Monopoly

15

Monopoly

- A firm is a *monopoly* if . . .
  - it is the only seller of its product, and
  - its product does not have close substitutes.

WHY MONOPOLIES ARISE

- The fundamental cause of monopoly is the existence of *barriers to entry*.

WHY MONOPOLIES ARISE

- Barriers to entry have three sources:
  - Ownership of a key resource.
  - The government gives a firm the exclusive right to produce some good.
  - Costs of production make one producer more efficient than a large number of producers.

Monopoly Resources

- Although exclusive ownership of a key resource is a potential source of monopoly, in practice monopolies rarely arise for this reason.
  - Example: The DeBeers Diamond Monopoly

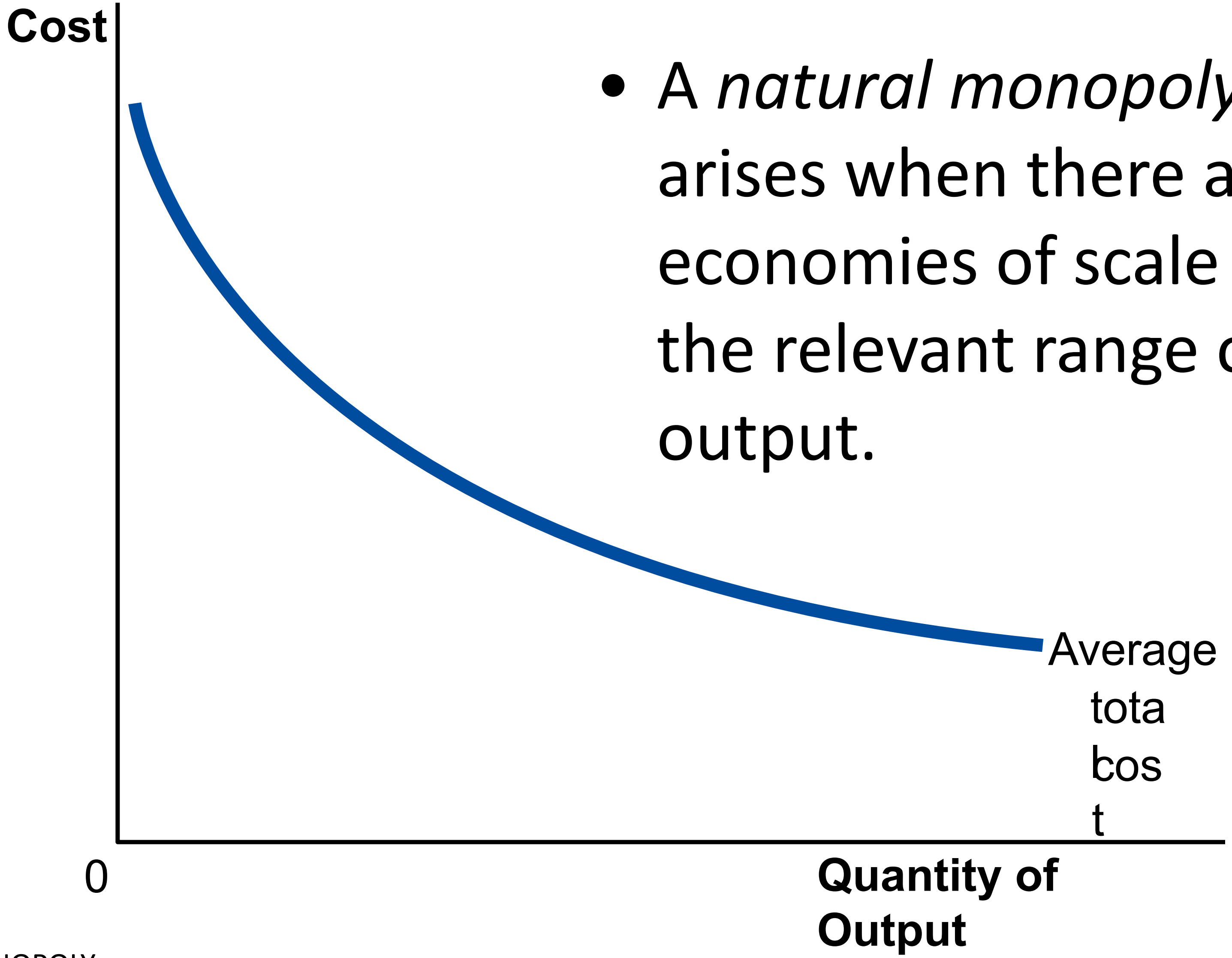
Government-Created Monopolies

- Governments may restrict entry by giving one firm the exclusive right to sell a particular good in certain markets.
  - Example: Patent and copyright laws are two important examples of how governments create monopoly to serve the public interest.

Natural Monopolies

- An industry is a *natural monopoly* when one firm can supply a good or service to an entire market at a smaller cost than could two or more firms.
  - Example: delivery of electricity, phone service, tap water, etc.

Natural Monopolies

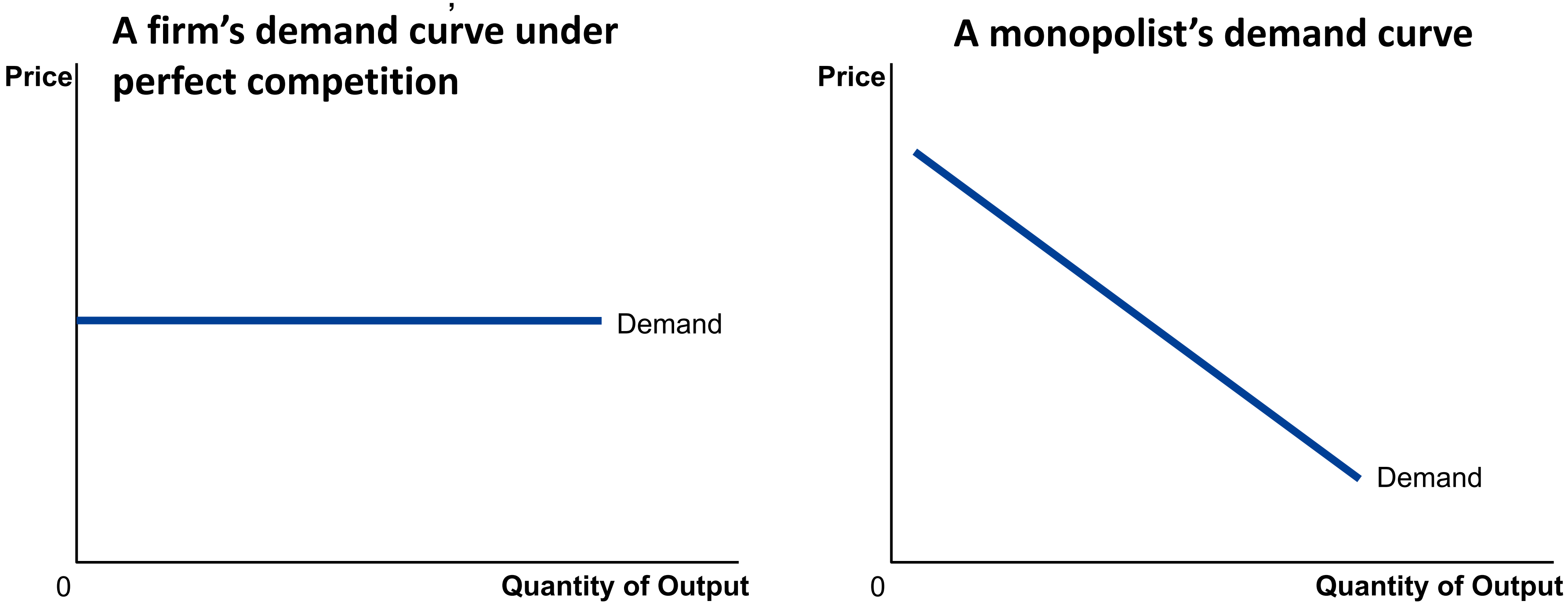


- A *natural monopoly* arises when there are economies of scale over the relevant range of output.

