



Module:  
Microeconomics

Lecturer:  
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# Microeconomics

## Lecture 5 - Market Structure

# Characteristics of Perfect Competition

1. Large number of small firms producing an identical (often called homogenous) product
2. Firms can freely enter or exit the market
3. Market participants have perfect information
4. Transactions costs are zero
5. No economies of scale

# The Revenue of a Competitive Firm

Total revenue ( $TR$ )

$$TR = P \times Q$$

**Average revenue (AR)**

$$AR = \frac{TR}{Q} = P$$

**Marginal revenue (MR)**

The change in  $TR$  from  
selling one more unit.

$$MR = \frac{\Delta TR}{\Delta Q}$$

# $MR = P$ for a Competitive Firm

- Because a competitive firm is so small in relation to the market as a whole, it can sell all that it can produce without affecting the market price
- Every time it sells an extra (marginal) unit of the good  $Q$ , it receives the market price  $P$
- The rise in revenue from selling one extra good is  $P$
- Simply,  $MR = P$  for a perfectly competitive firm

$MR = P$  is only true for  
firms in competitive markets.

# Profit Maximization

At any  $Q$  with  $MR > MC$ , increasing  $Q$  raises profit.

At any  $Q$  with  $MR < MC$ , reducing  $Q$  raises profit.

$Q$	$TR$	$TC$	Profit	$MR$	$MC$	$\Delta\text{Profit} = MR - MC$
0	€0	\$5	-\$5			
1	10	9	1	€10	€4	€6
2	20	15	5	10	6	4
3	30	23	7	10	8	2
4	40	33	7	10	10	0
5	50	45	5	10	12	-2

# MC and the Firm's Supply Decision

Rule:  $MR = MC$  at the profit-maximizing  $Q$ .

At  $Q_a$ ,  $MC < MR$ .

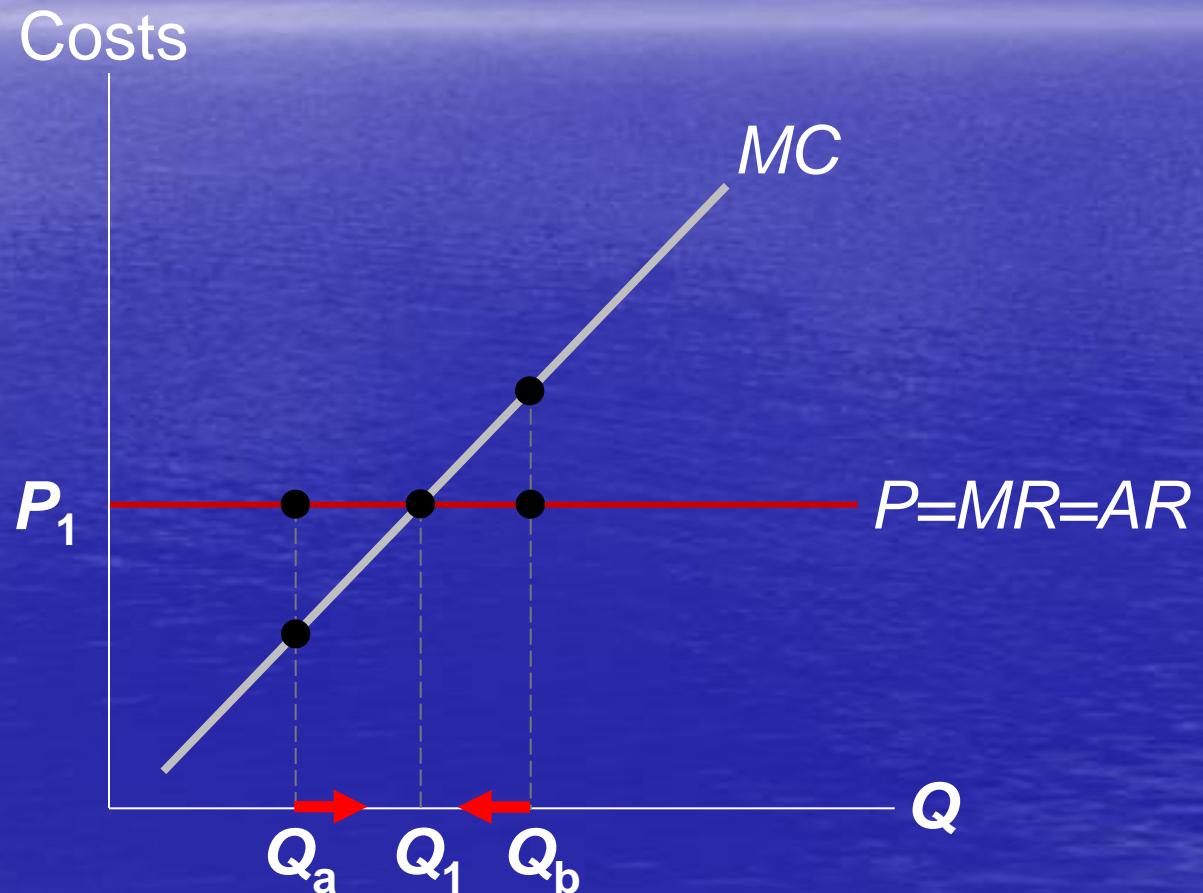
So, increase  $Q$   
to raise profit.

