



EC1101E:

Introduction to Economic Analysis

Lecture 2

How Markets Work

- Demand
- Supply
- Supply and Demand

Supply and Demand



- The **supply and demand model** shows
 - how supply and demand determine *prices* in a **market economy**
 - how *prices* allocate the economy's scarce resources

Markets and Competition

- A **market economy** allocates resources through the decentralized decisions of households and firms as they interact in markets for goods and services.
- A **market** is a group of *buyers* and *sellers* of a particular good or service.
- In **perfectly competitive markets**:
 - Goods and services are practically *identical*.
 - Buyers and sellers are so numerous that no one can affect the market price — everyone is a **price taker**.

Demand

Demand

- The *quantity demanded* of any good is the amount of the good that buyers are willing and able to purchase.
- **Law of demand:**
As the price of a good ,
the quantity demanded ,
ceteris paribus.

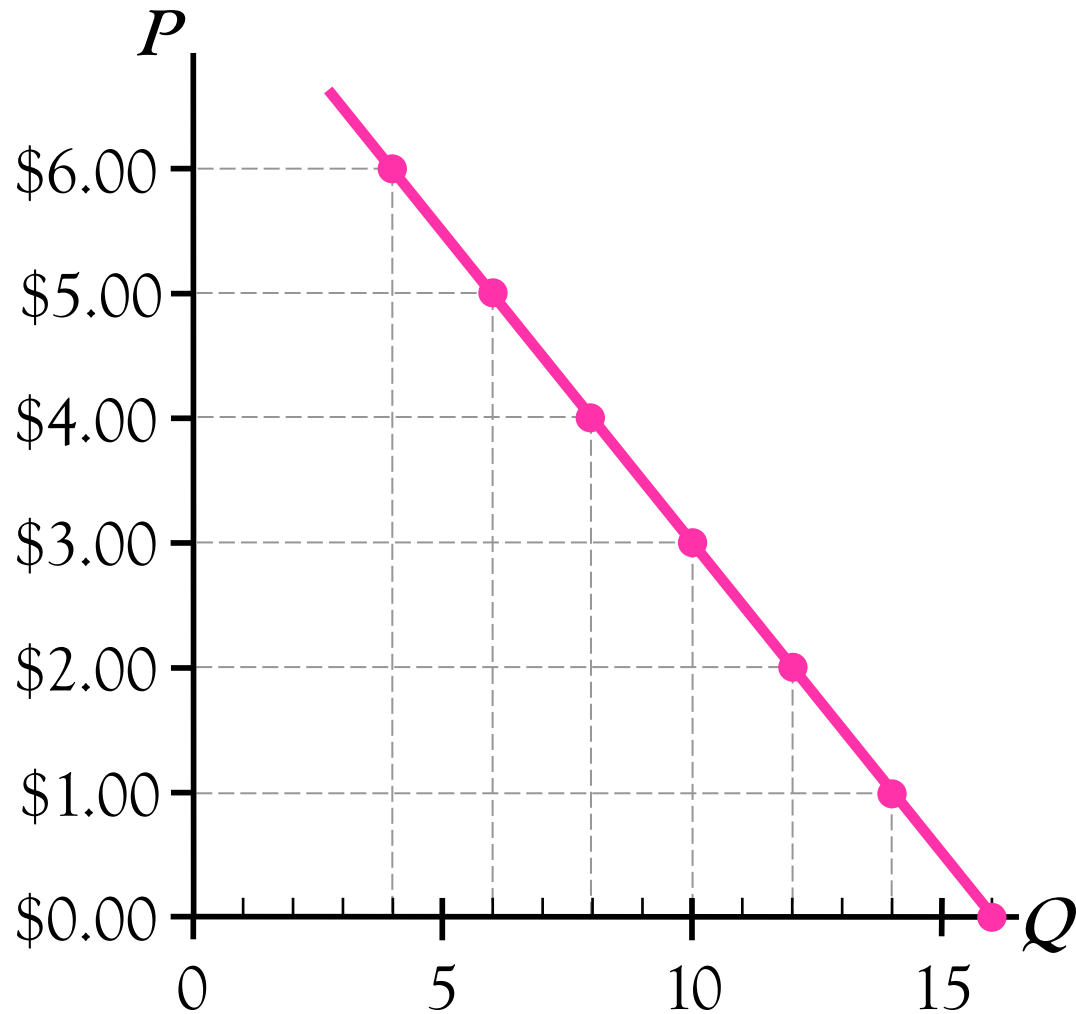
People Respond to Changes in Costs and Benefits

The Demand Schedule

- **Demand schedule:**
a table that shows
the relationship between
the *price* of a good and
the *quantity demanded*
- *Example:*
Tom's demand for lattes
- Notice that Tom's preferences
obey the Law of Demand.

Price of lattes	Quantity of lattes demanded
\$0.00	16
1.00	14
2.00	12
3.00	10
4.00	8
5.00	6
6.00	4

The Demand Curve



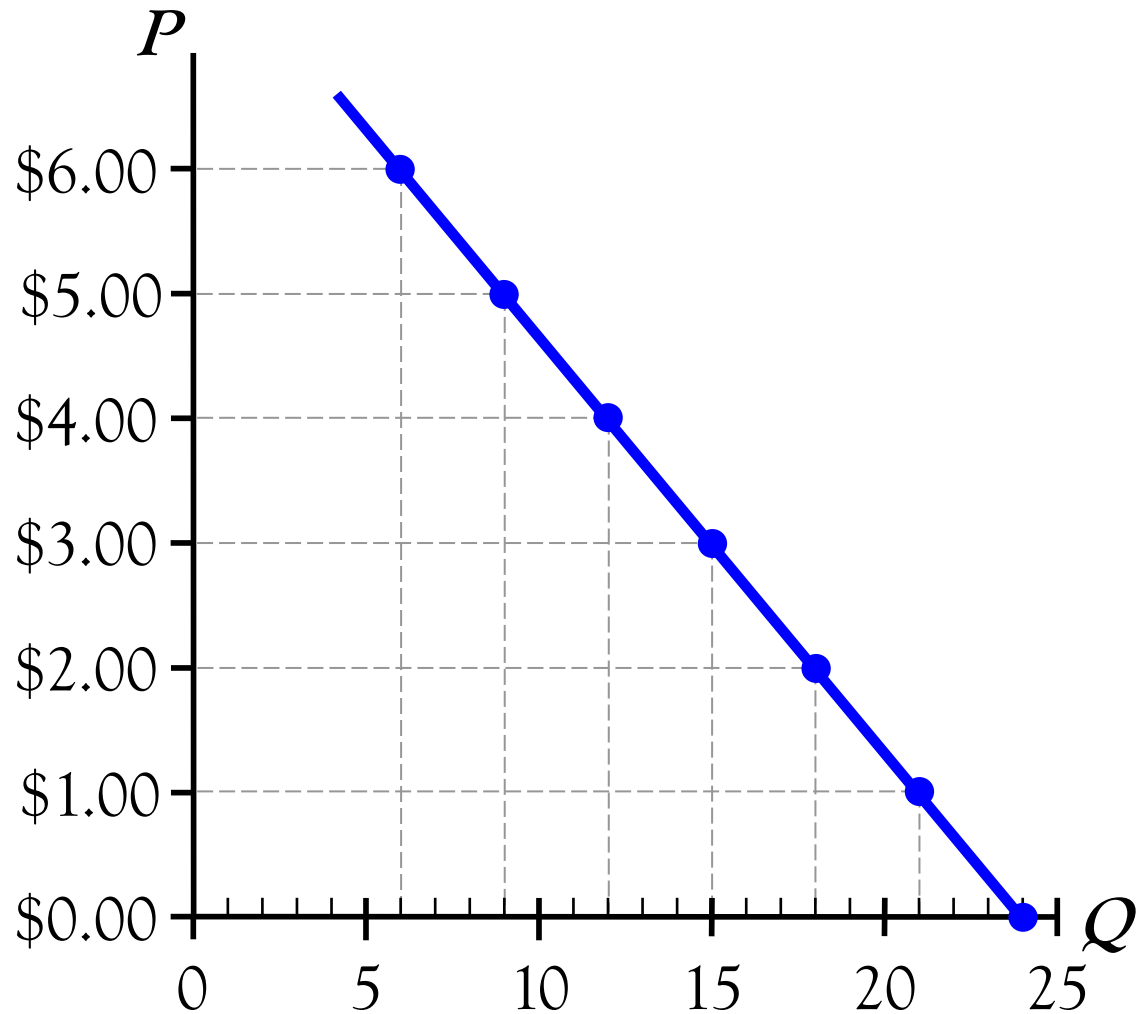
Price of lattes	Quantity of lattes demanded
\$0.00	16
1.00	14
2.00	12
3.00	10
4.00	8
5.00	6
6.00	4

Market Demand vs. Individual Demand

- The *quantity demanded in the market* is the sum of the quantities demanded by all buyers at each price.
- Suppose Tom and Jerry are the only two buyers in the latte market.

Price	Tom's Q^D		Jerry's Q^D		Market Q^D
\$0.00	16	+	8	=	24
1.00	14	+	7	=	21
2.00	12	+	6	=	18
3.00	10	+	5	=	15
4.00	8	+	4	=	12
5.00	6	+	3	=	9
6.00	4	+	2	=	6