HOW MONOPOLIES MAKE PRODUCTION AND PRICING DECISIONS

- Monopoly versus Competition
  - Monopoly
    - Is the sole producer
    - Faces a downward-sloping demand curve
      - Is a price maker
      - Can reduce its sales to increase price
  - Competitive Firm
    - Is one of many producers
    - Faces a horizontal demand curve
      - Is a price taker
      - Sells as much or as little as it wants at market price

Figure 2 Demand Curves for Competitive and Monopoly Firms



See Ch. 14 for a review of perfect competition.

Recap from Ch 14: A Firm's Revenue

- Total Revenue

$$TR = P \times Q$$

- Average Revenue

$$AR = TR/Q = P$$

- Marginal Revenue

$$MR = \Delta TR/\Delta Q$$

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

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

Note that *P* = *AR* > *MR*.

Recall that, in perfect competition, *P* = *AR* = *MR*.

Why is *MR* < *P*?

Quantity of Water (*Q*)	Price (*P*)	Total Revenue ($TR = P \times Q$)	Average Revenue ($AR = TR/Q$)	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

When *Q* = 3, *P* = 8 but *MR* = 6. Why is *MR* < *P*?

Output Effect: When the 3rd unit is sold, the firm earns an additional $8 for it. So, *TR increases* by $8, which is *P*.

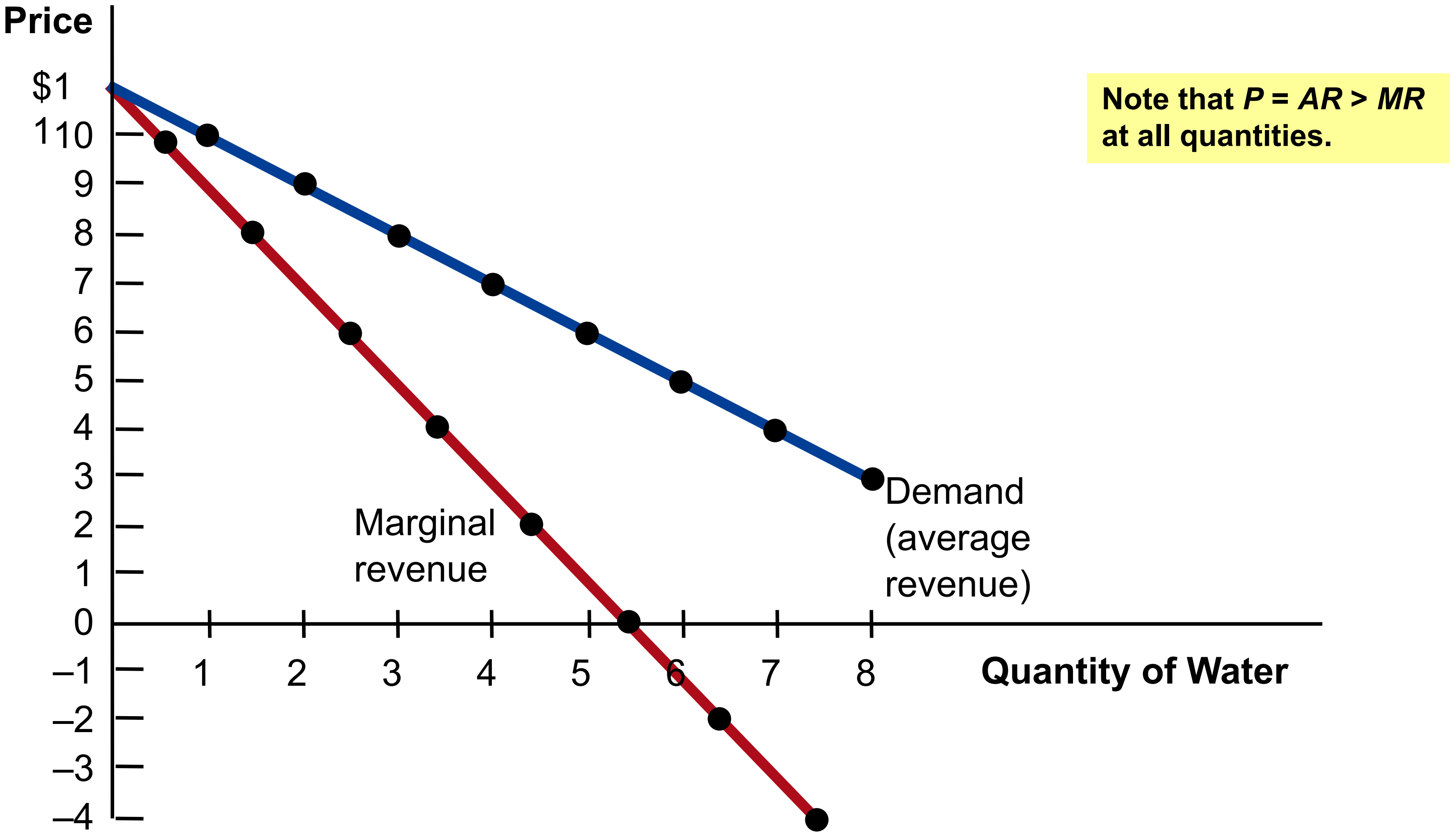
Price Effect: But to sell the 3rd unit, the price had to be reduced from $9 to $8. So, the total revenue from the first two units -- which would have been $18 if only 2 units were sold -- decreases to $16 when 3 units are sold. Thus, TR also *decreases* by $2 when the 3rd unit is sold.

Therefore, the increase in total revenue is $8 - $2 = $6, which is *less* than *P*. In other words, *MR* < *P*.

A Monopoly's Total Revenue

- When a monopoly increases the amount it sells by one unit, there are *two* effects on total revenue $P \times Q$.
  - The output effect: when an additional unit of output is sold, the monopolist charges a price for it. Therefore, total revenue *increases* by P, the price.
  - The price effect: to sell the additional unit, the price must be reduced. Therefore, total revenue from the units that the monopolist would have *decreases*.
    - The overall effect will depend on the price elasticity of demand; see chapter 5
    - If demand is elastic—that is, PED > 1—an increase in output is accompanied by an increase in total revenue