At  $Q_b$ ,  $MC > MR$ .

So, reduce  $Q$   
to raise profit.

At  $Q_1$ ,  $MC = MR$ .

Changing  $Q$   
would lower  
profit.

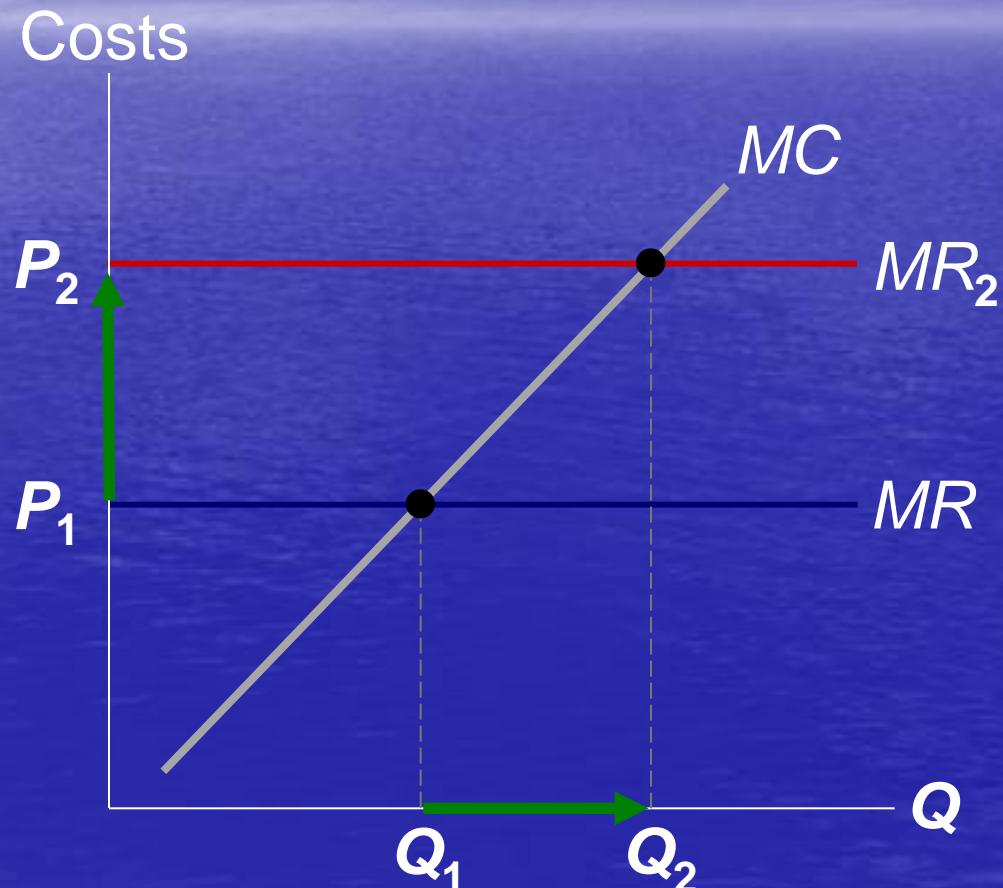


# MC & the Firm's Supply Decision

If price rises to  $P_2$ ,  
then the profit-  
maximizing quantity  
rises to  $Q_2$ .

The  $MC$  curve  
determines the  
firm's  $Q$  at any price.

Hence, the  $MC$  curve is the  
firm's supply curve.