The Market Demand Curve for Lattes




P	Q^D (Market)
\$0.00	24
1.00	21
2.00	18
3.00	15
4.00	12
5.00	9
6.00	6

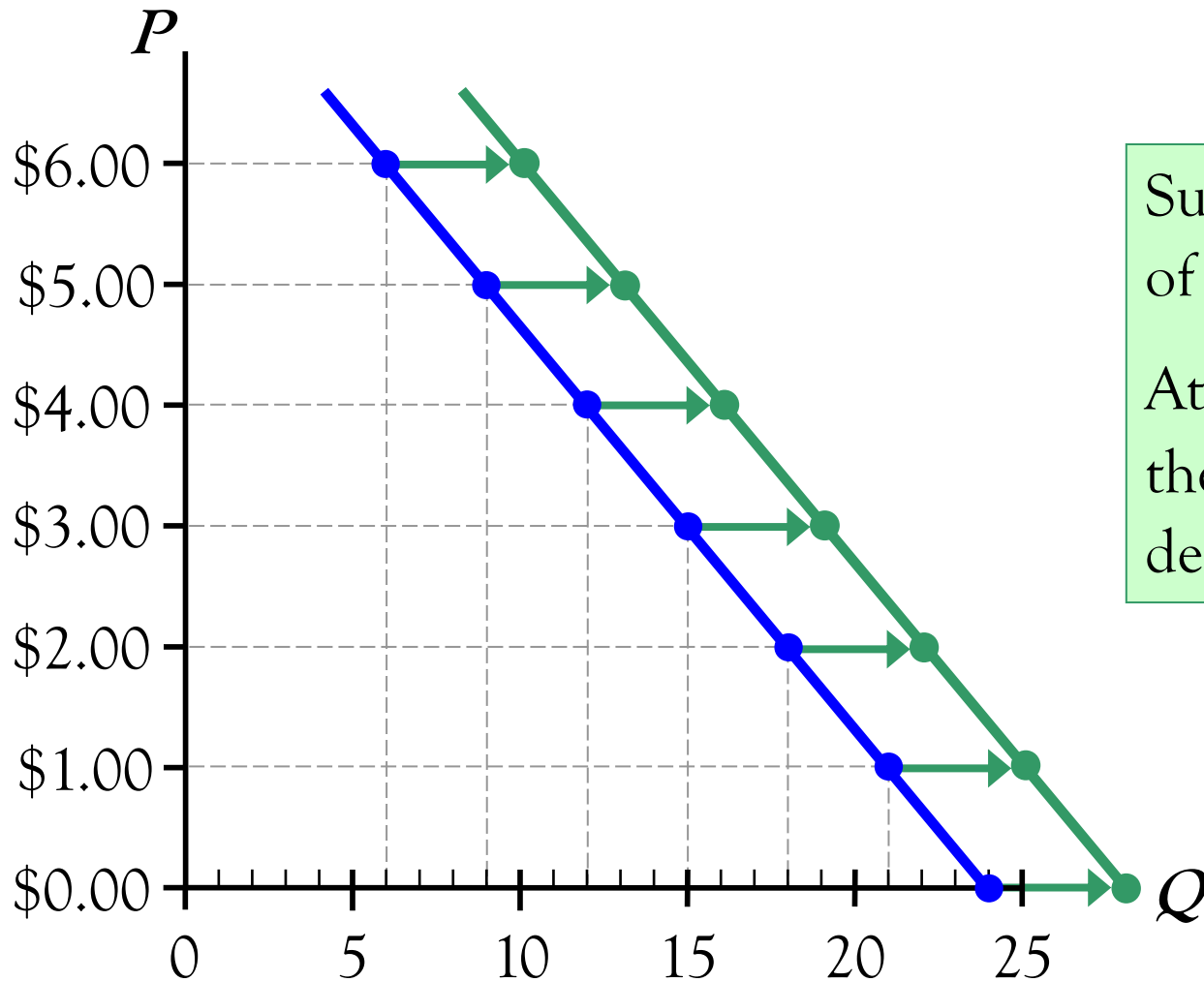
Demand Curve Shifters

- The demand curve shows
how price affects quantity demanded,
other things equal.
- These “other things”
are the non-price determinants of demand
(*i.e.*, things that affect buyers’ demand for a good
other than the good’s price).
- Changes in them shift the *D* curve ...

Demand Curve Shifters: Number of Buyers

- An increase in the number of buyers
 -  quantity demanded at each price
 - shifts *D* curve to the *right*


Demand Curve Shifters: Number of Buyers




Suppose the number of buyers increases.

At each price, the quantity of lattes demanded will \uparrow .

Demand Curve Shifters: **Income**

- Demand for a **normal good** is *positively* related to income.
- An increase in income
 -  quantity demanded at each price
 - shifts *D* curve to the *right*

Demand Curve Shifters: **Income**

- Demand for an **inferior good** is *negatively* related to income.
- An increase in income
 -  quantity demanded at each price
 - shifts *D* curve to the *left*


Demand Curve Shifters: Prices of Related Goods

- Two goods are **substitutes** if
an increase in the price of one good
causes a(n) *increase* in the demand for the other good.
- For example,
 - *Nasi lemak* and chicken rice.
 - iPhones and Android phones.
 - Coke and Pepsi.



Demand Curve Shifters: Prices of Related Goods

- Two goods are **complements** if
an increase in the price of one good
causes a(n) *decrease* in the demand for the other good.
- For example,
 - *Nasi lemak* and *teh tarik*.
 - Video game consoles and video games.
 - Burgers and fries.

Demand Curve Shifters: Tastes

- Anything that causes a shift in tastes toward a good will  demand for that good and shift its *D* curve to the right.
- For example, Steven Spielberg's film *Jurassic Park* appeared to kindle a powerful, if previously latent, preference among children for toy dinosaurs.

Demand Curve Shifters: **Expectations**

- Expectations affect consumers' buying decisions, *e.g.*,
 - If people expect their incomes to rise, their demand for meals at expensive restaurants may  now.
 - If the economy sours and people worry about their future job security, their demand for new cars may  now.

Summary: Variables that Influence Buyers

Variable	A change in this variable
Price	... causes a movement along the <i>D</i> curve
Number of buyers	... shifts the <i>D</i> curve
Income	... shifts the <i>D</i> curve
Price of related goods	... shifts the <i>D</i> curve
Tastes	... shifts the <i>D</i> curve
Expectations	... shifts the <i>D</i> curve

ACTIVE LEARNING 2.1

Demand Curve

Draw a demand curve for *roti prata*. What happens to the demand curve in each of the following scenarios?

- A. The price of *teh tarik* falls.
- B. The price of *roti prata* falls.
- C. The price of *naan* falls.

ACTIVE LEARNING 2.1

A. The price of *teh tarik* falls

ACTIVE LEARNING 2.1

B. The price of *roti prata* falls

ACTIVE LEARNING 2.1

C. The price of *naan* falls

Supply

Supply

- The *quantity supplied* of any good is the amount of the good that sellers are willing and able to sell.
- **Law of supply:**
As the price of a good ↑,
the quantity supplied ↑,
ceteris paribus.

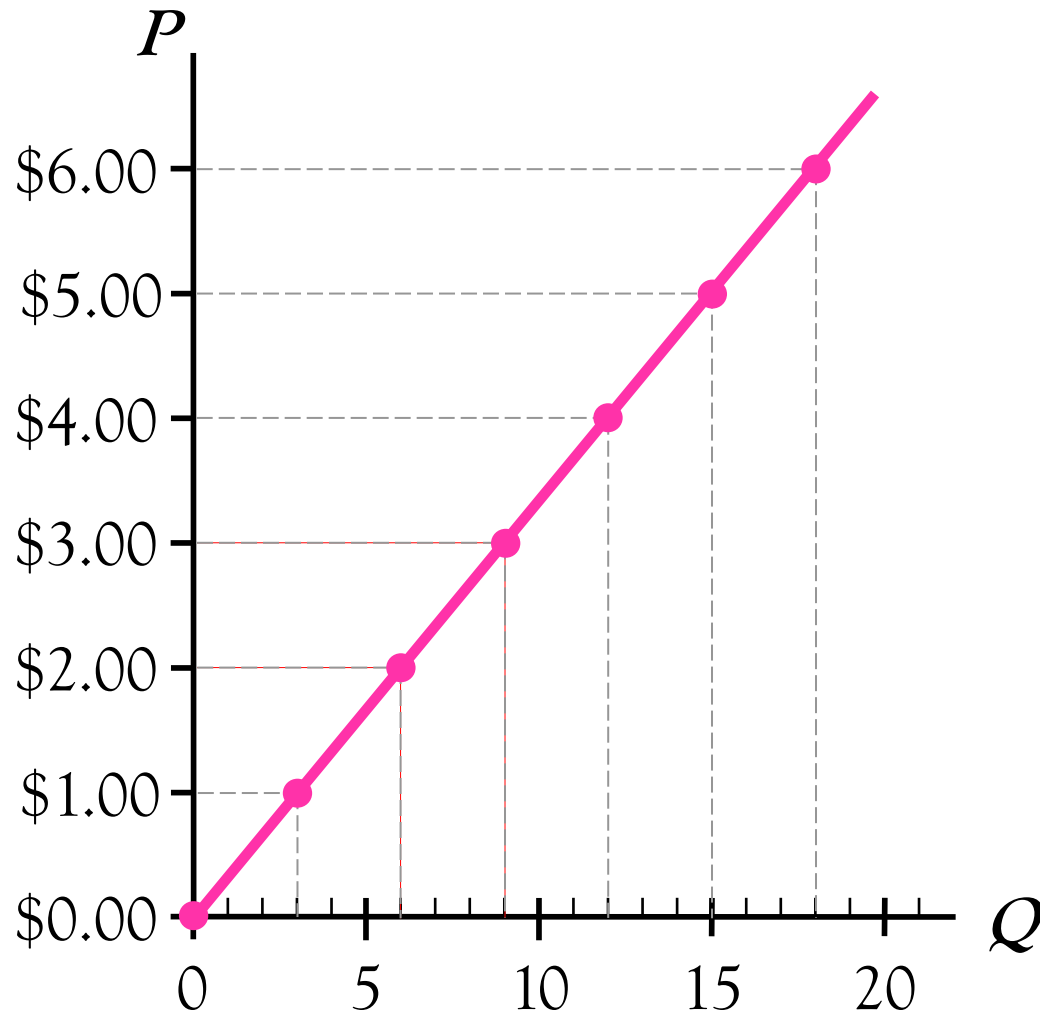
People Respond to Changes in Costs and Benefits

The Supply Schedule

- **Supply schedule:**
a table that shows the relationship between the *price* of a good and the *quantity supplied*
- *Example:*
Starbucks' supply of lattes
- Notice that Starbucks' supply schedule obeys the Law of Supply.

Price of lattes	Quantity of lattes supplied
\$0.00	0
1.00	3
2.00	6
3.00	9
4.00	12
5.00	15
6.00	18

The Supply Schedule



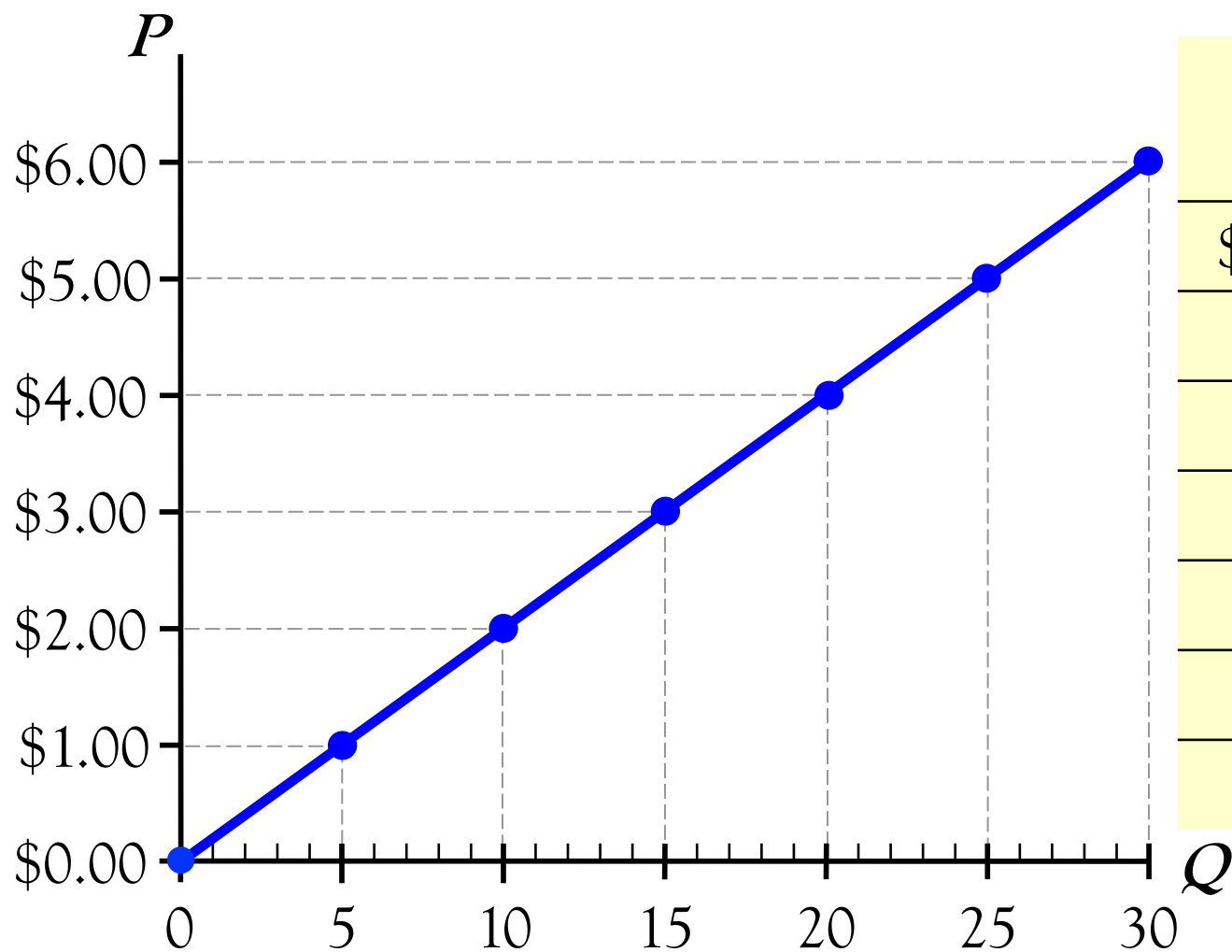
Price of lattes	Quantity of lattes supplied
\$0.00	0
1.00	3
2.00	6
3.00	9
4.00	12
5.00	15
6.00	18