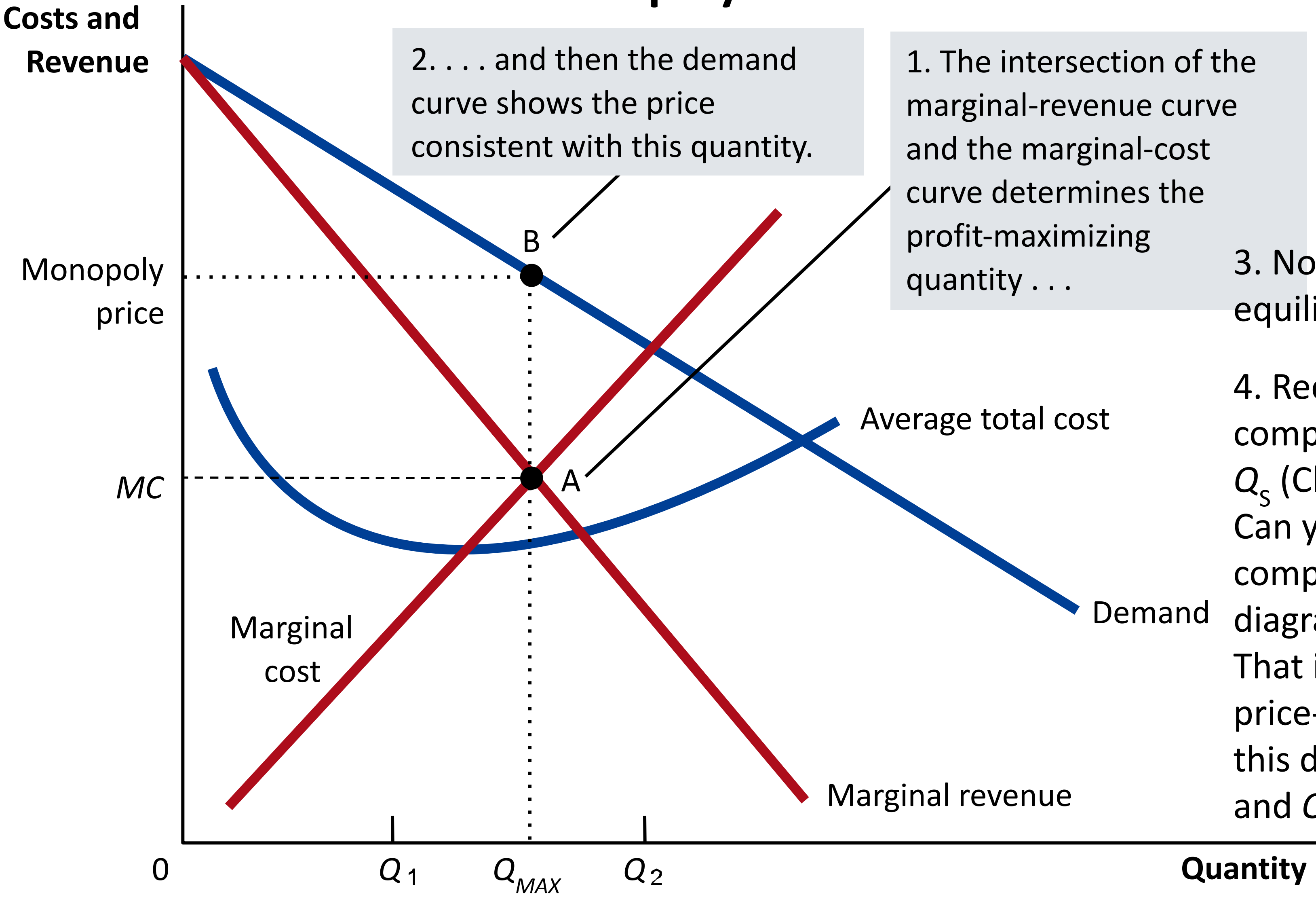
Figure 3 Demand and Marginal-Revenue Curves for a Monopoly



Profit Maximization

- For any firm, the profit-maximizing *quantity supplied* is that at which marginal revenue equals marginal cost: $MR = MC$.
  - We saw this in Chapter 14
- In equilibrium, quantity supplied = quantity demanded
- A monopoly firm then uses the demand curve to find the *price* that will induce consumers to buy the profit-maximizing quantity.

Figure 4 Profit Maximization for a Monopoly



3. Note that $P > MR = MC$ in equilibrium (point B).

4. Recall that in perfect competition $P = MC$ and $Q_D = Q_S$ (Ch. 14).
Can you pinpoint the perfect competition outcome in this diagram?
That is, can you find the price-and-quantity point in this diagram at which $P = MC$ and $Q_D = Q_S$?

Comparing Monopoly and Competition

- For a competitive firm, price equals marginal cost.

$$P = MR = MC$$

- For a monopoly firm, price exceeds marginal cost.

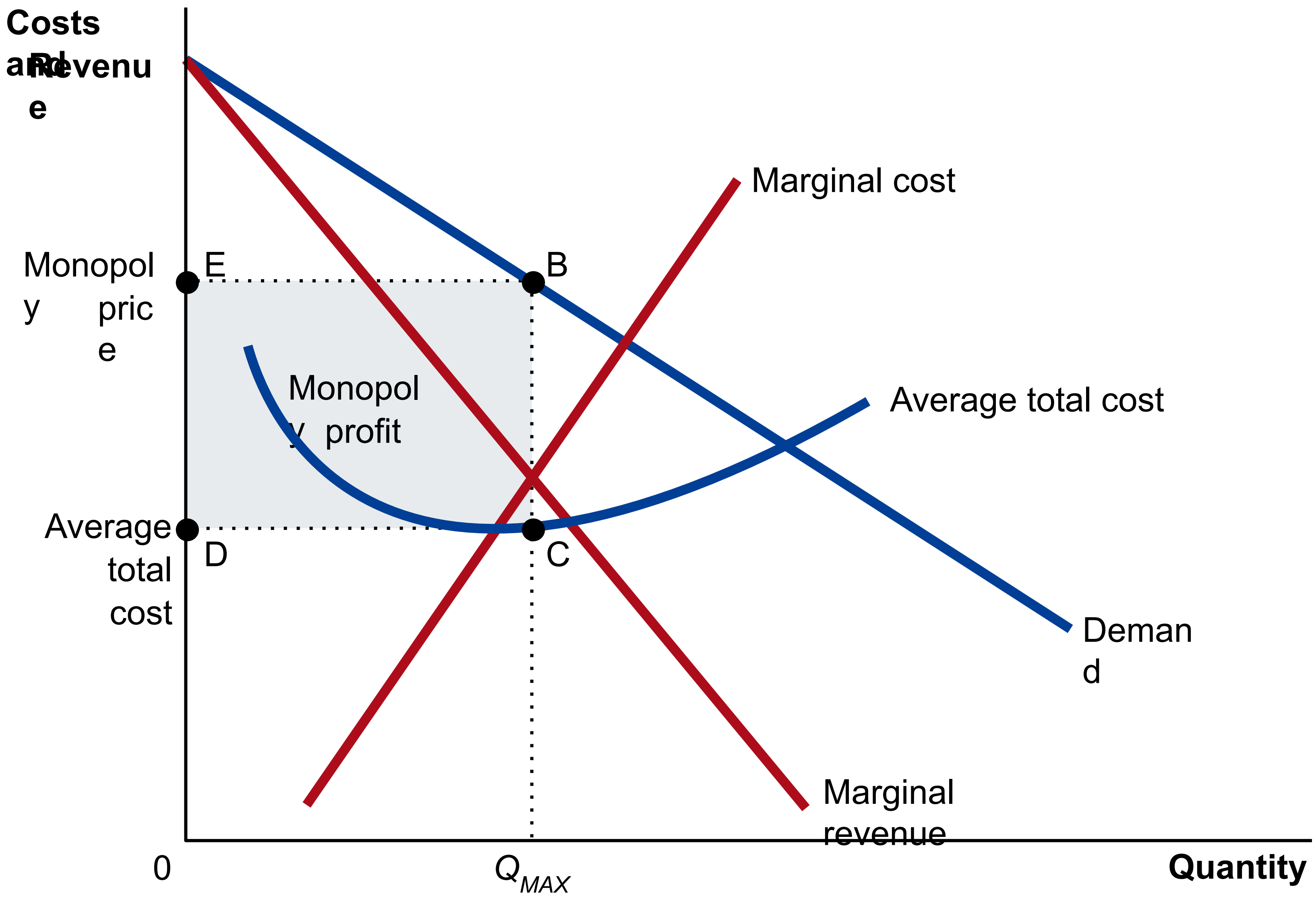
$$P > MR = MC$$

- Note that the monopolist does not have a supply curve
  - The monopolist is a *price maker*; it chooses what price to charge
  - A perfectly competitive firm is a *price taker*; it *responds* to whatever the market price happens to be and chooses what quantity to produce at that price
  - This is why there is a supply curve in perfect competition, but not in monopoly.
  - This is why the theory of supply and demand (chapter 4) works only under perfect competition

Recap from Ch 14: Profit

- Profit equals total revenue minus total costs.
  - Profit = $TR - TC$
  - Profit/Q = $TR/Q - TC/Q$
  - Profit = $(TR/Q - TC/Q) \times Q$
  - Profit = $(P - ATC) \times Q$

Figure 5 The Monopolist's Profit



A Monopolist's Profit

- Recall that profit = (P – ATC) × Q
- Therefore, the monopolist will stay in business as long as price (P) is greater than average total cost (ATC).

