Chapter 9:
Firms in a Competitive Market

ECON 1B

CSUS

Big Questions

1. How do competitive markets work?

2. How do firms maximize profits?

3. What does the perfectly competitive market look like in the short run and in the long run?

What Does it Take to Create Perfect Competition?

(1) All of the firms in the market are producing (selling) an identical product.
  - When you buy a head of lettuce do you ask what farm it came from?
  - copy shops, farming, fishing.

(2) A large number of firms exist in the market.

(3) Each firm supplies only a very small portion of the total amount supplied to the market.

(4) No barriers limit the entry or exit of firms in the market.

Production and Profits for the Firm

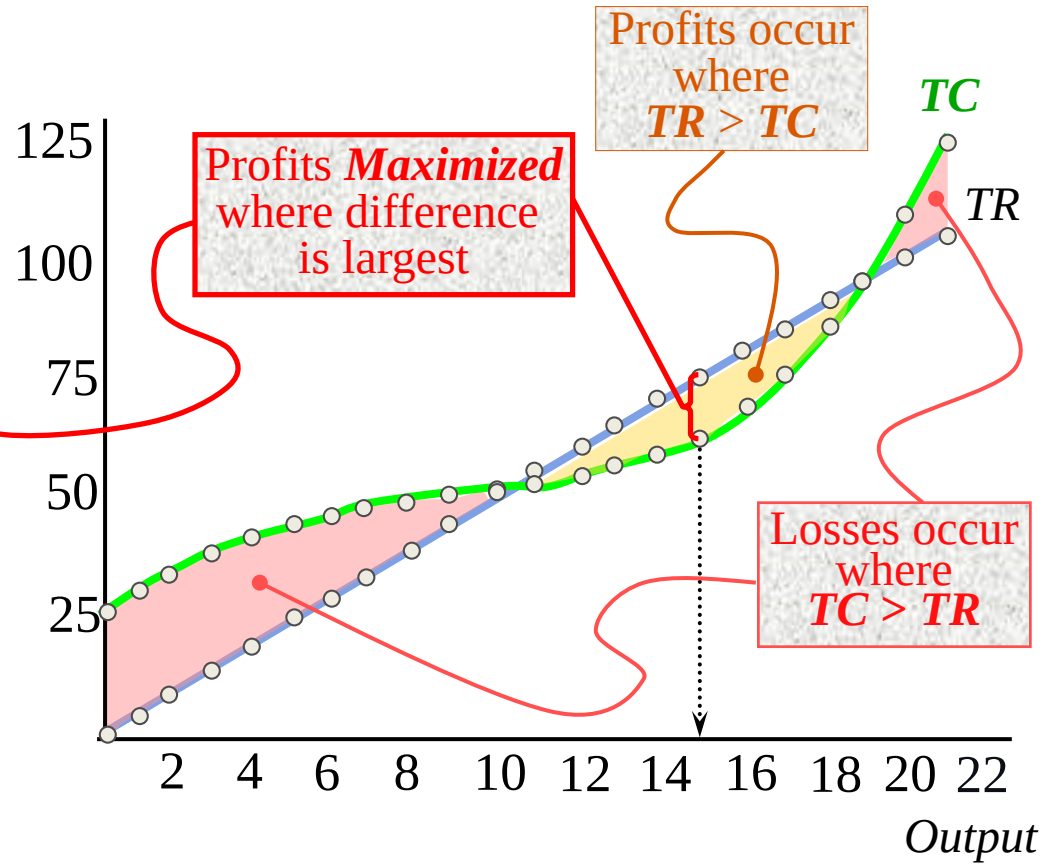
- Goal of a firm:
  - Maximize profits
  - This is true whether the firm is competitive or not
- A profit maximizing firm needs to consider
  - Revenues
  - Costs

Deciding How Much to Produce

- The ***Profit Maximizing Rule*** - the price taker will expand output until marginal revenue (price) is just equal to marginal cost.
  - This will maximize the firm's profits (or minimize its losses).
  - Marginal revenue is the incremental change in total revenue derived from the sale of one additional unit of a product.
  - Think of the profit maximizing rule as a rule for stopping production.

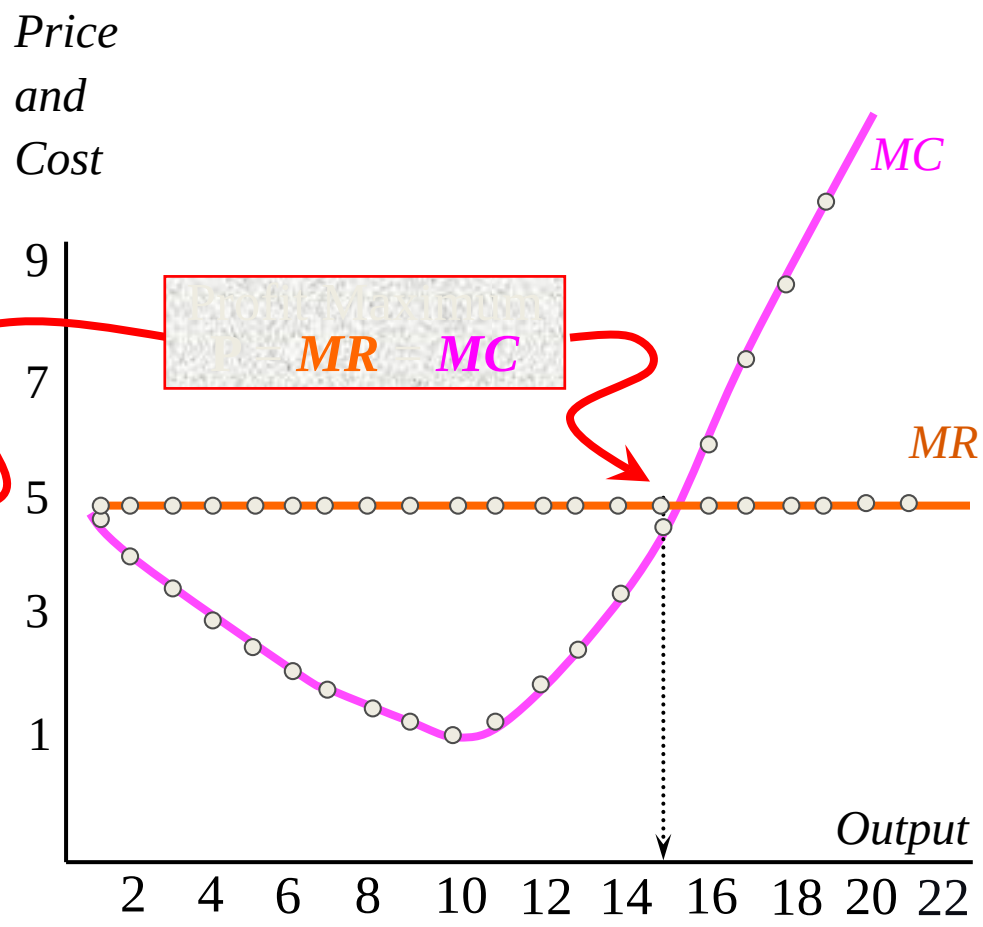
Output	Total Revenue *(TR)*	Total Cost *(TC)*	Profit *(TR - TC)*
0	0	25.00	- 25.00
1	5	29.80	- 24.80
2	10	33.75	- 23.75
⋮	⋮	⋮	⋮
8	40	48.00	- 8.00
9	45	49.25	- 4.25
10	50	50.25	- .25
11	55	51.50	3.50
12	60	53.25	6.75
13	65	55.75	9.25
14	70	59.25	10.75
15	75	64.00	11.00
16	80	70.00	10.00
17	85	77.25	7.75
18	90	85.50	4.50
19	95	95.00	0.00
20	100	108.00	- 8.00
21	105	125.00	- 20.00