Market Supply vs. Individual Supply

- The *quantity supplied in the market* is the sum of the quantities supplied by all sellers at each price.
- Suppose Starbucks and Coffee Bean are the only two sellers in this market.

Price	Starbucks		Coffee Bean		Market Q^s
\$0.00	0	+	0	=	0
1.00	3	+	2	=	5
2.00	6	+	4	=	10
3.00	9	+	6	=	15
4.00	12	+	8	=	20
5.00	15	+	10	=	25
6.00	18	+	12	=	30

The Market Supply Curve




P	Q^s (Market)
\$0.00	0
1.00	5
2.00	10
3.00	15
4.00	20
5.00	25
6.00	30

Supply Curve Shifters

- The supply curve shows
how price affects quantity supplied,
other things equal.
- These “other things”
are the non-price determinants of supply
(*i.e.*, things that affect sellers’ supply of a good
other than the good’s price).
- Changes in them shift the S curve ...

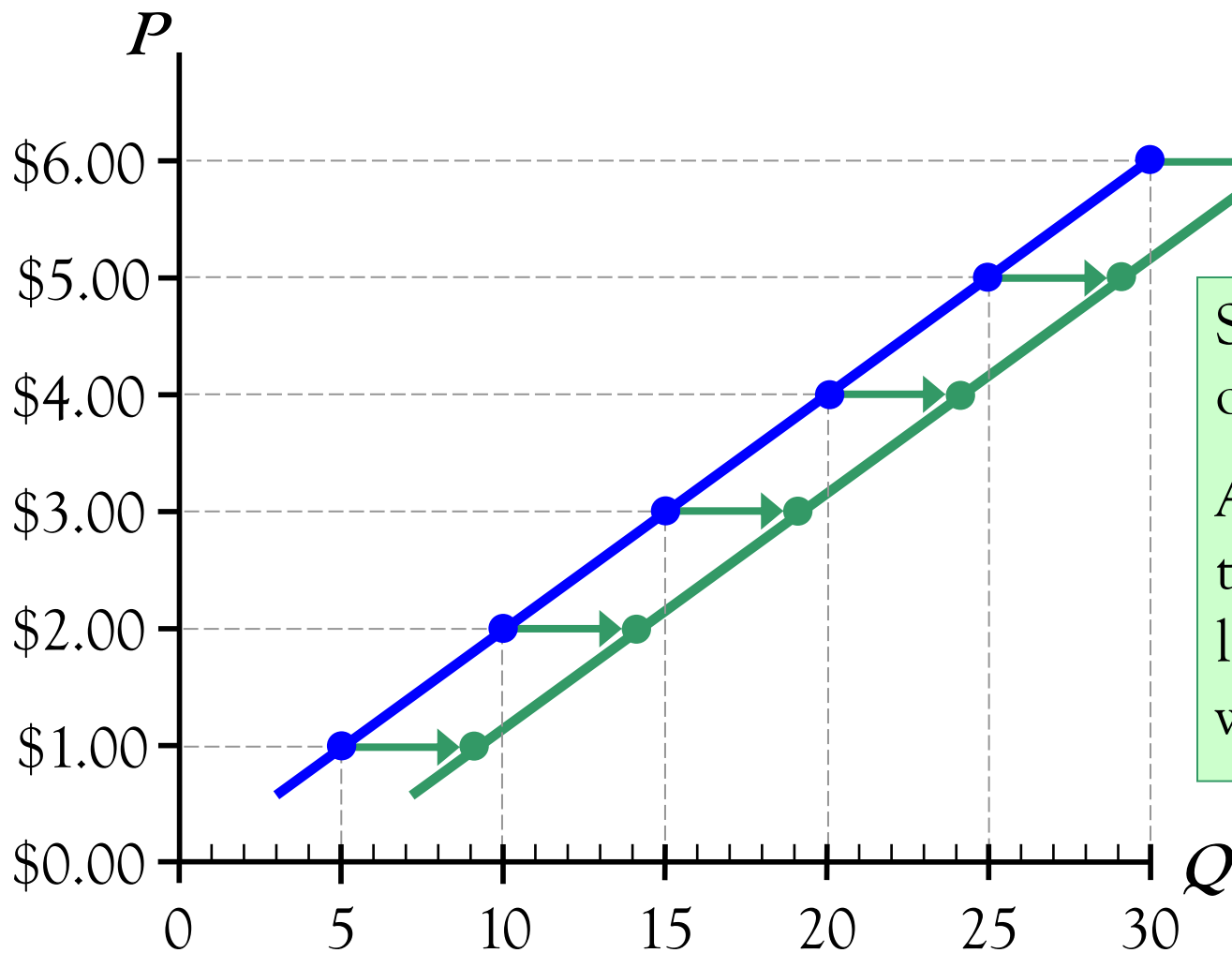
Supply Curve Shifters: Number of Sellers

- An increase in the number of sellers
 -  quantity supplied at each price
 - shifts *S* curve to the *right*

Supply Curve Shifters: Input Prices

- Examples of input prices:
prices of raw material, wages, prices of machinery,
rental prices of retail space.
- A fall in input prices
makes production *more* profitable at each output price;
so firms supply a *larger* quantity at each price,
and the S curve shifts to the *right*.

Supply Curve Shifters: Input Prices



Suppose the price of milk falls.

At each price, the quantity of lattes supplied will \uparrow .

Supply Curve Shifters: Technology

- Technology determines how many units of input is required to produce a unit of output.
- A cost-saving technological improvement has the same effect as a *fall* in input prices, and shifts the *S* curve to the *right*.

Supply Curve Shifters: Weather

- Weather is an important factor in agricultural commodities, *e.g.*,
 - Ideal weather conditions bring a bumper harvest of sweet and rosy apples; the *S* curve shifts *right*.
 - Freezing temperatures in California damage the state's citrus crops; the *S* curve shifts *left*.

Supply Curve Shifters: **Expectations**

- Expectations affect producers' supply decisions, *e.g.*,
 - Events in the Middle East lead to expectations of higher oil prices.
In response, oil fields in Brunei reduce supply now, saving some inventory to sell later when prices are higher.
The S curve shifts *left*.
- In general, sellers may adjust the supply (of non-perishable goods) when their expectations of future prices change.

Summary: Variables that Influence Sellers

Variable	A change in this variable
Price	... causes a movement along the S curve
Number of sellers	... shifts the S curve
Input prices	... shifts the S curve
Technology	... shifts the S curve
Weather	... shifts the S curve
Expectations	... shifts the S curve

ACTIVE LEARNING 2.2

Supply Curve

Draw a supply curve for burgers. What happens to the supply curve in each of the following scenarios?

- A. Burger sellers lower the price of burgers.
- B. A technological advance allows burgers to be produced at lower cost.
- C. Hot dog sellers raise the price of hot dogs.