A monopolist will exit when *P* < *ATC* at all *Q*

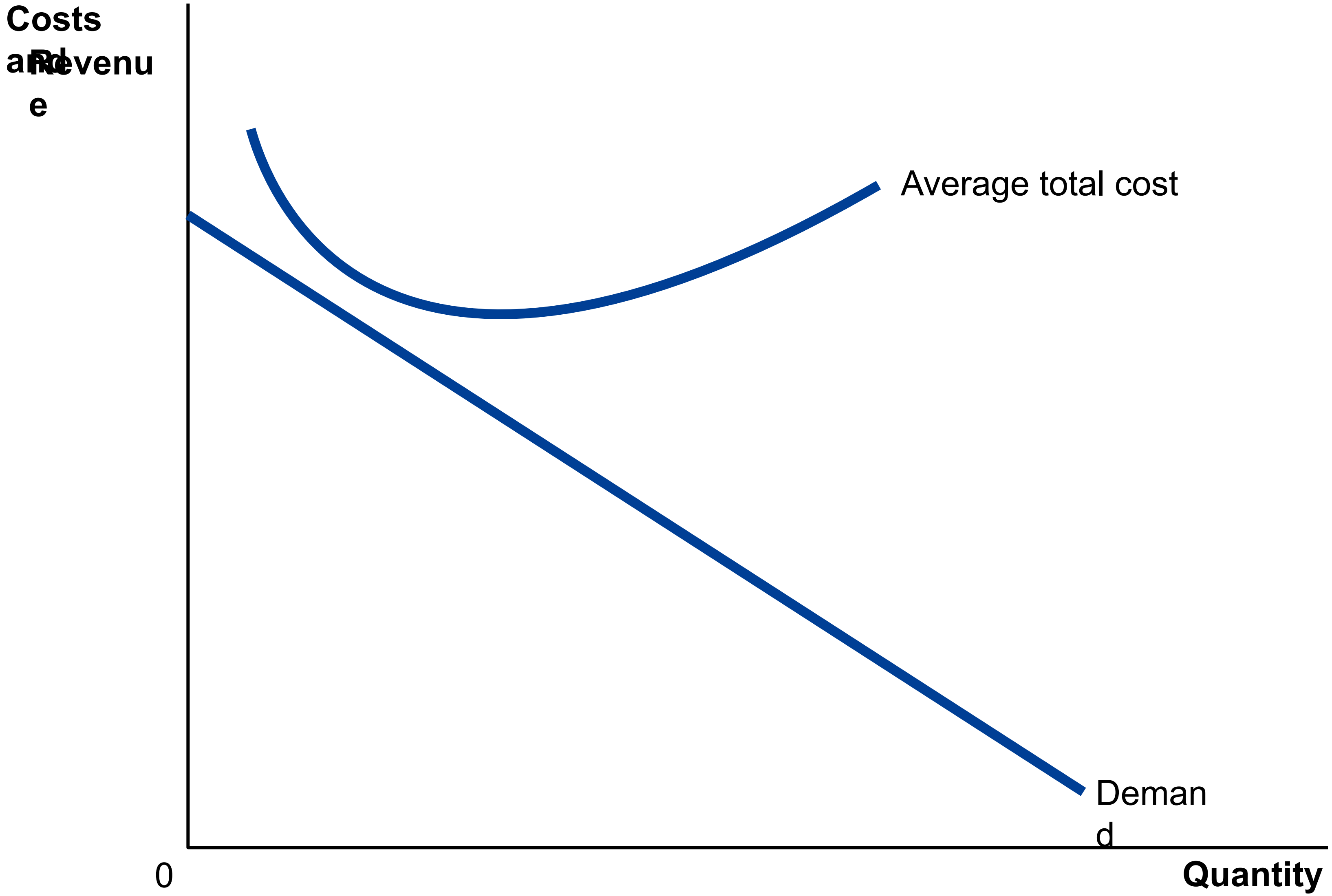
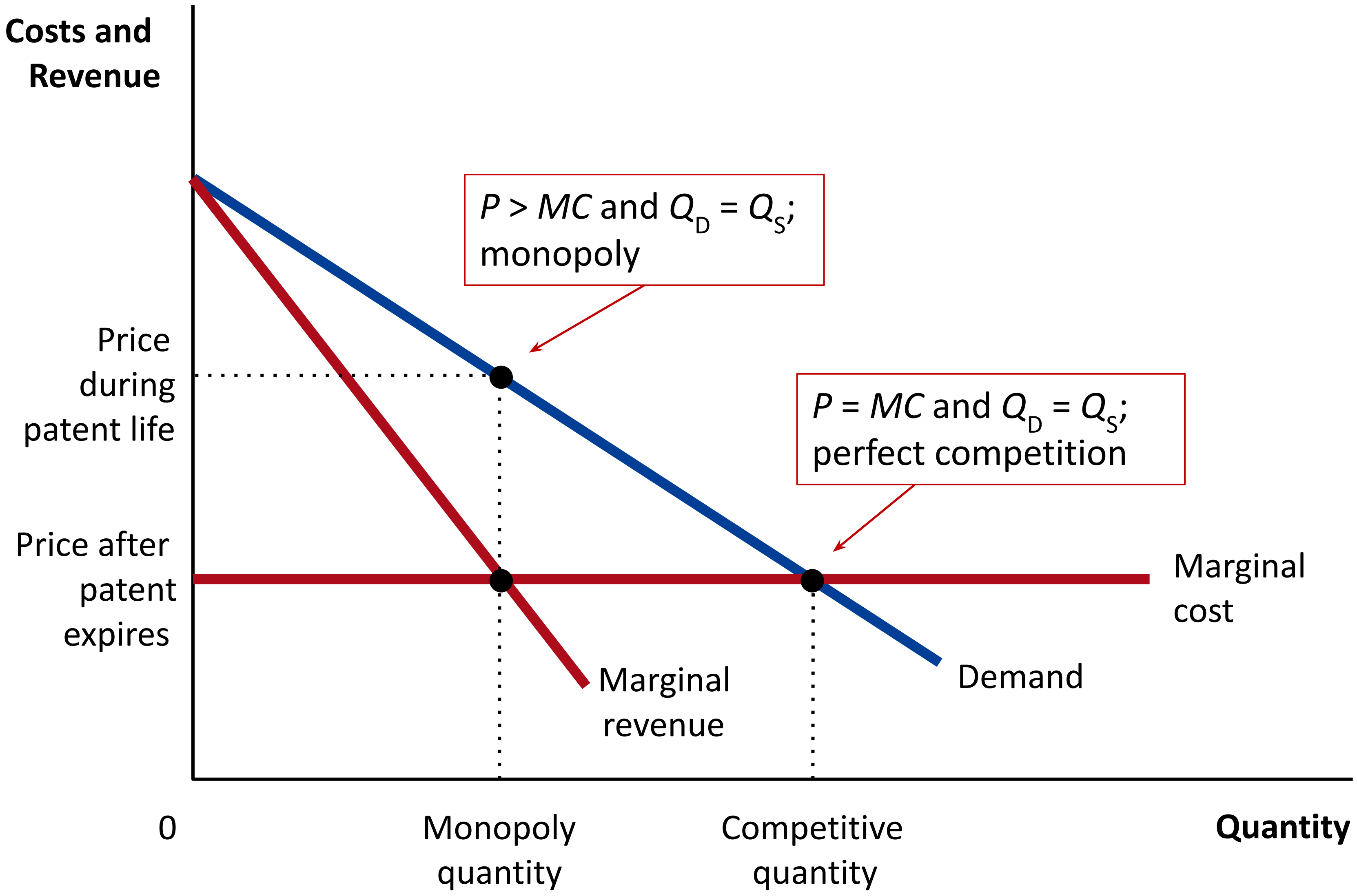