Total Revenue / Total Cost Approach

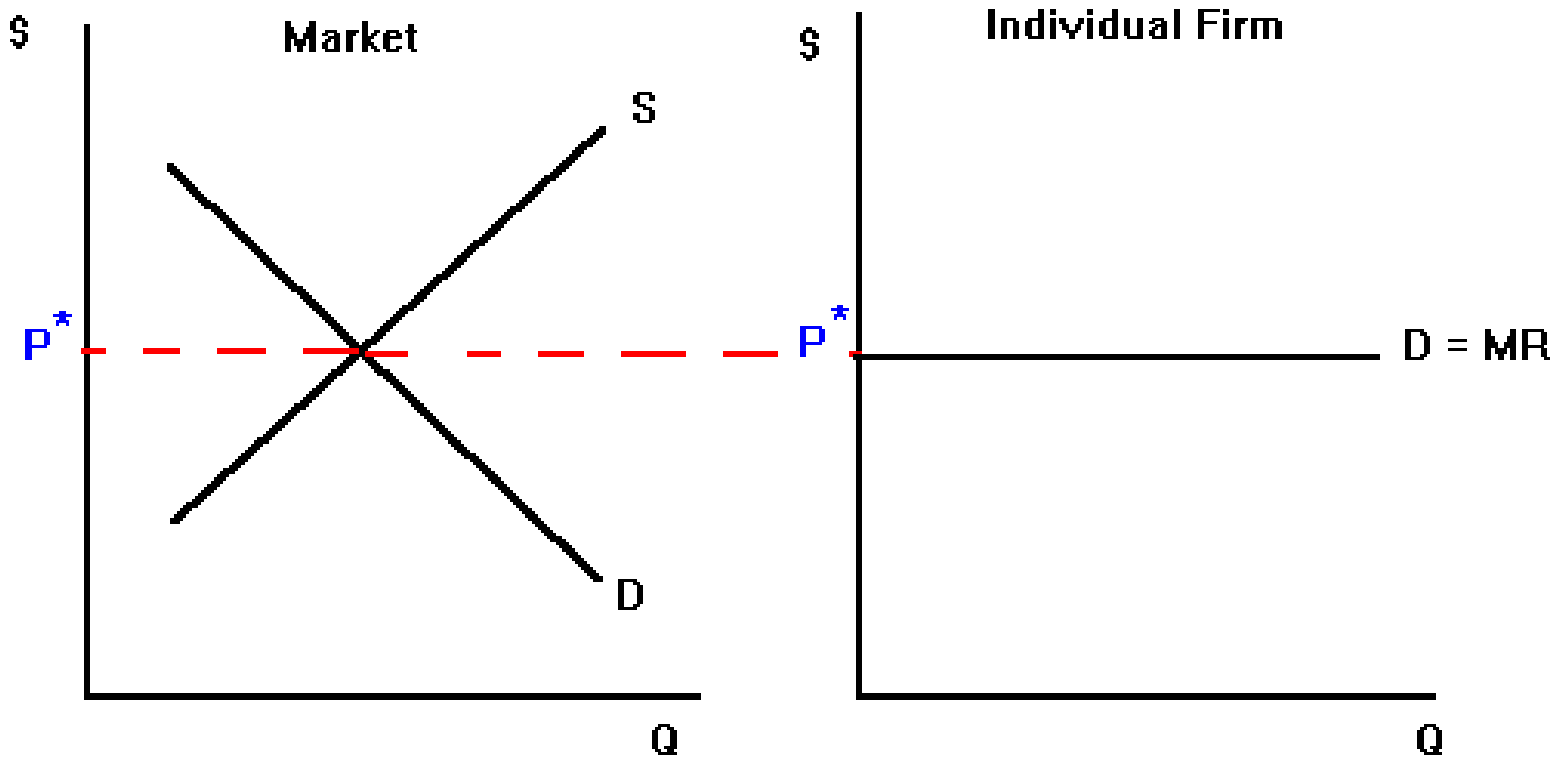


Marginal Revenue / Marginal Cost Approach

Output	Marginal Revenue *(MR)*	Marginal Cost *(MC)*	Profit *(TR - TC)*
0	----	----	- 25.00
1	5	$ 4.80	- 24.80
2	5	$ 3.95	- 23.75
⋮	⋮	⋮	⋮
8	5	$ 1.50	- 8.00
9	5	$ 1.25	- 4.25
10	5	$ 1.00	- .25
11	5	$ 1.25	3.50
12	5	$ 1.75	6.75
13	5	$ 2.50	9.25
14	5	$ 3.50	10.75
15	5	$ 4.75	11.00
16	5	$ 6.00	10.00
17	5	$ 7.25	7.75
18	5	$ 8.25	4.50
19	5	$ 9.50	0.00
20	5	$ 13.00	- 8.00
21	5	$ 17.00	- 20.00



Demand Facing a Perfectly Competitive Firm



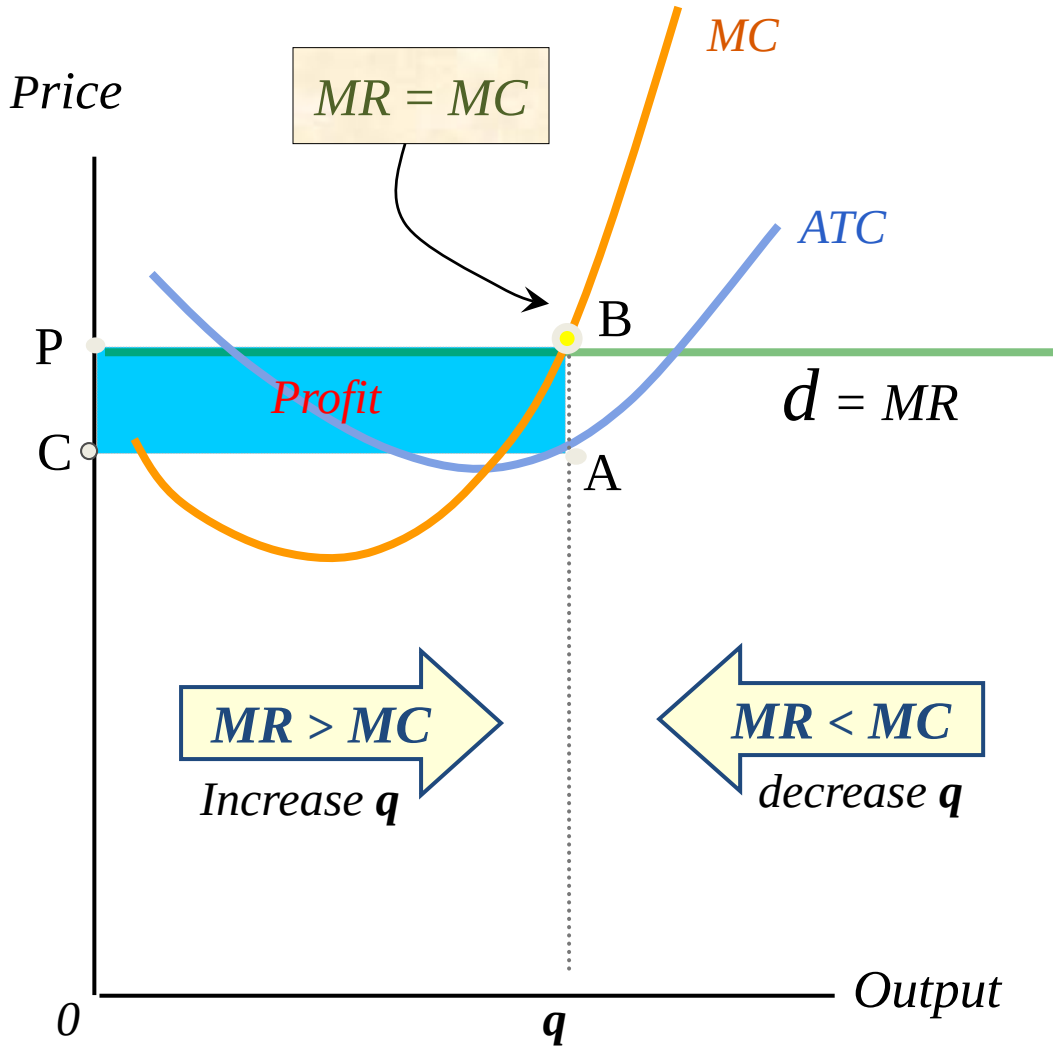
Deciding How Much to Produce

- The firm is a price taker
  - Cannot set its own price, and must charge the price that is determined by overall supply and demand
- Recall
  - Cost curves (ATC, AVC, and MC) are U-shaped
  - In perfect competition, P = MR
  - Profits are maximized at the level of output Q where MR = MC

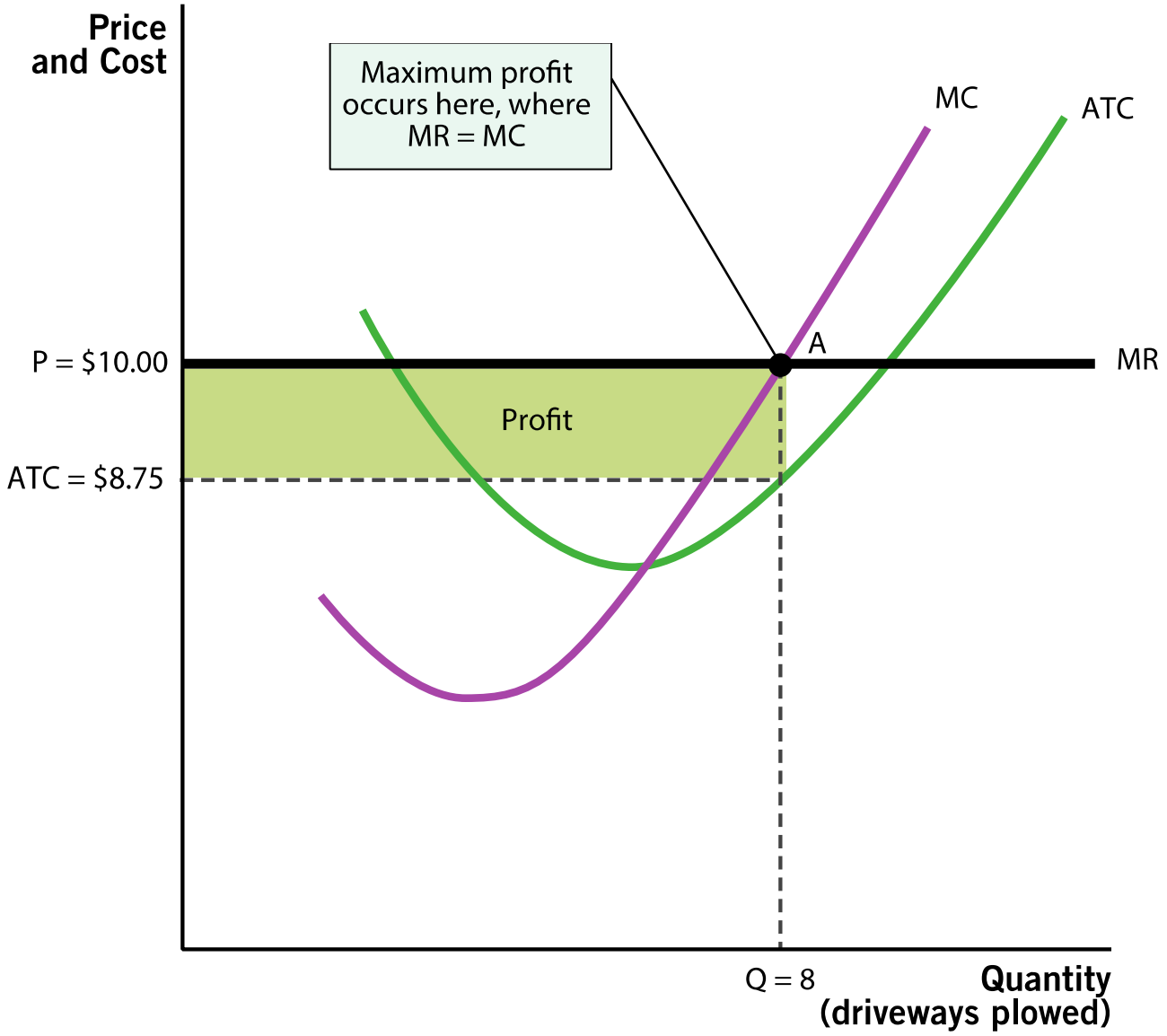
Profit Maximization when the Firm is a Price Taker

- When output is q this will maximize the firm's profits (rectangle *BACP*).
- When **MR > *MC*** then the firm should increase output until it reaches q.
- When **MR < *MC*** then the firm should decrease output until it reaches q.

■ *Price Takers* - can sell as much as they want at the market price. Have no control over the price they charge!



Profit Maximization



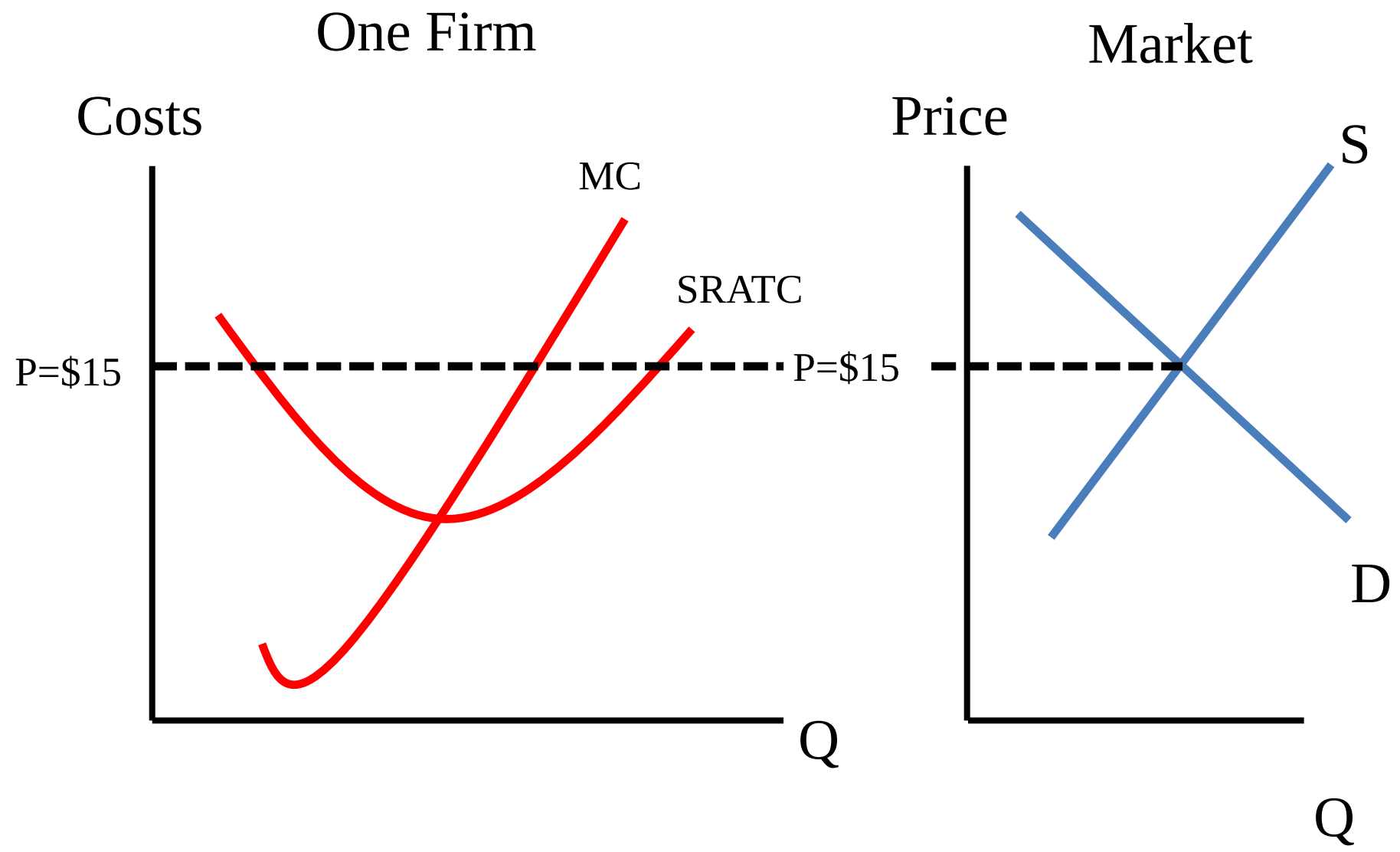
Calculating Profit

- To find profit, we need to know revenues and costs
  - For a perfectly competitive firm, revenues can be found by looking at the price (determined by the market) and the quantity sold
  - Costs are determined by the quantity sold
- For the firm,

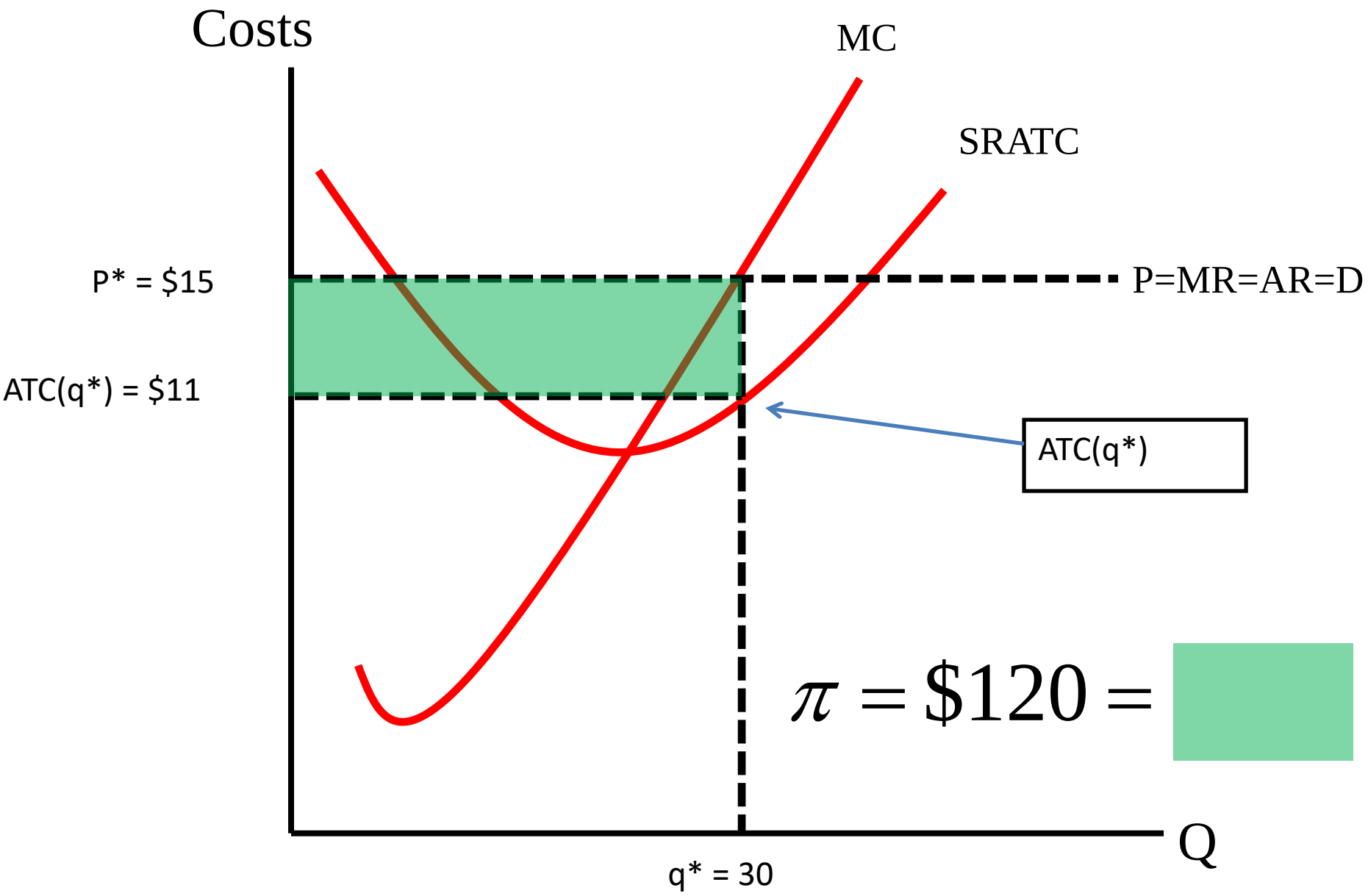
$$\pi = q \times \left(P - ATC \right)$$

- Intuition: Profit = (units sold) ×(average profit per unit)

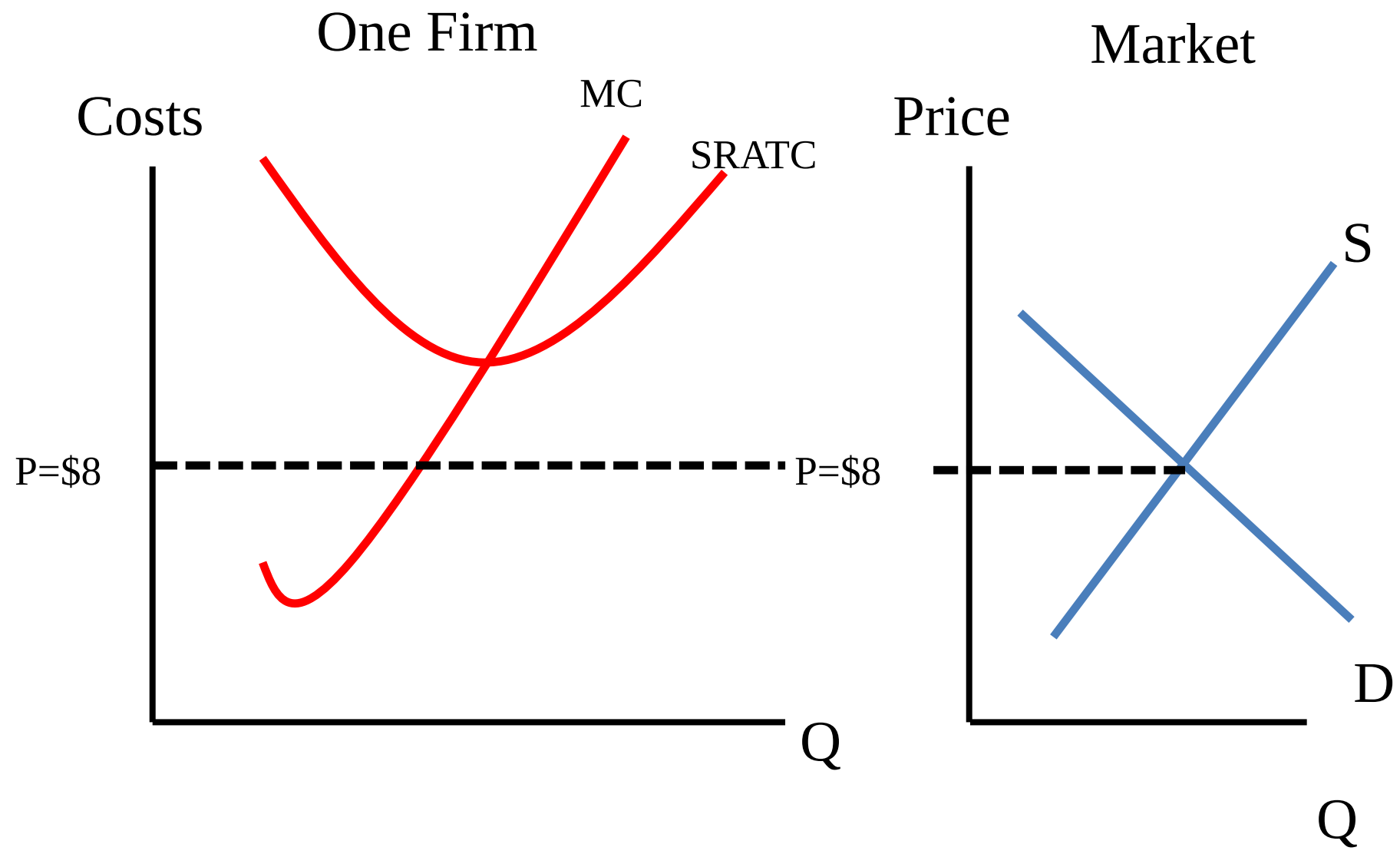
Firm making a short run profit



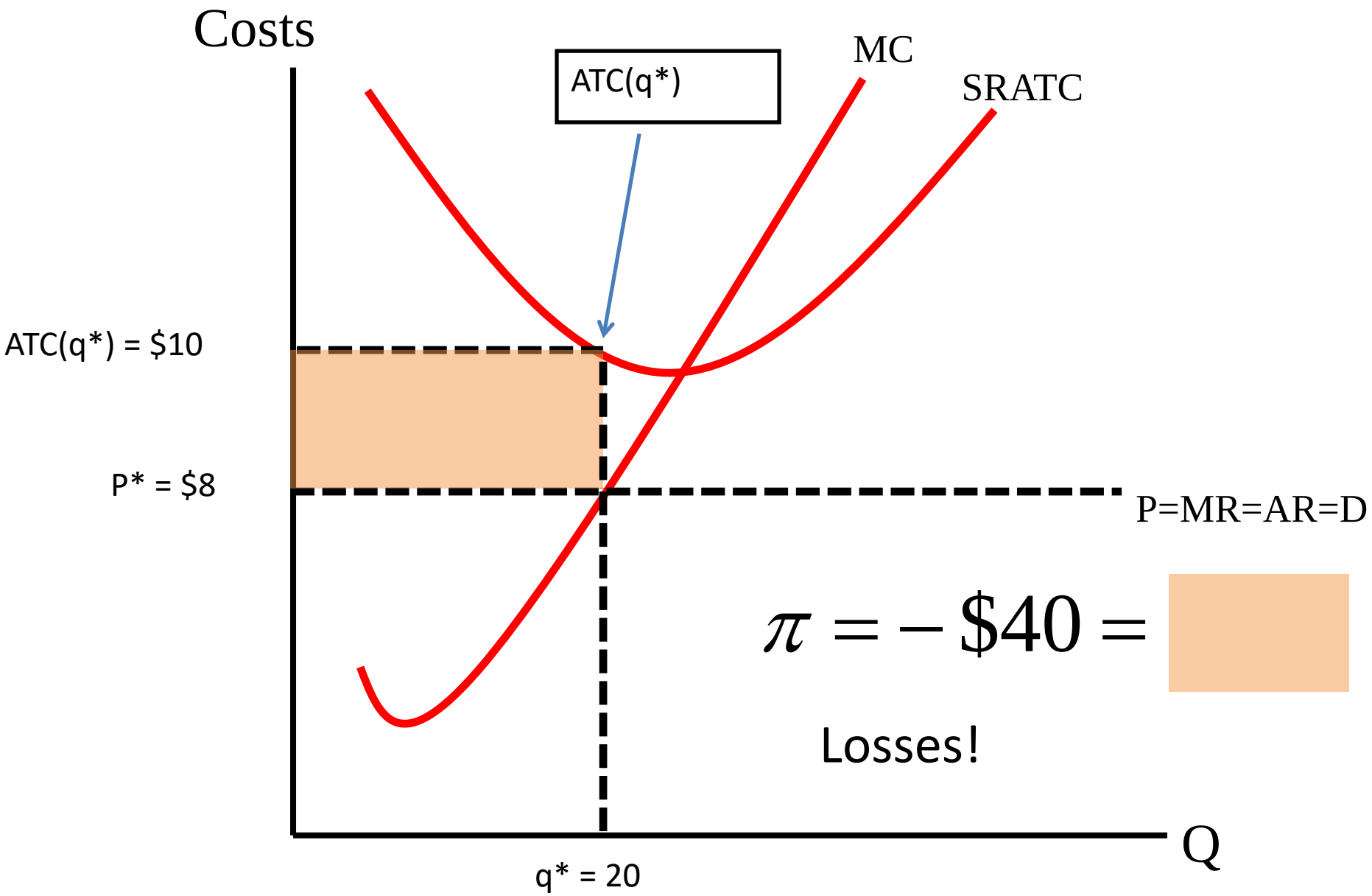
One (perfectly competitive) Firm



Firm making a short run LOSS

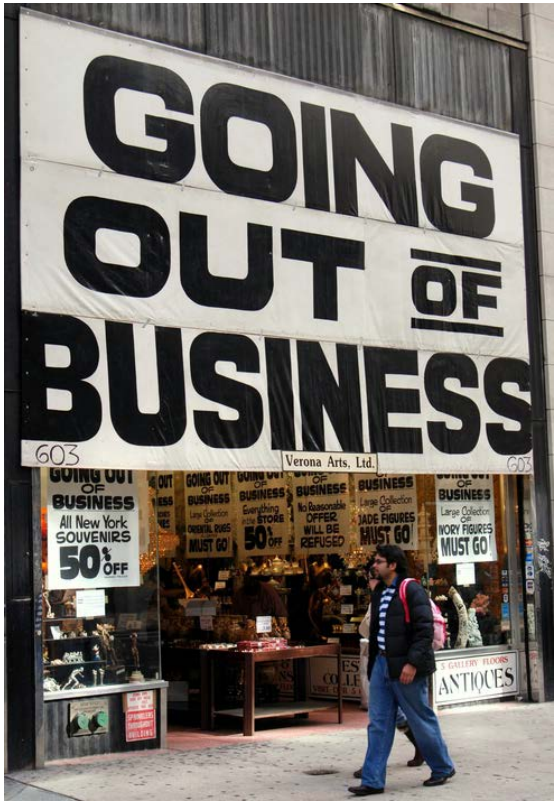


One (perfectly competitive) Firm



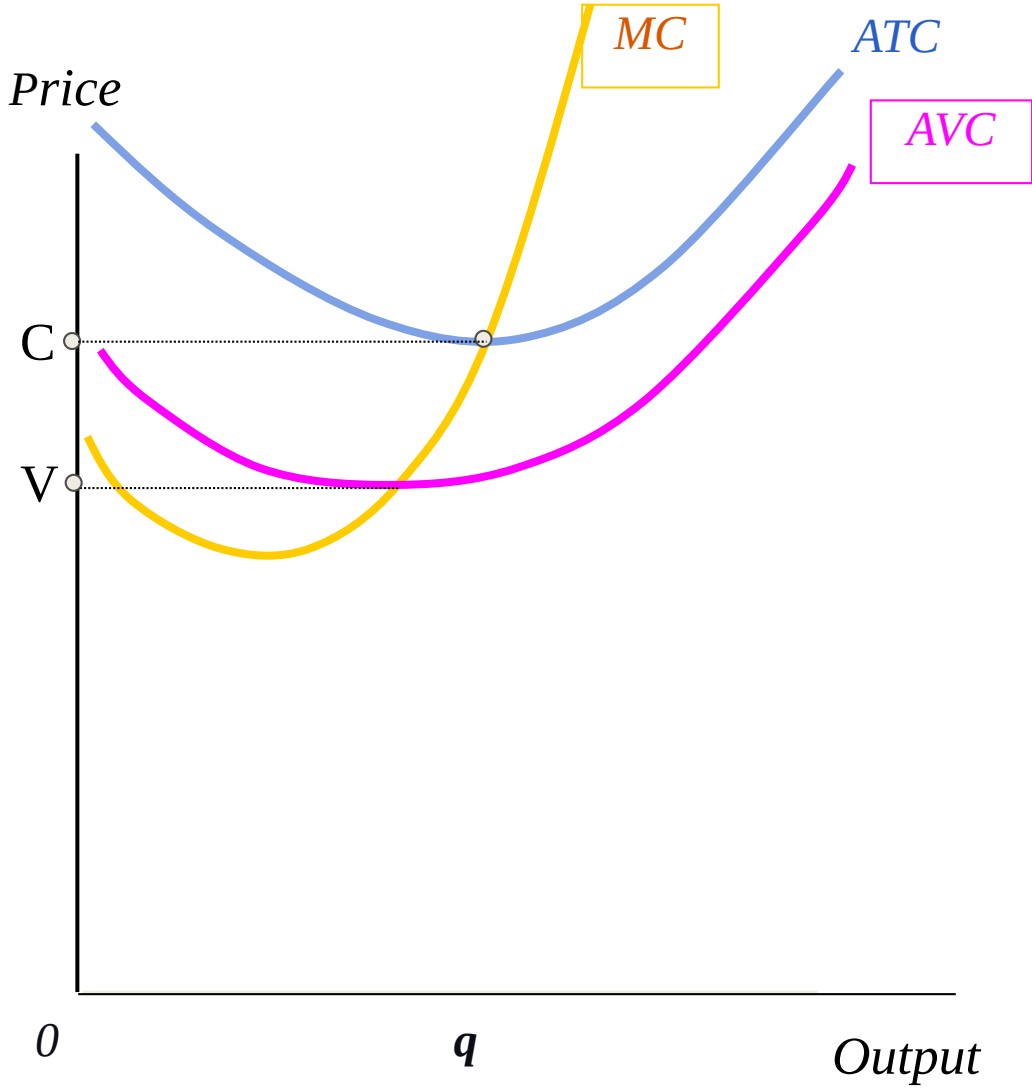
The Decision to Shut Down in the Short Run

- Firms can't always make a profit
  - Ski resort in summer
  - Surf shop in winter
- Shutting down
  - Firm will shut down if it cannot cover variable costs
  - **Shutting down is *not* the same as going out of business and exiting the industry**

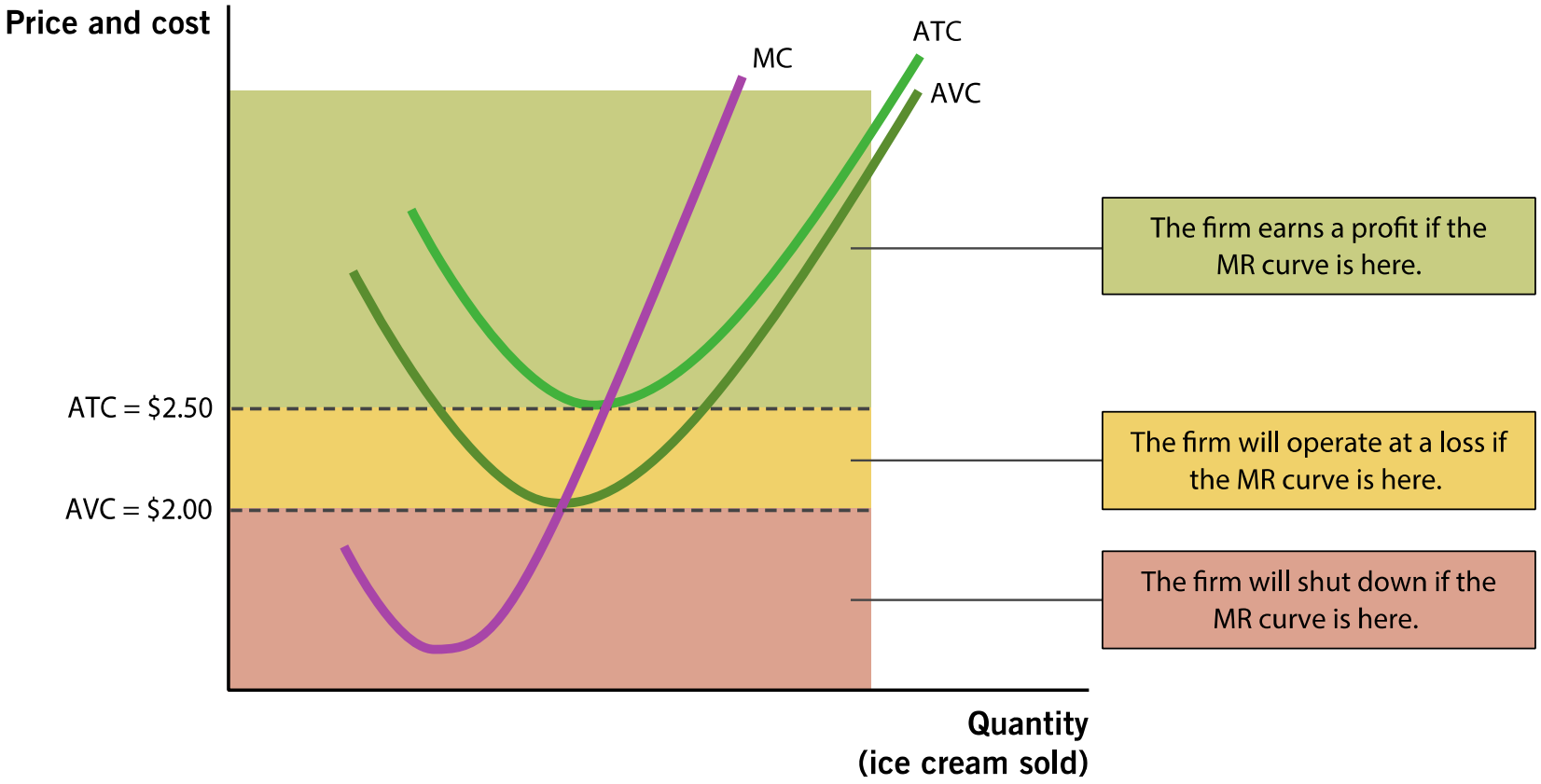


Operating with Short-Run Losses

- In the graph to the right, the firm operates at an output level where ***MR = MC***, but here demand is insufficient to make a profit.
- (1) A firm experiencing losses but covering its *average variable costs* will operate in the short-run.
- (2) A firm will shutdown in the short-run whenever price falls below *average variable cost*.
- (3) A firm will go-out-of-business in the long-run whenever price falls below *average total cost* AND it believes that demand will stay permanently lower than ***ATC***.



When to Operate or Shut Down



Profit and Loss in the Short Run

Condition	Outcome
P > ATC	The firm makes a profit
ATC > P > AVC	The firm will operate to minimize loss
AVC > P	The firm will temporarily shut down

Practice What You Know—1

- Steve runs a competitive sandwich shop. Right now, he is producing output at a level where MR > MC.
- To increase his profits, Steve should
  A. try to use more capital in his production.
  B. try to use more labor in his production.
  C. produce less output.
  D. produce more output.

Practice What You Know—2

- Suppose a competitive firm is faced with a price in the short run that is below ATC but above AVC. In the short run, this firm should
  A. shut down.
  B. exit the industry.
  C. raise the price of the good.
  D. produce at the output level where MR = MC.

Practice What You Know—3

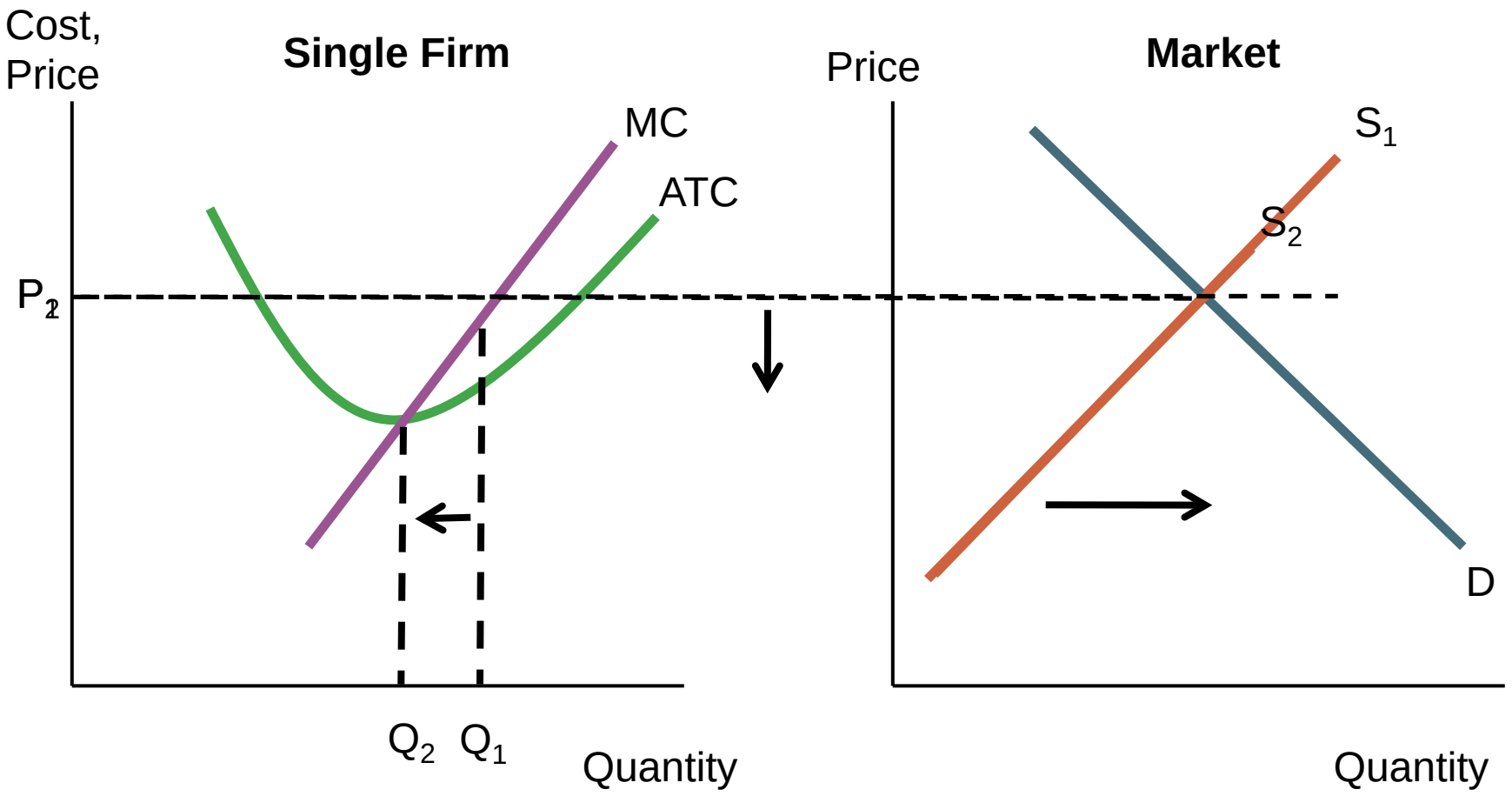
- A competitive firm will shut down and produce output level Q = 0 if
  A. price < min. (ATC).
  B. min. (AVC) < price < min. (ATC).
  C. price < min. (AVC).
  D. P = MR.

The Long-Run Industry Situation: Exit and Entry

- Profits and losses act as ***signals*** for resources to enter an industry or to leave an industry.
  - Signals
    - A true signal not only conveys information but also provides the incentive to react appropriately
- Economic profits - signal resources to enter the market and the price falls to the break-even price
- Economic losses - signal resources to exit the market and the price increases to the break-even level
- At break-even - resources will not enter or exit because the market is yielding a normal rate of return
- In the long run, perfectly competitive firms will make zero economic profits.

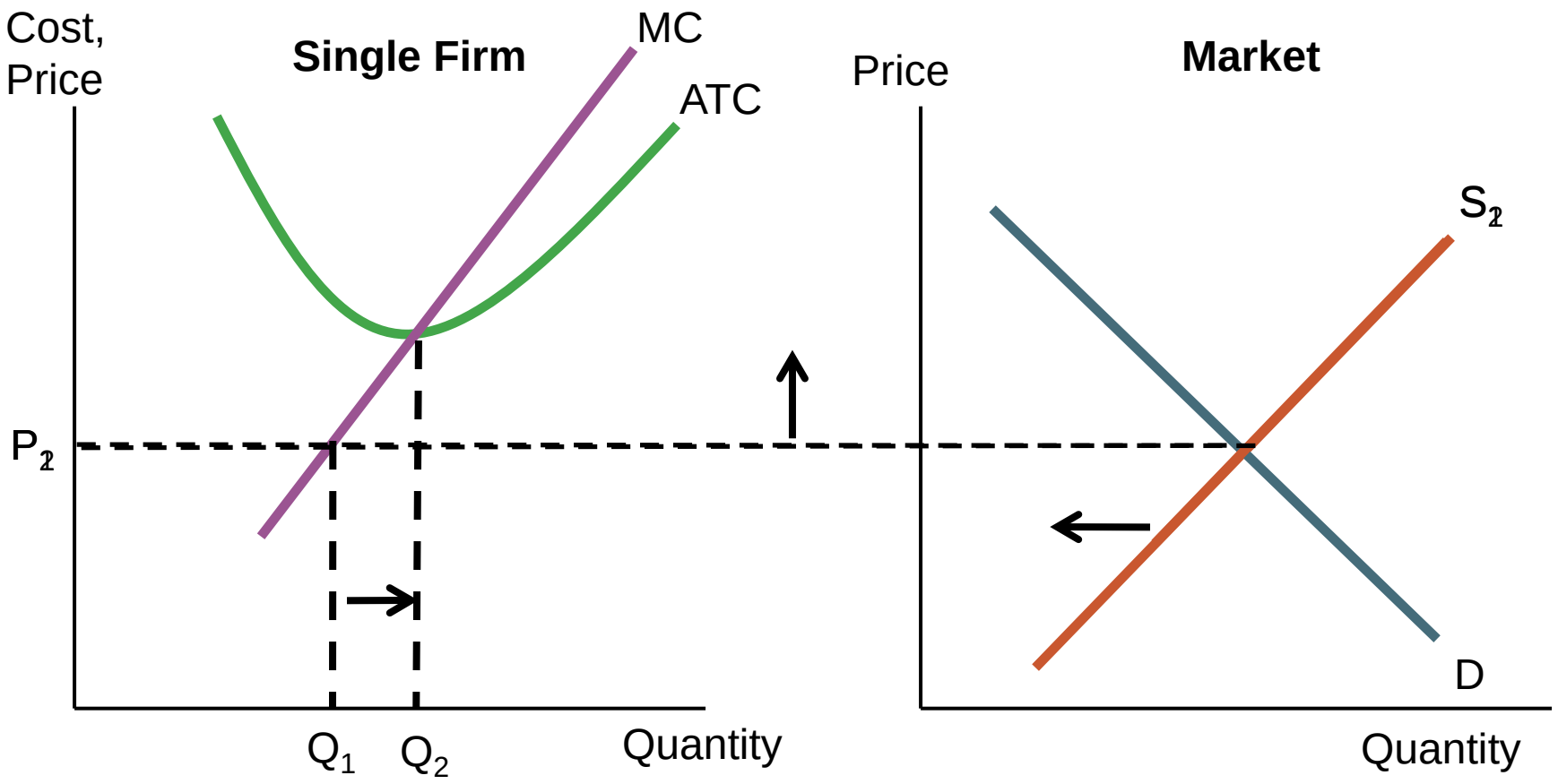
Animated Analysis

Firm entry caused by positive profits



Animated Analysis

Firm exit caused by negative profits



Price Taker is the Benchmark for Economic Efficiency

- Two Considerations:
  - *Production efficiency* - occurs whenever the firm produces at the level consistent the minimum point on the ATC curve.
  - *Allocative efficiency* - occurs when the price charged is equal to the MC of production.

Practice What You Know—4

- If a competitive industry is making positive economic profits, what will eventually happen in this industry?
  A. The market supply will shift to the left.
  B. The market supply will shift to the right.
  C. The market demand will shift to the left.
  D. The market demand will shift to the right.

Practice What You Know—5

- What do you suppose is one of the main reasons that competitive firms all earn zero economic profits in the long run?
  A. each firm has a lot of market power
  B. firms all want to earn zero profits
  C. free entry and exit in the industry
  D. the cost curves are U-shaped

Practice What You Know—6

- In the long run, a firm in a perfectly competitive market earns (more than one answer may apply)

A. positive accounting profits.

B. zero accounting profits.

C. positive economic profits.

D. zero economic profits.

Conclusion

- In competitive markets, firms have no control over price.
- Profits and losses act as signals in a perfectly competitive market.
- Competitive markets serve as an ideal benchmark we can compare other market structures to.