

chapter:

3

## >> Supply and Demand

Krugman/Wells  
Economics

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### WHAT YOU WILL LEARN IN THIS CHAPTER

- What a **competitive market** is and how it is described by the **supply and demand model**
- What the **demand curve** and **supply curve** are
- The difference between **movements along a curve** and **shifts of a curve**
- How the supply and demand curves determine a market's **equilibrium price** and **equilibrium quantity**
- In the case of a **shortage** or **surplus**, how price moves the market back to equilibrium

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## Supply and Demand

- A **competitive market**:
  - Many buyers and sellers
  - Same good or service
- The **supply and demand model** is a model of how a competitive market works.
- Five key elements:
  - Demand curve
  - Supply curve
  - Demand and supply curve shifts
  - Market equilibrium
  - Changes in the market equilibrium

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## Demand Schedule

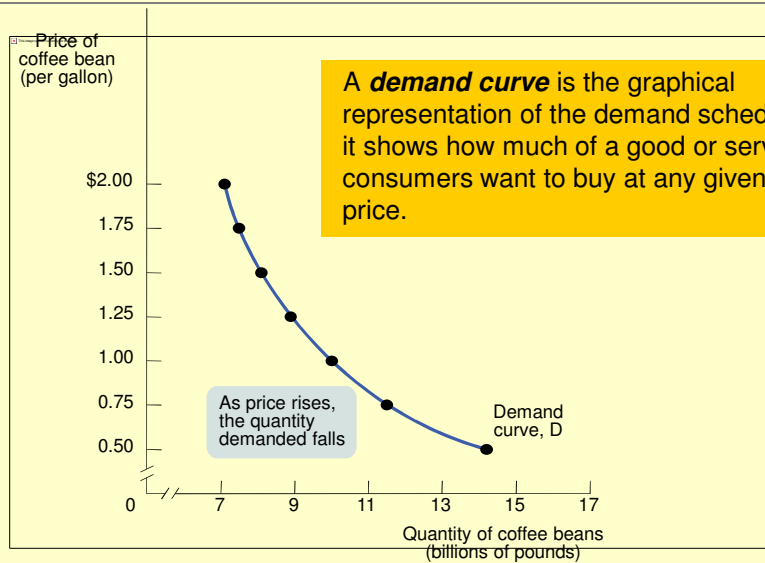
- A demand schedule shows how much of a good or service consumers will want to buy at different prices.

**Demand Schedule for Coffee Beans**

Price of coffee beans (per pound)	Quantity of coffee beans demanded (billions of pounds)
\$2.00	7.1
1.75	7.5
1.50	8.1
1.25	8.9
1.00	10.0
0.75	11.5
0.50	14.2

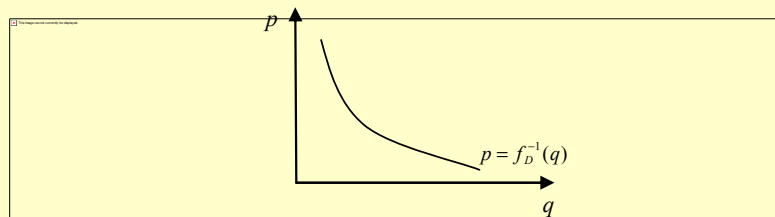
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## Demand Curve



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## No domínio contínuo



$q = f_D(p)$  .....> Curva da procura

$p = f_D^{-1}(q)$  .....> Curva da procura inversa (a representada no gráfico)

$\frac{dq}{dp} = f'_D(p) < 0$  .....> Relação inversa entre a quantidade procurada e o preço