Figure 6 The Market for Drugs (Pharmaceutical)



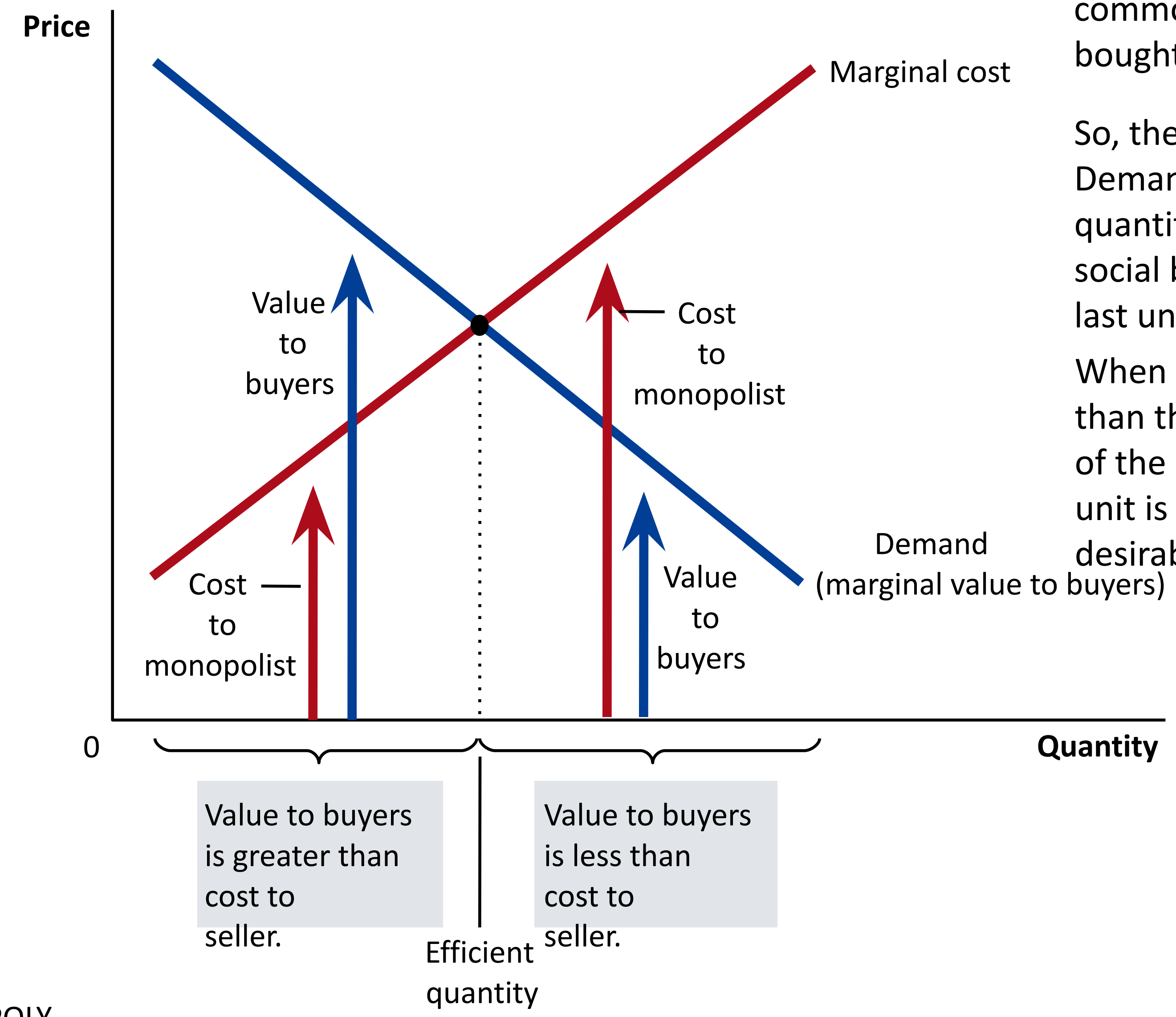
Video: Generic Drugs

- Pharmaceutical drugs that are no longer under patent are called generic drugs
- It is often assumed that the market for generic drugs is perfectly competitive
- But the reality is very different
    - *Why generic drugs don't necessarily mean lower prices* by Megan Thompson, PBS Newshour, December 23, 2013

THE WELFARE COST OF MONOPOLY

- In contrast to a competitive firm, the monopoly charges a price above the marginal cost ($P > MC$).
- For consumers, this high price makes monopoly undesirable.
- For the monopolist, the high price makes monopoly profitable.

Figure 7 The Efficient Level of Output



The height of the Demand curve at any quantity shows the value of the commodity to whoever bought the last unit.

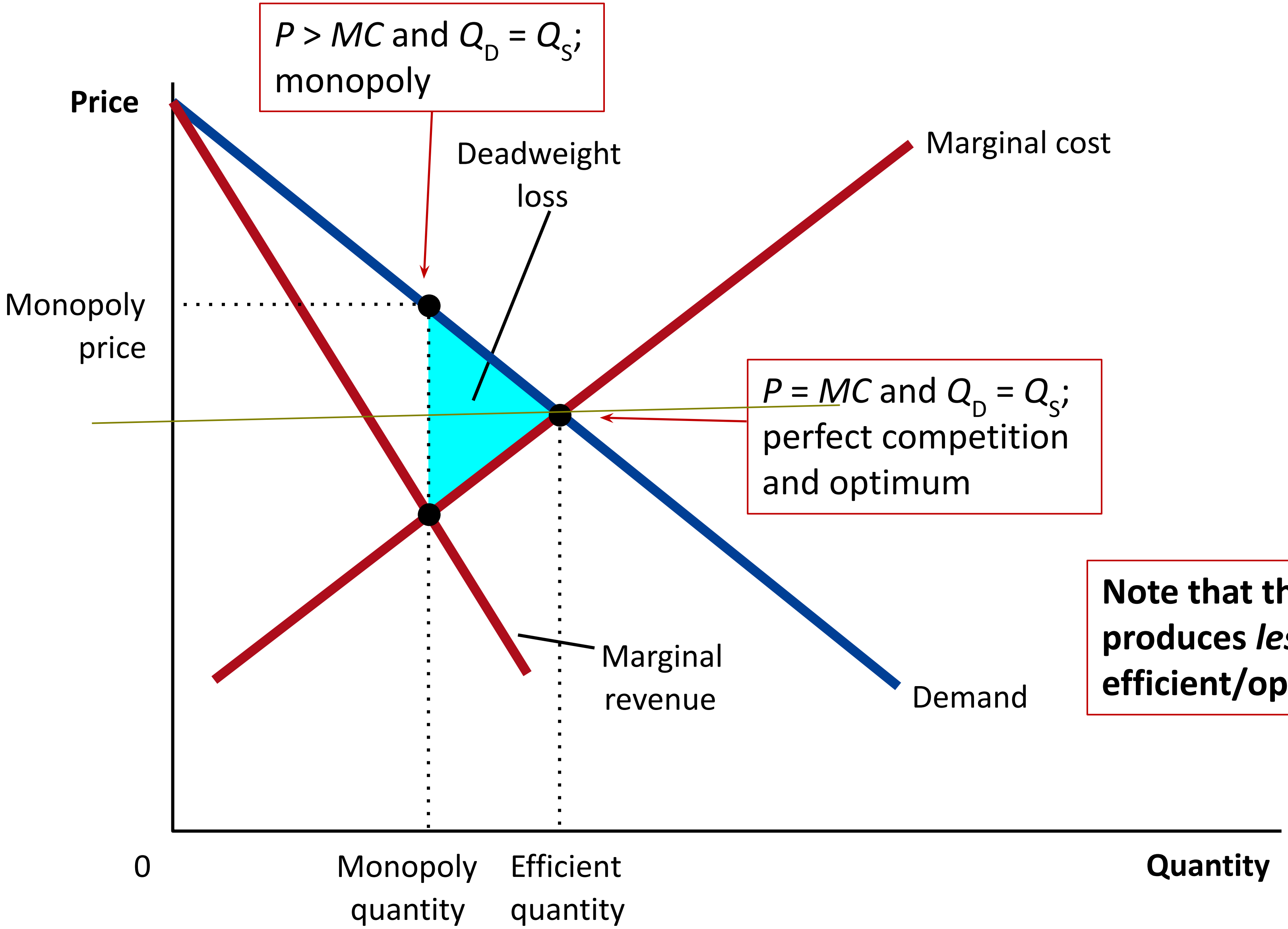
So, the height of the Demand curve at any quantity shows the social benefit of the last unit.

