

CHAPTER 13

Perfect Competition

Chapter Goals

- Explain how perfect competition serves as a reference point.
- Explain why producing an output at which marginal cost equals price maximizes total profit for a perfect competitor.
- Determine the output and profit of a perfect competitor graphically and numerically.
- Explain the adjustment process from short-run equilibrium to long-run equilibrium.

Conditions for Perfect Competition

A **perfectly competitive** market is a market in which economic forces operate unimpeded

For a market to be perfectly competitive, **three** conditions must be met:

1. *Both buyers and sellers are price takers.* A **price taker** is a firm or individual who takes the price determined by market supply and demand as given.
2. *There are no barriers to entry.* **Barriers to entry** are social, political, or economic impediments that prevent firms from entering a market.
3. *Firms' products are identical.* This requirement means that each firm's output is indistinguishable from any other firm's output.

Three Conditions for Perfect Competition

1. Both buyers and sellers are price takers.

- Market supply and demand determine the price
- Both firms and consumers take the market price as given

2. There are no barriers to entry.

- No legal barriers such as patents or processes.
- No technological barriers such as minimum efficient level of production allowing only one firm to produce at ATC.
- No social barriers such as racial discrimination.

3. Firms' products are identical.

- One product must not be distinguishable from another.

Profit Maximizing Level of Output

The goal of the firm is to maximize profits.

- Profit: the difference between total cost and total revenue

A firm maximizes profit when marginal revenue equals marginal cost.

Marginal revenue (MR) is the change in total revenue associated with a change in quantity.

- Since a perfect competitor accepts the market price, marginal revenue is the market price.

Marginal cost (MC) is the change in total cost associated with a change in quantity.

Profit Maximizing Level of Output

The profit-maximizing condition of a competitive firm is:

$$\mathbf{MC = MR = P}$$

A firm maximizes total profit, not profit per unit.

If **MR < MC**, a firm can increase profit by decreasing its output.

If **MR > MC**, a firm can increase profit by increasing output.

Marginal Cost, Marginal Revenue, and Price Table

Price = MR (\$)	Q	Marginal Cost (\$)
35	0	28
35	1	20
35	2	16
35	3	14
35	4	12
35	5	17
35	6	22
35	7	30
35	8	40
35	9	54
35	10	

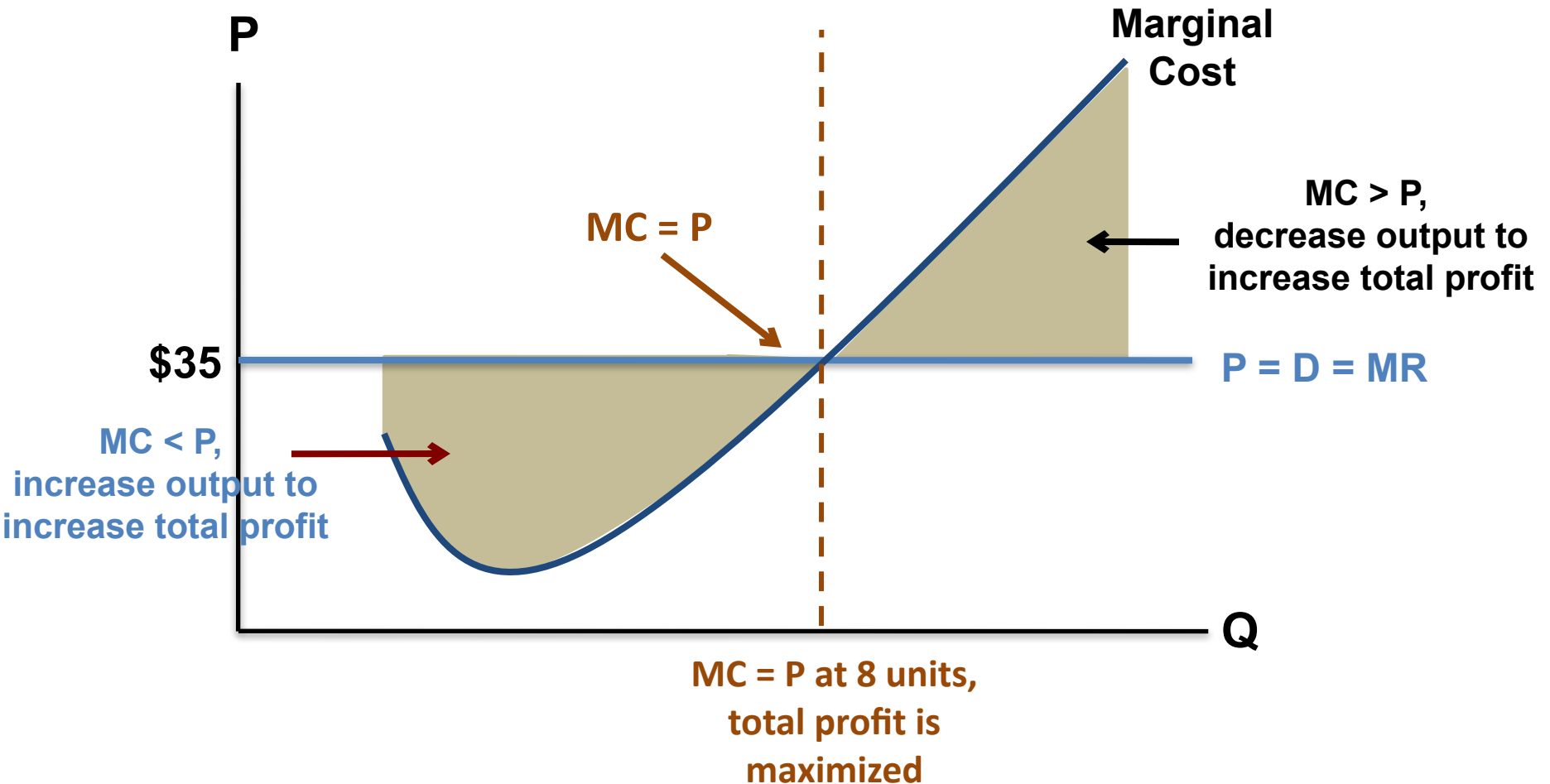
The profit-maximizing condition of a competitive firm is: $MC = MR = P$

If $MC < P$, increase production.