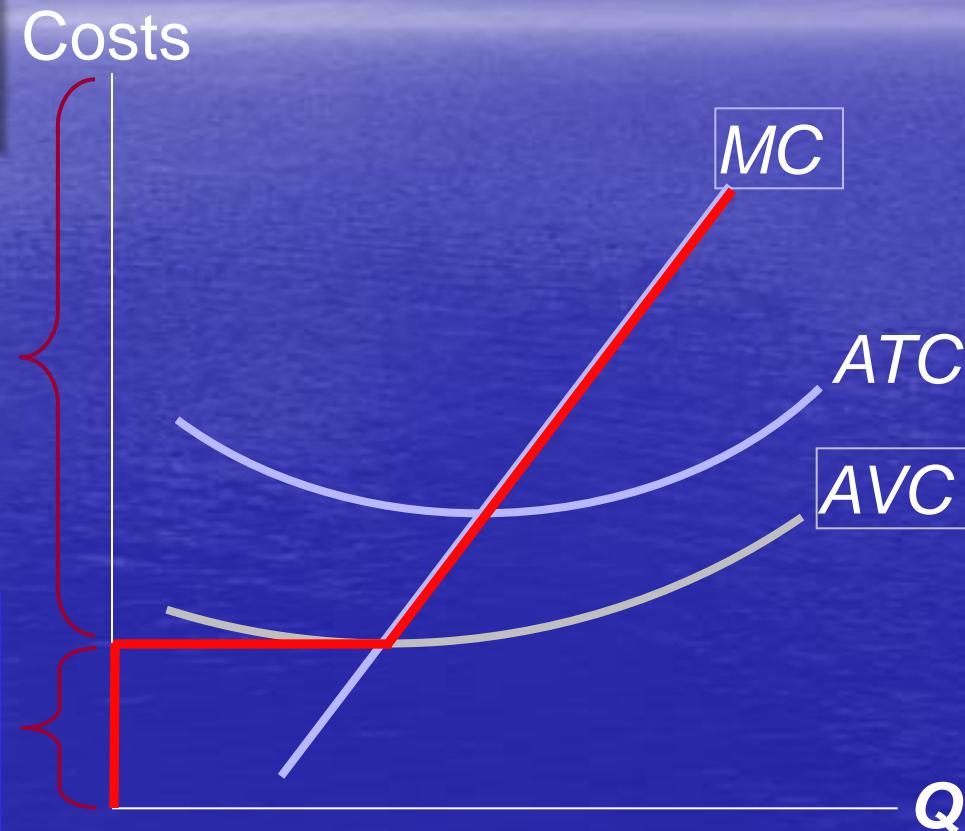


# A Competitive Firm's SR Supply Curve

The firm's SR supply curve is the portion of its  $MC$  curve above  $AVC$ .

If  $P > AVC$ , then firm produces  $Q$  where  $P = MC$ .

If  $P < AVC$ , then firm shuts down (produces  $Q = 0$ ).

