

chapter:

3

>> Supply and Demand

**Krugman/Wells
Economics**

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

Supply and Demand

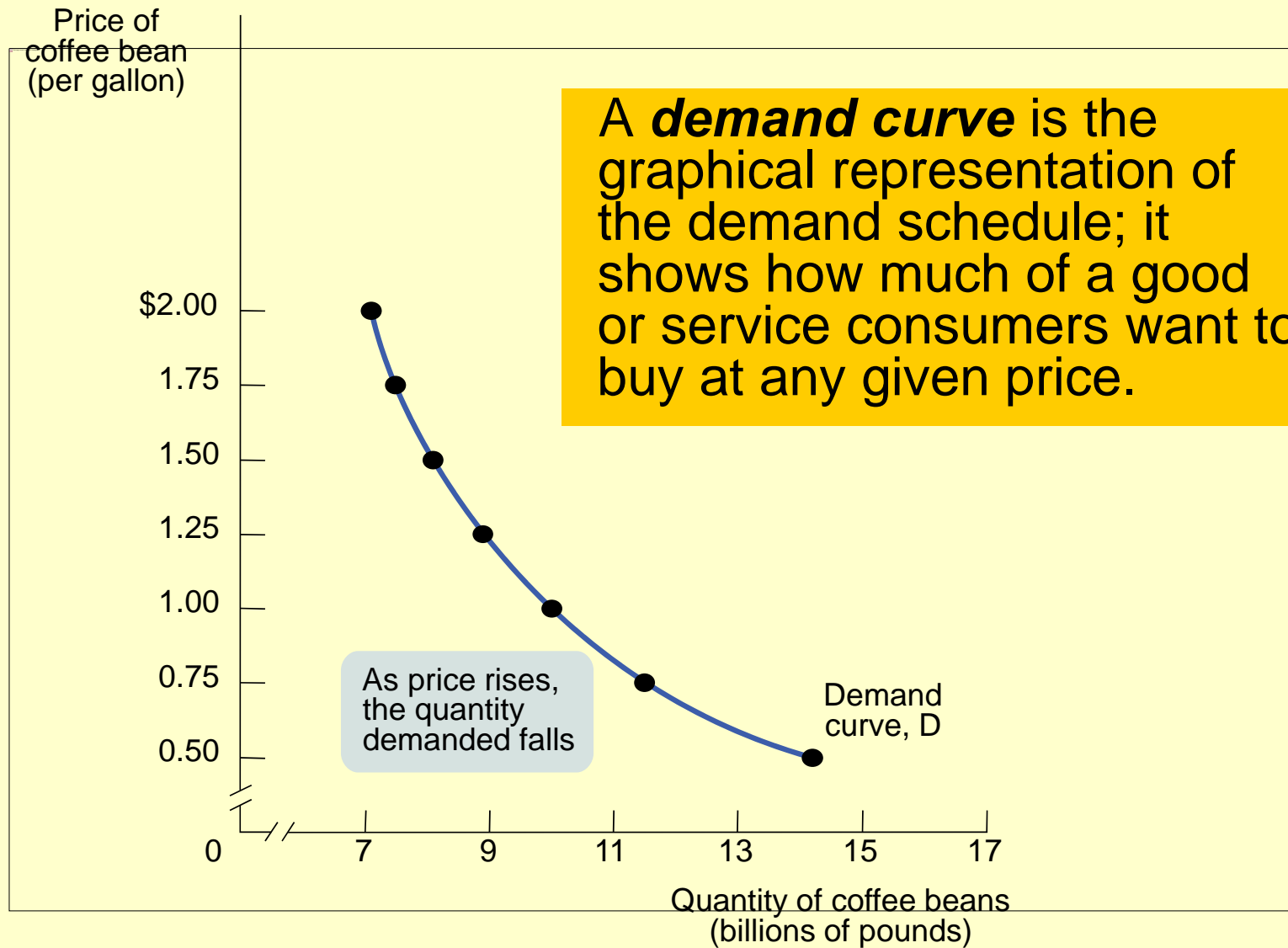
- A **competitive market**:
 - many buyers and sellers
 - same good or service
- The **supply and demand model** is a model of how a competitive market works.
- Five key elements:
 - Demand curve
 - Supply curve
 - Demand and supply curve shifts
 - Market equilibrium
 - Changes in the market equilibrium

Demand Schedule

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

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

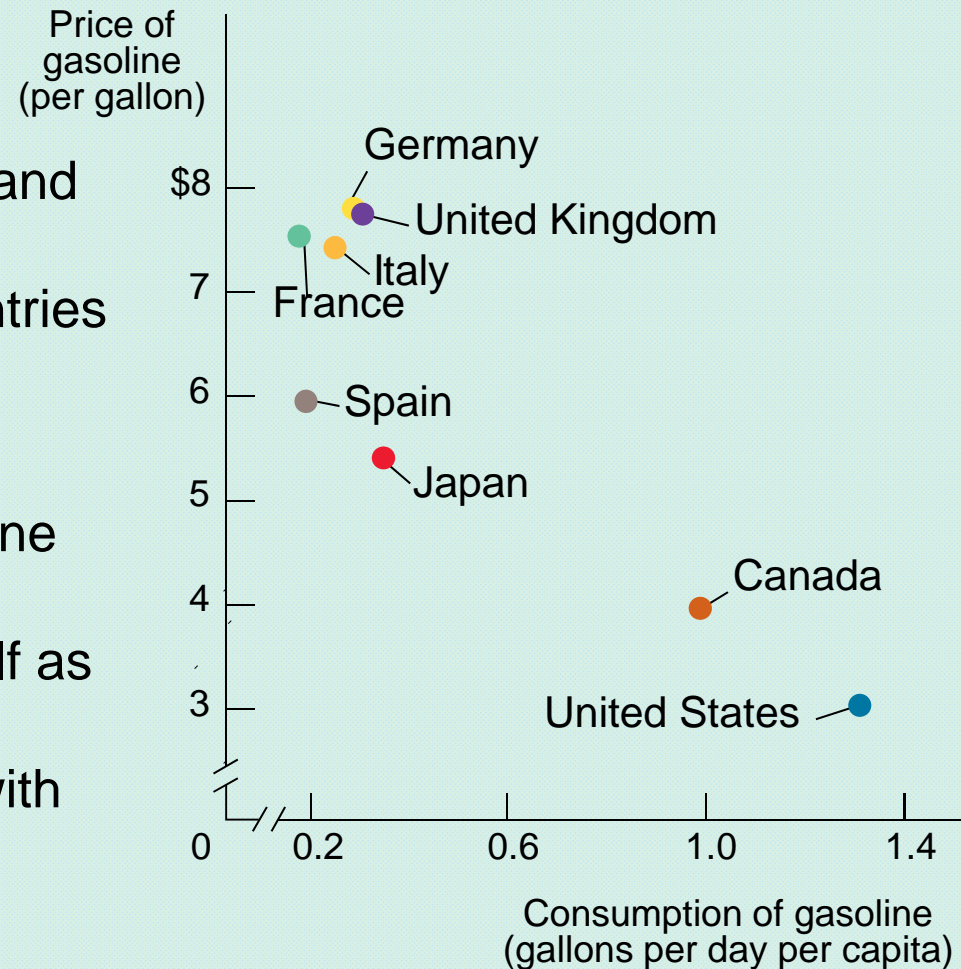
Demand Curve



GLOBAL COMPARISON

Pay More, Pump Less...

- Because of high taxes, gasoline and diesel fuel are more than twice as expensive in most European countries as in the United States.
- According to the law of demand: Europeans should buy less gasoline than Americans, and they do: Europeans consume less than half as much fuel as Americans, mainly because they drive smaller cars with better mileage.