Profit maximizing quantity is where $MC = P$.

If $MC > P$, decrease production.

Marginal Cost, Marginal Revenue, and Price Graph

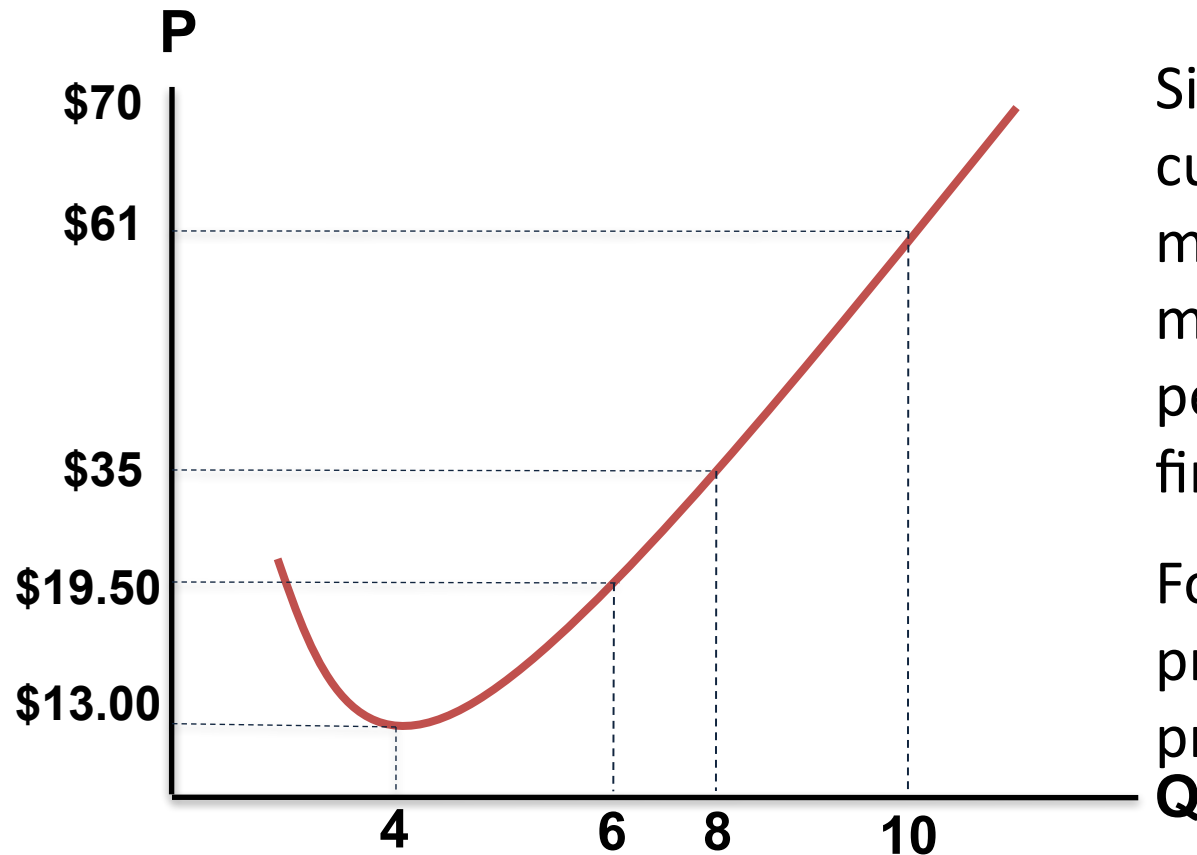


The Marginal Cost Curve Is the Supply Curve

Marginal cost = Firm's supply curve

Since the marginal cost curve tells the firm how much to produce, the marginal cost curve is perfectly competitive firm's supply curve.

For example, if market price is \$19.50, the firm produces 6 units.



Profit Maximization Using Total Revenue and Total Cost

An alternative method to determine the profit-maximizing level of output is to look at the total revenue and total cost curves.

Total cost is the cumulative sum of the marginal costs, plus the fixed cost.

Total profit is the difference between total revenue and total cost.