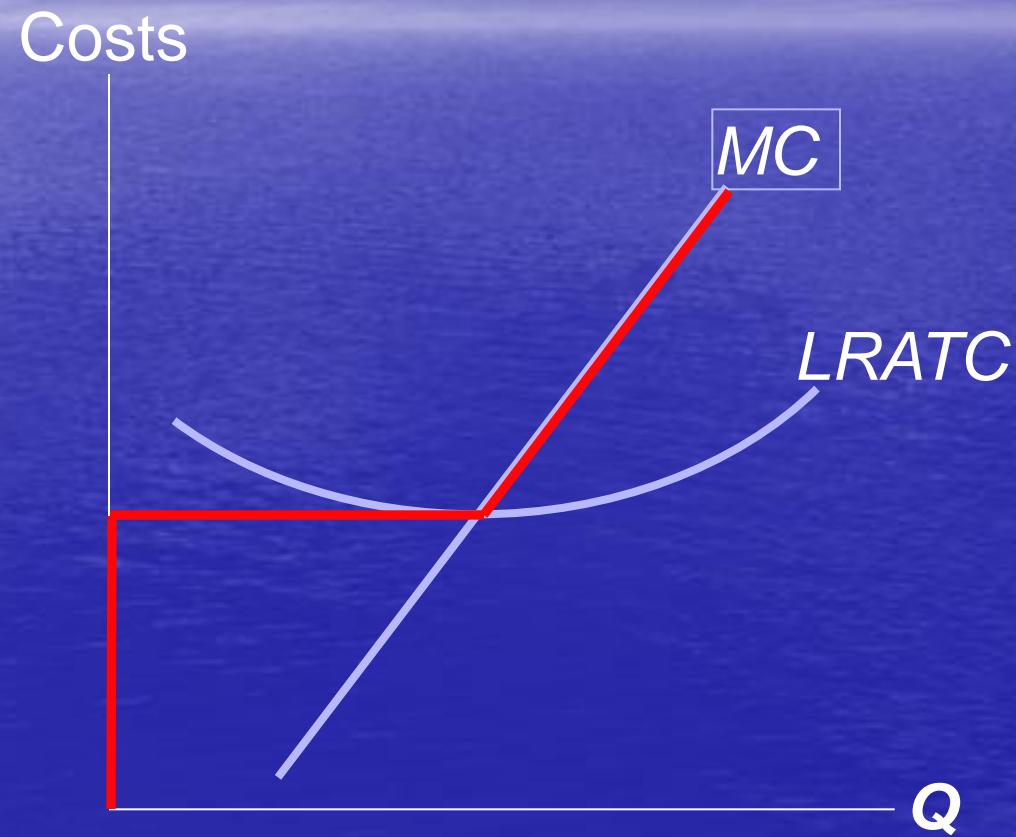


# The Competitive Firm's Supply Curve

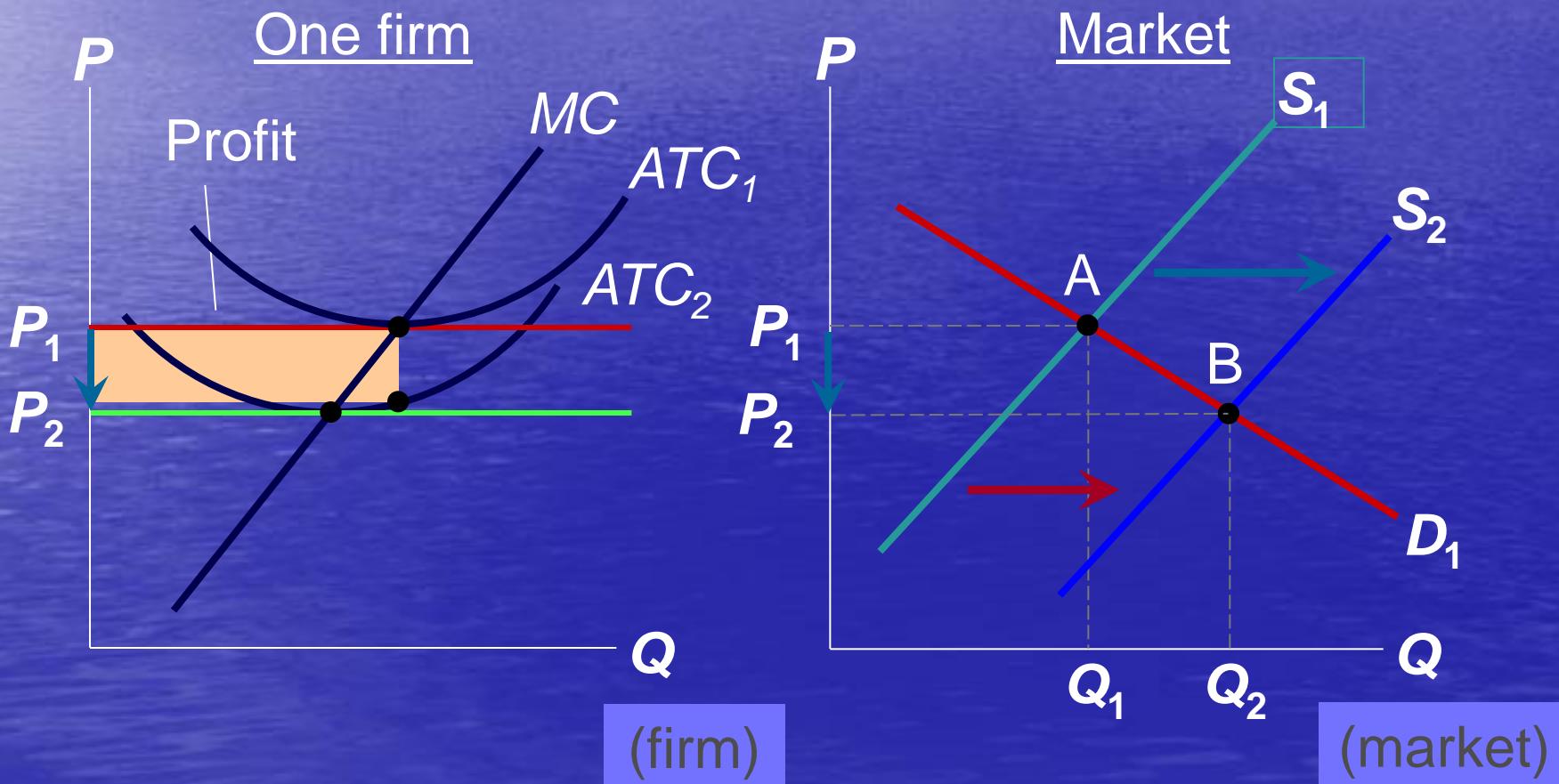
In the LR a Firm will Exit the market if  $P < ATC$

In other words, the firm's  $TR < TC$

The firm's LR supply curve is the portion of its  $MC$  curve above  $LRATC$ .



# The Effects of New Technology



# A Competitive Market is Efficient

- Profit-maximization:  $MC = MR$
- Perfect competition:  $P = MR$
- So  $P = MC$
- Recall,  $MC$  is cost of producing the marginal unit.  
 $P$  is value to buyers of the marginal unit.
- Also,  $P$  is driven down to the lowest point on the ATC curve
- So, the competitive equilibrium is efficient

# Monopoly

- A **monopoly** is a firm that is the sole seller of a product without close substitutes.
- 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.