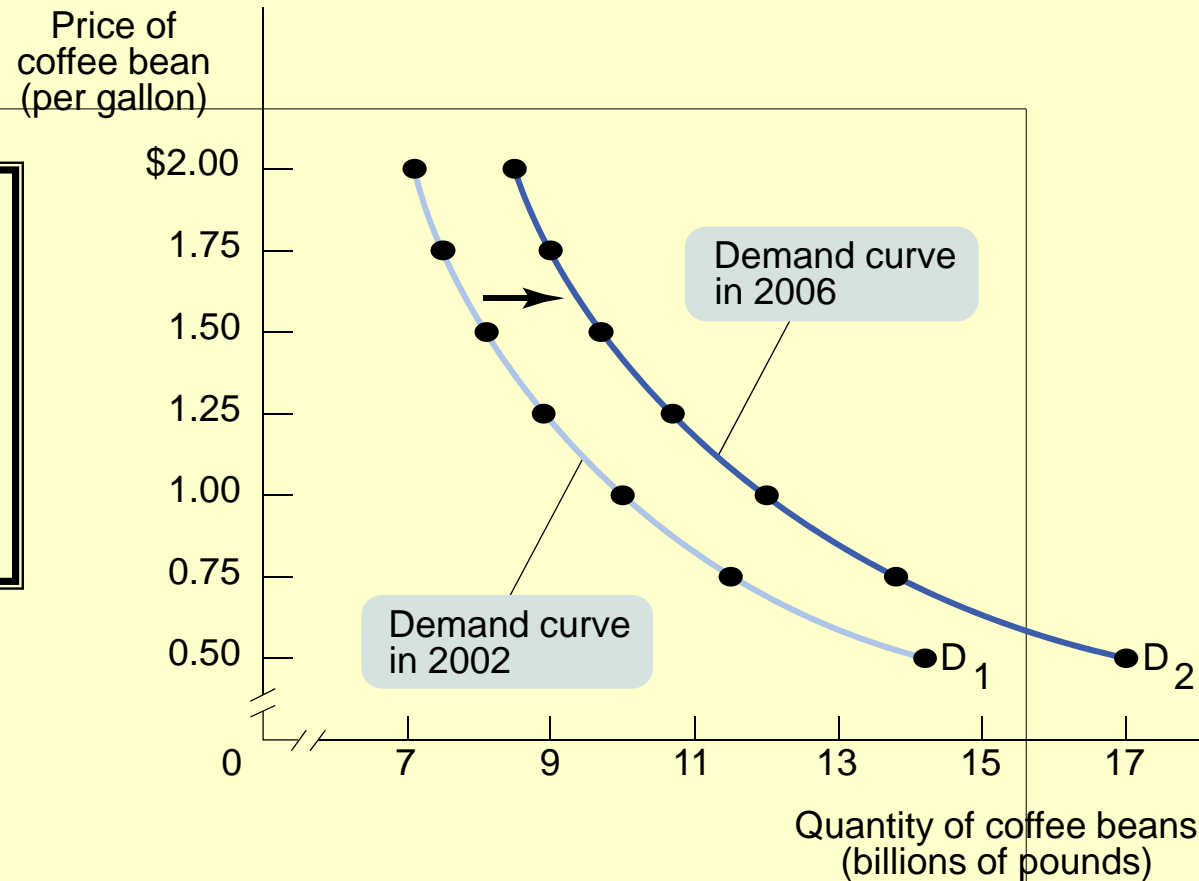
An Increase in Demand

- 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

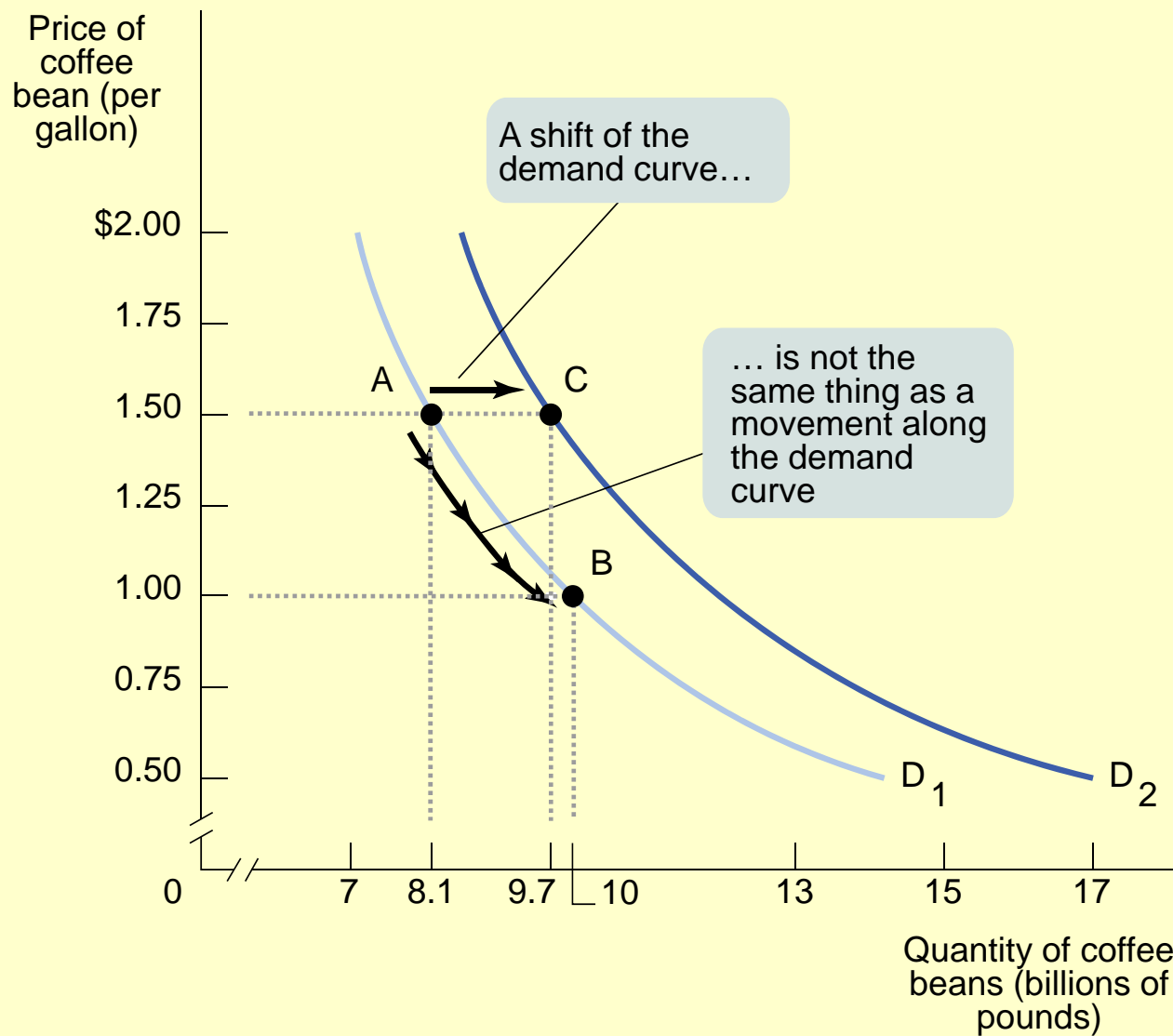
An Increase in Demand

Increase in population →
More coffee drinkers



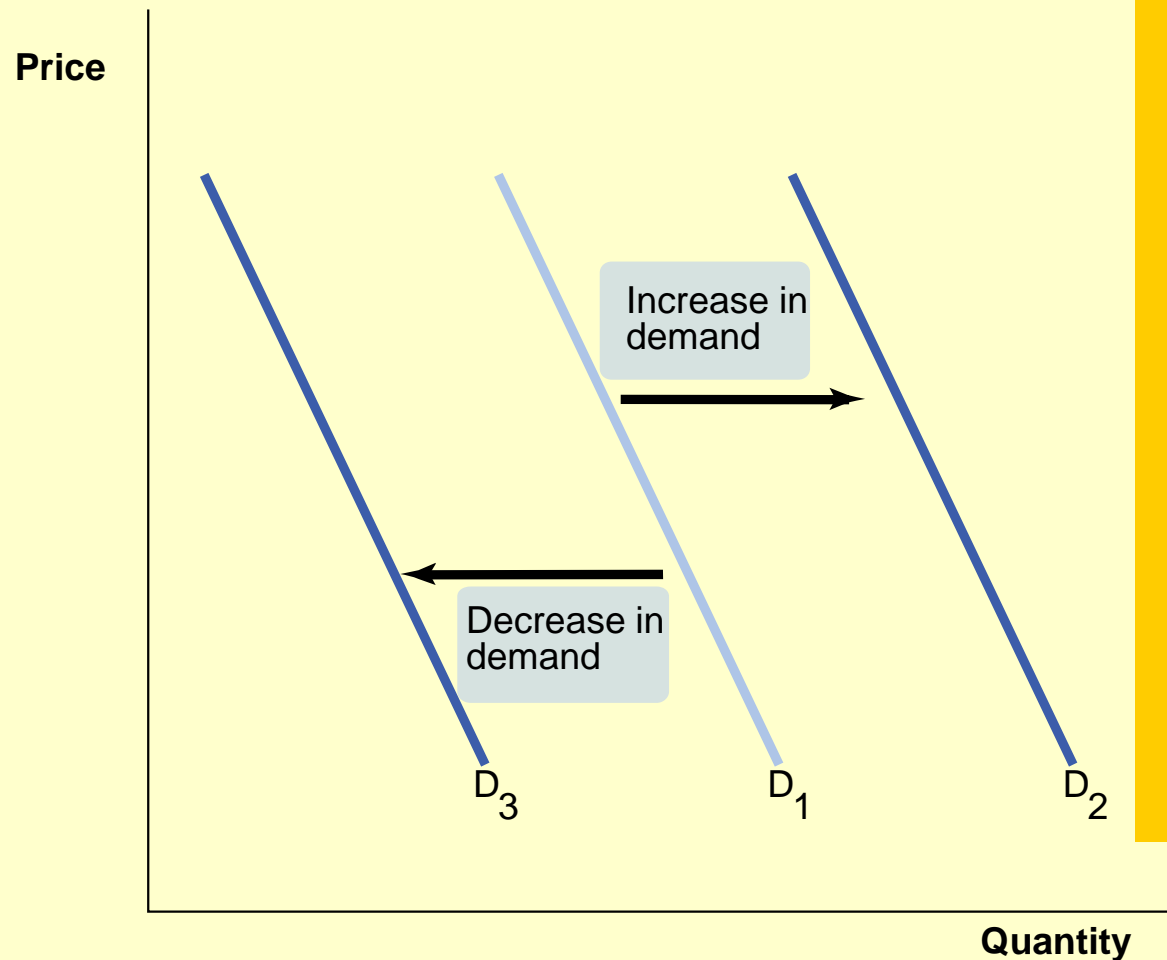
• A **shift of the demand curve** is a change in the quantity demanded at any given price, represented by the change of the original demand curve to a new position, denoted by a new demand curve.

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.

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. ($D_1 \rightarrow D_2$)

What causes a demand curve to shift?

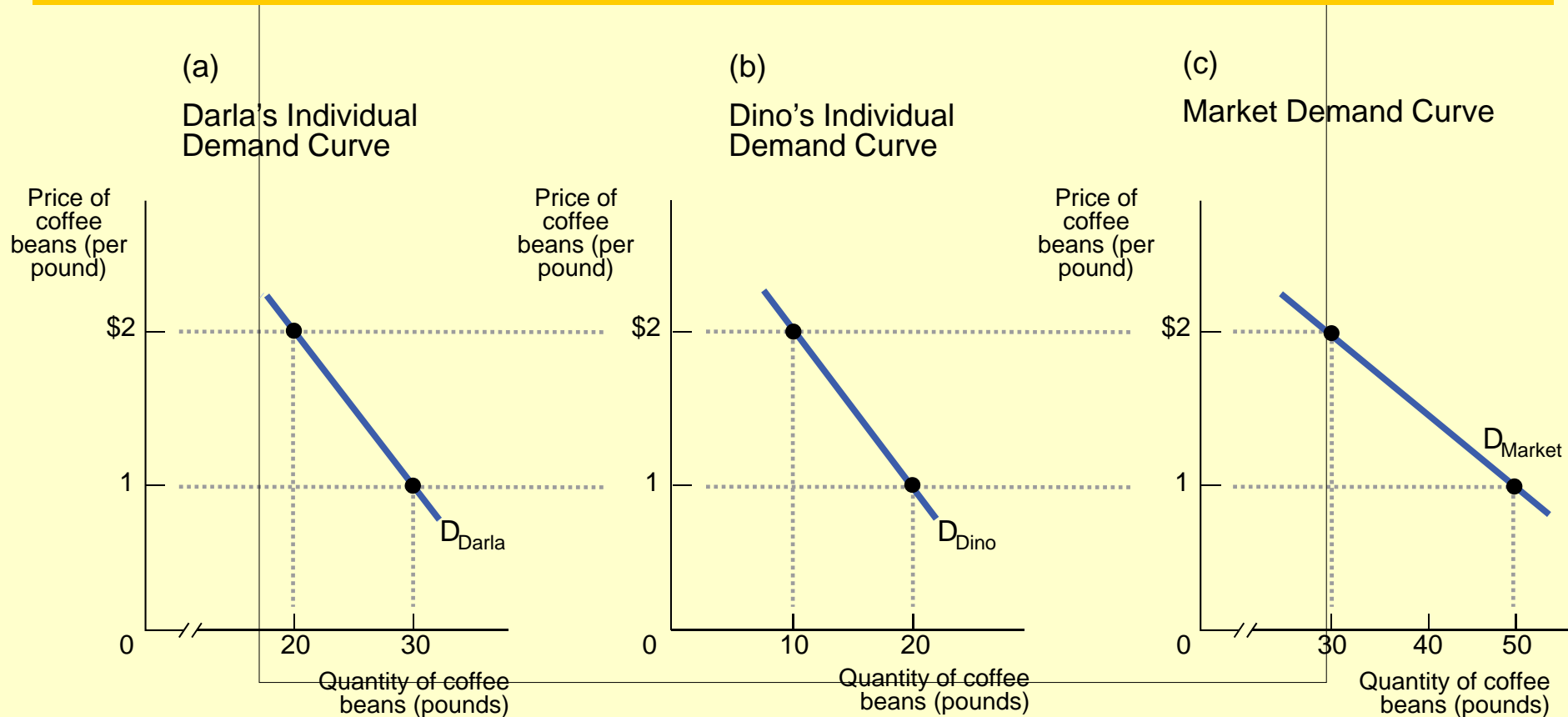
- Changes in the Prices of Related Goods
 - **Substitutes:** *Two goods are **substitutes** if a fall in the price of one of the goods makes consumers less willing to buy the other good.*
 - **Complements:** *Two goods are **complements** if a fall in the price of one good makes people more willing to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