ACTIVE LEARNING 2.2

A. The price of burgers falls

ACTIVE LEARNING 2.2

B. The cost of producing burgers falls

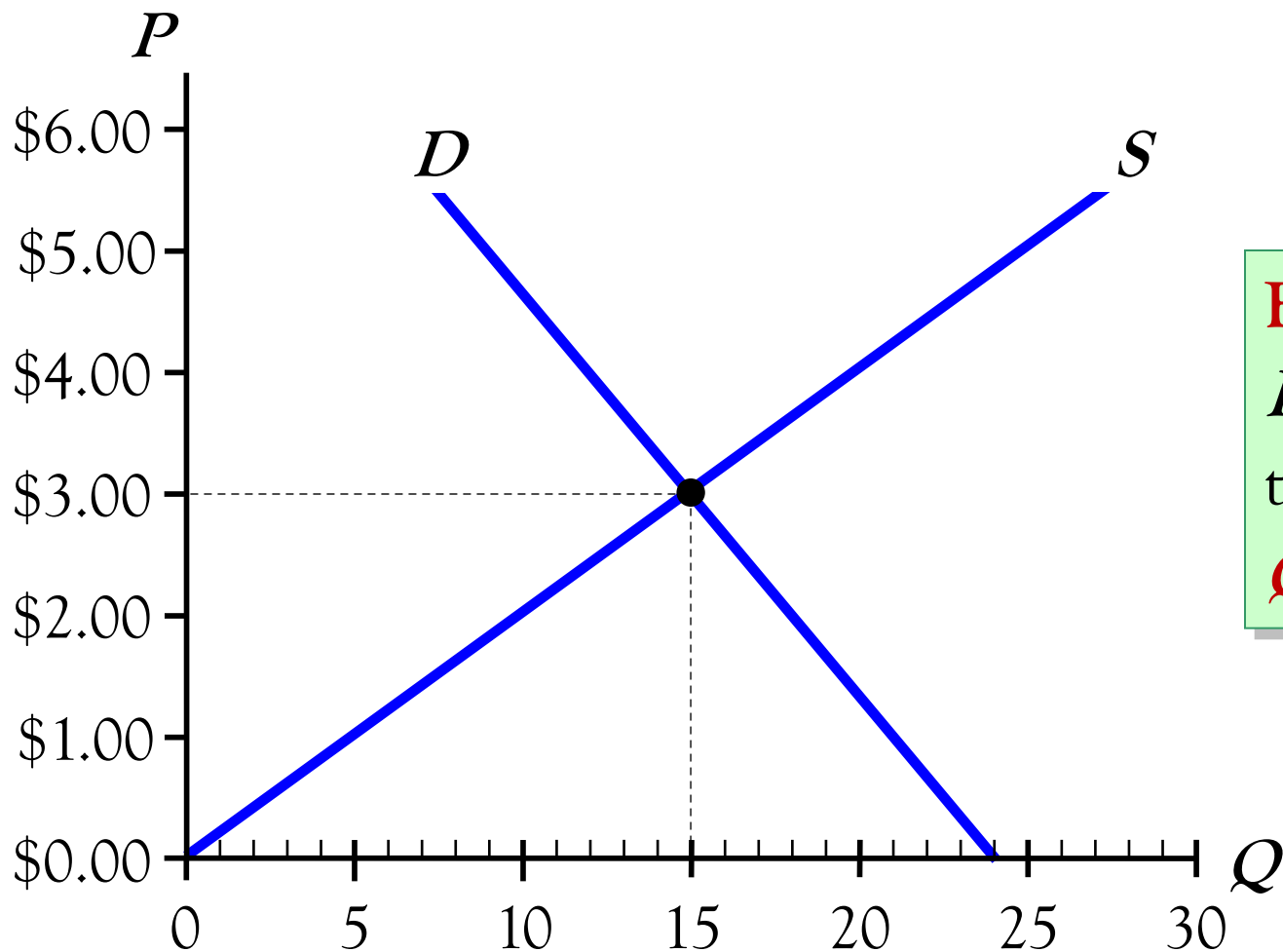
ACTIVE LEARNING 2.2

C. The price of hot dogs rises

Supply and Demand

Supply and Demand Together

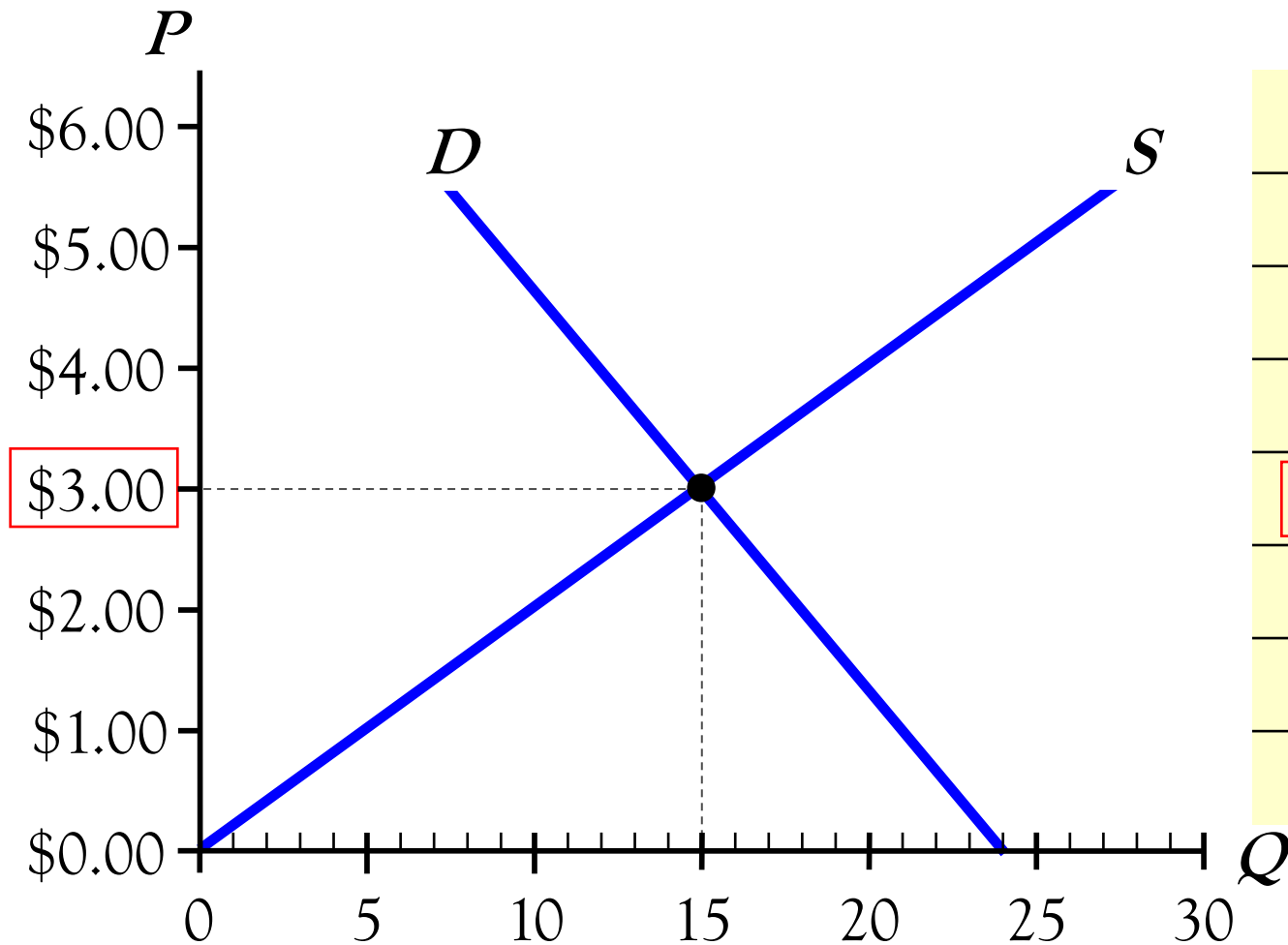
Equilibrium: a state in which opposing forces are balanced so that one is not greater than the other.



Equilibrium:
 P has reached
the level where
 $Q^S = Q^D$

Equilibrium price:

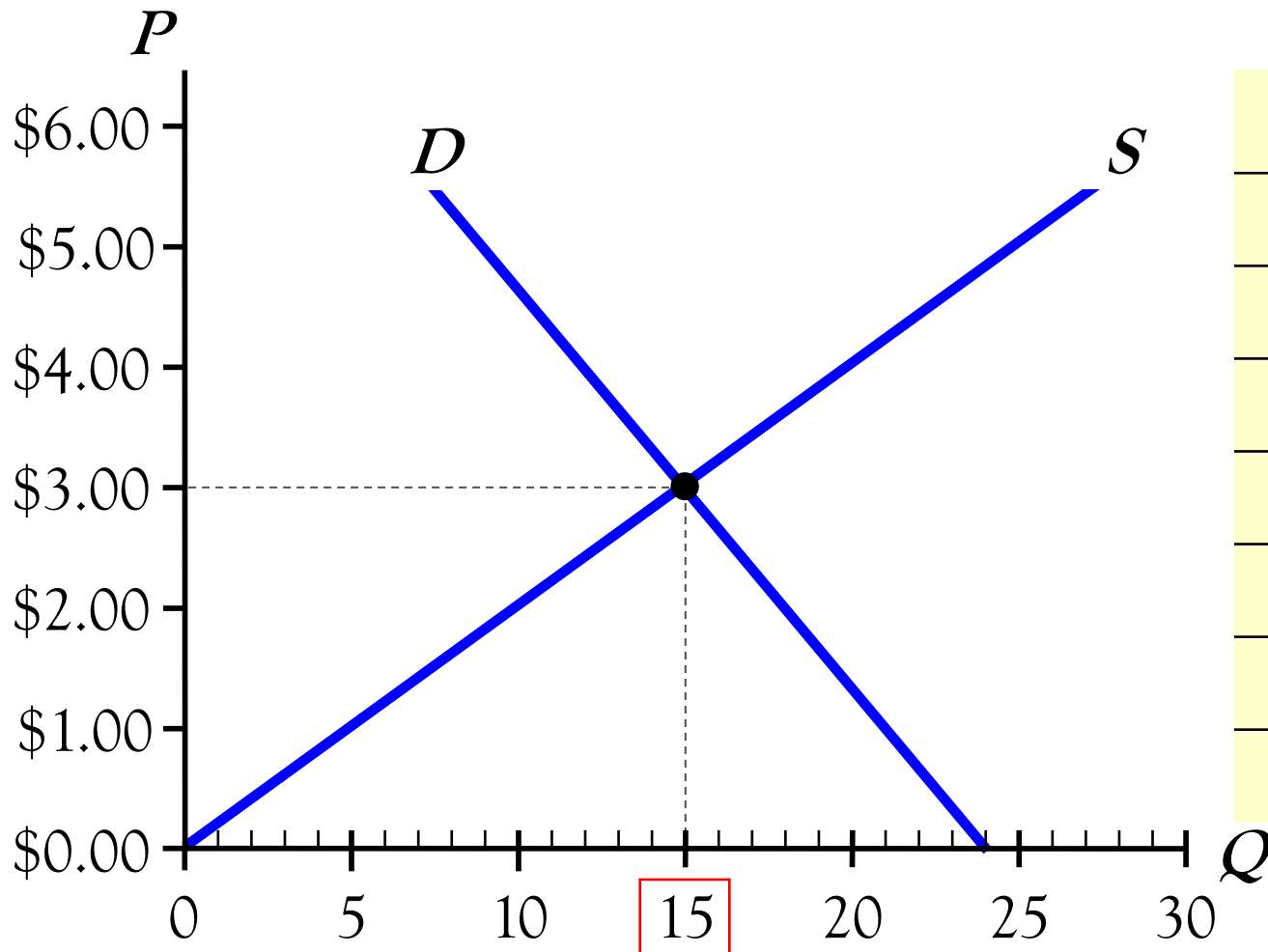
the price that equates Q^S with Q^D



P	Q^D	Q^S
\$0	24	0
1	21	5
2	18	10
3	15	15
4	12	20
5	9	25
6	6	30

Equilibrium quantity:

