

Economics

PERFECT COMPETITION

Ch.8 OUTLINE



- 8.1: Perfect Competition and Why It Matters
 - 8.2: How Perfectly Competitive Firms Make Output Decisions
 - 8.3: Entry and Exit Decisions in the Long Run
 - 8.4: Efficiency in Perfectly Competitive Markets
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Competition in Farming

- Depending upon the competition and prices offered, a wheat farmer may choose to grow a different crop.

(Credit: modification "Agronomist & Farmer Inspecting Weeds" by United Soybean Board/Flickr, CC BY 2.0)



8.1 Perfect Competition and Why It Matters

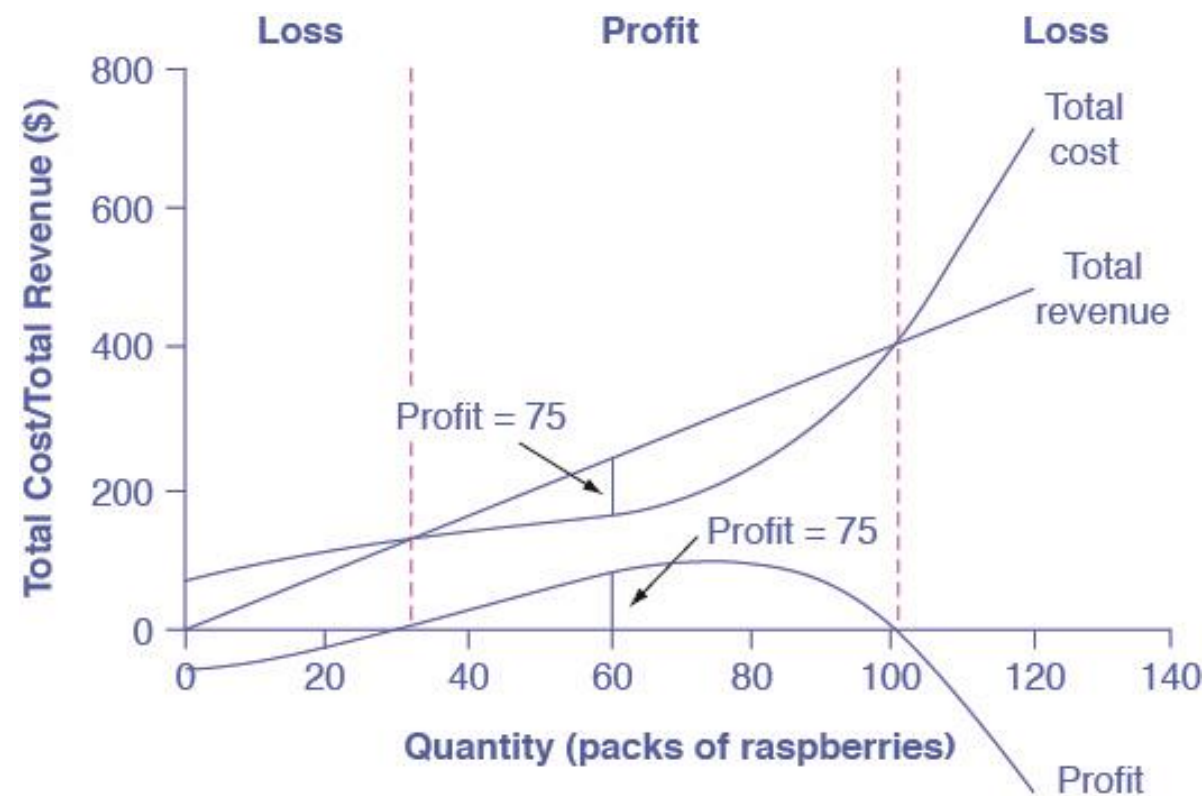
- **Market structure** - the conditions in an industry, such as number of sellers, how easy or difficult it is for a new firm to enter, and the type of products that are sold.
- **Perfect competition** - each firm faces many competitors that sell identical products.
 - 4 criteria:
 - many firms produce identical products,
 - many buyers and many sellers are available,
 - sellers and buyers have all relevant information to make rational decisions,
 - firms can enter and leave the market without any restrictions.
- **Price taker** - a firm in a perfectly competitive market that must take the prevailing market price as given.