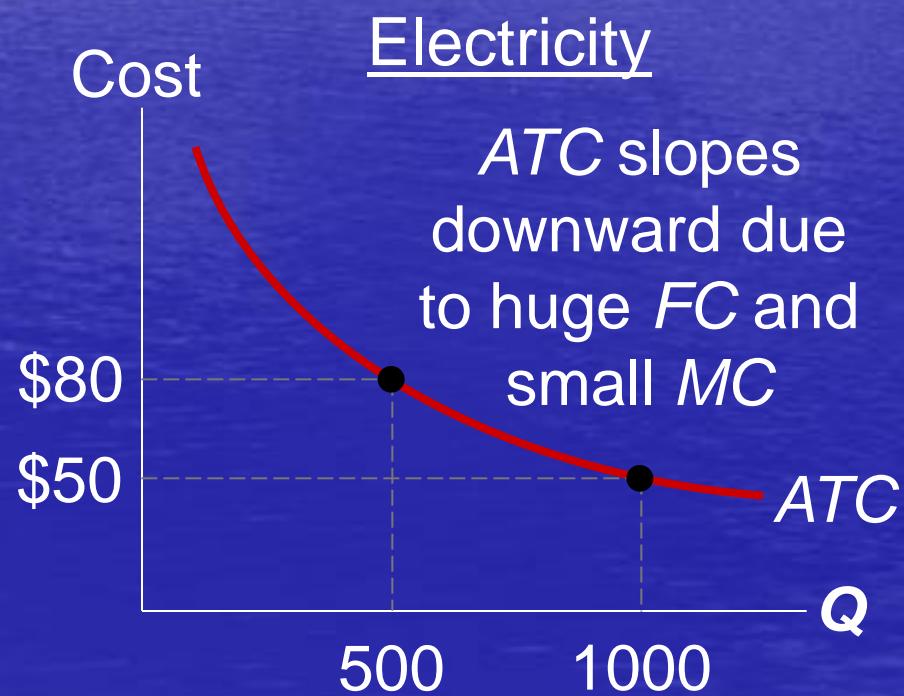
# Why Monopolies Arise

- Monopolies arise due to barriers to other firms entering the market
- Barriers to Entry:
  1. A single firm owns a key resource E.g., Alcoa own all the viable bauxite mines in the world
  2. The government gives one firm the exclusive right to produce the good, e.g., government ownership, patents, copyright laws
  3. Natural monopoly: one single firm can produce the entire market at a lower cost than if there was several others

# Natural monopoly

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

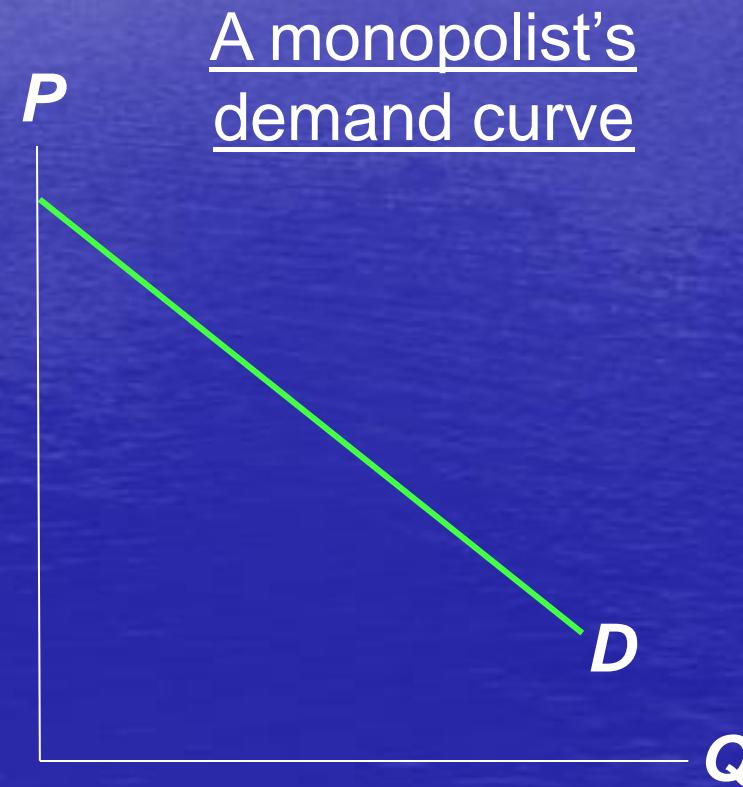


# Monopoly vs. Competition: Demand Curves

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

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

Thus,  $MR \neq P$ .