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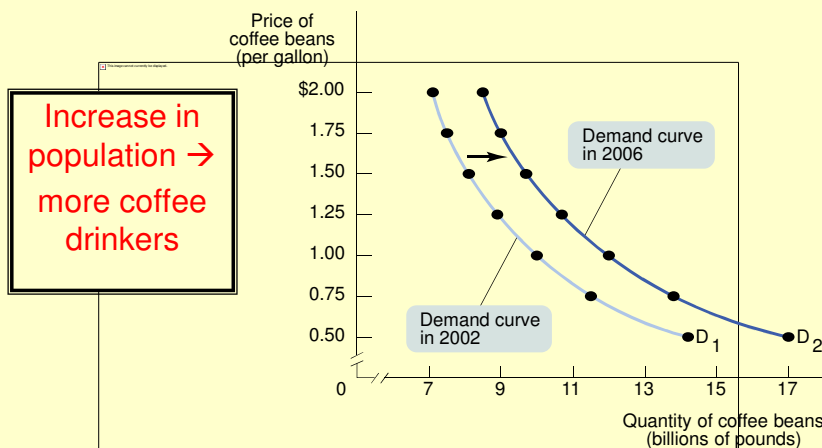
## An Increase in Demand

- An increase in the population and other factors generate an increase in demand – a rise in the quantity demanded at any given price.
- This is represented by the two demand schedules - one showing demand in 2002, before the rise in population, the other showing demand in 2006, after the rise in population.

Price of coffee beans (per pound)	Quantity of coffee beans demanded (billions of pounds)	
	in 2002	in 2006
\$2.00	7.1	8.5
1.75	7.5	9.0
1.50	8.1	9.7
1.25	8.9	10.7
1.00	10.0	12.0
0.75	11.5	13.8
0.50	14.2	17.0

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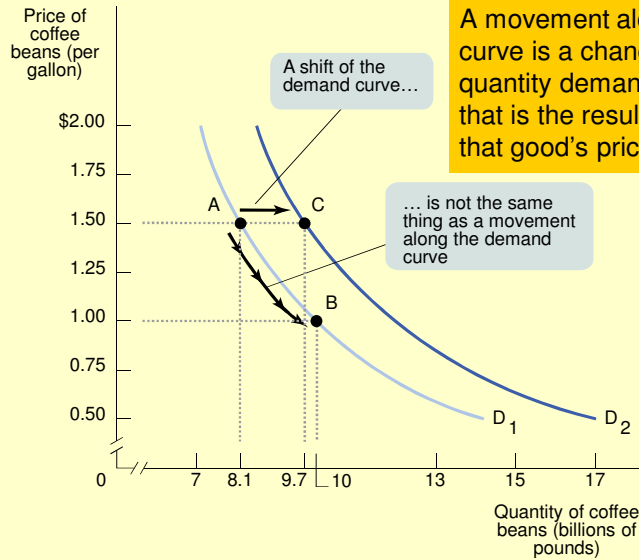
## An Increase in Demand



A **shift of the demand curve** is a change in the quantity demanded at any given price, represented by the change of the original demand curve to a new position, denoted by a new demand curve.

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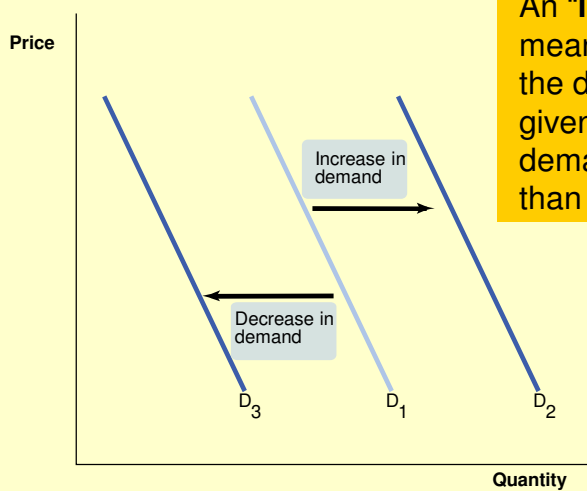
## Movement Along the Demand Curve



A movement along the demand curve is a change in the quantity demanded of a good that is the result of a change in that good's price.

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## Shifts of the Demand Curve



An **"increase in demand"** means a *rightward* shift of the demand curve: at any given price, consumers demand a larger quantity than before. ( $D_1 \rightarrow D_2$ )

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## What Causes a Demand Curve to Shift?