When this is no less than the marginal cost of the last unit, the last unit is socially desirable.

The Deadweight Loss

- Because a monopoly sets its price above marginal cost, it places a wedge between the consumer’s willingness to pay and the producer’s cost.
  - This wedge causes the quantity sold to fall short of the social optimum.

Figure 8 The Inefficiency of Monopoly



Note that the monopolist produces *less* than the socially efficient/optimum quantity

The Deadweight Loss

- The deadweight loss caused by a monopoly is similar to the deadweight loss caused by a tax.
  - See chapter 8
- The difference between the two cases is that the government gets the revenue from a tax, whereas a private firm gets the monopoly profit.

PUBLIC POLICY TOWARD MONOPOLIES

- Governments may respond to the problem of monopoly in one of four ways.
  - Making monopolized industries more competitive.
  - Regulating the behavior of monopolies.
  - Turning some private monopolies into public enterprises.
  - Doing nothing at all.

Increasing Competition with Antitrust Laws

- Antitrust laws are laws aimed at curbing monopoly power.
- Antitrust laws give government various ways to promote competition.
  - They allow government to prevent mergers.
  - They allow government to break up companies.
  - They prevent companies from performing activities that make markets less competitive.

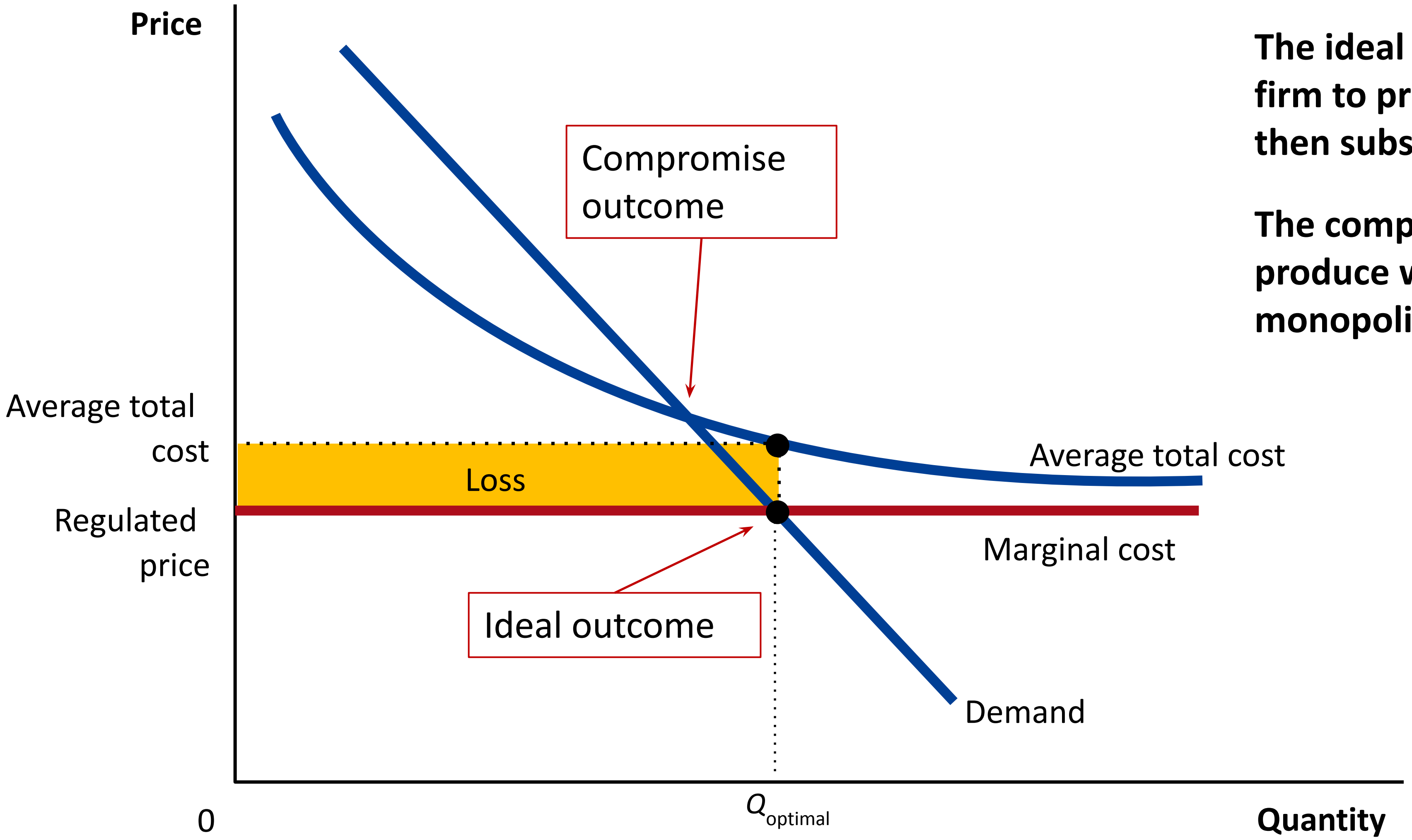
Increasing Competition with Antitrust Laws

- Two Important Antitrust Laws
  - Sherman Antitrust Act (1890)
    - Reduced the market power of the large and powerful “trusts” of that time period.
  - Clayton Act (1914)
    - Strengthened the government’s powers and authorized private lawsuits.

Regulation

- Government may regulate the prices that the monopoly charges.
  - Example: ConEd, LIPA, etc.
- The regulator may force the monopolist to implement the efficient outcome
  - Recall that the allocation of resources is efficient when price is set to equal marginal cost ($P = MC$).
  - But it might be difficult for government regulators to force the monopolist to set $P = MC$

Figure 10 Marginal-Cost Pricing for a Natural Monopoly



The ideal policy is to force the firm to produce $Q_{optimal}$ and then subsidize it for its loss.

The compromise outcome is to produce where P = ATC and the monopolist breaks even

Regulation

- In practice, regulators will allow monopolists to keep some of the benefits from lower costs in the form of higher profit
- This requires some departure from marginal-cost pricing.

Public Ownership

- Rather than regulating a *natural monopoly* that is run by a private firm, the government may run the monopoly itself
  - e.g. in the United States, the government runs the U.S. Postal Service.

Doing Nothing

- Government may do nothing at all if the market failure is deemed small compared to the imperfections of public policies.

PRICE DISCRIMINATION

PRICE DISCRIMINATION

- *Price discrimination* is the business practice of selling the same good at different prices to different customers, even though the cost of production is the same for all customers.
  - What do you think of this practice?