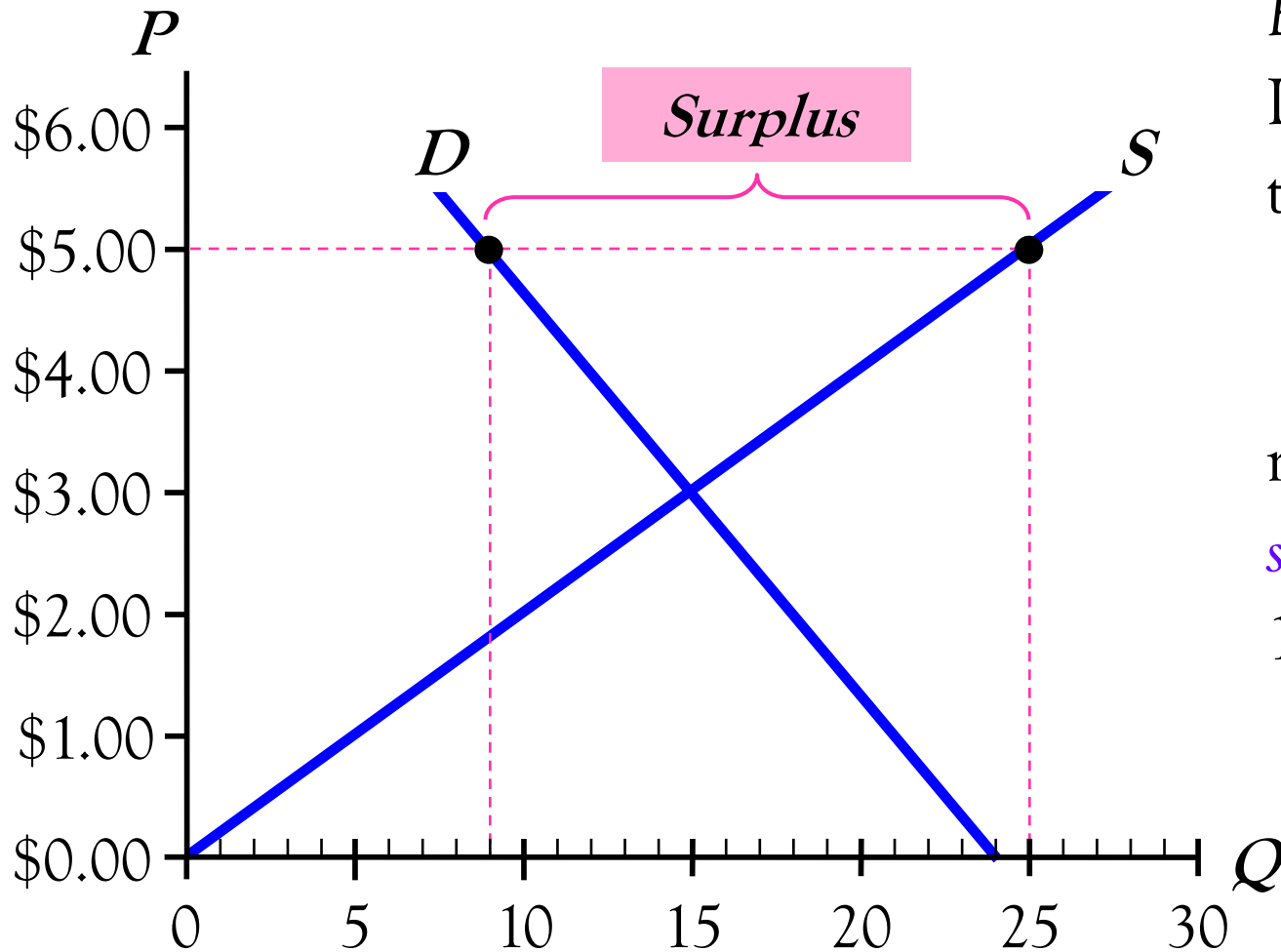
Q^S and Q^D at the equilibrium price



P	Q^D	Q^S
\$0	24	0
1	21	5
2	18	10
3	15	15
4	12	20
5	9	25
6	6	30

Surplus (excess supply):

when $Q^S > Q^D$



Example:

If $P = \$5$,
then

$Q^D = 9$ lattes,

$Q^S = 25$ lattes,

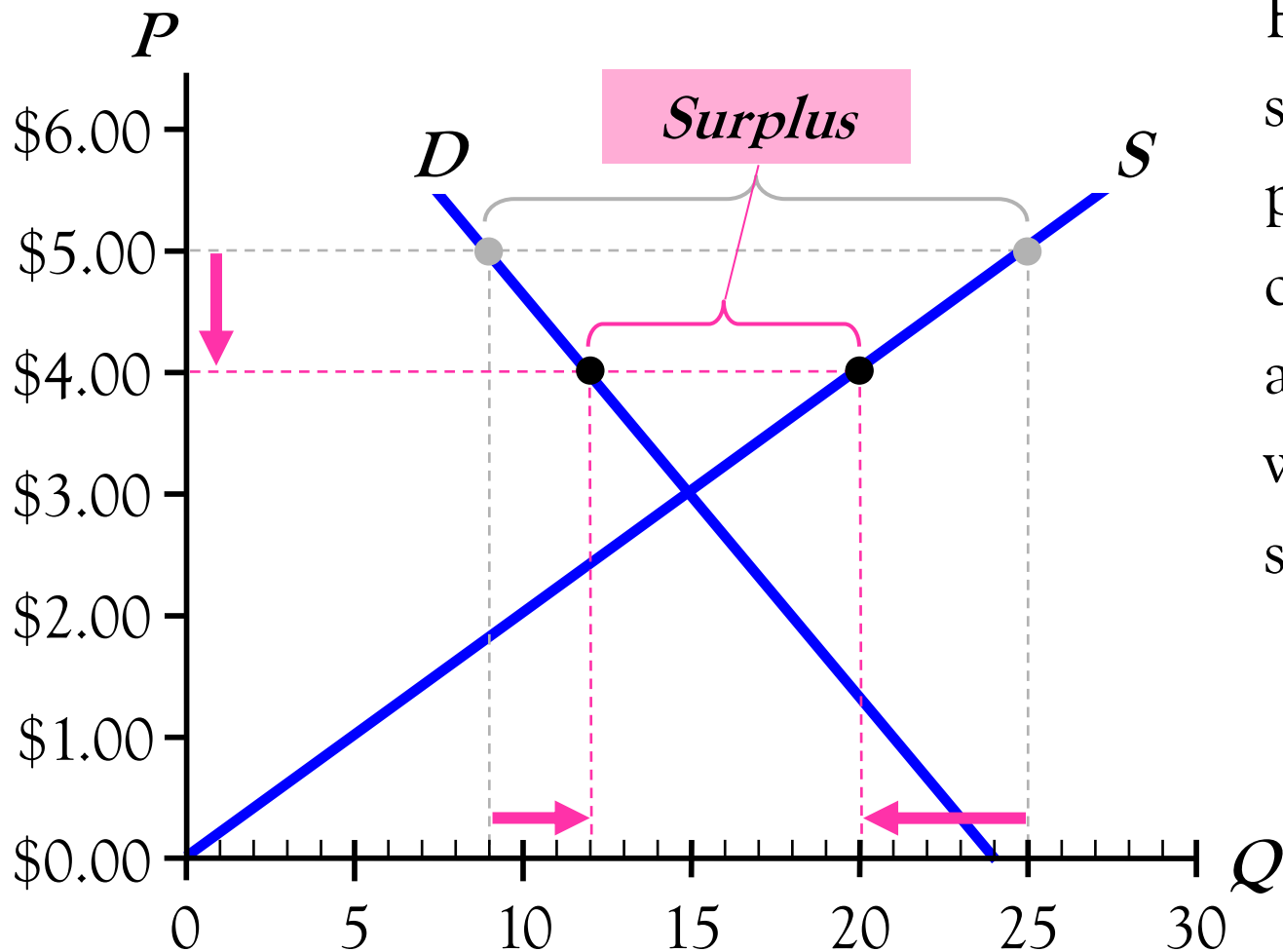
resulting in a

surplus of

16 lattes.

Surplus (excess supply):

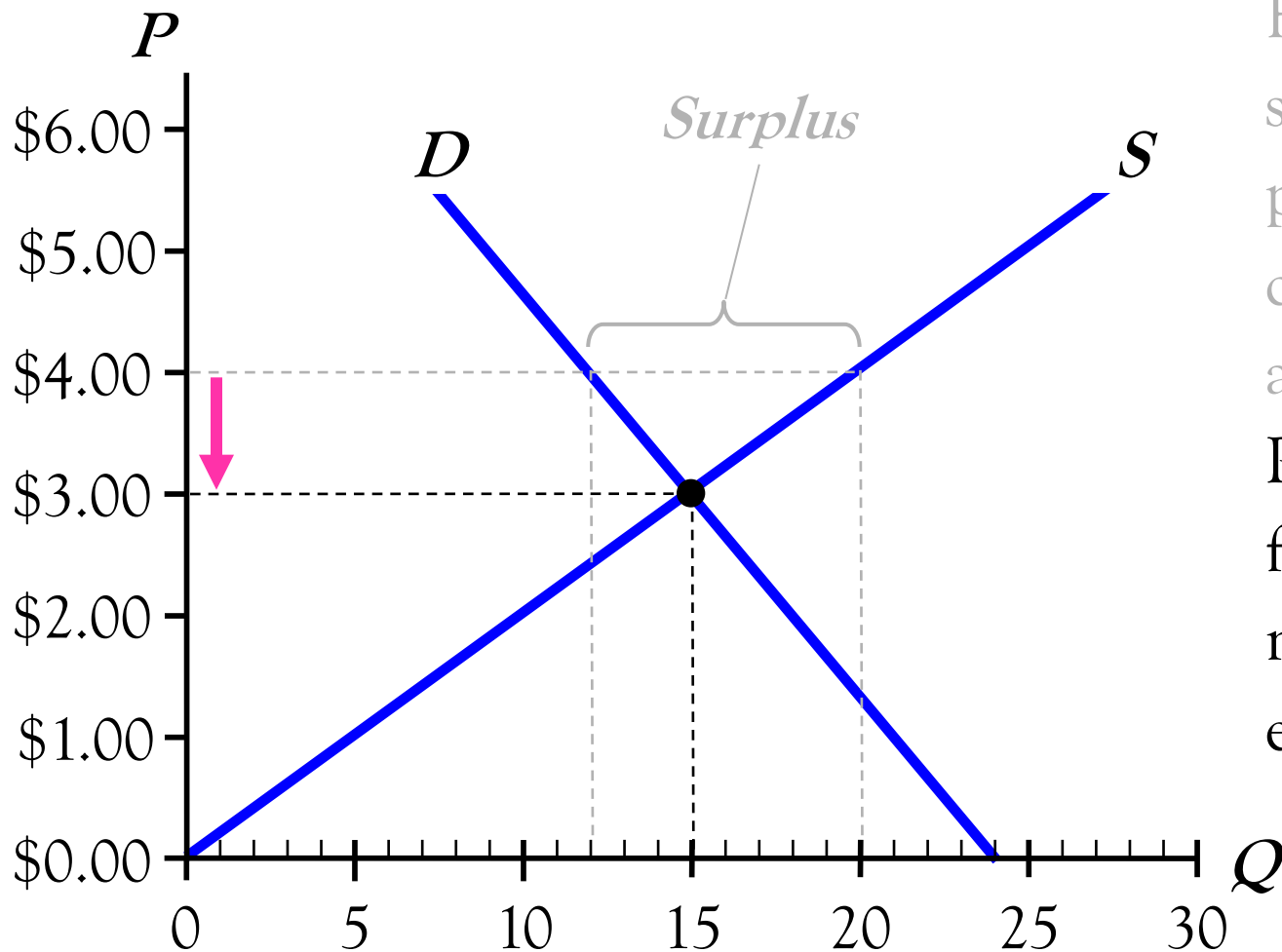
when $Q^S > Q^D$



Facing a surplus, sellers lower the price, causing Q^D to rise and Q^S to fall, which reduces the surplus.