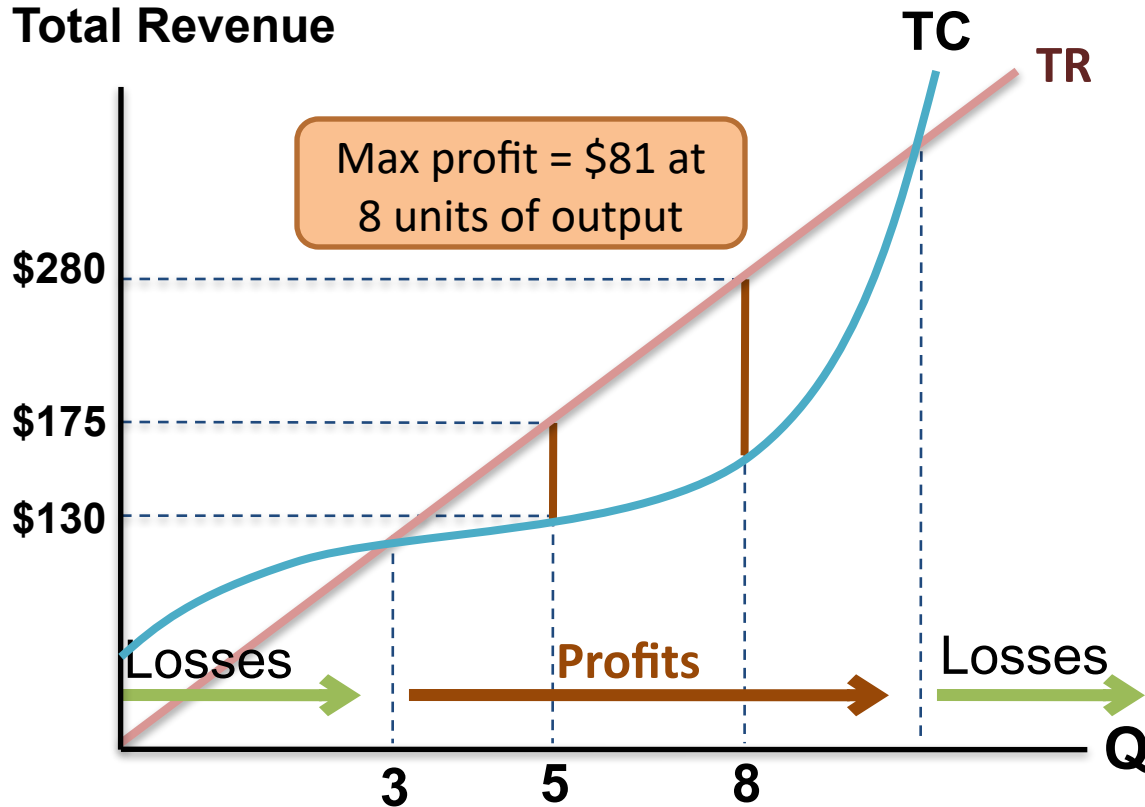
Total Revenue and Total Cost Table

Q	Total Revenue (\$)	Total Cost (\$)	Total Profit (\$)
0	0	40	-40
1	35	68	-33
2	70	88	-18
3	105	104	1
4	140	118	22
5	175	130	45
6	210	147	63
7	245	169	76
8	280	199	81
9	315	239	76
10	350	293	57

Total profit is
maximized at 8
units of output.

Total Revenue and Total Cost Table

Total Cost,
Total Revenue

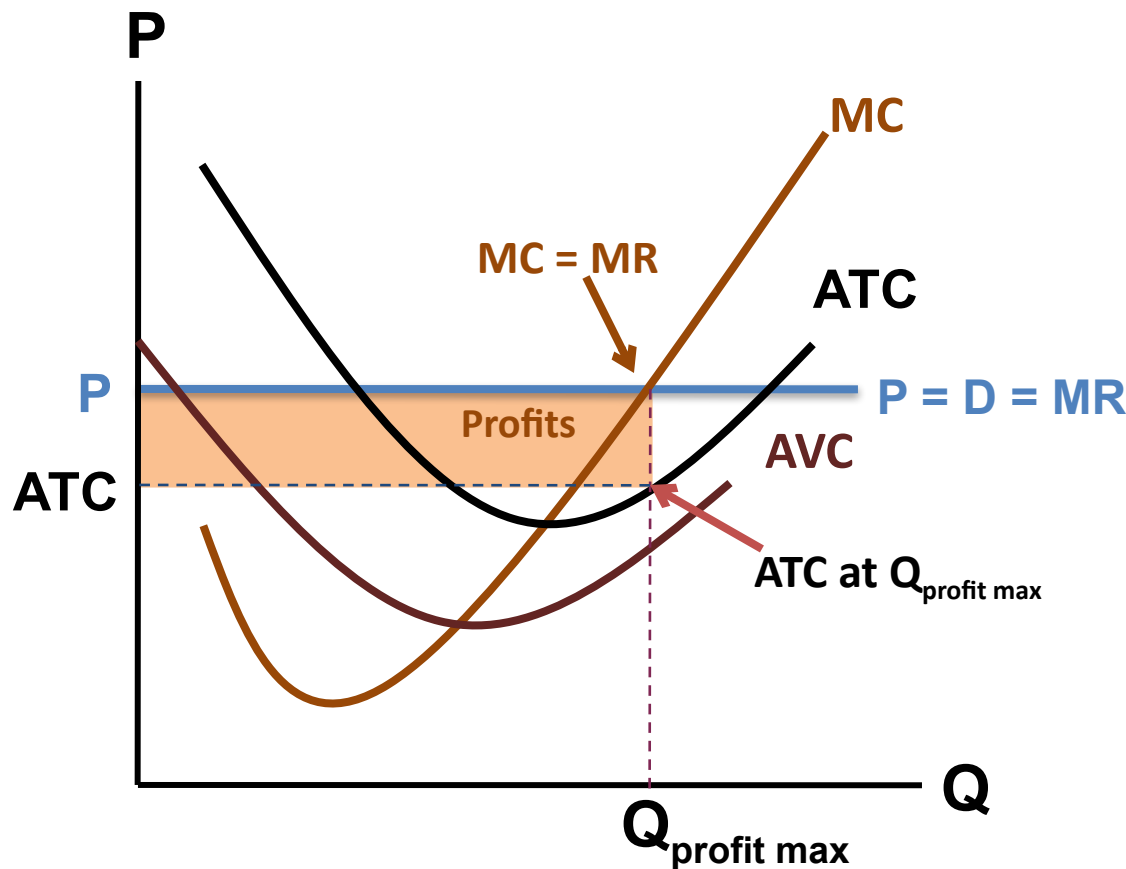


The total revenue curve is a straight line.