PRICE DISCRIMINATION

- Price discrimination is not possible in a competitive market
  - as there are many firms all selling the same product at the market price.
- In order to price discriminate, the firm must have some *market power*.
  - That is, it must have the ability to set its prices without being afraid that its customers will go to competing firms.
- Price discrimination won’t work if resale is easy

Perfect Price Discrimination

- Perfect price discrimination refers to the situation when
  - the monopolist knows each customer's willingness to pay, and
  - can charge each customer exactly what he/she is willing to pay.
- Example:
  - Suppose the Cable TV industry is a monopoly
  - Suppose you are willing to pay up to $200 per month for a cable connection
  - Suppose the cable company knows this and accordingly charges you $200 per month
  - All other customers are also being charged the maximum they are willing to pay
  - What do you think of this state of affairs?

PRICE DISCRIMINATION

- Important effects of price discrimination:
  - It increases the monopolist's profits.
  - It reduces the consumer surplus.
    - Under perfect price discrimination, consumer surplus is *zero*
  - It reduces the deadweight loss.
    - Under perfect price discrimination, deadweight loss is *zero*,
      - Exactly as under perfect competition.

Figure 9 Welfare with and without Price Discrimination

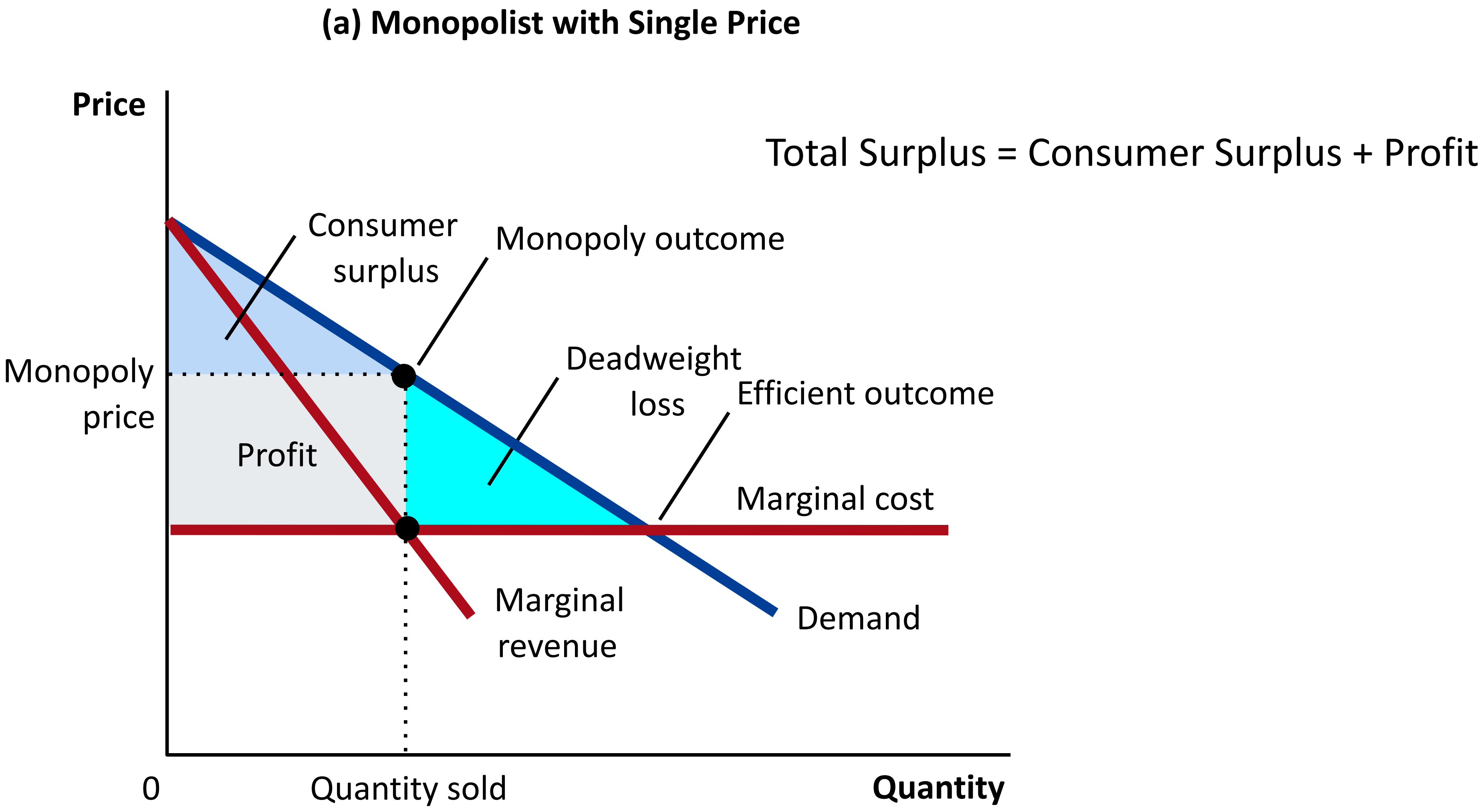
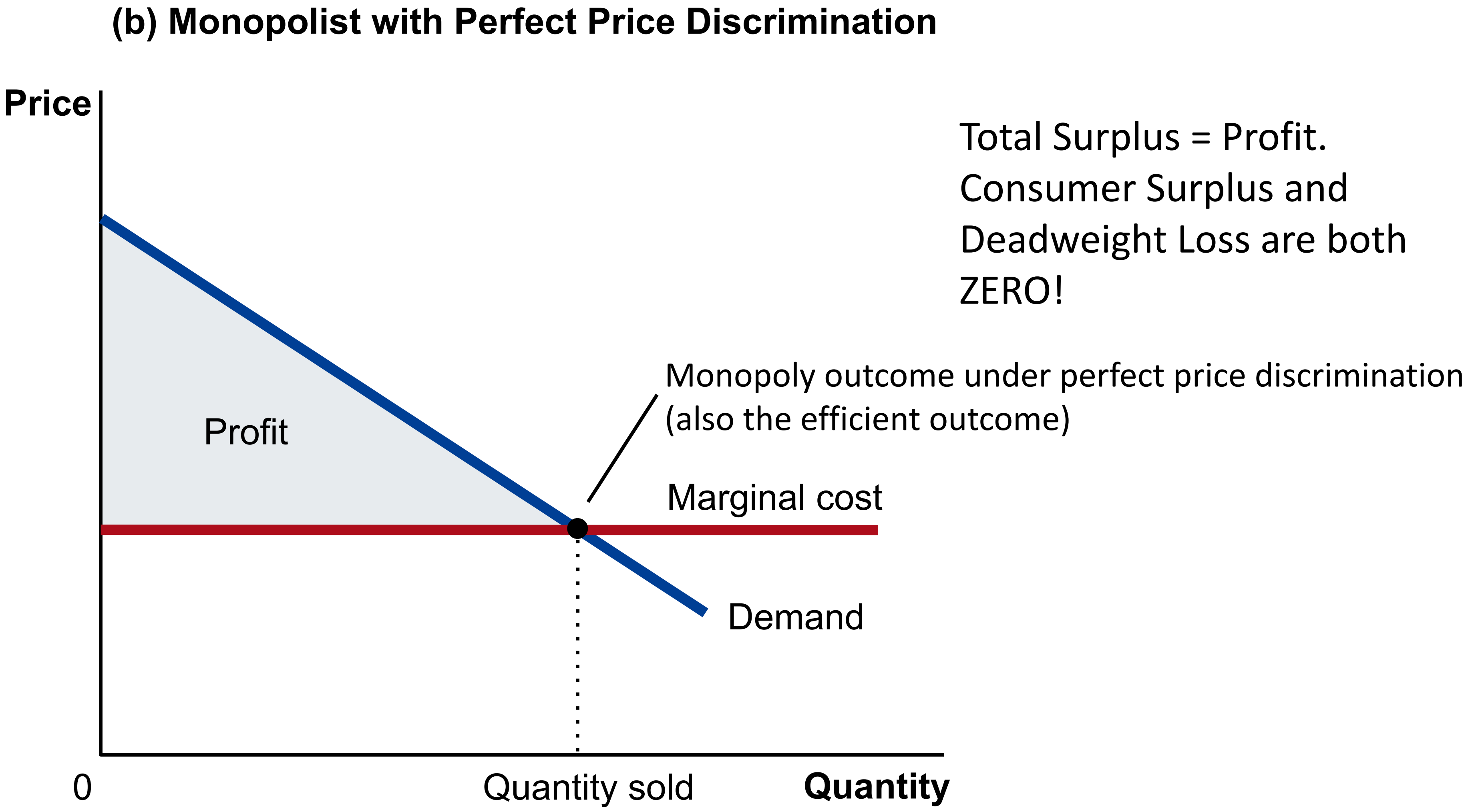