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

Individual Demand Curve and the Market Demand Curve

The market demand curve is the *horizontal sum* of the individual demand curves of all consumers in that market.

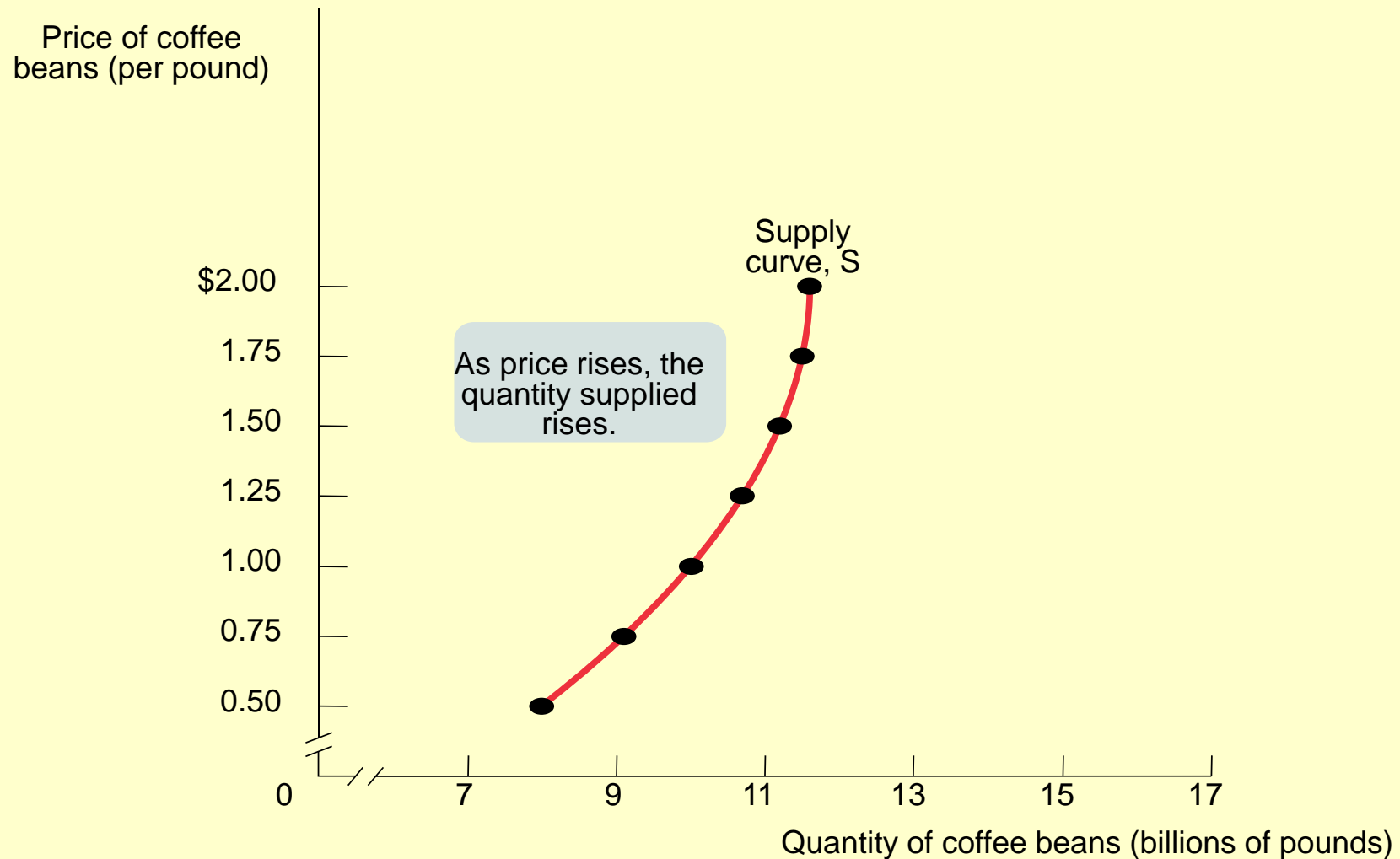


Supply Schedule

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

<i>Supply Schedule for Coffee Beans</i>	
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

Supply Curve



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

An Increase in Supply

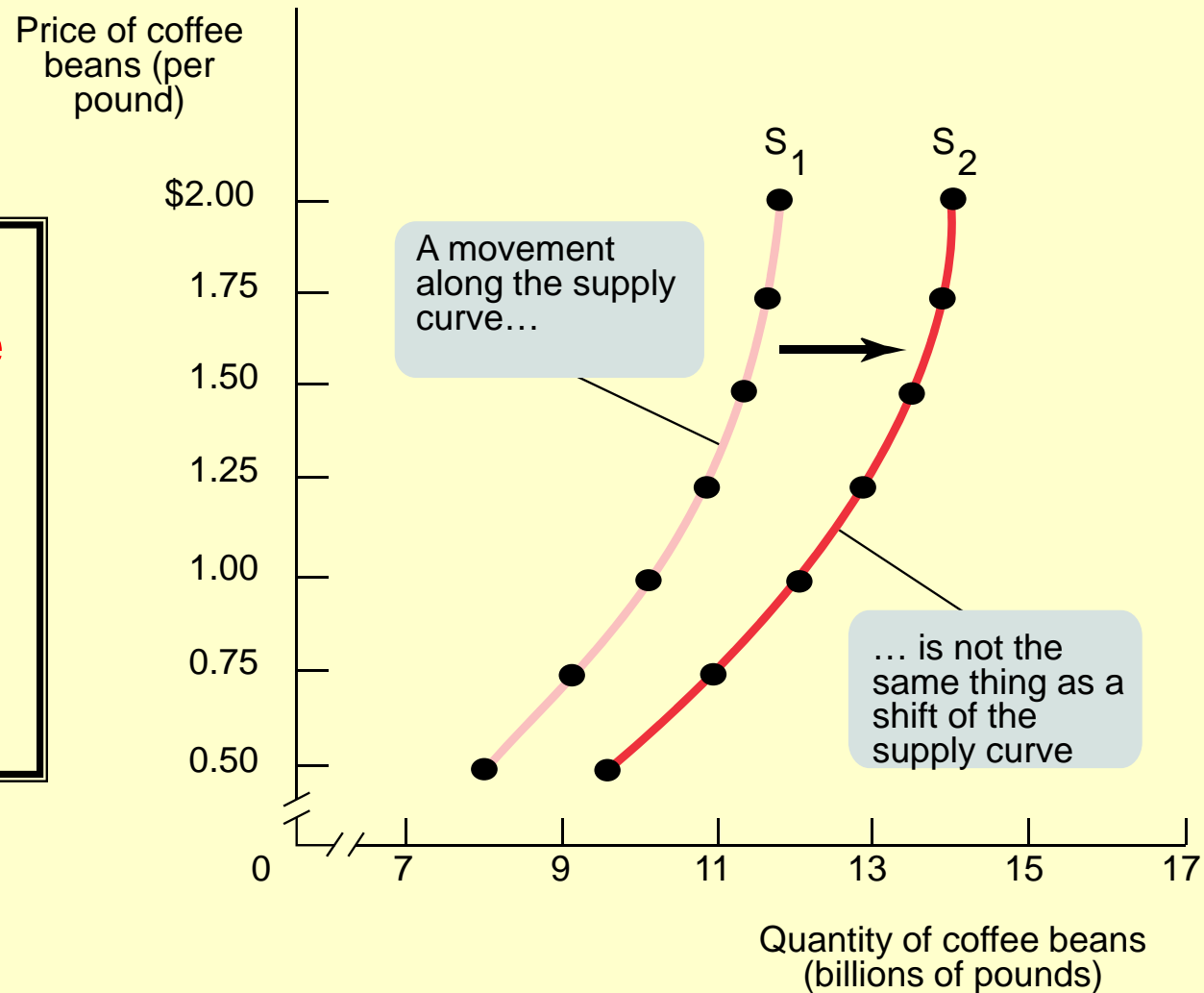
- The entry of Vietnam into the coffee bean business generated an increase in supply—a rise in the quantity supplied at any given price.
- This event is represented by the two supply schedules—one showing supply before Vietnam's entry, the other showing supply after Vietnam came in.