The total cost curve is bowed upward at most quantities reflecting increasing marginal cost.

Profits are maximized when the vertical distance between TR and TC is greatest.

Determining Profits Graphically: A Firm with Profit



Find output where $MC = MR$. This is the profit-maximizing Q .

Find profit per unit where the profit-max Q intersects ATC .

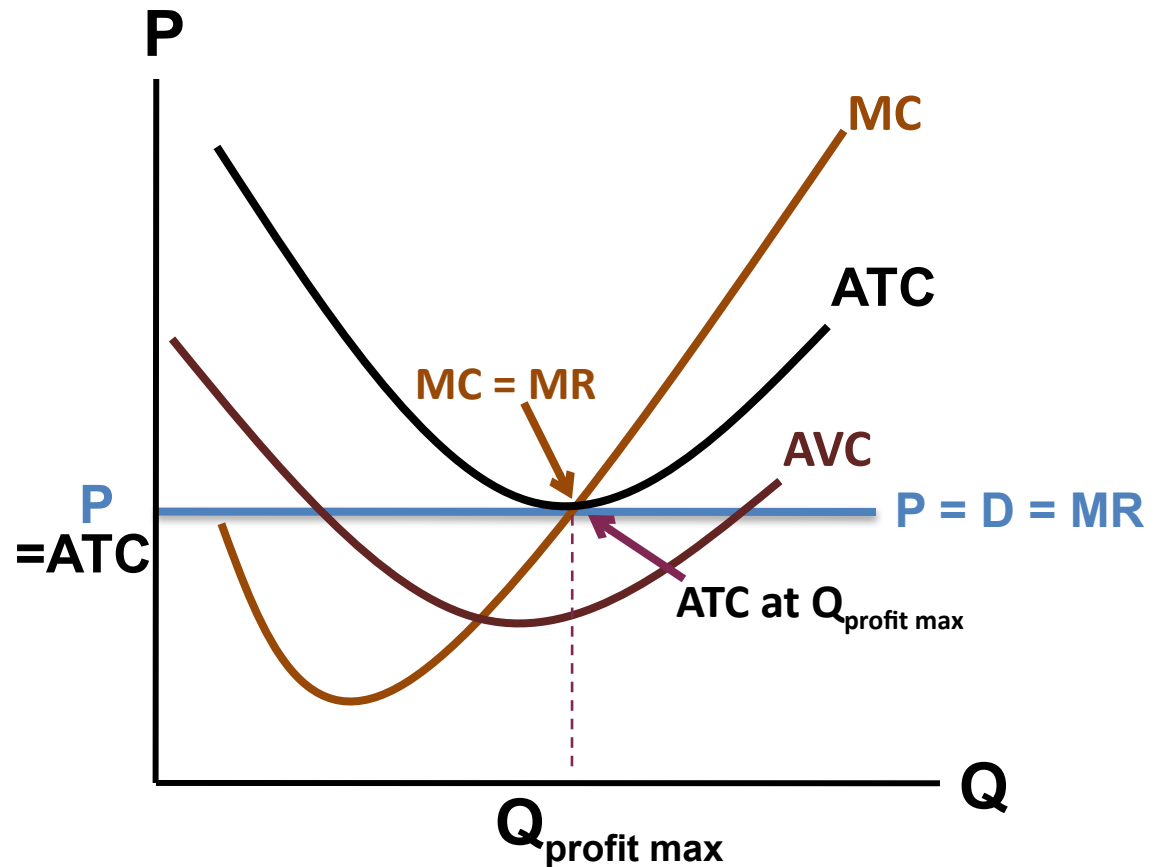
Since $P > ATC$ at the profit-maximizing quantity, this firm is earning profits.