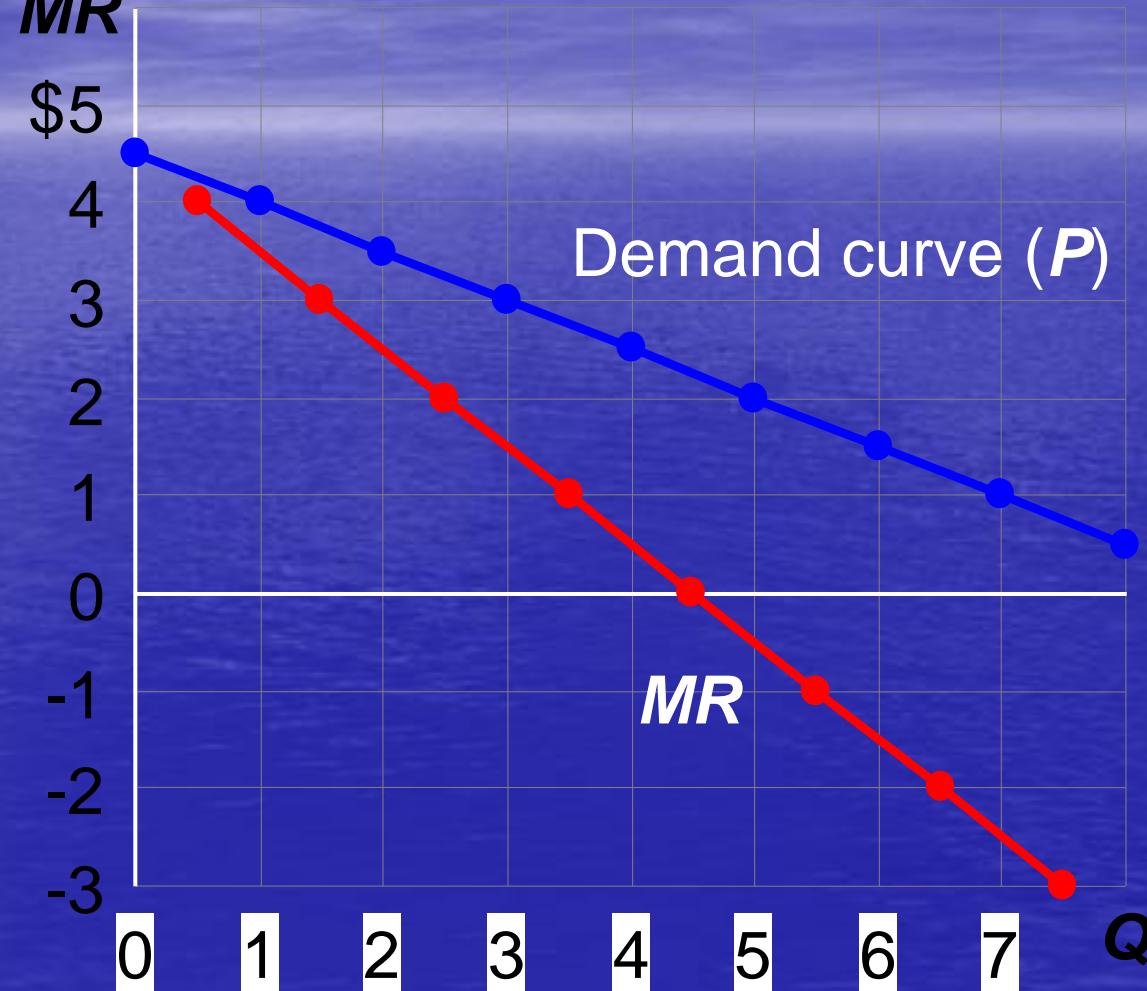
# Understanding the Monopolist's MR

- Increasing  $Q$  has two effects on revenue:
  - ***Output effect***: higher output raises revenue
  - ***Price effect***: lower price reduces revenue
- To sell a larger  $Q$ , the monopolist must reduce the price on all the units it sells.
- Hence,  $MR < P$ 
  - $MR$  could even be negative if the price effect exceeds the output effect (e.g., when monopolist increases  $Q$  from 5 to 6).