Figure 9 Welfare with and without Price Discrimination

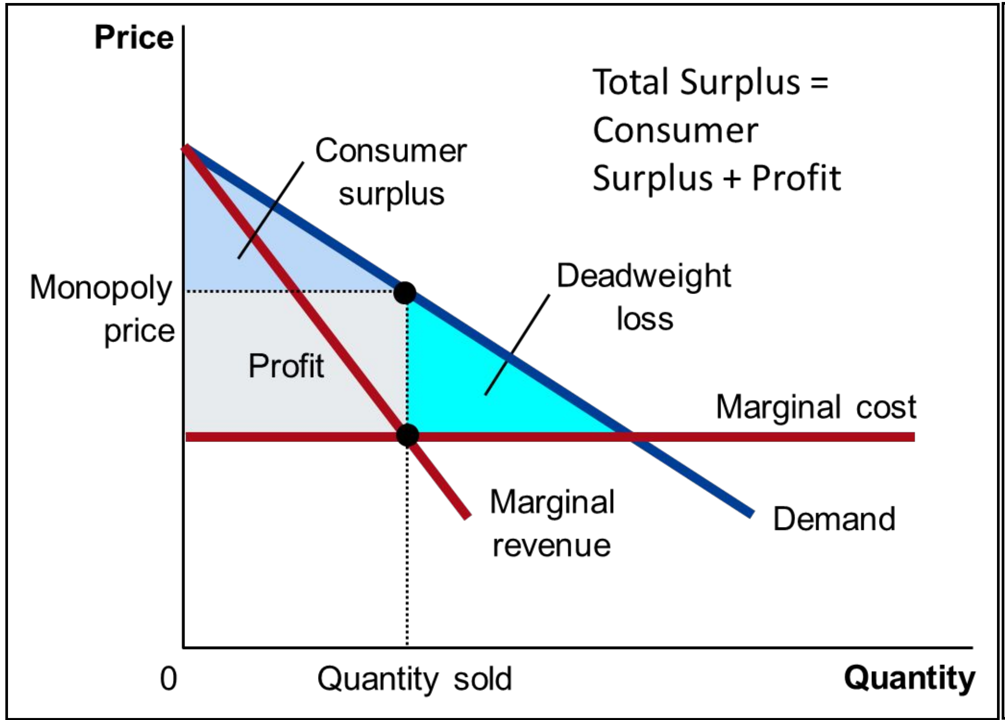


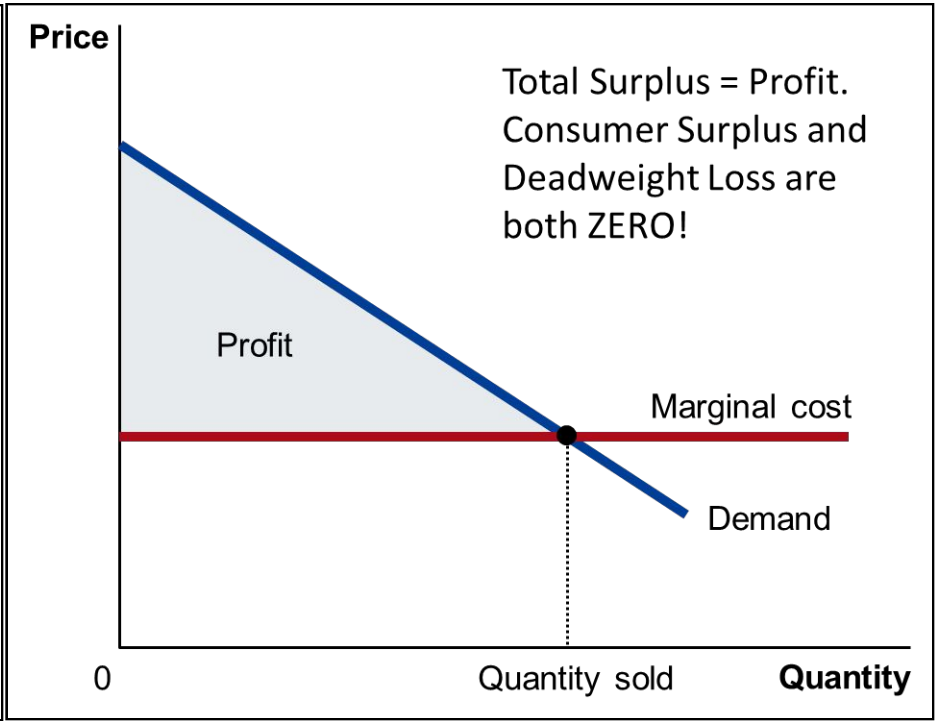
Total Surplus = Profit. Consumer Surplus and Deadweight Loss are both ZERO!

Which outcome is better?

- One price for all

- A different price for every buyer
  - *P* = *AR* is no longer true!





Examples of Price Discrimination

- Movie tickets
- Airline tickets
- Discount coupons
- Financial aid
- Quantity discounts

CONCLUSION: THE PREVALENCE OF MONOPOLY

- We have seen that monopoly is inefficient. But how widespread is monopoly? How worried should we be?
  - Monopolies are common.
    - Most firms have some control over their prices because of differentiated products. But
  - Firms with substantial monopoly power are rare.
    - Few goods are truly unique.

Competition v. Monopoly

	Competition	Monopoly
Similarities		
Goal of firms	Maximize profits	Maximize profits
Rule for maximizing	$MR = MC$	$MR = MC$
Can earn economic profits in the short run?	Yes	Yes
Differences		
Number of firms	Many	One
Marginal revenue	$MR = P$	$MR < P$
Price	$P = MC$	$P > MC$
Produces welfare-maximizing level of output?	Yes	No
Entry in long run?	Yes	No
Can earn economic profits in long run?	No	Yes
Price discrimination possible?	No	Yes

Any Questions?

Summary

- A monopoly is a firm that is the sole seller in its market.
- It faces a downward-sloping demand curve for its product.
- A monopoly’s marginal revenue is always below the price of its good.

Summary

- Like a competitive firm, a monopoly maximizes profit by producing the quantity at which marginal cost and marginal revenue are equal.
- Unlike a competitive firm, its price exceeds its marginal revenue, so its price exceeds marginal cost.

Summary

- A monopolist’s profit-maximizing level of output is below the level that maximizes the sum of consumer and producer surplus.
- A monopoly causes deadweight losses similar to the deadweight losses caused by taxes.

Summary

- Policymakers can respond to the inefficiencies of monopoly behavior with antitrust laws, regulation of prices, or by turning the monopoly into a government-run enterprise.
- If the market failure is deemed small, policymakers may decide to do nothing at all.

Summary

- Monopolists can raise their profits by charging different prices to different buyers based on their willingness to pay.
- Price discrimination can raise economic welfare and lessen deadweight losses.

Pricing Power

- While a competitive firm is a *price taker*, a monopoly firm is a *price maker*.

Figure 1 Economies of Scale as a Cause of Monopoly