Determining Profits Graphically: A Firm with Zero Profit or Losses

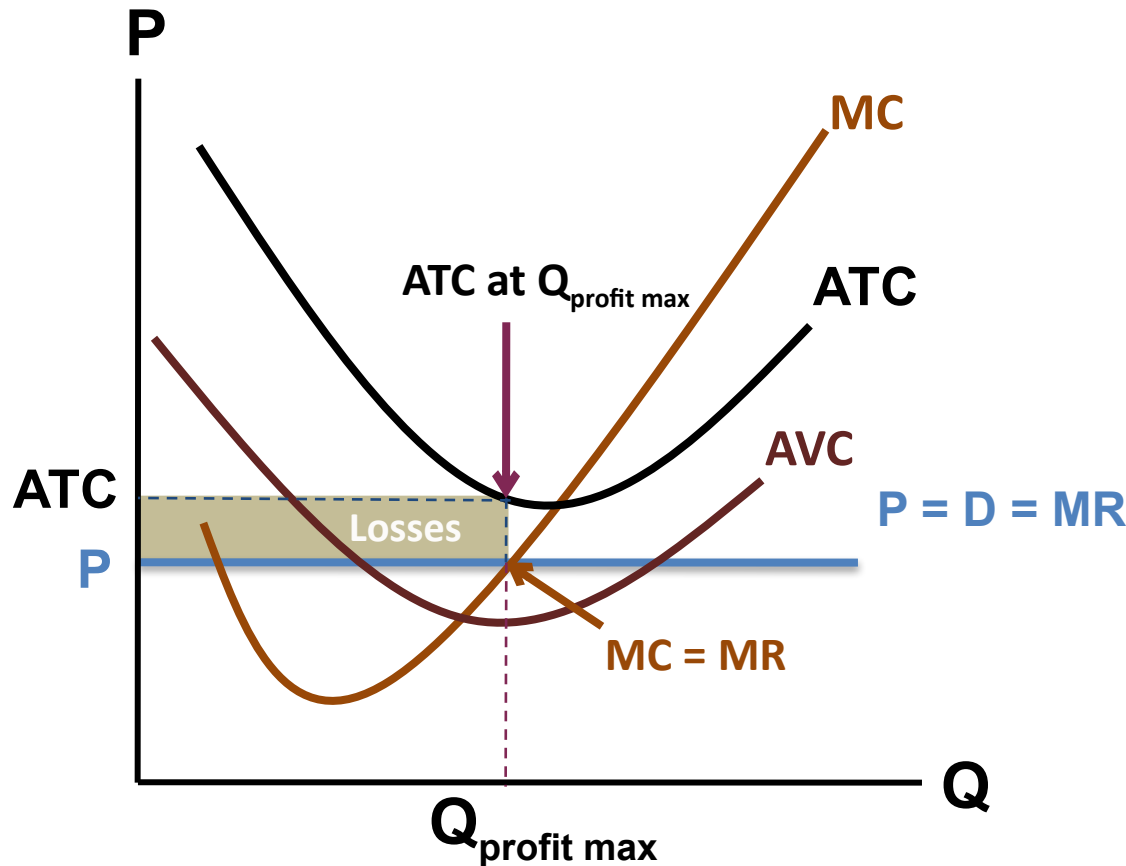
Find output where
 $MC = MR$, this is the
profit-maximizing Q .

Find profit per unit
where the profit max Q
intersects ATC .

Since $P = ATC$ at the profit
maximizing quantity,
this firm is earning zero
profit.



Determining Profits Graphically: A Firm with Losses



Find output where $MC = MR$, this is the profit maximizing Q.

Find profit per unit where the profit max Q intersects ATC.

Since $P < ATC$ at the profit maximizing quantity, this firm is earning losses.

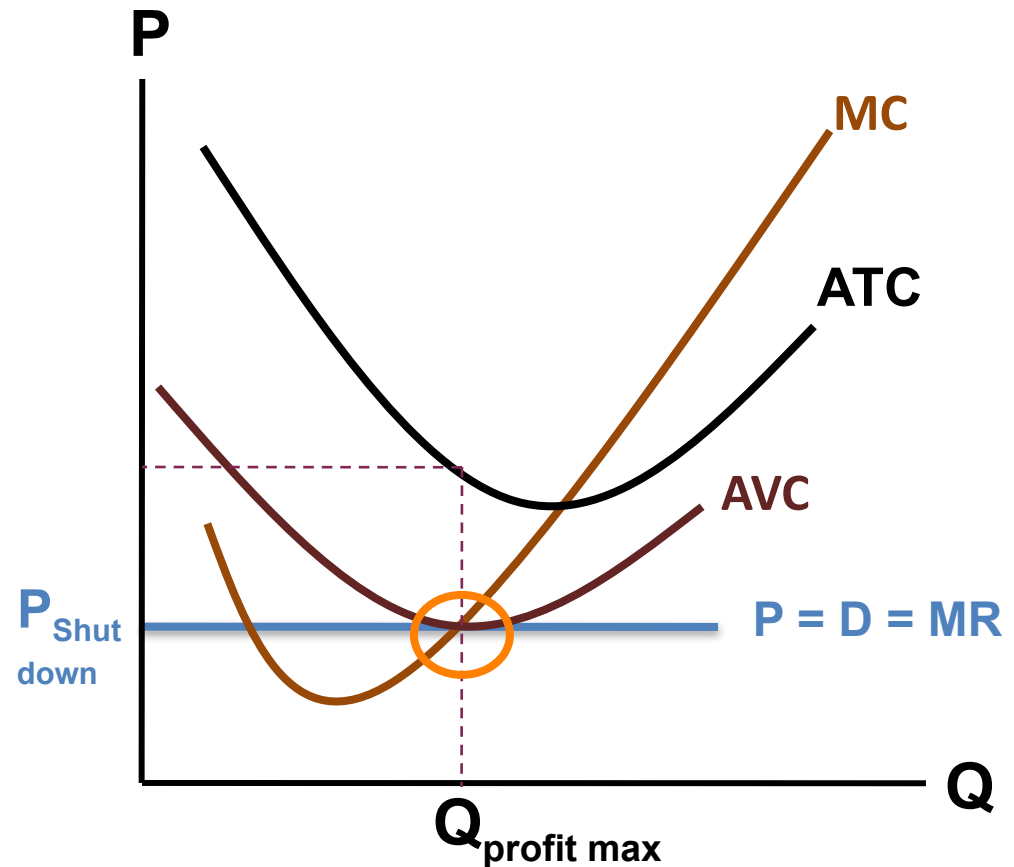
Determining Profits Graphically: The Shutdown Point

The shutdown point is the point below which the firm will be better off if it temporarily shuts down than it will if it stays in business.

If $P > \min \text{ of } AVC$, then the firm will still produce, but earn a loss.

If $P < \min \text{ of } AVC$, the firm will shut down.

