announce it to sellers
- So, firms divide customers into groups based on some observable trait that is likely related to WTP, such as age.

Examples of Price Discrimination

Movie tickets

Discounts for seniors, students, and people who can attend during weekday afternoons. They are all more likely to have lower WTP than people who pay full price on Friday night.

Airline prices

Discounts for Saturday-night stayovers help distinguish business travelers, who usually have higher WTP, from more price-sensitive leisure travelers.

Examples of Price Discrimination

Discount coupons

People who have time to clip and organize coupons are more likely to have lower income and lower WTP than others.

Need-based financial aid

Low income families have lower WTP for their children's college education.
Schools price-discriminate by offering need-based aid to low income families.

Examples of Price Discrimination

Quantity discounts

A buyer's WTP often declines with additional units, so firms charge less per unit for large quantities than small ones.

Example: A movie theater charges $4 for a small popcorn and $5 for a large one that's twice as big.

CONCLUSION: The Prevalence of Monopoly

- In the real world, pure monopoly is rare.
- Yet, many firms have market power, due to
  - selling a unique variety of a product
  - having a large market share and few significant competitors
- In many such cases, most of the results from this chapter apply, including
  - markup of price over marginal cost
  - deadweight loss

CHAPTER SUMMARY

- A monopoly firm is the sole seller in its market. Monopolies arise due to barriers to entry, including: government-granted monopolies, the control of a key resource, or economies of scale over the entire range of output.
- A monopoly firm faces a downward-sloping demand curve for its product. As a result, it must reduce price to sell a larger quantity, which causes marginal revenue to fall below price.

CHAPTER SUMMARY

- Monopoly firms maximize profits by producing the quantity where marginal revenue equals marginal cost. But since marginal revenue is less than price, the monopoly price will be greater than marginal cost, leading to a deadweight loss.
- Policymakers may respond by regulating monopolies, using antitrust laws to promote competition, or by taking over the monopoly and running it. Due to problems with each of these options, the best option may be to take no action.

CHAPTER SUMMARY

- Monopoly firms (and others with market power) try to raise their profits by charging higher prices to consumers with higher willingness to pay. This practice is called price discrimination.