Surplus (excess supply):

when $Q^S > Q^D$

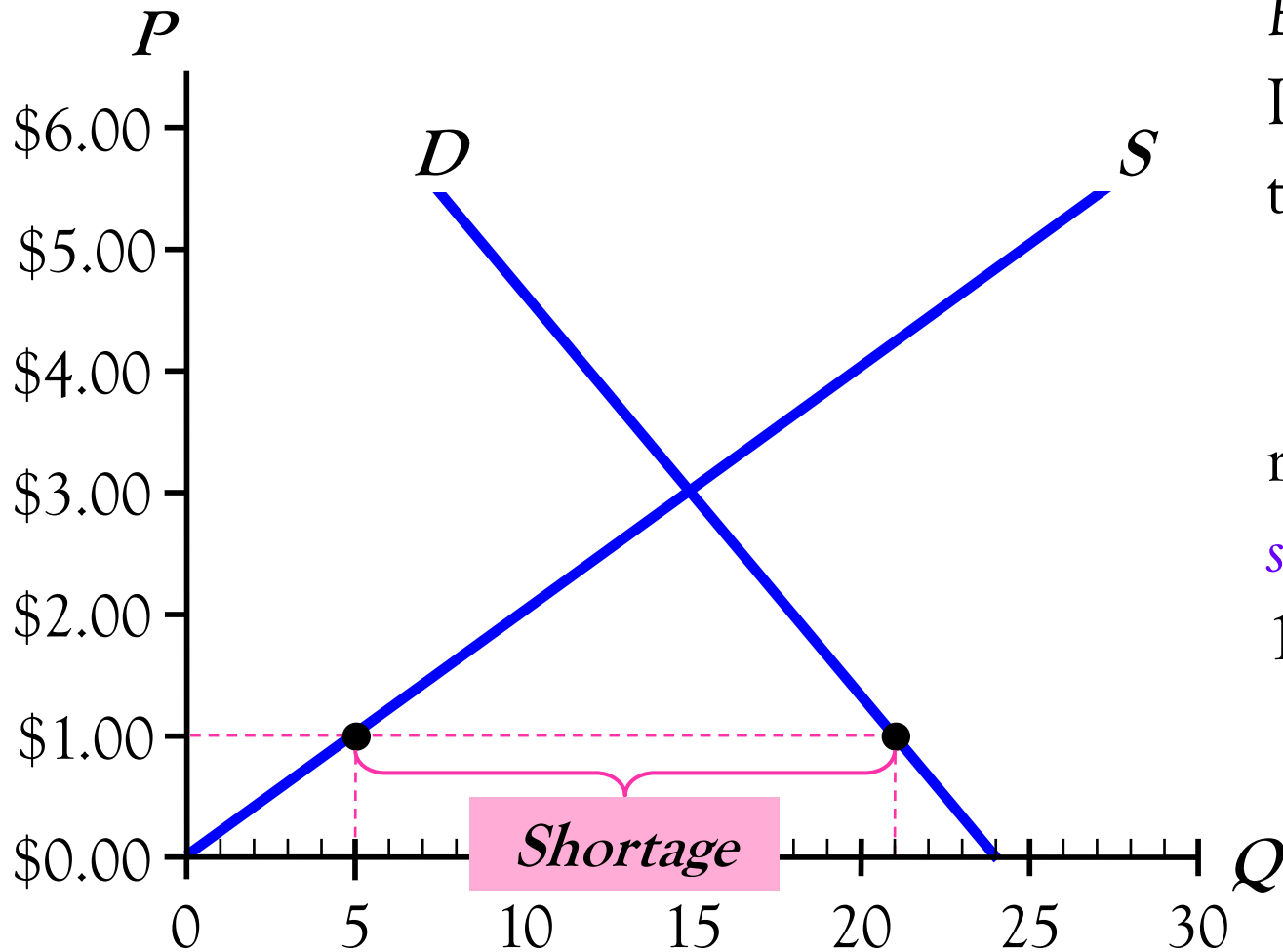


Facing a surplus, sellers lower the price, causing Q^D to rise and Q^S to fall.

Prices continue to fall until the market reaches equilibrium.

Shortage (excess demand):

when $Q^D > Q^S$



Example:

If $P = \$1$,
then

$Q^D = 21$ lattes,

$Q^S = 5$ lattes,

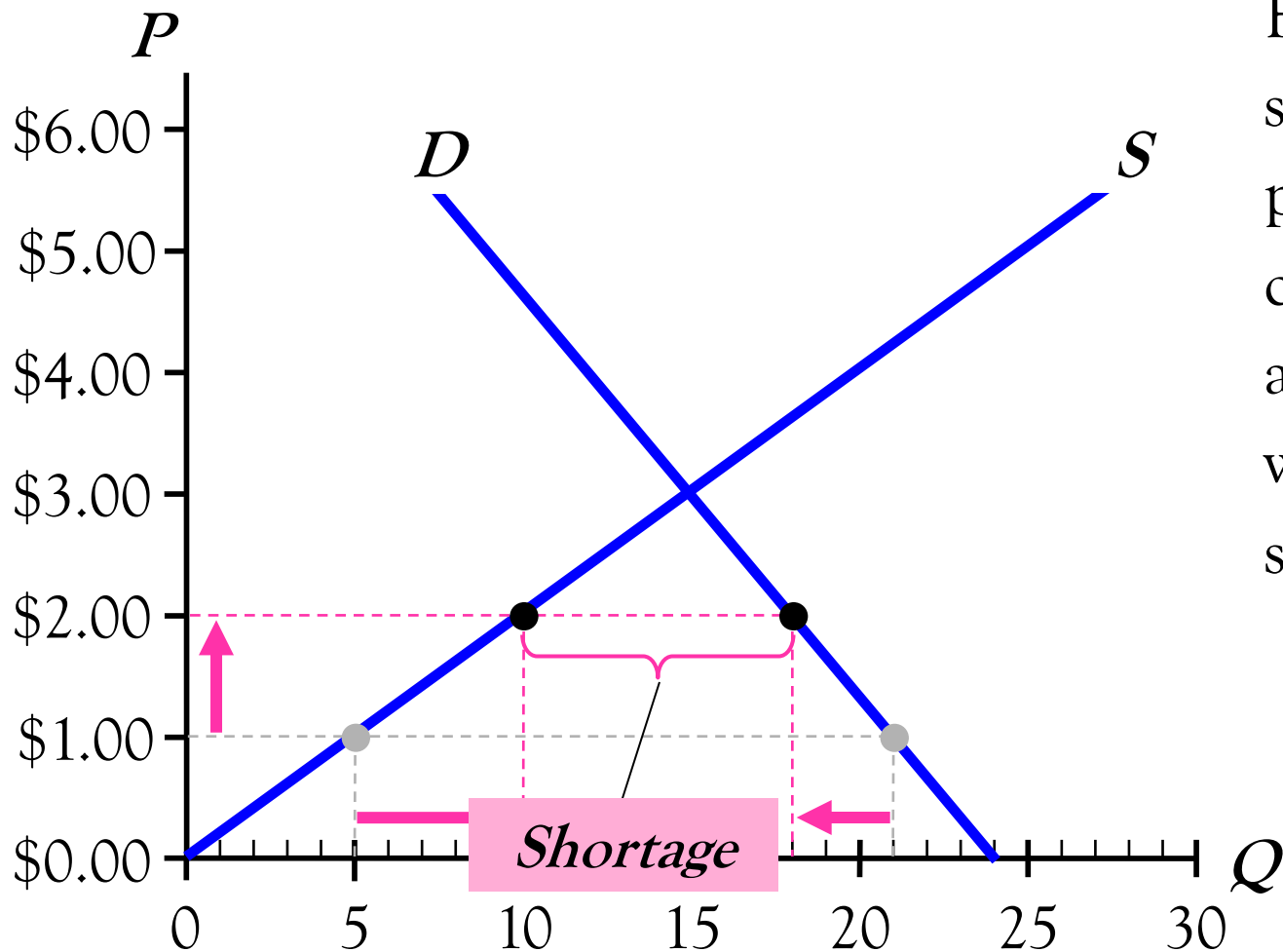
resulting in a

shortage of

16 lattes.

Shortage (excess demand):

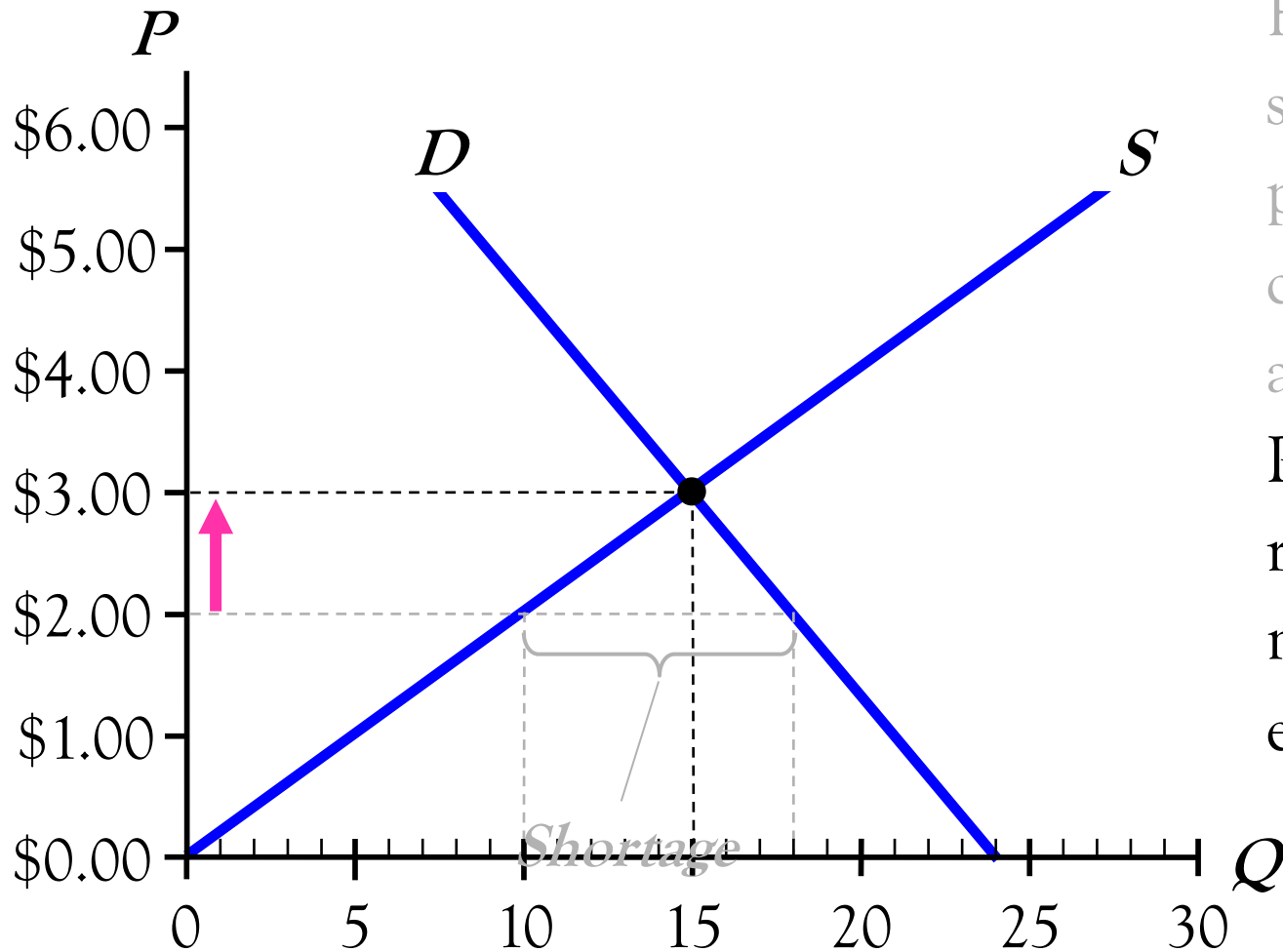
when $Q^D > Q^S$



Facing a shortage, sellers raise the price, causing Q^D to fall and Q^S to rise, which reduces the shortage.