If a firm shuts down, it still has to pay its fixed costs.

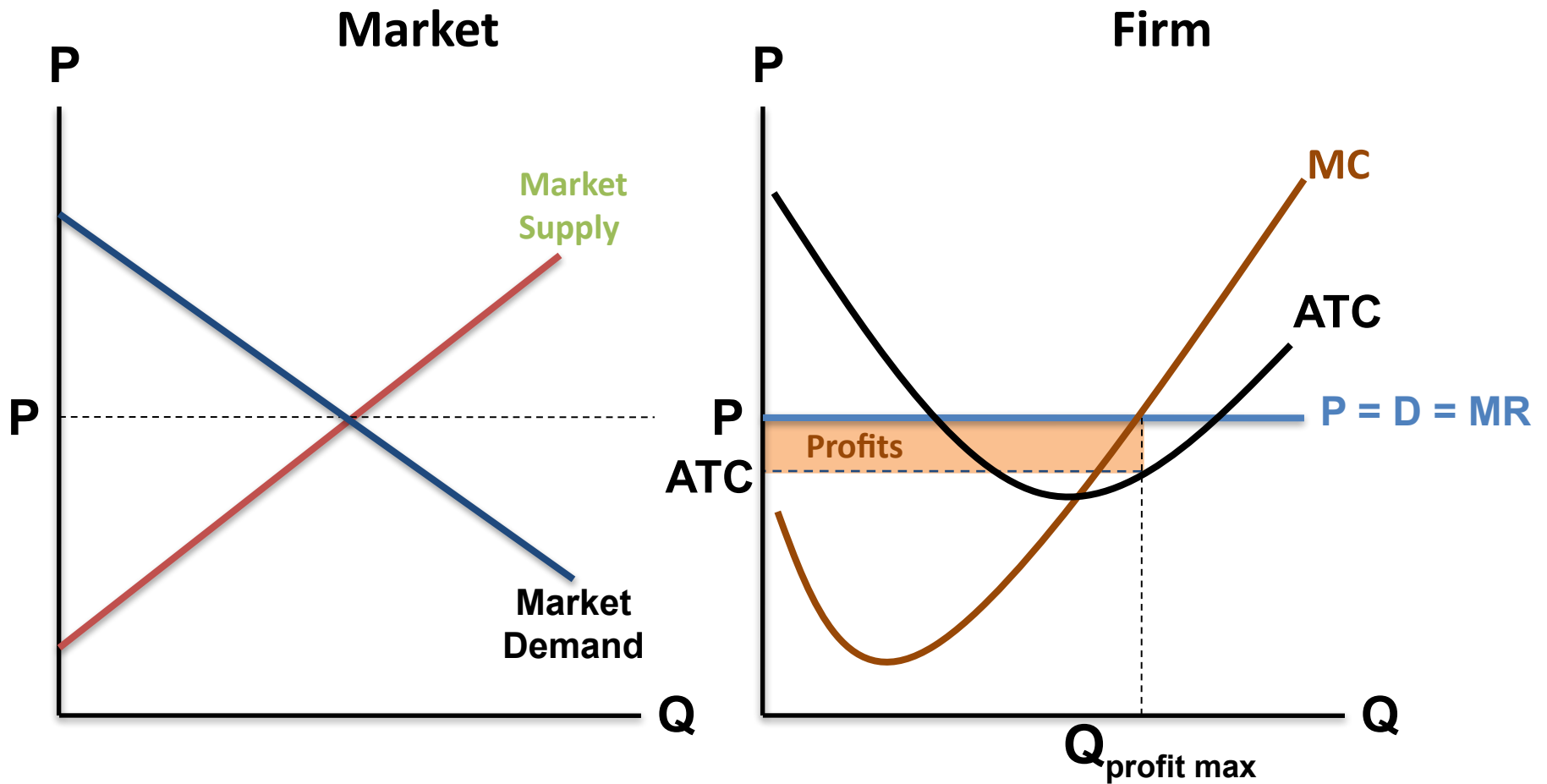


Short-Run Market Supply and Demand

While the firm's demand curve is perfectly elastic, the industry's demand curve is downward sloping.

The **market supply curve** is the horizontal sum of all the firms' marginal cost curves, taking into account any changes in input prices that might occur.

Short-Run Market Supply and Demand Graph



Long-Run Competitive Equilibrium

At long-run equilibrium, economic profits are zero.

Profits create incentives for new firms to enter, market supply will increase, and the price will fall until zero profits are made.

The existence of losses will cause firms to leave the industry, market supply will decrease, and the price will increase until losses are zero.