Supply Schedule for Coffee Beans

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

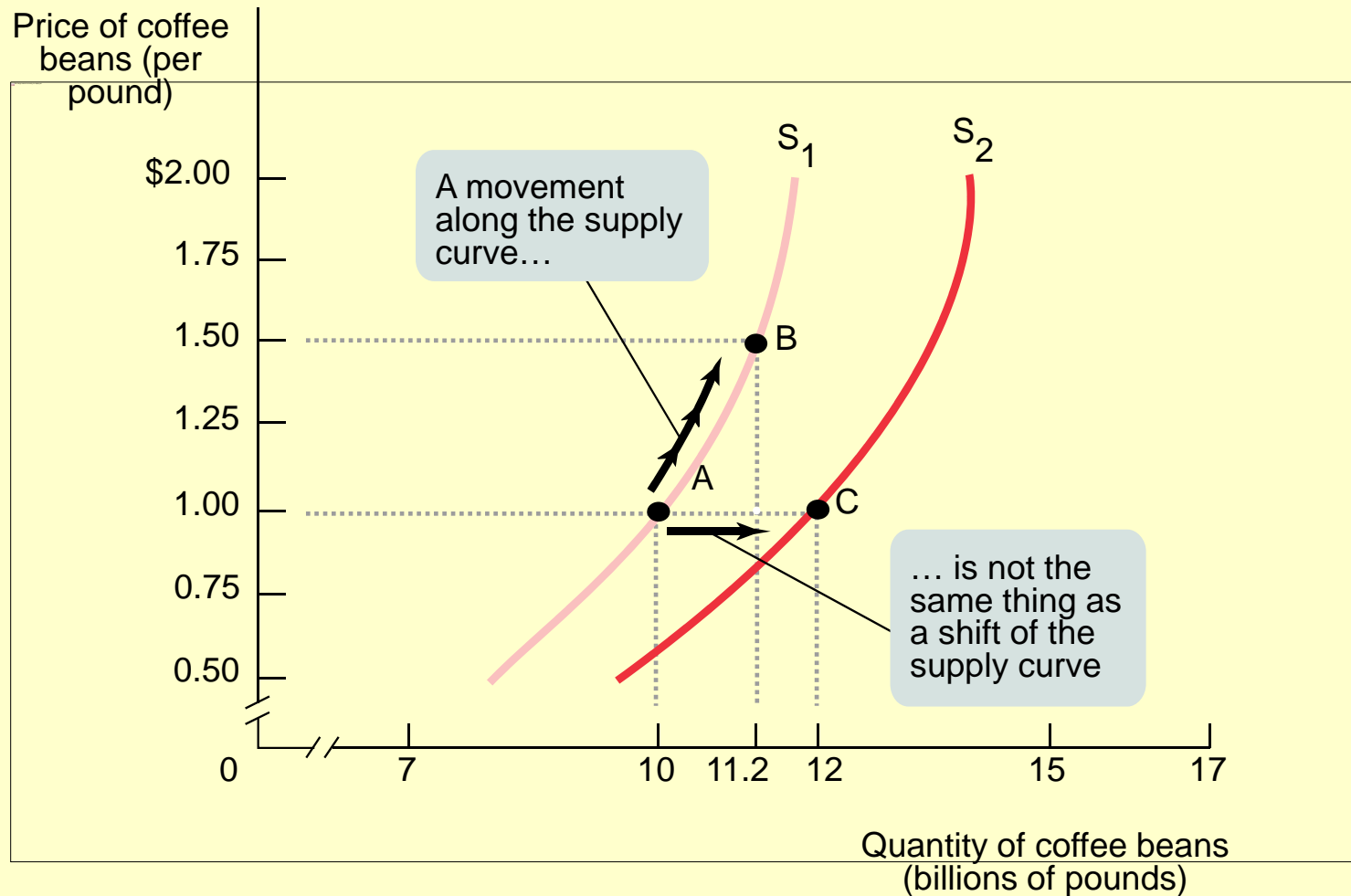
An Increase in Supply

Vietnam enters coffee bean business → More coffee producers



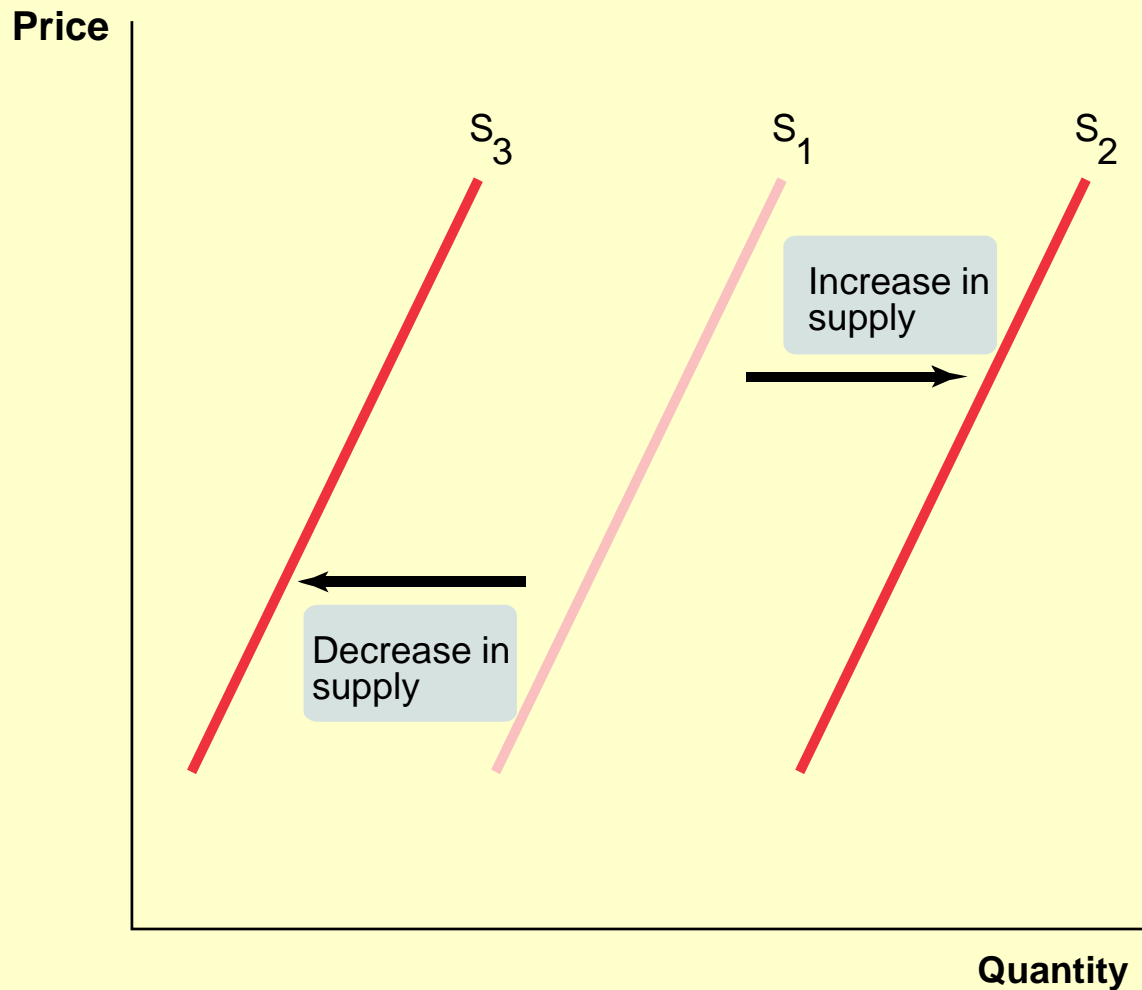
A shift of the supply curve is a change in the quantity supplied of a good at any given price.

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.

Shifts of the Supply Curve



➤ Any “**decrease in supply**” means a *leftward* shift of the supply curve:

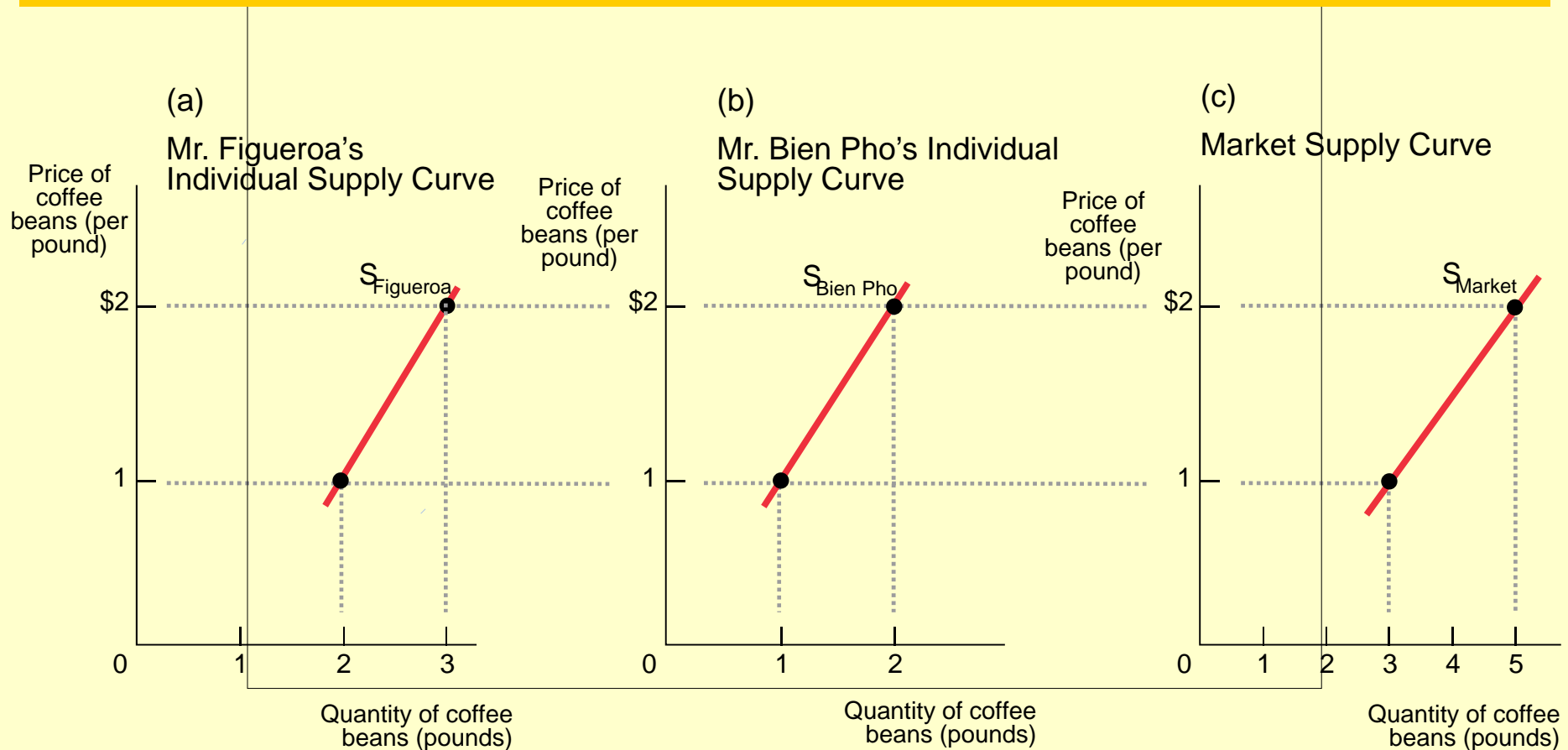
➤ at any given price, there is a decrease in the quantity supplied. ($S_1 \rightarrow S_3$)

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 Income
- Changes in Expectations

Individual Supply Curve and the Market Supply Curve

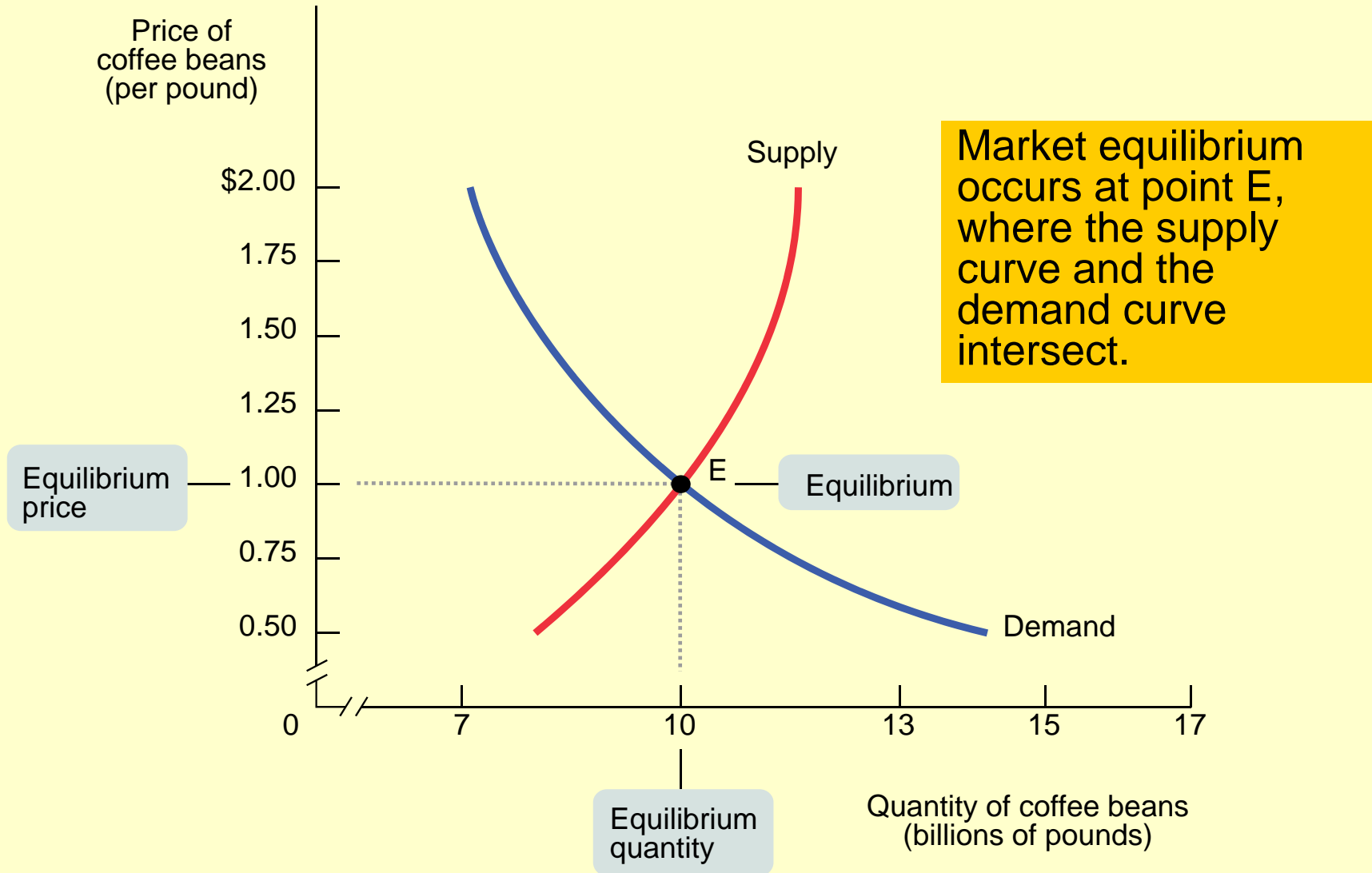
The market supply curve is the *horizontal sum* of the individual supply curves of all firms in that market.



Supply, Demand and Equilibrium

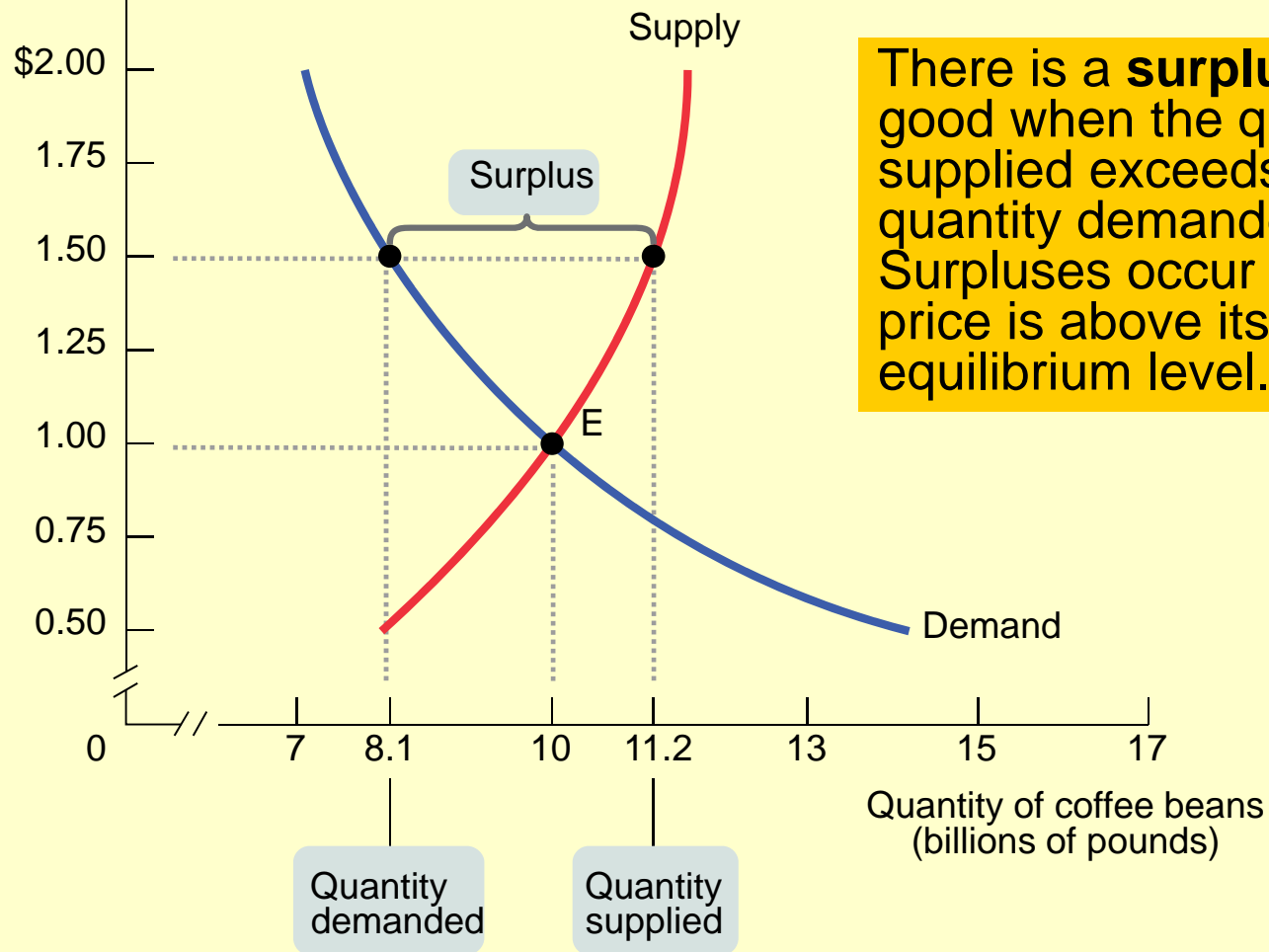
- **Equilibrium** in a competitive market: when the quantity demanded of a good equals the quantity supplied of that good.
 - The price at which this takes place is the **equilibrium price** (a.k.a. *market-clearing price*):
 - every buyer finds a seller and vice versa.
 - The quantity of the good bought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

Market Equilibrium



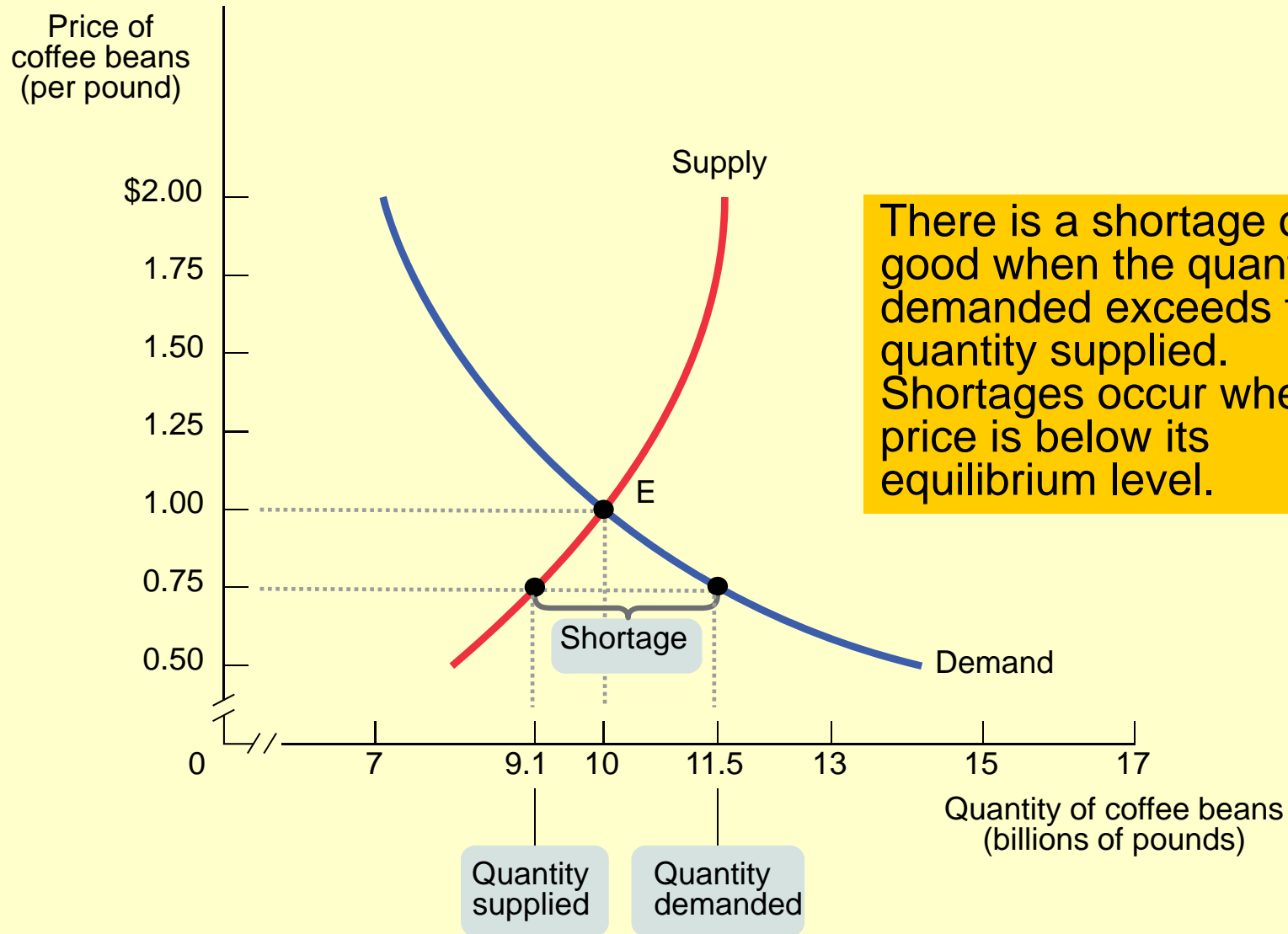
Surplus

Price of coffee beans (per pound)



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.

Shortage



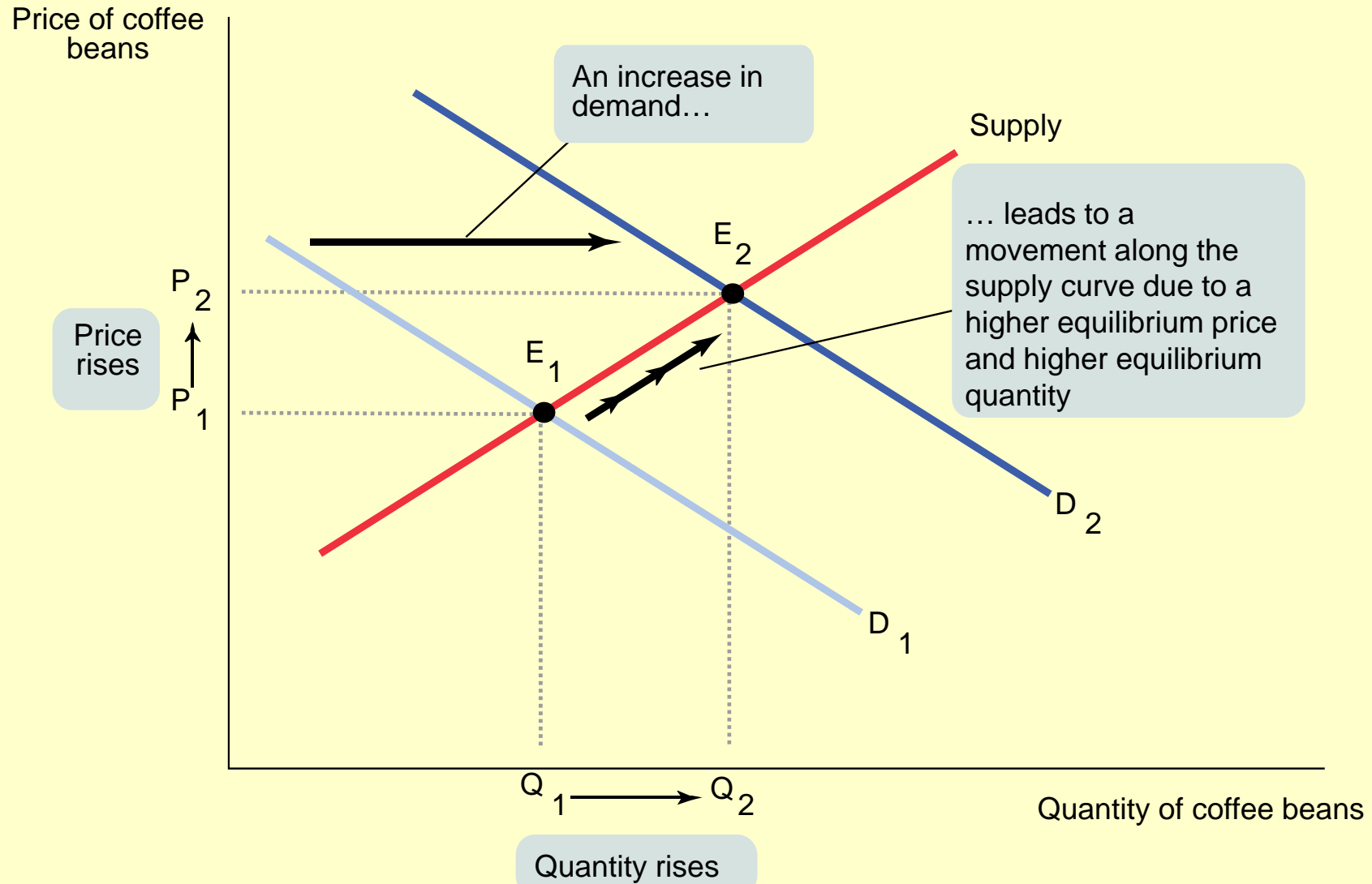
There is a shortage of a good when the quantity demanded exceeds the quantity supplied. Shortages occur when the price is below its equilibrium level.

► **ECONOMICS IN ACTION**

The Price of Admission:

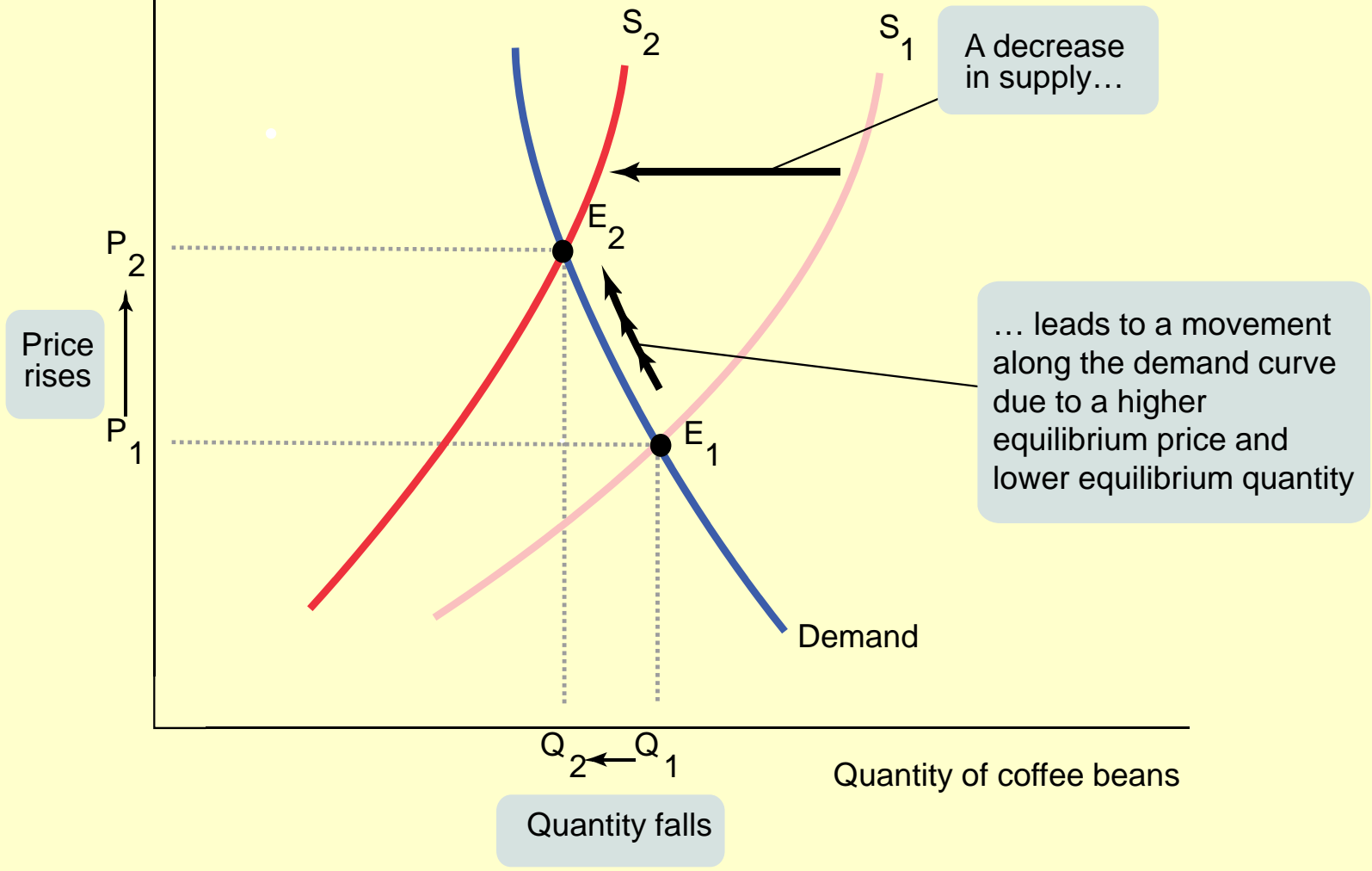
- Compare the box office price for a recent Justin Timberlake concert in Miami, Florida, to the StubHub.com price for seats in the same location: \$88.50 versus \$155.
- Why is there such a **big difference** in prices? For major events, buying tickets from the box office means waiting in very long lines. Ticket buyers who use Internet resellers have decided that the **opportunity cost** of their time is too high to spend waiting in line. And for those major events with online box offices selling tickets at face value, tickets often sell out within minutes.
- In this case, some people who want to go to the concert badly but have missed out on the opportunity to buy cheaper tickets from the online box office are willing to pay the higher Internet reseller price.

Equilibrium and Shifts of the Demand Curve

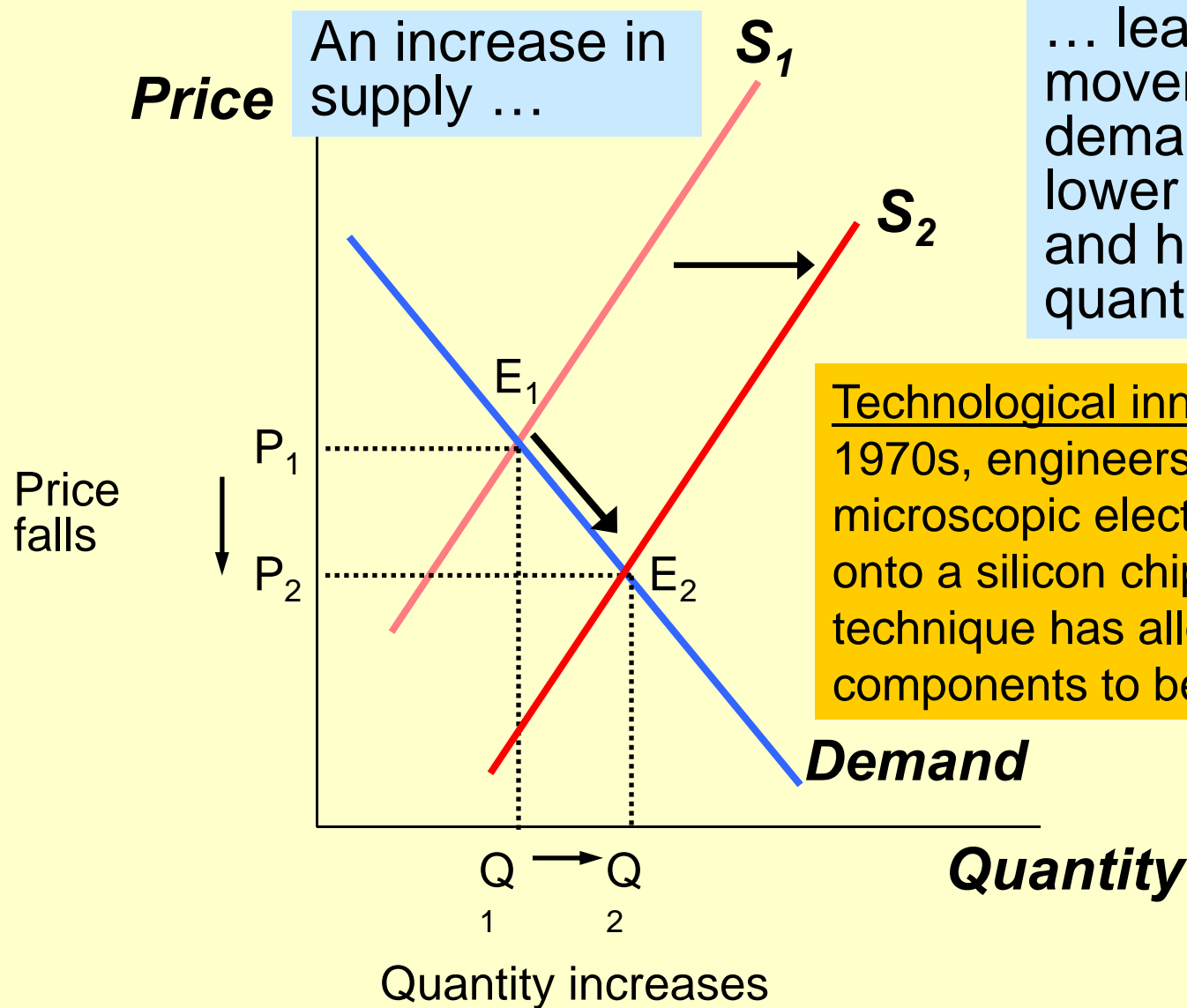


Equilibrium and Shifts of the Supply Curve

Price of coffee beans



Technology Shifts of the Supply Curve



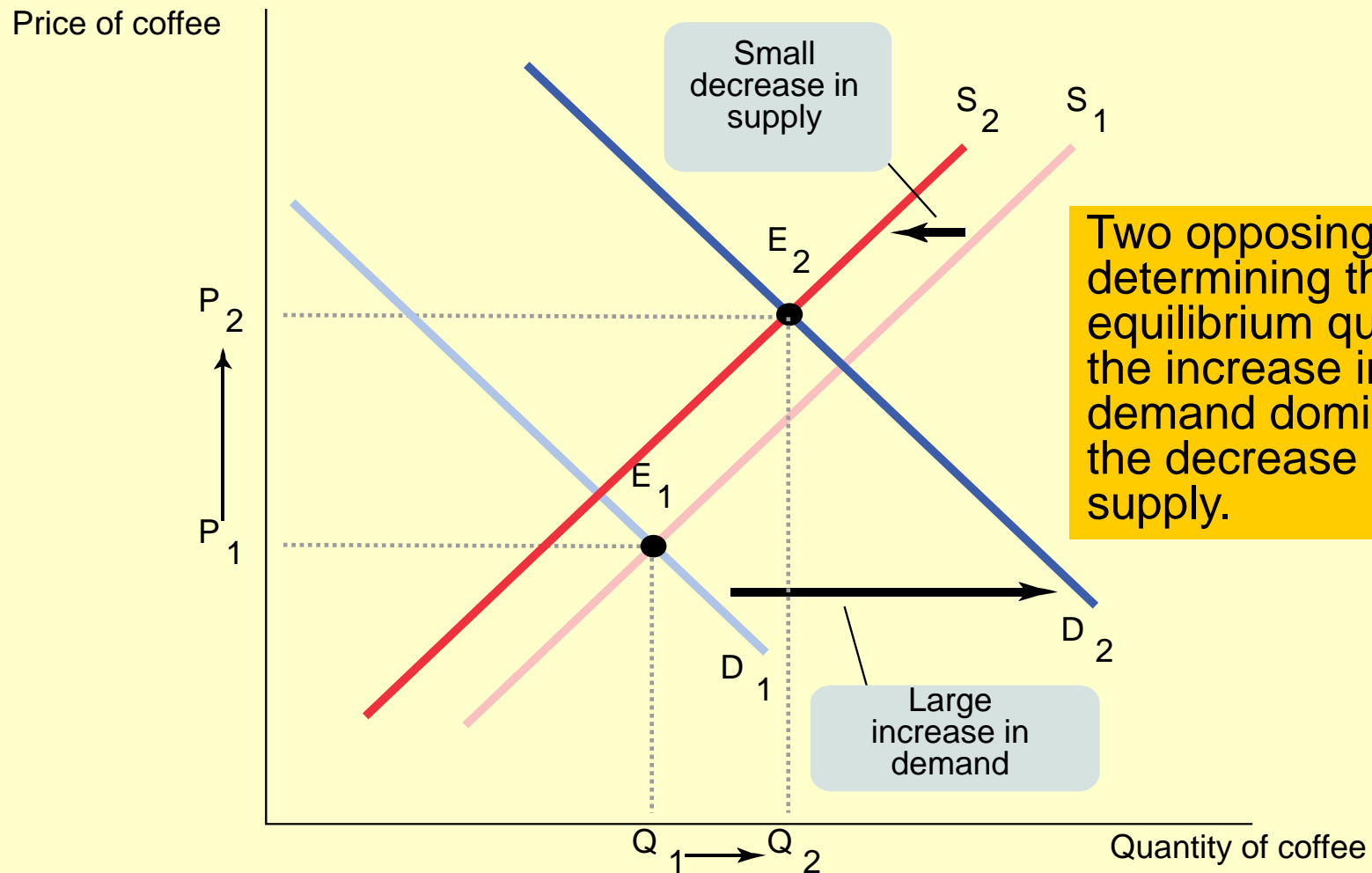
An increase in supply ...

... leads to a movement along the demand curve to a lower equilibrium price and higher equilibrium quantity.

Technological innovation: In the early 1970s, engineers learned how to put microscopic electronic components onto a silicon chip; progress in the technique has allowed ever more components to be put on each chip.

Simultaneous Shifts of the Demand and Supply Curves I (P up, Q up)

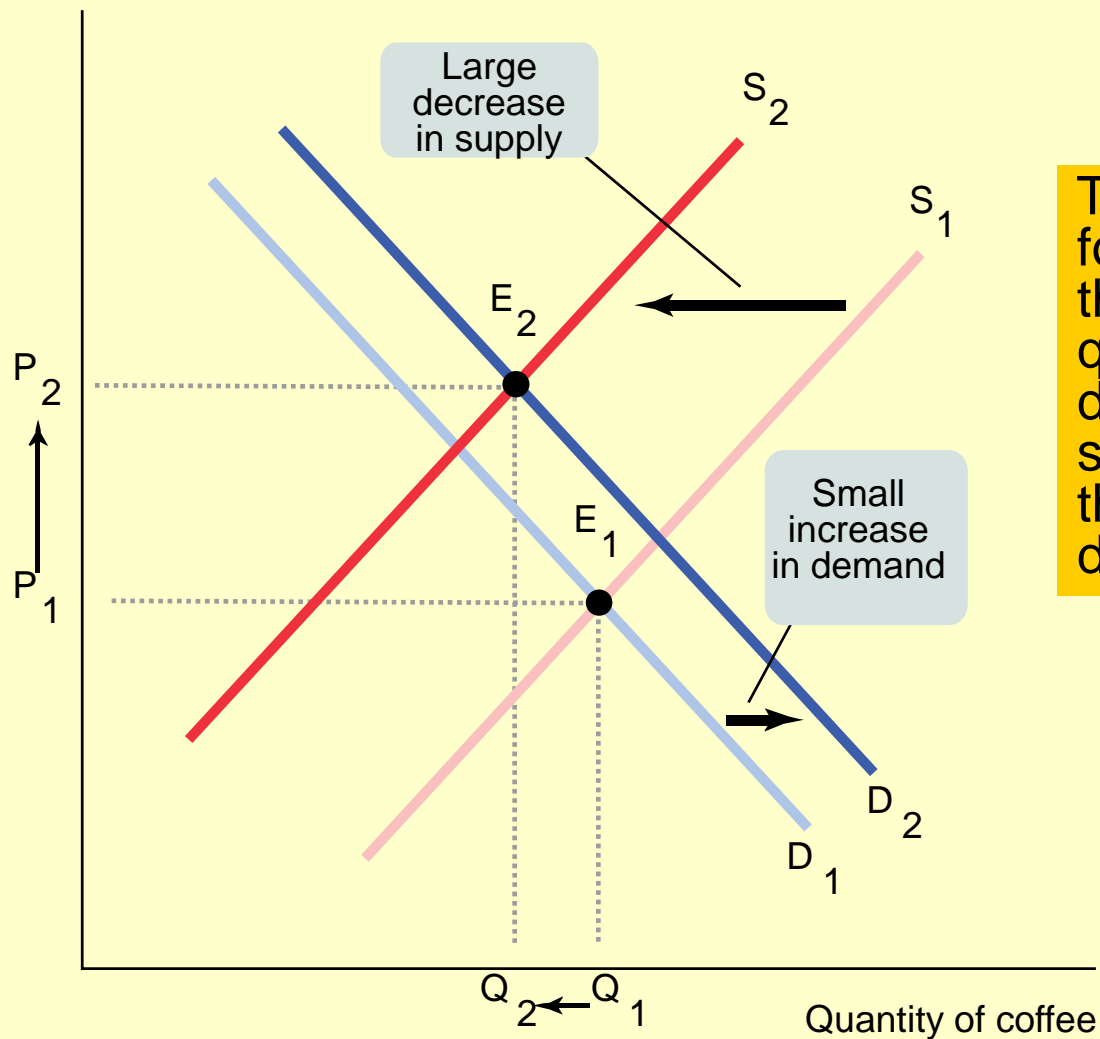
(a) One possible outcome: Price Rises, Quantity Rises



Simultaneous Shifts of the Demand and Supply Curves II (P up, Q down)

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

Price of coffee



Two opposing forces determining the equilibrium quantity: the decrease in supply dominates the increase in demand.

Simultaneous Shifts in Supply and Demand

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

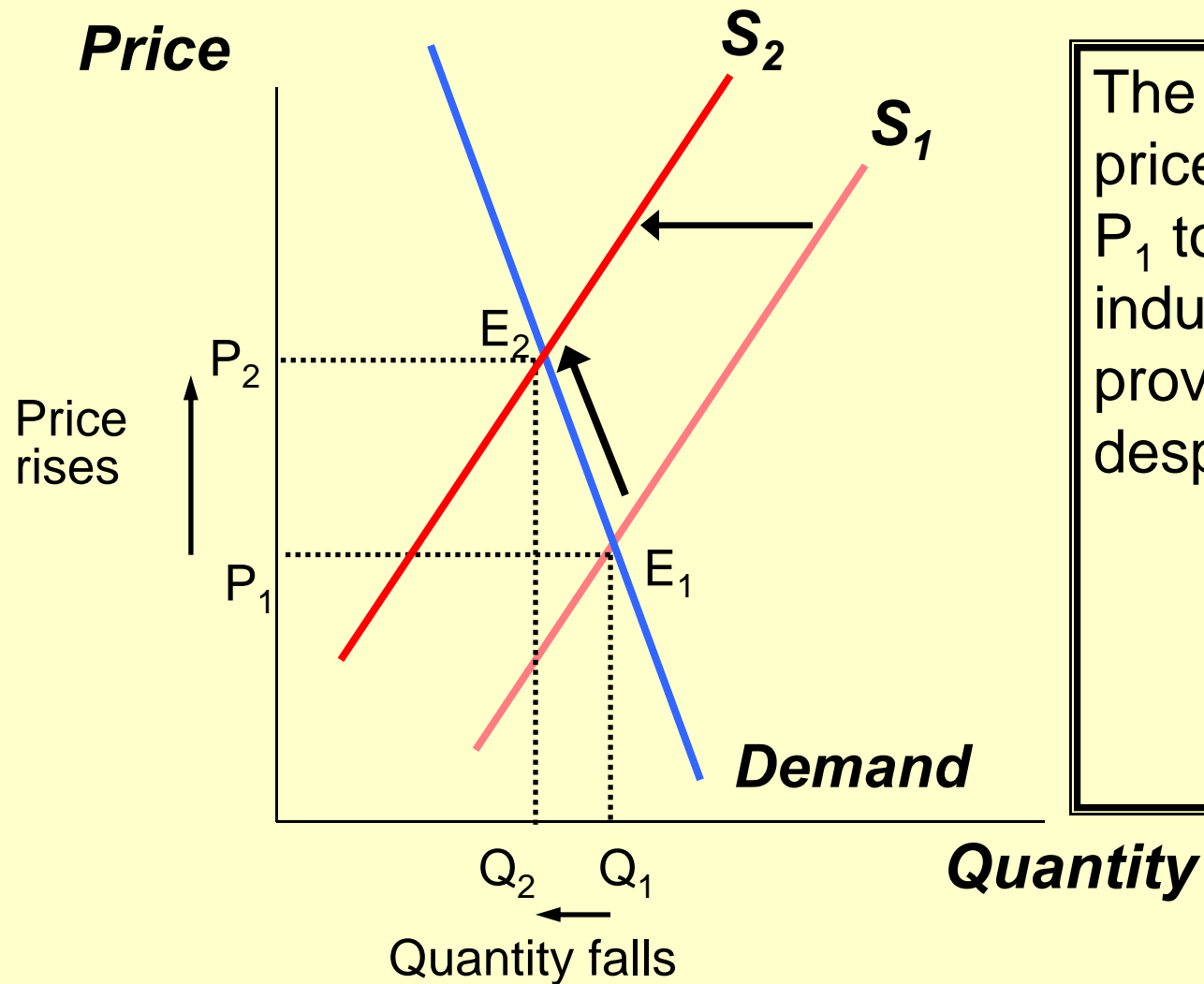
<i>Simultaneous Shifts of Supply and Demand</i>	Supply Increases	Supply Decreases
Demand Increases	<u>Price</u> : ambiguous <u>Quantity</u> : up	<u>Price</u> : up <u>Quantity</u> : ambiguous
Demand Decreases	<u>Price</u> : down <u>Quantity</u> : ambiguous	<u>Price</u> : ambiguous <u>Quantity</u> : down

Your turn on the runway: **An Exercise of Supply, Demand and Supermodels**

- The ease of transmitting photos over the Internet and the relatively low cost of international travel → beautiful young women from all over the world, eagerly trying to make it as models: **influx of aspiring models from around the world**
- In addition the tastes of many of those who hire models have changed → they prefer celebrities
- What happened to the equilibrium price of a young (not a celebrity) fashion model? Use your supply and demand curves to determine the salaries of “America’s Next Best Models”...

FOR INQUIRING MINDS

Another Example: *Supply, Demand and Controlled Substances*



The equilibrium price has risen from P_1 to P_2 , and this induces suppliers to provide drugs despite the risks.

► **ECONOMICS IN ACTION**

The Great Tortilla Crises:

- A sharp rise in the price of tortillas, a staple food of Mexico's poor, which had gone from 25 cents a pound to between 35 and 45 cents a pound in just a few months in early 2007.

Why were tortilla prices soaring?

- It was a classic example of what happens to equilibrium prices when supply falls. Tortillas are made from corn; much of Mexico's corn is imported from the United States, with the price of corn in both countries basically set in the U.S. corn market. And U.S. corn prices were rising rapidly thanks to surging demand in a new market: the market for ethanol.

Demand and supply shifts at work in the global economy

- A recent **drought in Australia** reduced the amount of grass on which Australian dairy cows could feed, thus limiting the amount of milk these cows produced for export.
- At the same time, a **new tax levied by the government of Argentina** raised the price of the milk the country exported, thereby decreasing Argentine milk sales worldwide.
- These two developments produced a supply shortage in the world market, which dairy farmers in Europe couldn't fill because of strict production **quotas set by the European Union**.

Demand and supply shifts at work in the global economy

- **In China**, meanwhile, demand for milk and milk products increased, as rising income levels drove higher per-capita consumption.
- **All these occurrences resulted in a strong upward pressure on the price of milk everywhere in 2007.**



SUMMARY

1. The **supply and demand model** illustrates how a **competitive market** works.
2. The **demand schedule** shows the **quantity demanded** at each price and is represented graphically by a **demand curve**. The **law of demand** says that demand curves slope downward.
3. A **movement along the demand curve** occurs when a price change leads to a change in the quantity demanded. When economists talk of increasing or decreasing demand, they mean **shifts of the demand curve**—a change in the quantity demanded at any given price.

SUMMARY

4. There are five main factors that shift the demand curve:
 - A change in the prices of related goods or services
 - A change in income
 - A change in tastes
 - A change in expectations
 - A change in the number of consumers
5. The market demand curve for a good or service is the horizontal sum of the **individual demand curves** of all consumers in the market.
6. The **supply schedule** shows the **quantity supplied** at each price and is represented graphically by a **supply curve**. Supply curves usually slope upward.

SUMMARY

7. A **movement along the supply curve** occurs when a price change leads to a change in the quantity supplied. When economists talk of increasing or decreasing supply, they mean **shifts of the supply curve**—a change in the quantity supplied at any given price.
8. There are five main factors that shift the supply curve:
 - A change in **input** prices
 - A change in the prices of related goods and services
 - A change in technology
 - A change in expectations
 - A change in the number of producers
9. The market supply curve for a good or service is the horizontal sum of the **individual supply curves** of all producers in the market.

SUMMARY

10. The supply and demand model is based on the principle that the price in a market moves to its **equilibrium price**, or **market-clearing price**, the price at which the quantity demanded is equal to the quantity supplied. This quantity is the **equilibrium quantity**. When the price is above its market-clearing level, there is a **surplus** that pushes the price down. When the price is below its market-clearing level, there is a **shortage** that pushes the price up.
11. An increase in demand increases both the equilibrium price and the equilibrium quantity; a decrease in demand has the opposite effect. An increase in supply reduces the equilibrium price and increases the equilibrium quantity; a decrease in supply has the opposite effect.
12. Shifts of the demand curve and the supply curve can happen simultaneously.