- Changes in the Prices of Related Goods
  - **Substitutes:** *Two goods are **substitutes** if a fall in the price of one of the goods makes consumers less willing to buy the other good.*
  - **Complements:** *Two goods are **complements** if a fall in the price of one good makes people more willing to buy the other good.*

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## What Causes a Demand Curve to Shift?

- Changes in Income
  - **Normal Goods:** *When a rise in income increases the demand for a good - the normal case - we say that the good is a **normal good**.*
  - **Inferior Goods:** *When a rise in income decreases the demand for a good, it is an **inferior good**.*
- Changes in Tastes
- Changes in Expectations

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## Supply Schedule

- A supply schedule shows how much of a good or service would be supplied at different prices.

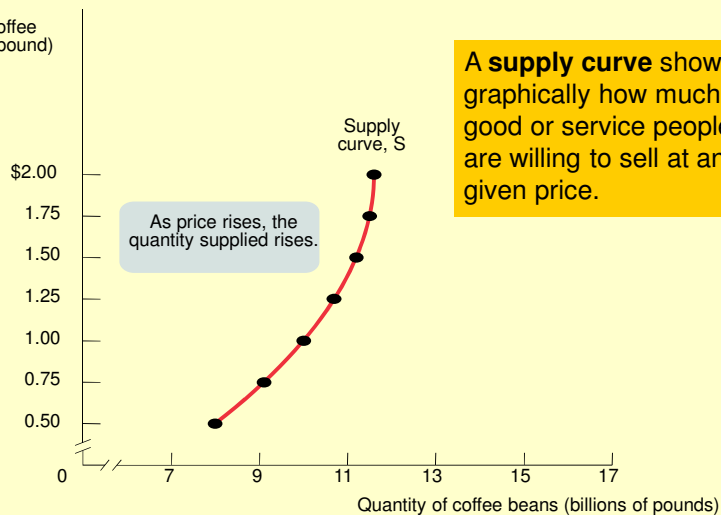
**Supply Schedule for Coffee Beans**

Price of coffee beans (per pound)	Quantity of coffee beans supplied (billions of pounds)
\$2.00	11.6
1.75	11.5
1.50	11.2
1.25	10.7
1.00	10.0
0.75	9.1
0.50	8.0

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## Supply Curve

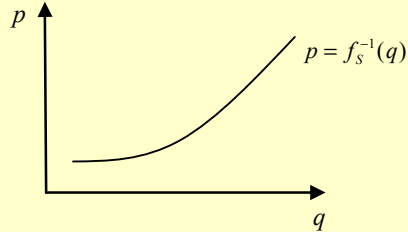
Price of coffee beans (per pound)



A **supply curve** shows graphically how much of a good or service people are willing to sell at any given price.

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## No domínio contínuo



$q = f_S(p)$  ..... Curva da oferta

$p = f_S^{-1}(q)$  ..... Curva da oferta inversa (a representada no gráfico)

$\frac{dq}{dp} = f'_S(p) > 0$  ..... Relação directa entre a quantidade oferecida e o preço

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## An Increase in Supply

- The entry of Vietnam into the coffee bean business generated an increase in supply—a rise in the quantity supplied at any given price.
- This event is represented by the two supply schedules—one showing supply before Vietnam's entry, the other showing supply after Vietnam came in.

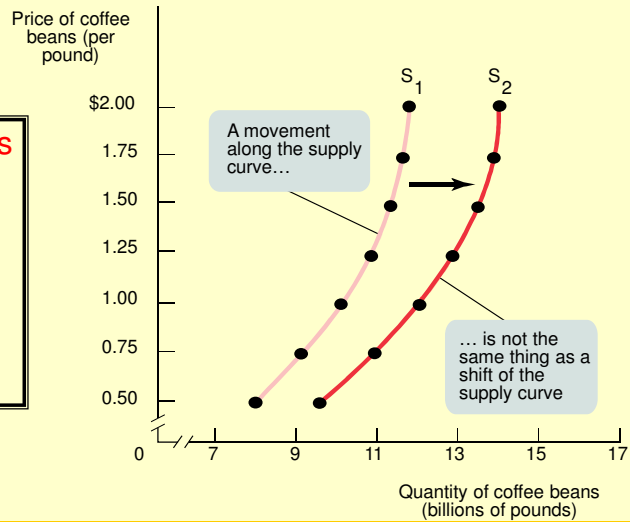
<b>Supply Schedule for Coffee Beans</b>		
Price of coffee beans (per pound)	Quantity of beans supplied (billions of pounds)	
	Before entry	After entry
\$2.00	11.6	13.9
1.75	11.5	13.8
1.50	11.2	13.4
1.25	10.7	12.8
1.00	10.0	12.0
0.75	9.1	10.9
0.50	8.0	9.6

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## An Increase in Supply

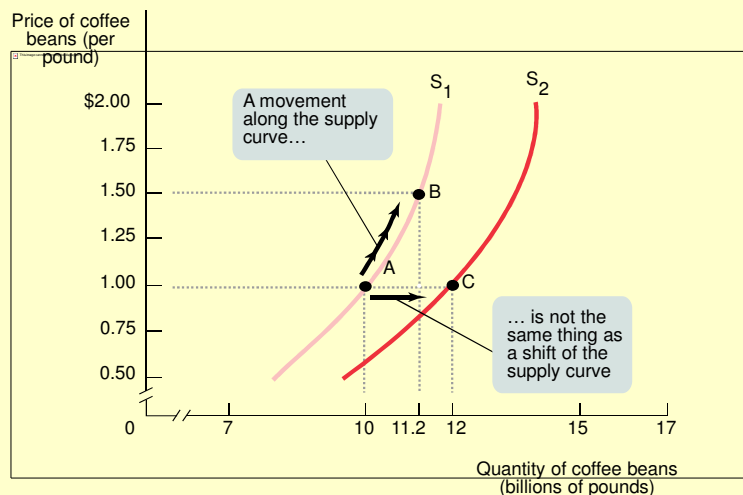
Vietnam enters coffee bean business → more coffee producers



A shift of the supply curve is a change in the quantity supplied of a good at any given price.

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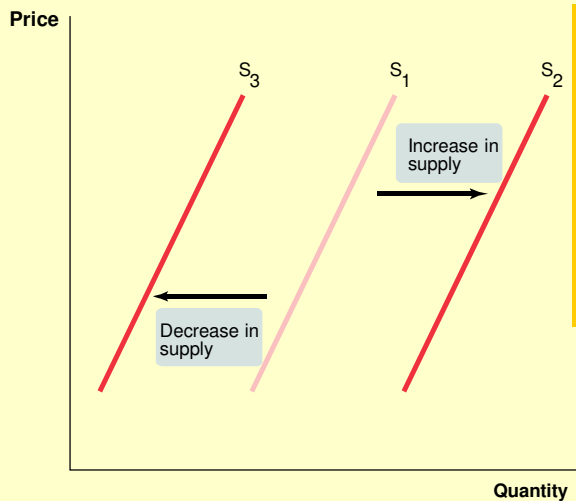
## Movement Along the Supply Curve



A movement along the supply curve is a change in the quantity supplied of a good that is the result of a change in that good's price.

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## Shifts of the Supply Curve



Any “**decrease in supply**” means a *leftward* shift of the supply curve: at any given price, there is a decrease in the quantity supplied. (S1 → S3)

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## What Causes a Supply Curve to Shift?

- Changes in input prices
  - An **input** is a good that is used to produce another good.
- Changes in the prices of related goods and services
- Changes in technology
- Changes in expectations
- Changes in the number of producers

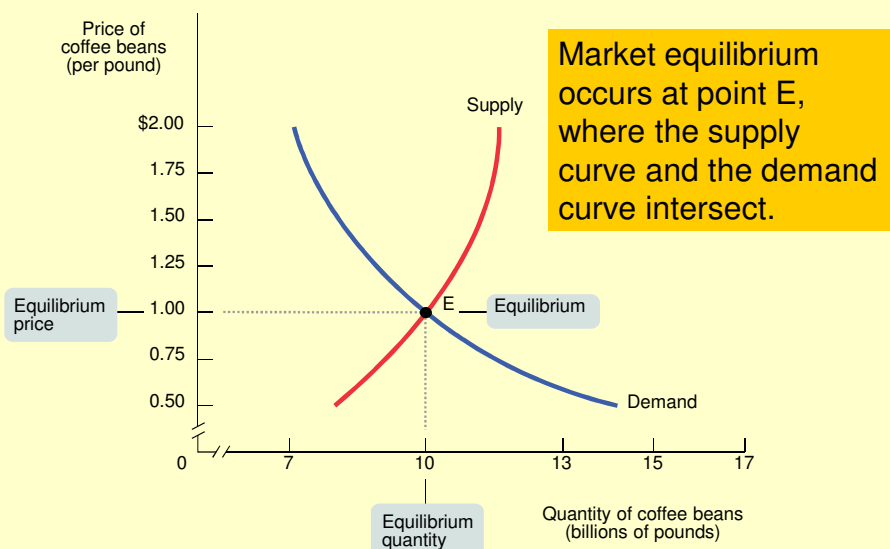
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## Supply, Demand and Equilibrium

- **Equilibrium** in a competitive market: when the quantity demanded of a good equals the quantity supplied of that good.
- The price at which this takes place is the **equilibrium price** (a.k.a. *market-clearing price*):
  - Every buyer finds a seller and vice versa.
  - The quantity of the good bought and sold at that price is the **equilibrium quantity**.

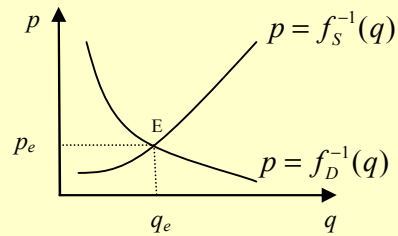
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## Market Equilibrium



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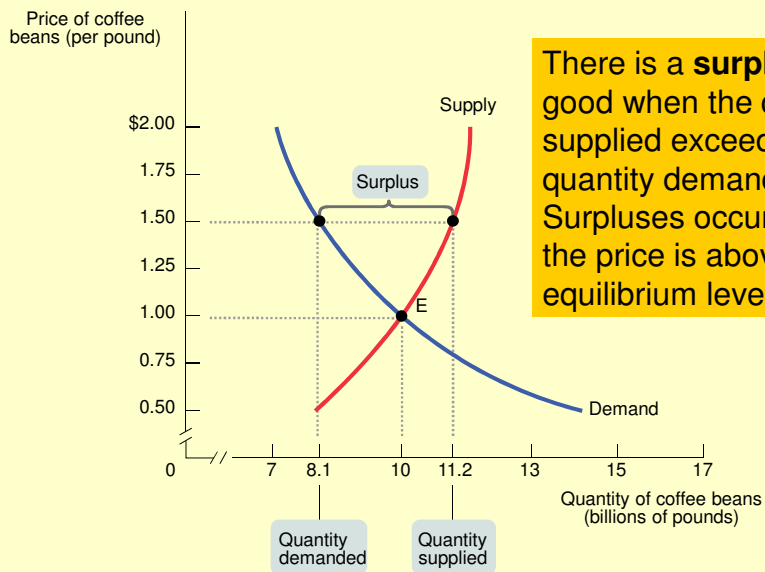
## No domínio contínuo



$$f_D^{-1}(q) = f_S^{-1}(q)$$

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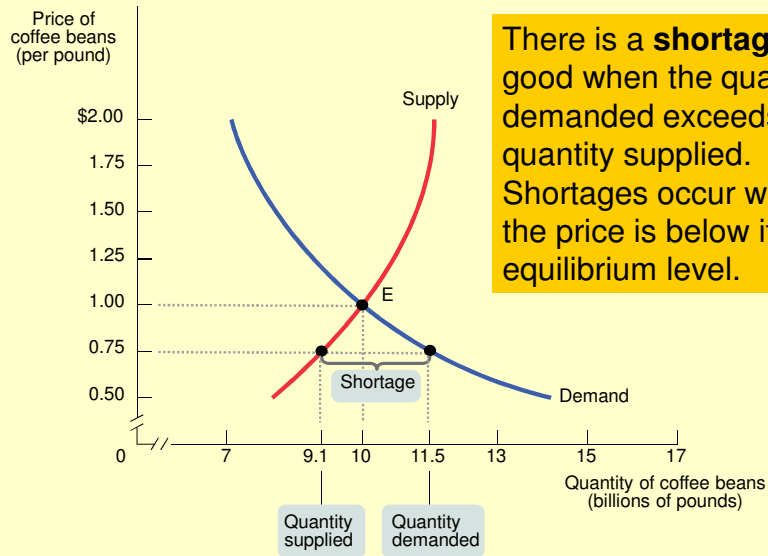
## Surplus



There is a **surplus** of a good when the quantity supplied exceeds the quantity demanded. Surpluses occur when the price is above its equilibrium level.

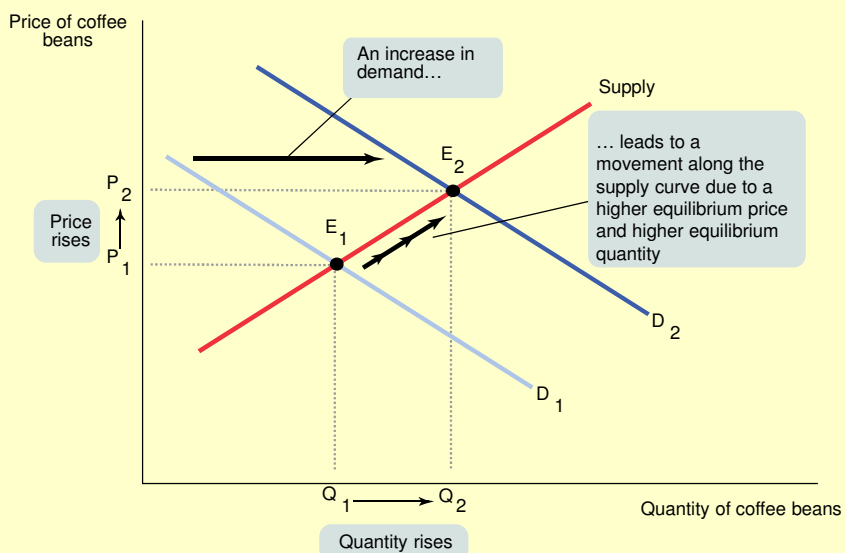
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## Shortage



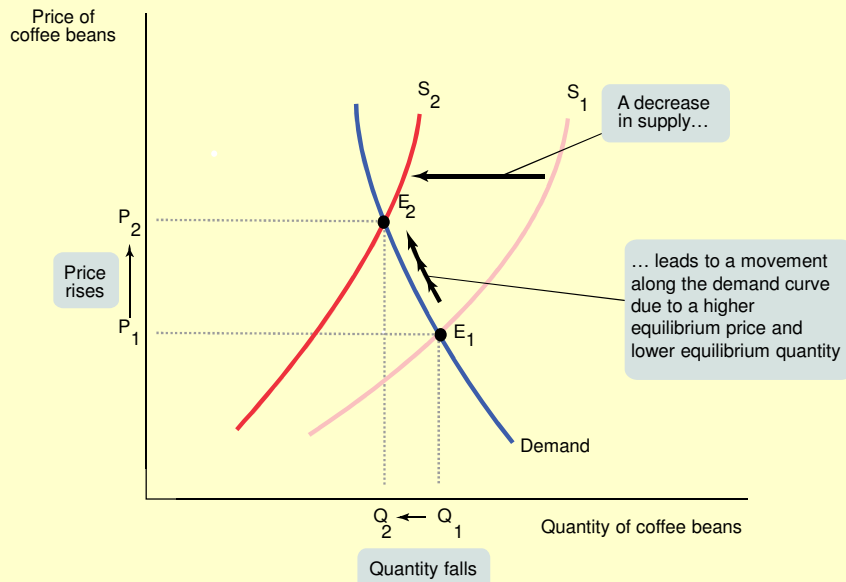
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## Equilibrium and Shifts of the Demand Curve



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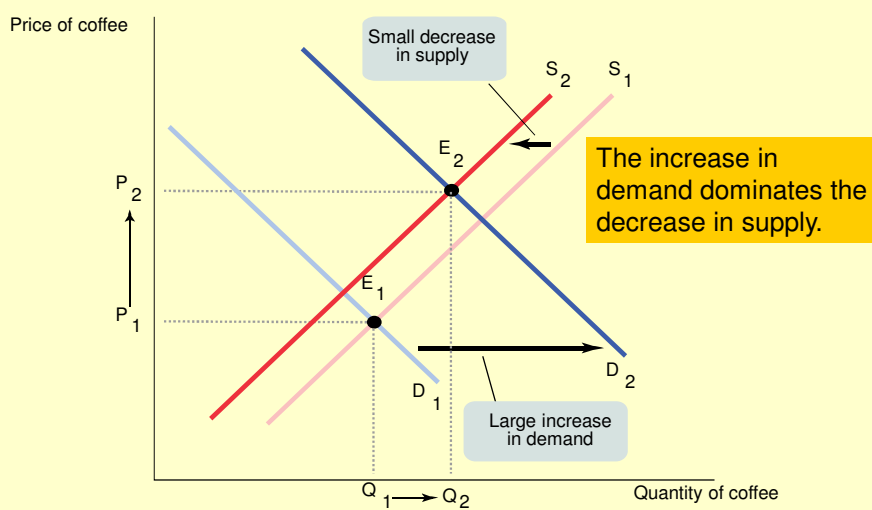
## Equilibrium and Shifts of the Supply Curve



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## Simultaneous Shifts of Supply and Demand

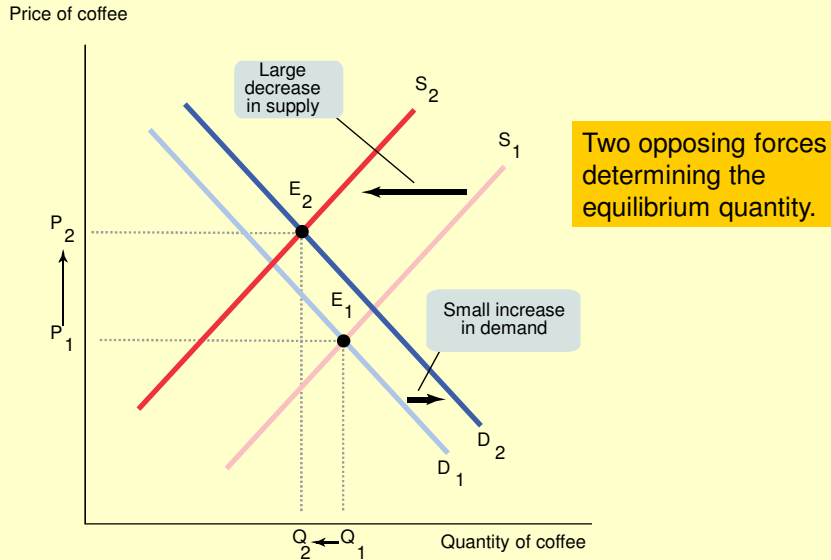
(a) One possible outcome: Price Rises, Quantity Rises



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## Simultaneous Shifts of Supply and Demand

(b) Another Possibility Outcome: Price Rises, Quantity Falls



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## Simultaneous Shifts of Supply and Demand

We can make the following predictions about the outcome when the supply and demand curves shift simultaneously:

<b>Simultaneous Shifts of Supply and Demand</b>	<b>Supply Increases</b>	<b>Supply Decreases</b>
<b>Demand Increases</b>	Price: ambiguous Quantity: up	Price: up Quantity: ambiguous
<b>Demand Decreases</b>	Price: down Quantity: ambiguous	Price: ambiguous Quantity: down

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## **The End of Chapter 3**

Coming attraction

### **Chapter 4: Consumer and Producer Surplus**

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