Long-Run Competitive Equilibrium

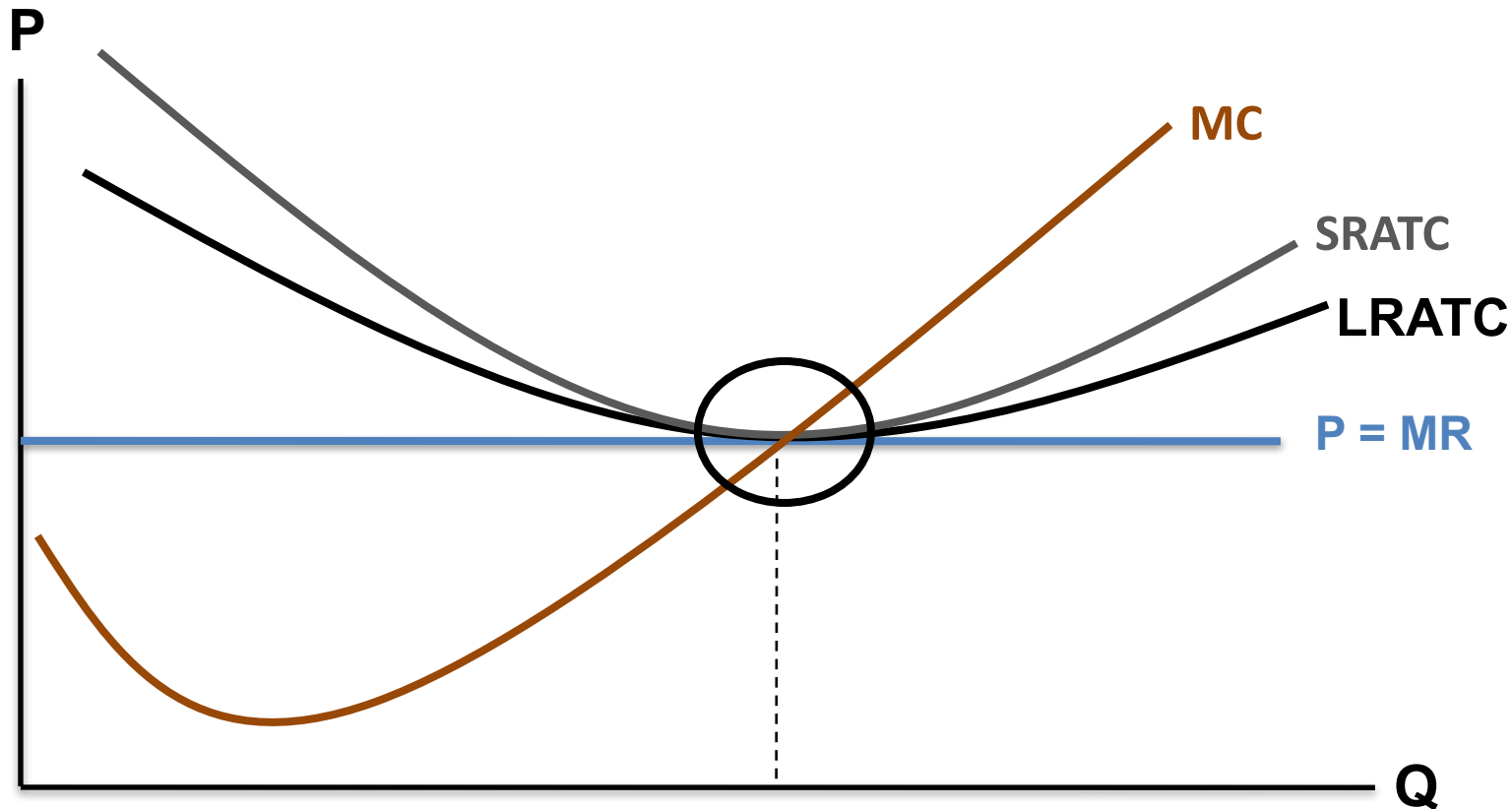
Zero profit does not mean that the entrepreneur does not get anything for his efforts.

Normal profit is the amount the owners would have received in their next-best alternative.

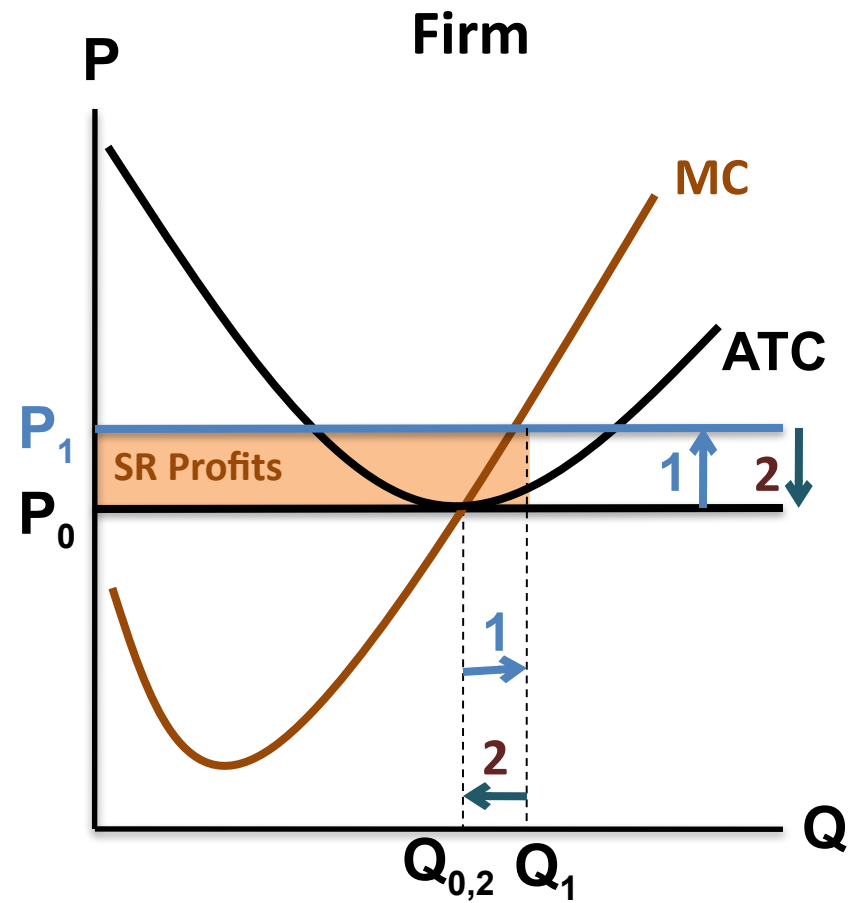
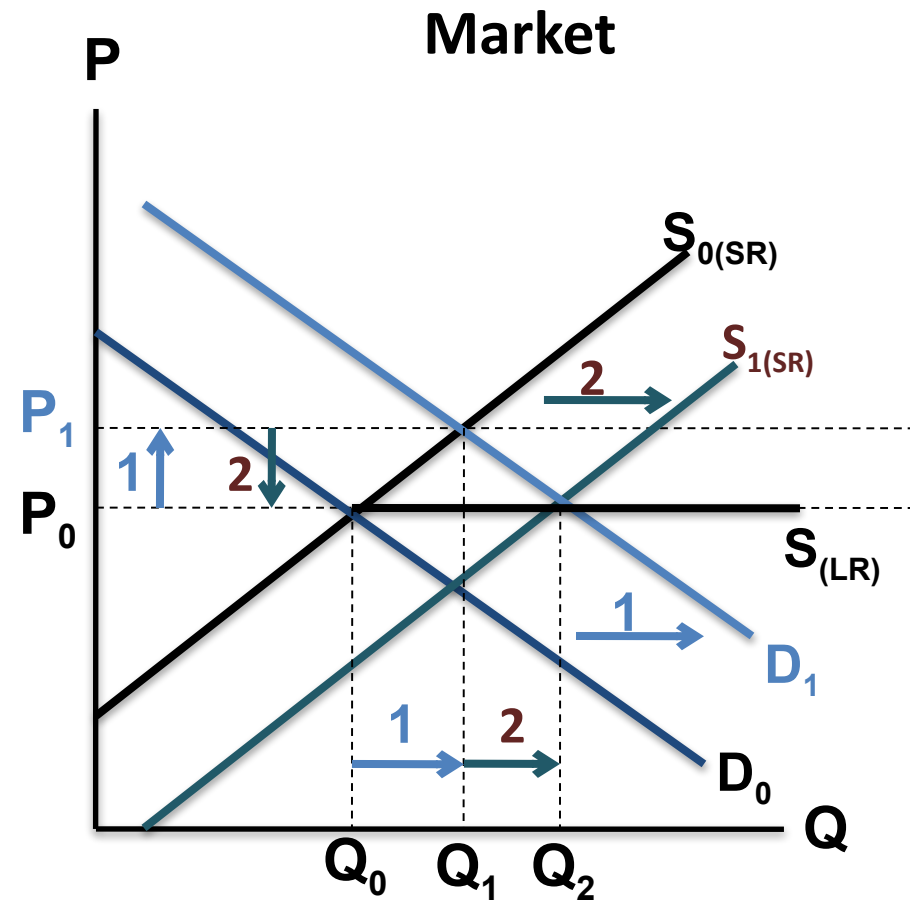
Economic profits are profits above normal profits.

Long-Run Competitive Equilibrium Graph

At long-run equilibrium, economic profits are zero.



Market Response to an Increase in Demand Graph



Long-Run Market Supply

If the long-run industry supply curve is perfectly elastic, the market is a constant-cost industry.

In the short run, the price does more of the adjusting, and in the long run, more of the adjustment is done by quantity.

Real World Example: Walmart

The owners of the Walmart had to close more than 60 of its Sam's Club stores after experiencing years of losses.

Initially, Walmart saw the losses it was suffering as temporary because $P > AVC$.

But after years of losses, Walmart recognized that prices had fallen below long-run average costs.

Since long run costs are variable, the *ATC became its relevant AVC*. At that point, it shut down those stores for which $P < AVC$.

A Summary of a Perfectly Competitive Industry

1. The profit-maximizing condition for perfectly competitive firms is $MC = MR = P$
2. To determine profit or loss at the profit-maximizing level of output, subtract the average total cost at that level of output from the price and multiply the result by the output level
3. Firms will shut down production if price falls below the minimum of their average variable costs
4. A perfectly competitive firm is in long-run equilibrium only when it is earning zero economic profit, or when price equals the minimum of long-run average total costs

Chapter Summary (1 of 3)

The necessary conditions for perfect competition include: buyers and sellers are price takers, there are no barriers to entry, and firms' products are identical.

The profit-maximizing position of a competitive firm is where marginal revenue equals marginal cost.

The supply curve of a competitive firm is its marginal cost curve. Only competitive firms have supply curves.

To find the profit-maximizing level of output for a perfect competitor, find that level of output where $MC = MR$.

Profit is price less average total cost times output at the profit-maximizing level of output.

Chapter Summary (2 of 3)

In the short run, competitive firms can make a profit or loss. In the long run, they make zero profits.

Profit equals total revenue less total cost. Graphically, profit is the vertical distance between the price of the good and the ATC curve at the maximizing level of output times that level of output.

The shutdown price for a perfectly competitive firm is a price below average variable cost.

The short-run market supply curve is the horizontal summation of the marginal cost curves for all firms in the market. An increase in the number of firms in the market shifts the market supply curve to the right, while a decrease shifts it to the left.

Chapter Summary (3 of 3)

Perfectly competitive firms make zero profit in the long run because if profit were being made, new firms would enter and the market price would decline, eliminating the profit. If losses were being made, firms would exit and the market price would rise.

The long-run supply curve is a schedule of quantities supplied where firms are making zero profit.

The slope of the long-run supply curve depends on what happens to factor prices when output increases.

The constant-cost industries have horizontal long-run supply curves.