Shortage (excess demand):

when $Q^D > Q^S$



Facing a shortage, sellers raise the price, causing Q^D to fall and Q^S to rise.

Prices continue to rise until the market reaches equilibrium.

Analyzing Changes in Equilibrium

To determine the effects of any event:

- (i) Decide whether the event shifts the S curve, the D curve, or both.
- (ii) Decide in which direction the curve shifts.
- (iii) Use the supply-demand diagram to see how the shift changes equilibrium P and Q .

Shifts vs. Movements

- **Change in supply:**

A shift in the S curve occurs when a non-price determinant of supply changes.

- **Change in the quantity supplied:**

A movement along a fixed S curve occurs when P changes.

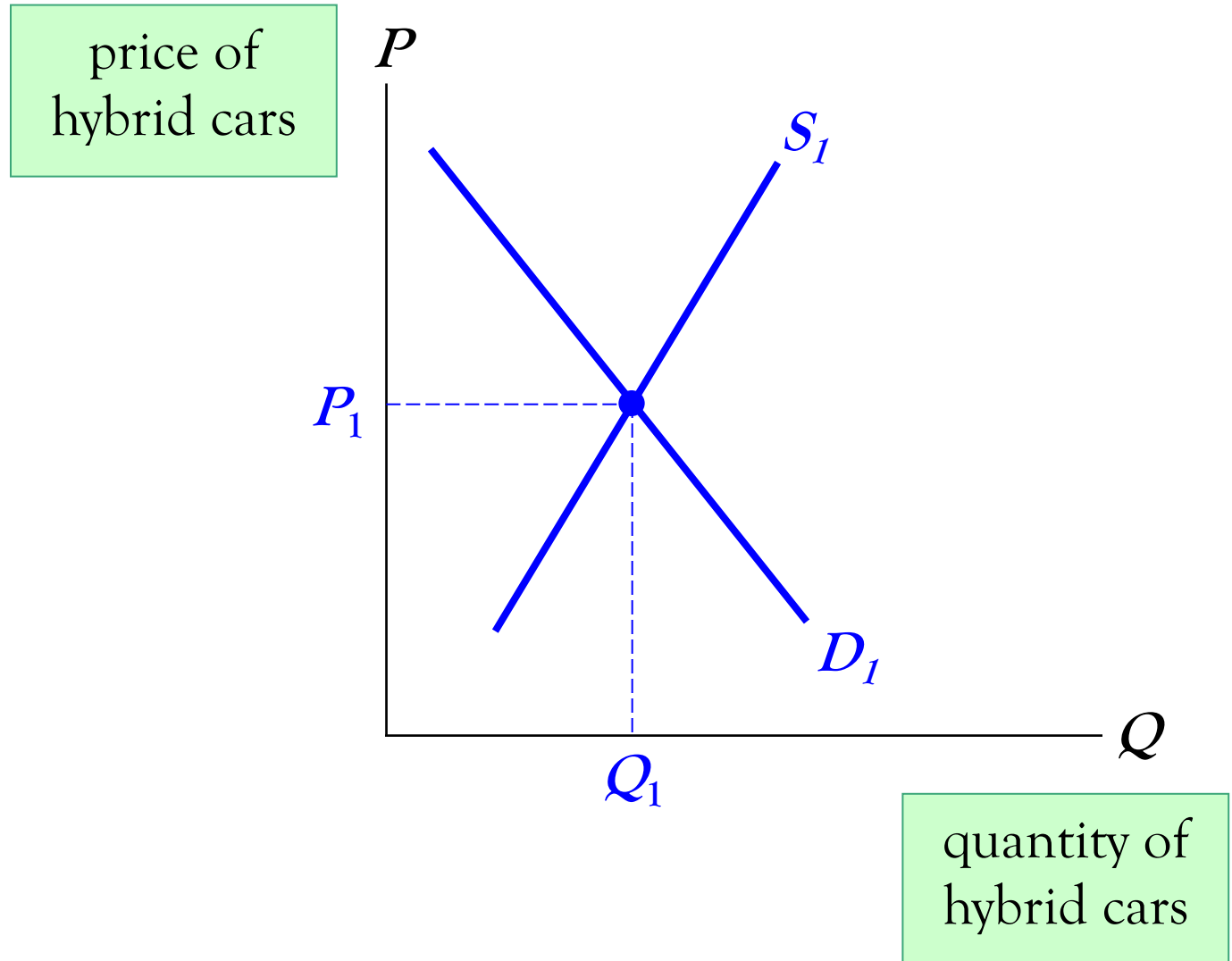
- **Change in demand:**

A shift in the D curve occurs when a non-price determinant of demand changes.

- **Change in the quantity demanded:**

A movement along a fixed D curve occurs when P changes.

EXAMPLE: The Market for Hybrid Cars



EXAMPLE 1: A Shift in Demand

The price of petrol rises.

Step 1:

The D curve shifts.

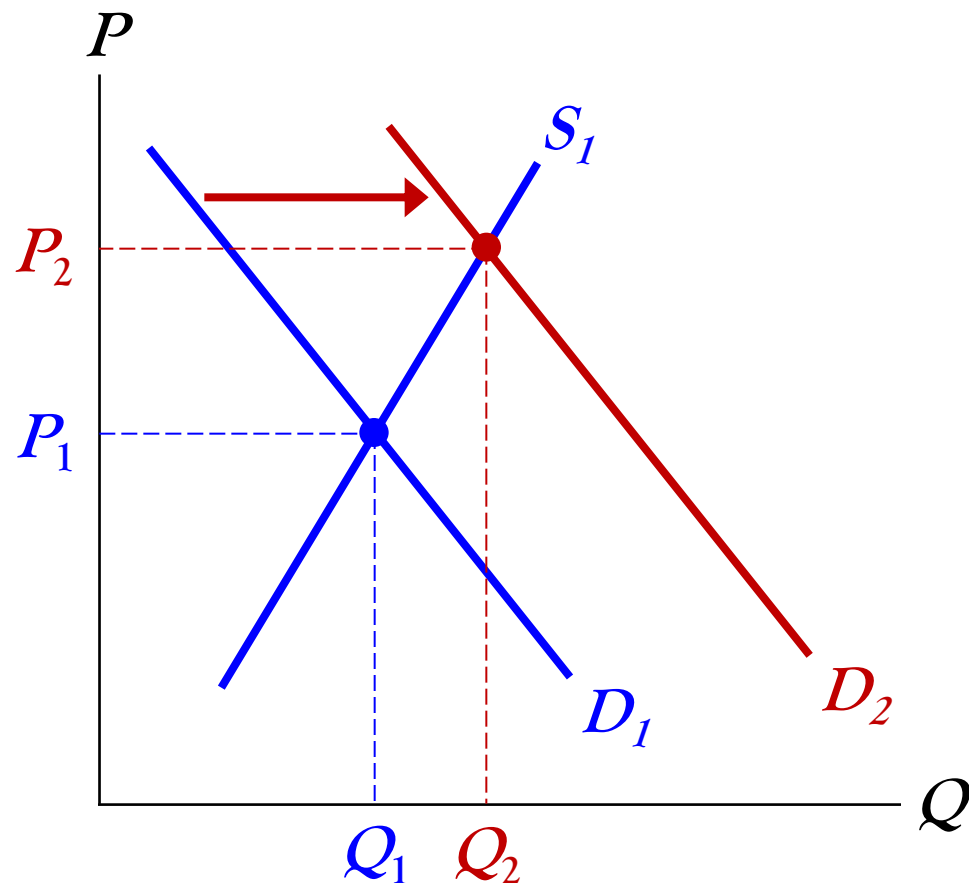
Step 2:

D shifts **right**.

Step 3:

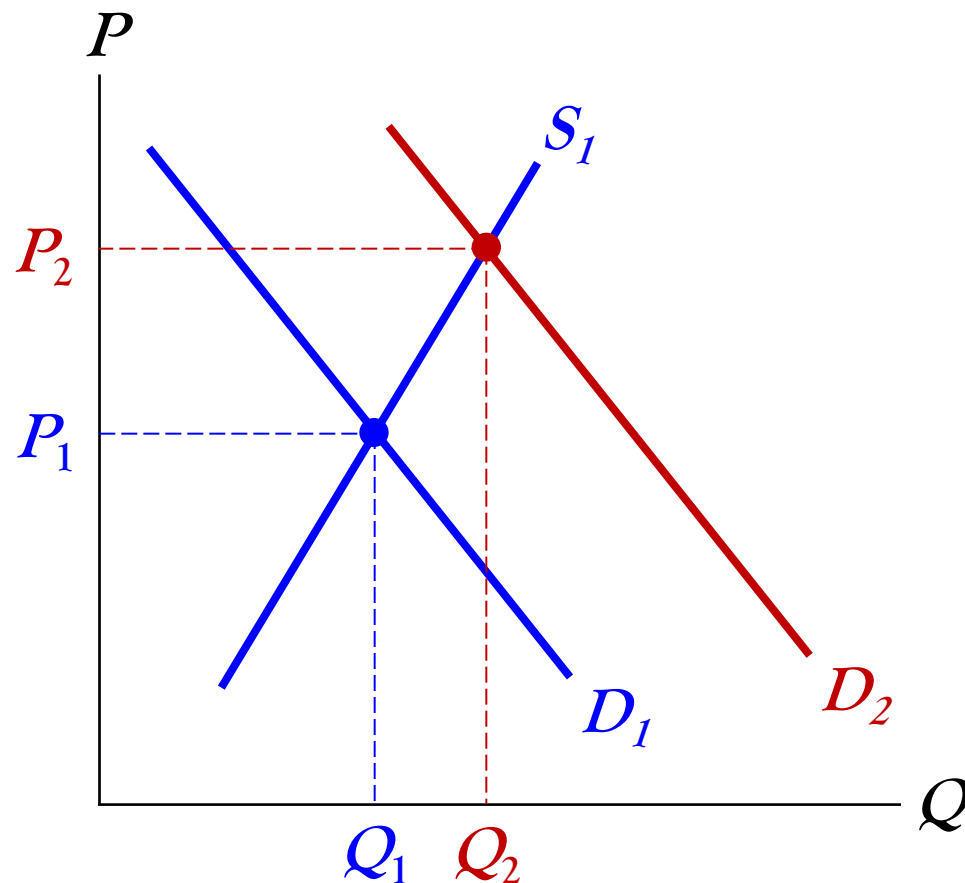
The shift causes

P to \uparrow and Q to \uparrow .



EXAMPLE 1: A Shift in Demand

Notice that when P rises, producers supply a larger quantity of hybrids, even though the S curve has not shifted.



EXAMPLE 2: A Shift in Supply

A new technology reduces the cost of producing hybrid cars.