8.2 How Perfectly Competitive Firms Make Output Decisions

- A perfectly competitive firm has only one major decision to make - *what quantity to produce?*
- A perfectly competitive firm must accept the price for its output as determined by the product's market demand and supply.
- The maximum profit will occur at the quantity where the difference between total revenue and total cost is largest.

Total Cost and Total Revenue at a Raspberry Farm

- Total revenue for a perfectly competitive firm is a straight line sloping up; the slope is equal to the price of the good.
- Total cost also slopes up, but with some curvature.
- At higher levels of output, total cost begins to slope upward more steeply because of diminishing marginal returns.
- The maximum profit will occur at the quantity where the difference between total revenue and total cost is largest.



Comparing Marginal Revenue and Marginal Costs

- **Marginal revenue** (MR) - the additional revenue gained from selling one more unit.

$$\text{MR} = \frac{\text{change in total revenue}}{\text{change in quantity}}$$

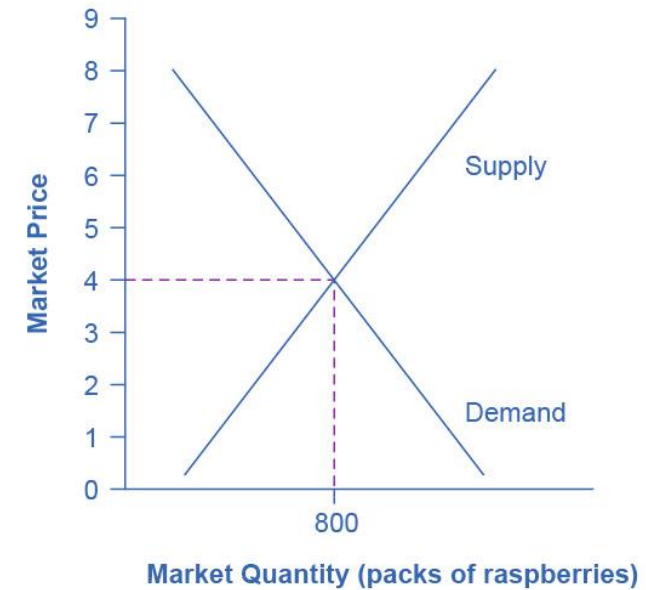
- **Marginal cost** (MC) - the cost per additional unit sold.

$$\text{MC} = \frac{\text{change in total cost}}{\text{change in quantity}}$$

- The profit-maximizing choice for a perfectly competitive firm will occur at the level of output where $\text{MR} = \text{MC}$.

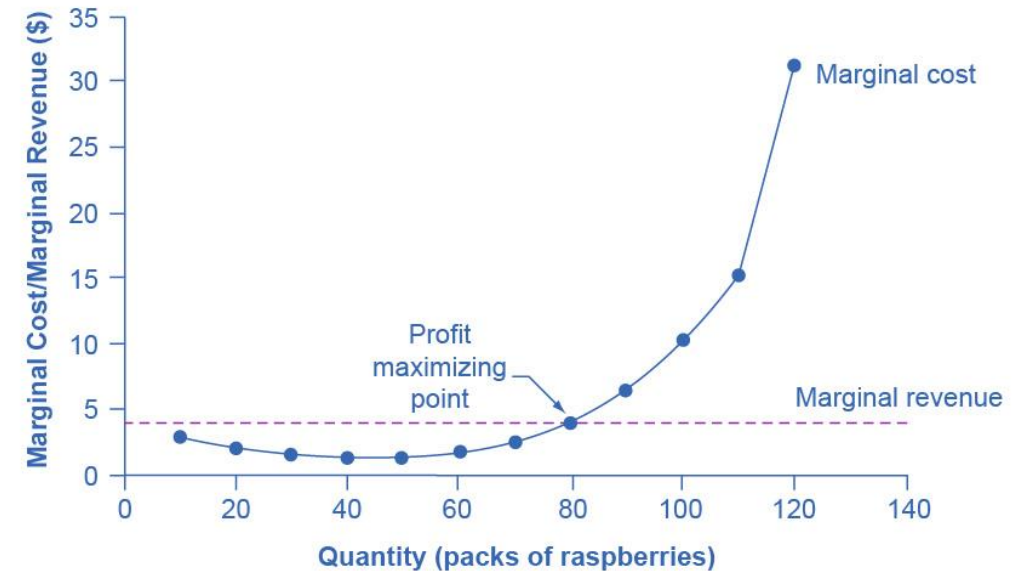
Marginal Revenues and Marginal Costs at the Raspberry Farm: Raspberry Market

- The equilibrium price of raspberries is determined through the interaction of market supply and market demand at \$4.00.
- If there are 10 farms in the market, the equilibrium quantity is $80 \times 10 = 800$.



Marginal Revenues and Marginal Costs at the Raspberry Farm: Individual Farmer

- For a perfectly competitive firm, the marginal revenue curve is a horizontal line because it's equal to the price of the good (\$4), determined by the market.
- The marginal cost curve is sometimes initially downward-sloping, if there is a region of increasing marginal returns at low levels of output.
- It is eventually upward-sloping at higher levels of output as diminishing marginal returns kick in.

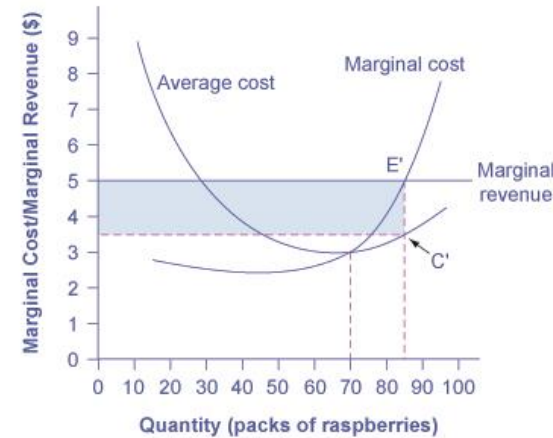


Profits and Losses with the Average Cost Curve

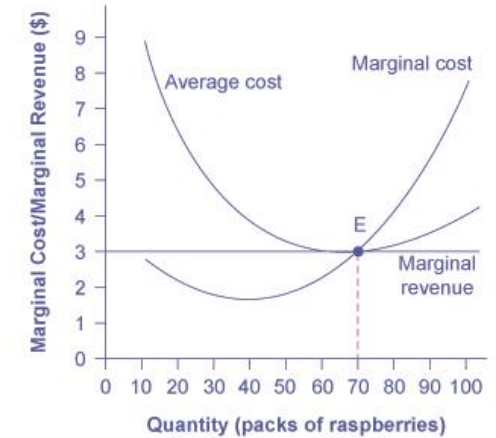
- Does maximizing profit (producing where $MR = MC$) imply an actual economic profit?
- The answer depends on the relationship between price and average total cost, which is the average profit or **profit margin**.

Price and Average Cost at the Raspberry Farm

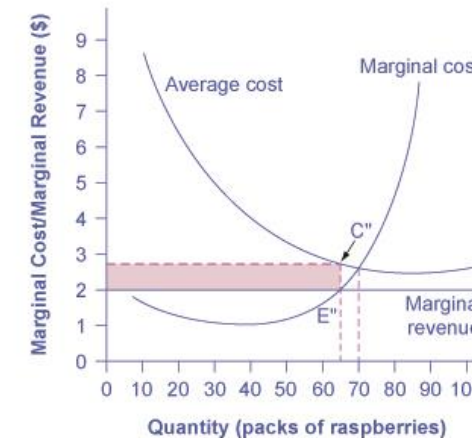
- In (a), price intersects MC *above* the AC curve.
 - Since price > AC, the firm is making a profit.
- In (b), price intersects MC at the minimum point of the AC curve.
 - Since price = AC, the firm is *breaking even*.
- In (c), price intersects MC *below* the AC curve.
 - Since price < average cost, the firm is making a *loss*.



(a) Price is above average cost



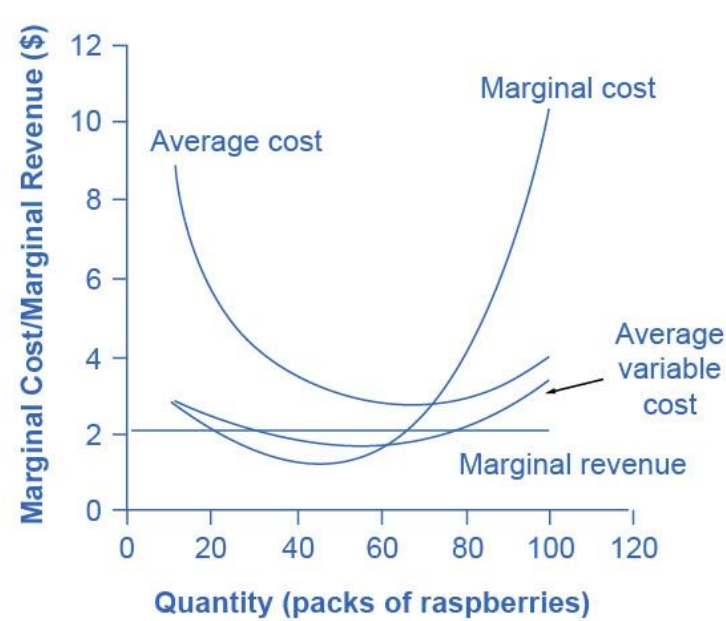
(b) Price equals average cost



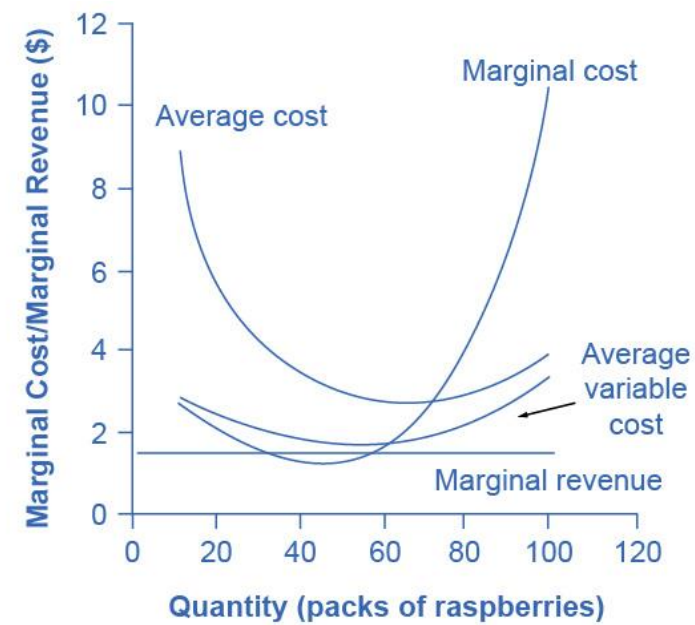
(c) Price is below average cost

The Shutdown Point

- Discussion Question: Why can a firm not avoid losses by shutting down and not producing at all?
- **Shutdown point** - the intersection of the average variable cost curve and the marginal cost curve. If:
 - $\text{price} < \text{minimum AVC}$, then the firm shuts down
 - $\text{price} > \text{minimum AVC}$, then the firm stays in business



(a) Price is above average variable cost

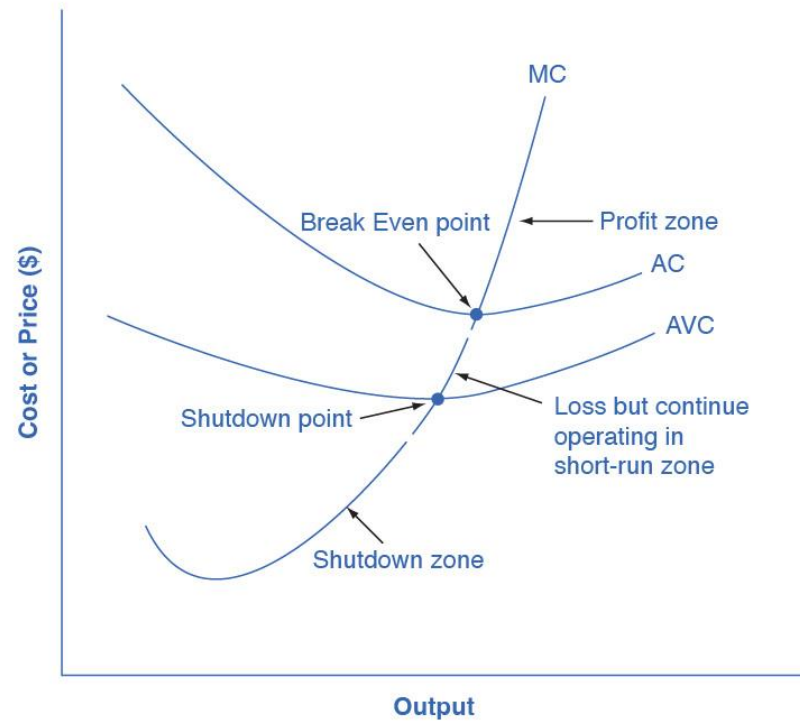


(b) Price is below average variable cost

The Shutdown Point for the Raspberry Farm

- In (a), the farm produces at a level of 65. It is making losses, but $\text{price} > \text{AVC}$, so it continues to operate.
- In (b), the farm produces at a level of 60. This price $< \text{AVC}$ for this level of output.
- If the farmer cannot pay workers (the variable costs), then it has to shut down.

Short-Run Outcomes for Perfectly Competitive Firms



We can divide the MC curve into 3 zones, based on where it is crossed by the AC and AVC curves.

We call the point where MC crosses AC the break even point.

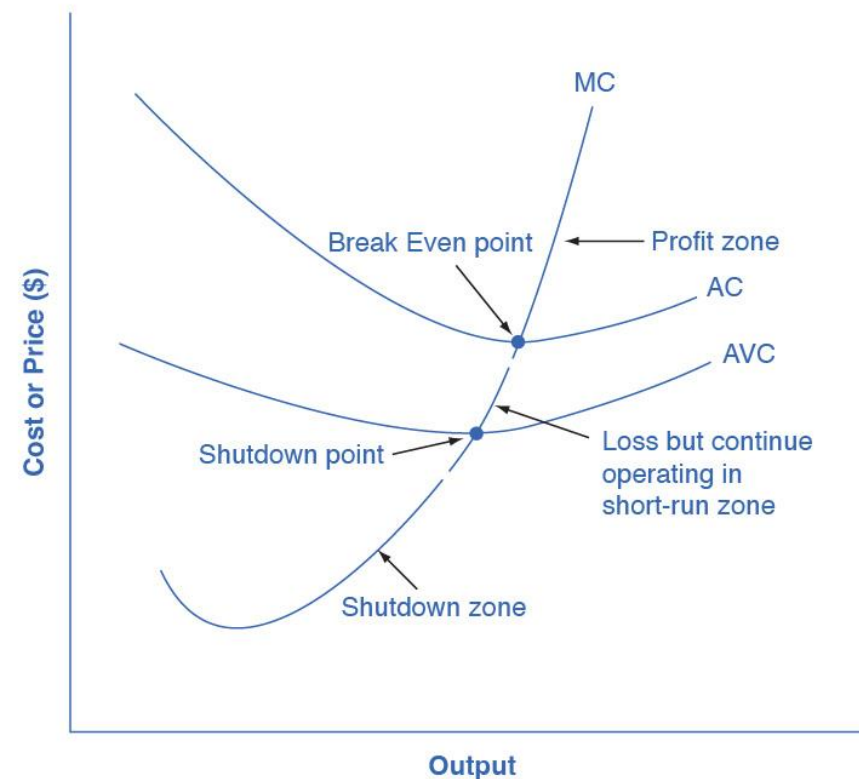
If the firm is operating where *price > break even point*, then $price > AC$ and the firm is earning profits.

If the *price = break even point*, then the firm is making zero profits.

- **Break even point** - level of output where the MC intersects the AC curve at the minimum point of AC; if the price is at this point, the firm is earning zero economic profits.

Short-Run Outcomes for Perfectly Competitive Firms

- If $\text{shutdown point} < \text{price} < \text{break even point}$,
 - the firm is making losses
 - but will continue to operate in the short run,
 - since it is covering its variable costs, and more if price is above the shutdown-point price.
- If $\text{price} < \text{shutdown point}$, then the firm will shut down immediately, since it is not even covering its variable costs.

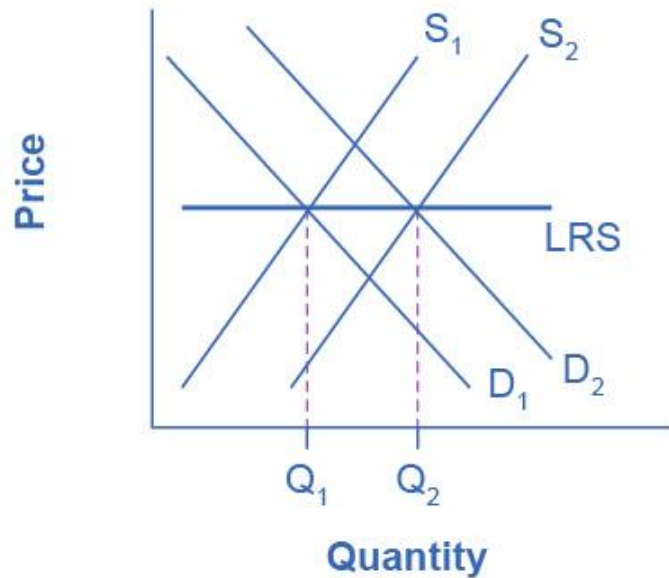


8.3 Entry and Exit Decisions in the Long Run

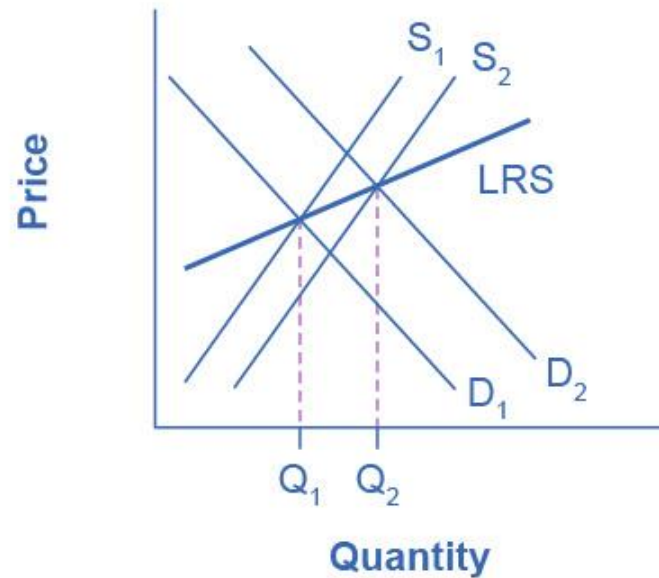
- **Entry** - when new firms enter the industry in response to increased industry profits.
- **Exit** - the long-run process of reducing production in response to a sustained pattern of losses.
- **Long-run equilibrium** - where all firms earn zero economic profits producing the output level where $P = MR = MC$ and $P = AC$.

The Long-Run Adjustment and Industry Types

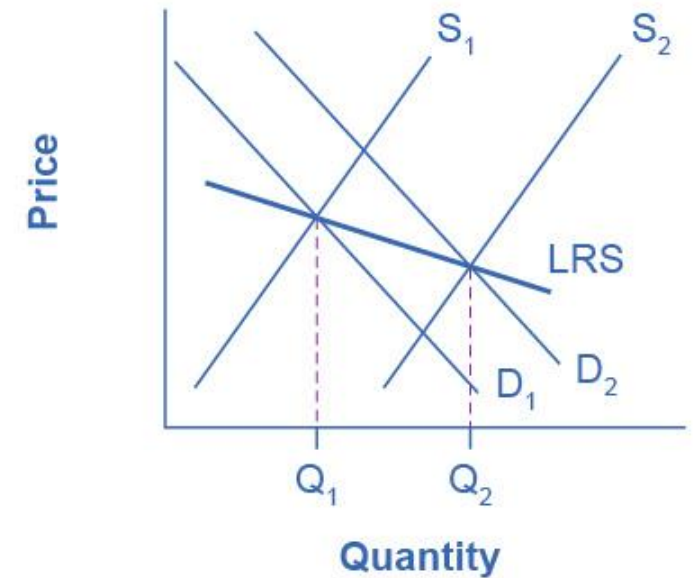
- Constant-cost industry - as demand increases, the cost of production for firms stays the same.
- Increasing-cost industry - as demand increases, the cost of production for firms increases.
- Decreasing-cost industry - as demand increases the costs of production for the firms decreases



(a) Constant cost



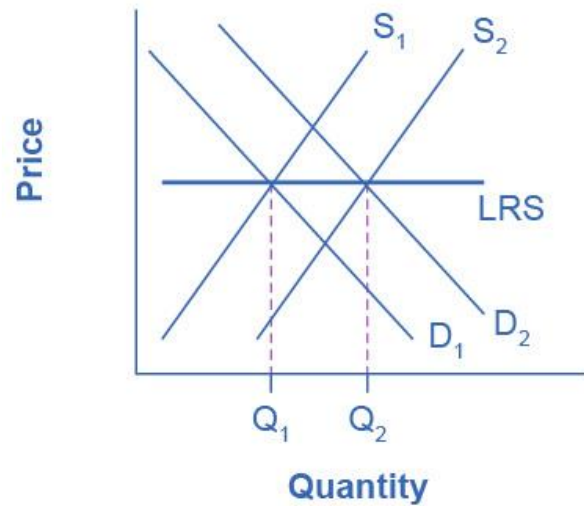
(b) Increasing cost



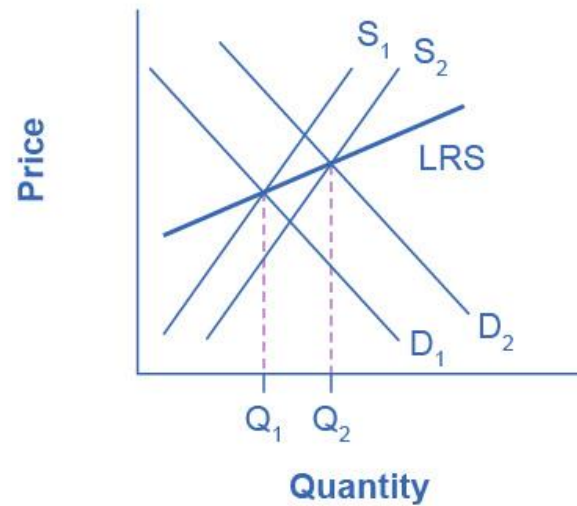
(c) Decreasing cost

Adjustment Process in a Constant-Cost Industry

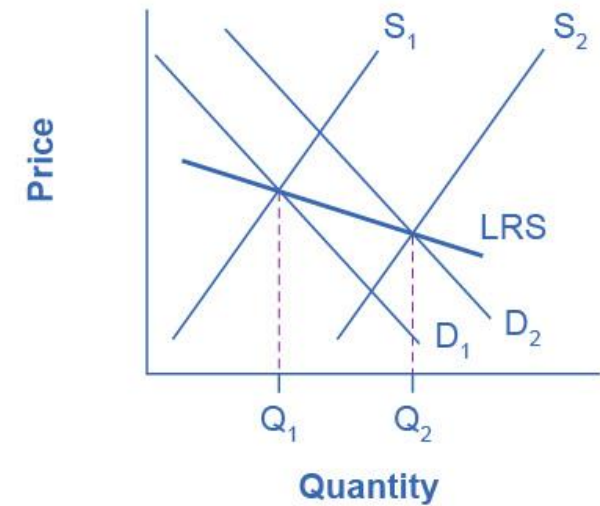
- In (a), demand increased and supply met it.
- Notice that the supply increase is equal to the demand increase.
- The result is that the equilibrium price stays the same as quantity sold increases.



(a) Constant cost



(b) Increasing cost



(c) Decreasing cost

Adjustment Process in a Constant-Cost Industry

- In (b), notice that sellers were not able to increase supply as much as demand.
 - Some inputs were scarce, or wages were rising.
 - The equilibrium price rises.
- In (c), sellers easily increased supply in response to the demand increase.
 - Here, new technology or economies of scale caused the large increase in supply, The equilibrium price declines.

8.4 Efficiency in Perfectly Competitive Markets

- When profit-maximizing firms in perfectly competitive markets *combine* with utility-maximizing consumers, the resulting quantities of outputs of goods and services demonstrate both productive and allocative efficiency.
- Productive efficiency means producing without waste, so that the choice is on the PPF.
- In the long run in a perfectly competitive market, the price in the market is equal to the minimum of the long-run average cost curve.
- In other words, firms produce and sell goods at the lowest possible average cost.

Perfectly Competitive Market and Allocative Efficiency

- Allocative efficiency means that among the points on the production possibility frontier, the chosen point is socially preferred.
- In a perfectly competitive market, $P = MC$ of production.
- When perfectly competitive firms follow the rule that profits are maximized by producing at the quantity where $P = MC$, they are ensuring that the social benefits they receive from producing a good are in line with the social costs of production.

Compare Perfect Competition to Real-World Markets

- Perfect competition is a hypothetical benchmark.
- Real-world markets include many issues that are assumed away in the model of perfect competition.
 - Such as:
 - Pollution,
 - Inventions of new technology
 - Poverty (some people are unable to pay for basic necessities)
 - Government programs
 - Discrimination in labor markets
 - Buyers and sellers with imperfect and unclear information.

Credits: Greenlaw, S. A., Shapiro, D., & MacDonald, D. (2022). *Principles of economics* (3rd ed.). OpenStax. <https://openstax.org/books/principles-economics-3e>