# Monopolist's $D$ and $MR$ Curves

$P, MR$

$Q$	$P$	$MR$
0	\$4.50	
1	4.00	
2	3.50	
3	3.00	
4	2.50	
5	2.00	
6	1.50	

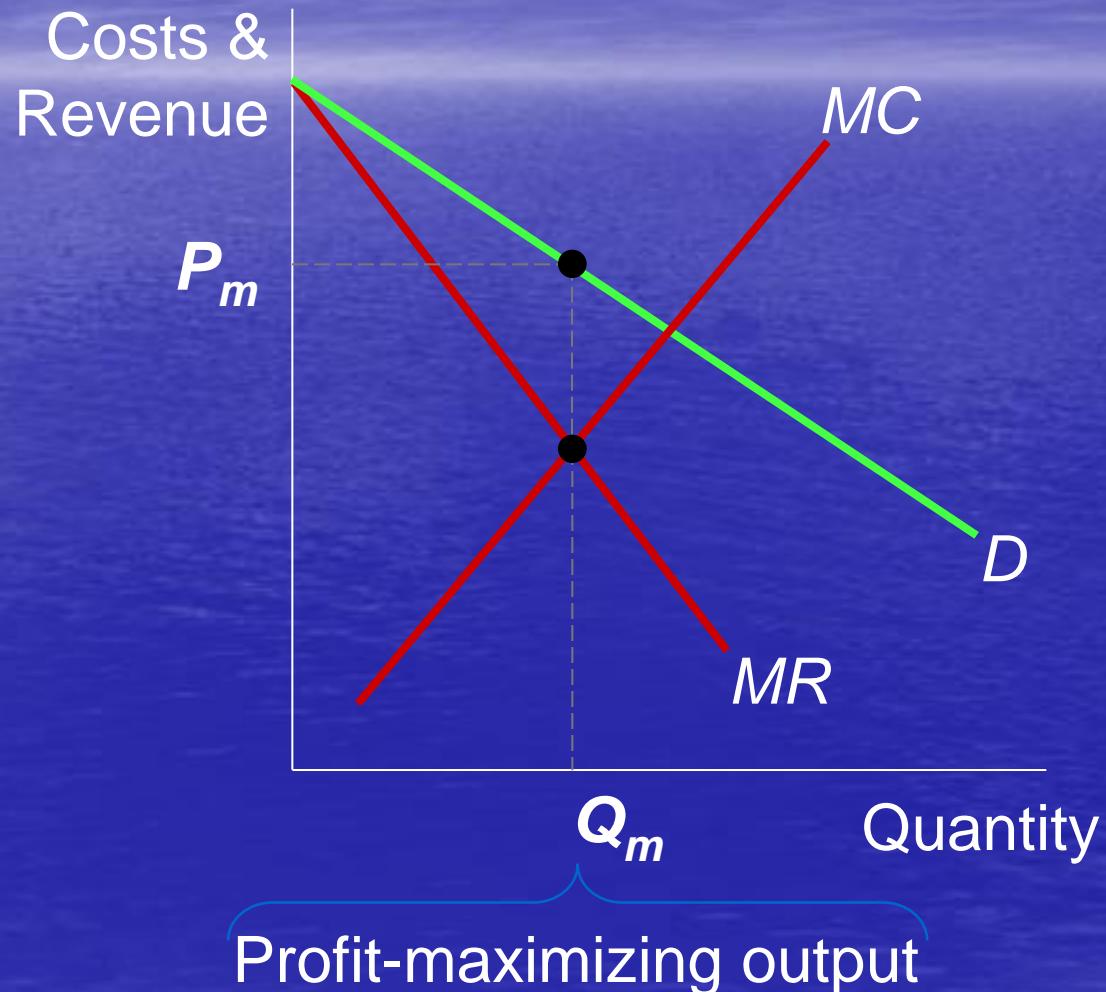


# Profit-Maximization

- 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.

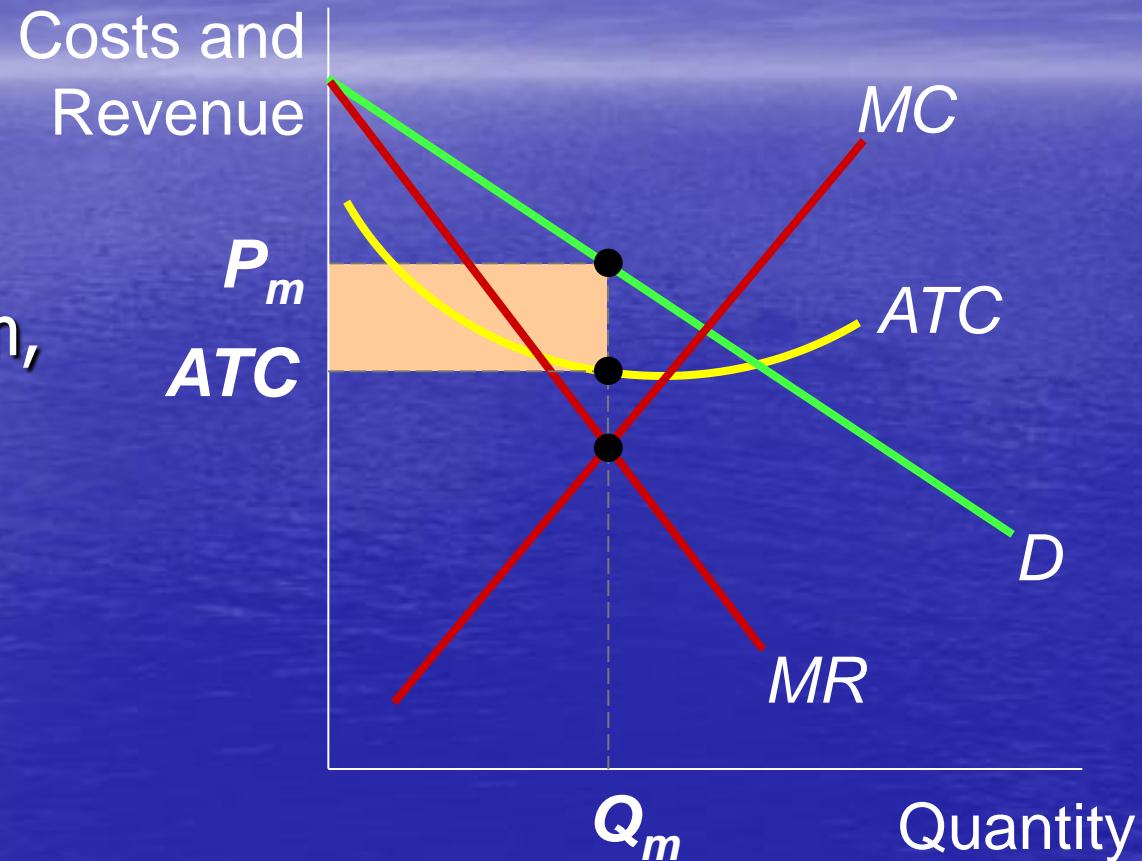
# Profit-Maximization

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



# The Monopolist's Profit

As with a competitive firm,  
the monopolist's profit  
equals  $(P - ATC) \times Q$



# The Welfare Cost of Monopoly

Competitive equilibrium:

quantity =  $Q_C$

$P = MC$

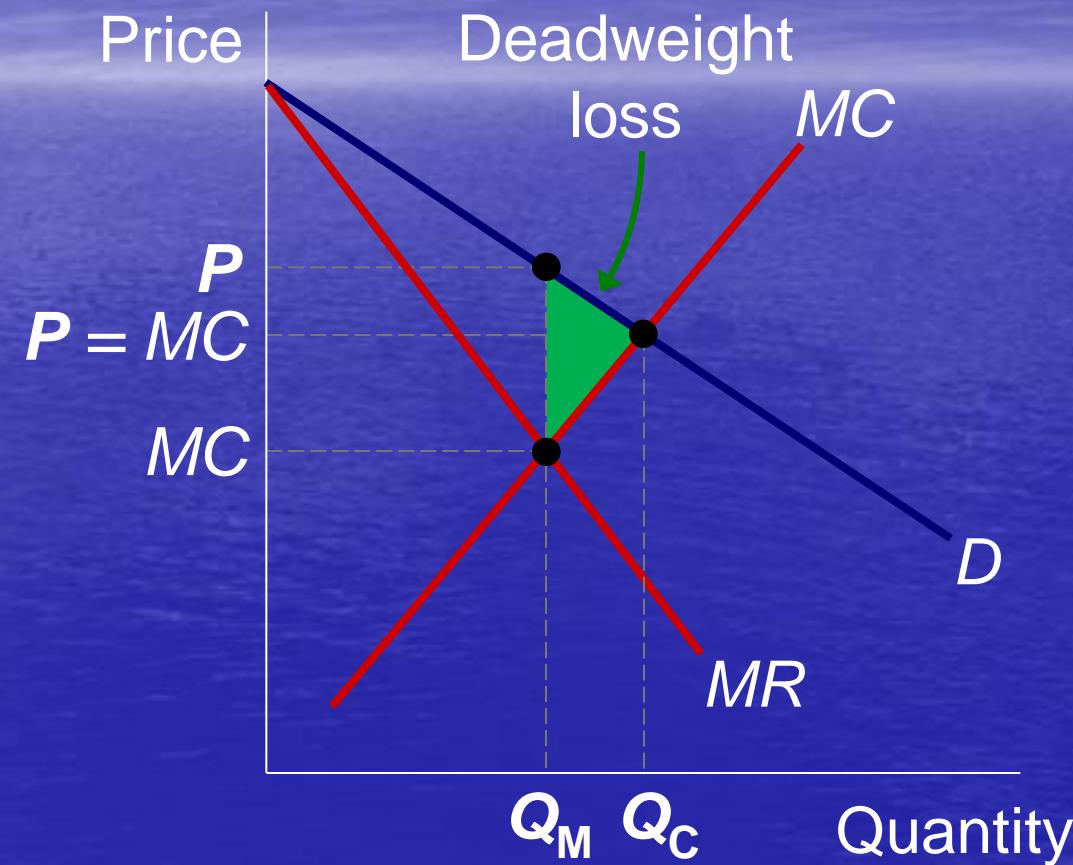
total surplus is maximized

Monopoly equilibrium:

quantity =  $Q_M$

$P > MC$

deadweight loss



# Public Policy Toward Monopolies

- Increase competition with antitrust laws
  - Ban some anticompetitive practices, allow government to break up monopolies.
  - e.g., US: Sherman Antitrust Act (1890), Clayton Act (1914)
  - e.g., IRE: Competition Acts 2002, 2006, 2007, 2012, and 2014
- Regulation
  - Govt agencies set the monopolist's price.
  - For natural monopolies,  $MC < ATC$  at all  $Q$ , so marginal cost pricing would result in losses
  - Consequently, regulators might subsidize the monopolist or set  $P = ATC$  for zero economic profit.

# Public Policy Toward Monopolies

- Public ownership
  - Example: Eirgrid
- Doing nothing
  - The foregoing policies all have drawbacks, so the best policy may be no policy.