Step 1:

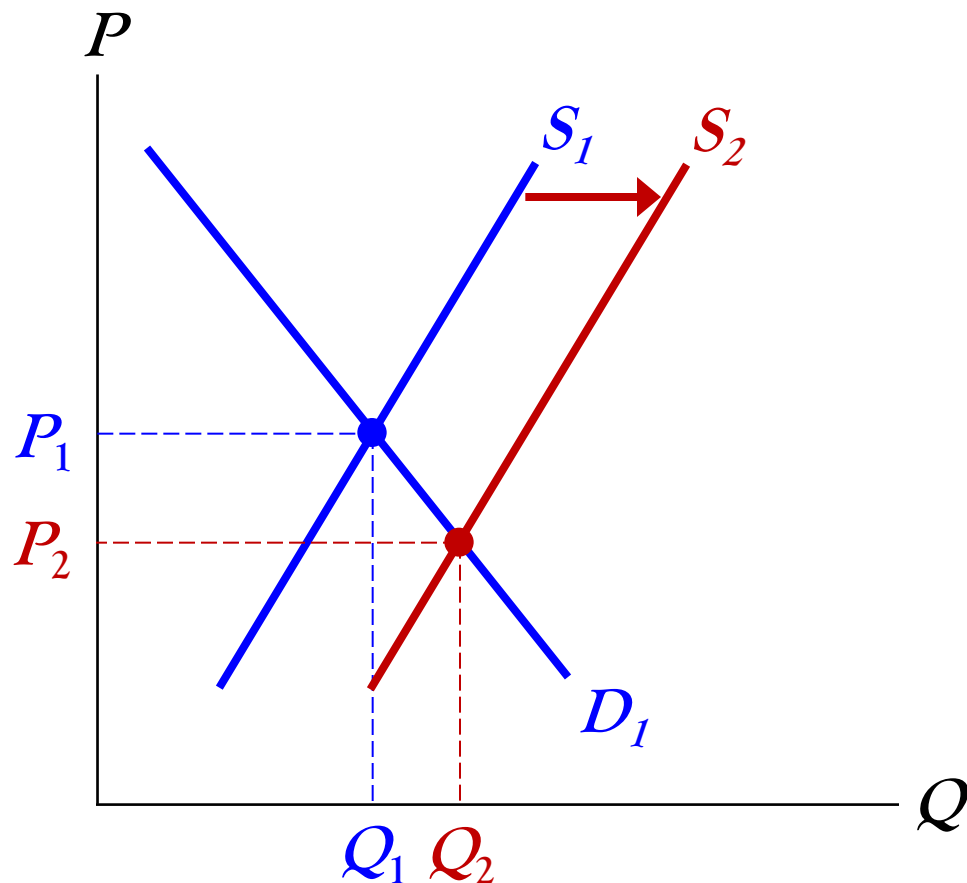
The S curve shifts.

Step 2:

S shifts **right**.

Step 3:

The shift causes
 P to **↓** and Q to **↑**.



EXAMPLE 3: A Shift in Supply and Demand

*The price of petrol rises
AND new technology reduces
production costs.*

Step 1:

Both curves shift.

Step 2:

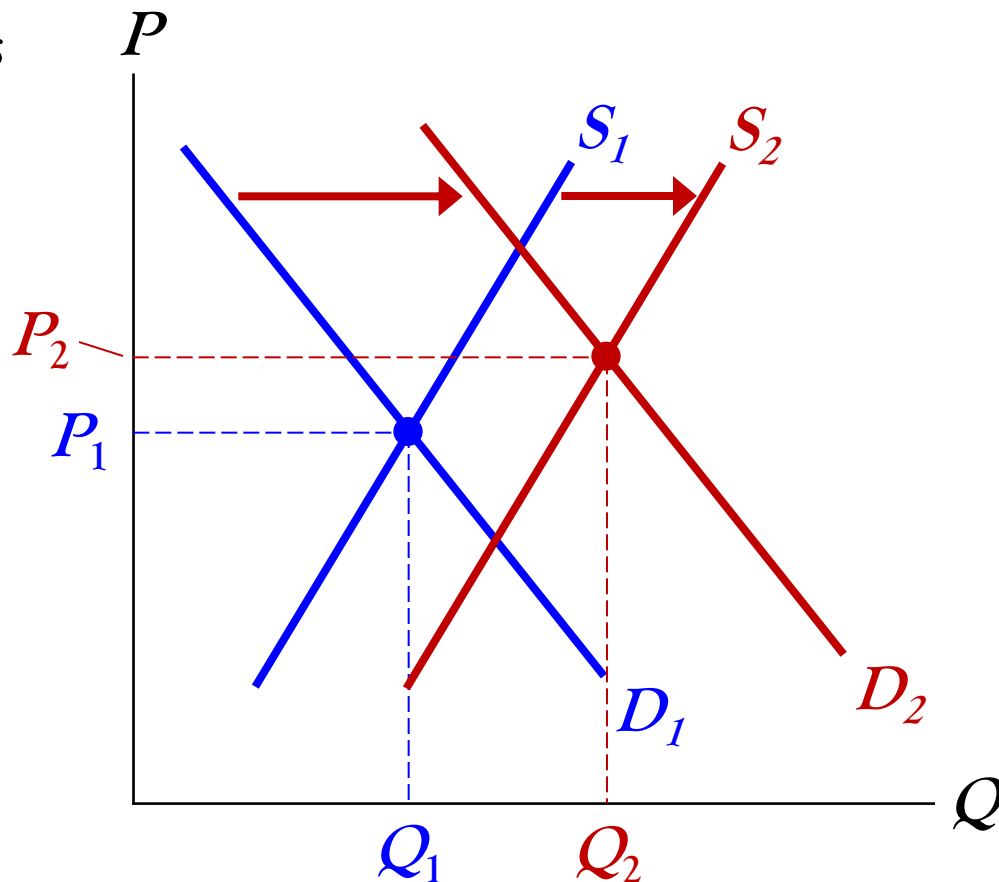
Both D and S shift **right**.

Step 3:

$Q \uparrow$ but the effect on P
is ambiguous.

If demand increases
more than supply,

$P \uparrow$.



EXAMPLE 3: A Shift in Supply and Demand

The price of petrol rises AND
new technology reduces
production costs.

Step 1:

Both curves shift.

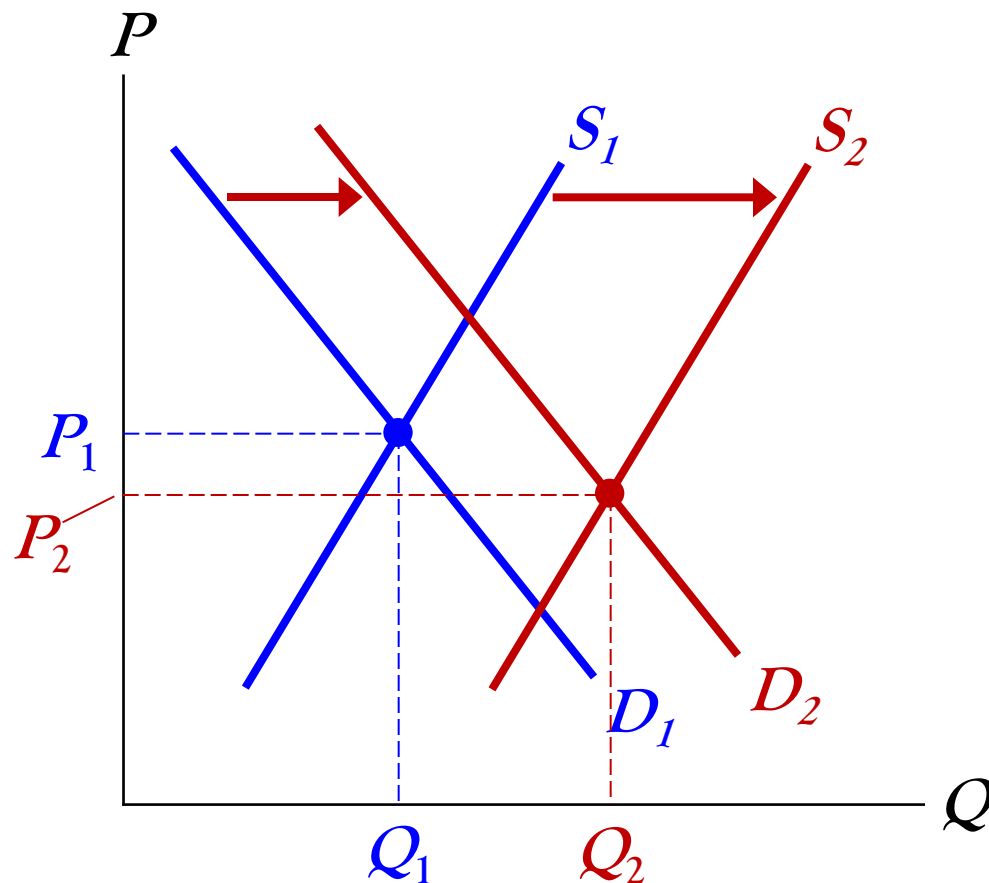
Step 2:

Both D and S shift right.

Step 3:

$Q \uparrow$ but the effect on P
is ambiguous.

If supply increases
more than demand,
 $P \downarrow$.



ACTIVE LEARNING 2.3

The Market for Cellphones

Use the three-step method to analyze the effects of each event on the equilibrium price and quantity of cellphones.

- A. The recession compels consumers to delay new purchases of cellphones.
- B. The number of cellphone manufacturers increases.
- C. Events A and B both occur.

ACTIVE LEARNING 2.3

A. Delay new purchases of cellphones

ACTIVE LEARNING 2.3

B. Number of cellphone manufacturers increases

ACTIVE LEARNING 2.3

C. Events A and B both occur

ACTIVE LEARNING 2.4

The Market for Coffee

“In the last few years, coffee yields have plummeted here [Colombia] and in many of Latin America’s other premier coffee regions as a result of rising temperatures and more intense and unpredictable rains, phenomena that many scientists link partly to global warming . . . [while] global demand is soaring as the rising middle classes of emerging economies like Brazil, India and China develop the coffee habit.”

The New York Times, March 9, 2011

Illustrate the impact of these events in a supply-and-demand graph of the global market for coffee.

ACTIVE LEARNING *2.4*

The Market for Coffee

ACTIVE LEARNING 2.5

Supply and Demand

Draw supply-and-demand graphs to explain each of the following.

- A. Why are housing prices so much higher in Singapore compared to Norway, which is just as rich?
- B. For a few weeks in June and July this year, durians were much cheaper relative to other summers. Why?
- C. Why does the price of seafood go up just before Chinese New Year?

ACTIVE LEARNING 2.5

A. Housing prices in Singapore vs. Norway

ACTIVE LEARNING 2.5

B. Durian prices in the summer of 2022

ACTIVE LEARNING 2.5

C. Seafood prices before Chinese New Year

ACTIVE LEARNING 2.6

The Market for Cotton Shirts

Which of the following events would unambiguously cause a decrease in the equilibrium price of cotton shirts?

- A. An increase in the price of wool shirts and a decrease in the price of raw cotton.
- B. A decrease in the price of wool shirts and a decrease in the price of raw cotton.
- C. An increase in the price of wool shirts and an increase in the price of raw cotton.
- D. A decrease in the price of wool shirts and an increase in the price of raw cotton.

ACTIVE LEARNING *2.6*

The Market for Cotton Shirts

Test Yourself

- In market economies, the _____ of a good adjusts to bring the quantity supplied and the quantity demanded into balance.
- These _____ are the signals that guide economic decisions and thereby allocate _____ resources.

Test Yourself

- The law of demand:
- The law of supply:

Test Yourself

- Things that shift the demand curve:
- Things that shift the supply curve: