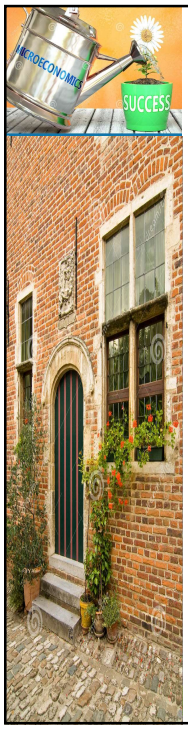

Unit 2: Supply, Demand and Market

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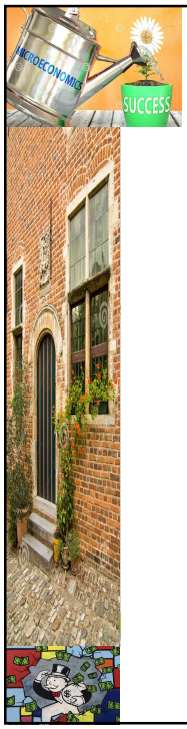
1

Contents

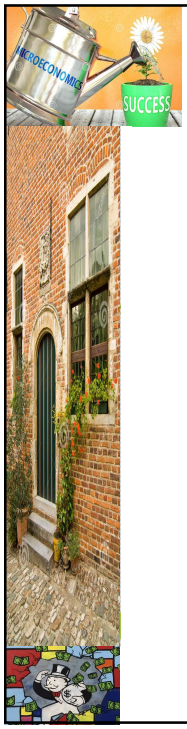
2



2.1 Markets and Competition

- **Market –** a group of buyers and sellers of a particular good or service
- **Competitive market –** a market in which there are many buyers and many sellers so that each has a negligible impact on the market price
- In a **perfectly competitive** market:
  - All goods exactly the same
  - Buyers & sellers so numerous that no one can affect market price – each is a "**price taker**"
- In this unit, we assume markets are perfectly competitive.

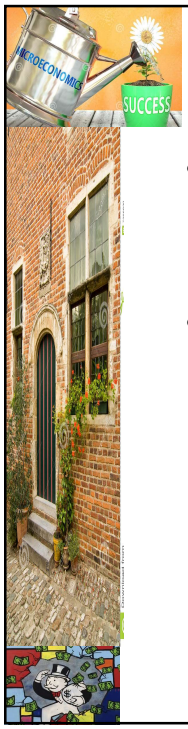
3



2.2 Demand

- Demand comes from the behavior of buyers.
- **Quantity demanded –** the amount of a good that buyers are willing and able to purchase
- **Law of demand –** the claim that, other things equal, the quantity demanded of a good falls when the price of the good rises.

4



Demand Schedule

- A table that shows the relationship between the price of a good and the quantity demanded
- Example:
  Helen's demand for lattes.
  - Notice that Helen'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

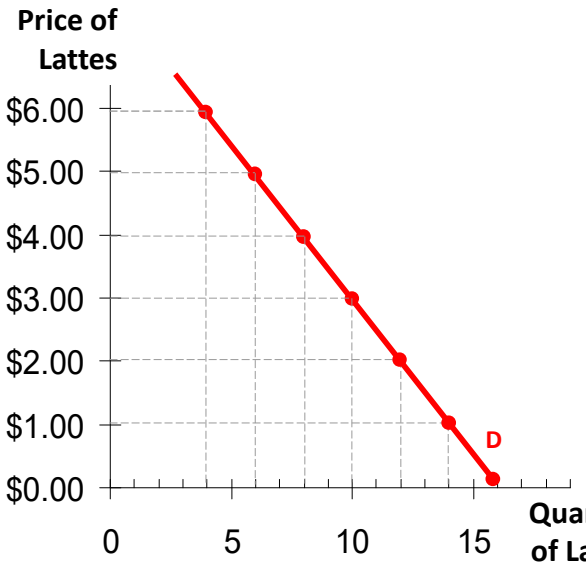
5

Demand Curve

- A graph of the relationship between the price of a good and the quantity demanded
  - Price is generally drawn on the vertical axis
  - Quantity demanded is represented on the horizontal axis

6

Helen's Demand Schedule and 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

7

Market Demand Versus Individual Demand

- The market demand is the sum of all of the individual demands for a particular good or service
  - The demand curves are summed horizontally – meaning that the quantities demanded are added up for each level of price
- The market demand curve shows how the total quantity demanded of a good varies with the price of the good, holding constant all other factors that affect how much consumers want to buy

8

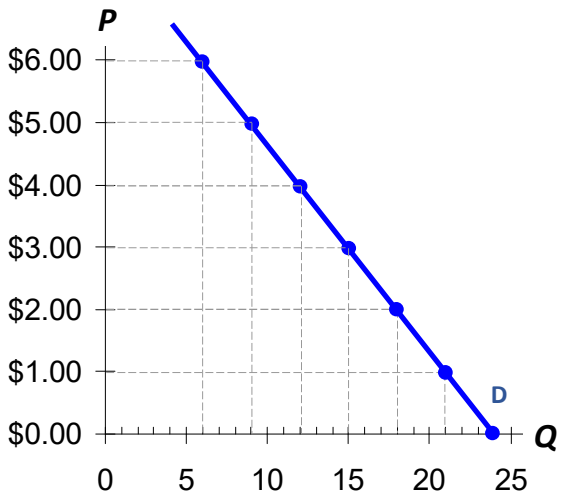
Market Demand versus Individual Demand

- Suppose Helen and Ken are the only two buyers in the Latte market. (Q^d = quantity demanded)

Price	Helen's Q^d		Ken'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

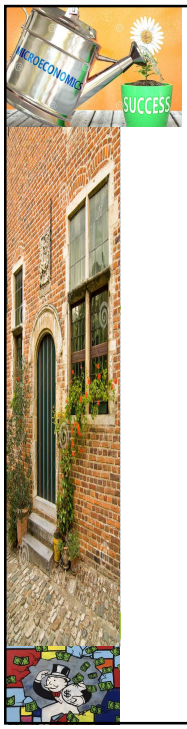
9

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

10



Shifts in the Demand Curve

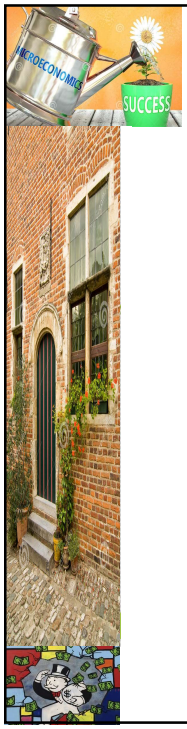
- The demand curve shows how much consumers want to buy at any price, holding constant the many other factors that influence buying decisions

$$Q_D = f(P)$$

- If any of these other factors change, the demand curve will shift
  - An increase in demand can be represented by a shift of the demand curve to the right
  - A decrease in demand can be represented by a shift of the demand curve to the left

$$Q_D = f(P = \text{const}, \text{other variables})$$

11



Shifts in the Demand Curve

1. Income

- The relationship between income and quantity demanded depends on what type of good the product is

- Normal good – a good for which, other things equal, an increase in income leads to a increase in demand
  - Demand for a **normal good** is positively related to income.

- Inferior good – a good for which, other things equal, an increase in income leads to a decrease in demand
  - Demand for an **inferior good** is negatively related to income.

12

Shifts in the Demand Curve

2. Prices of related goods

- **Substitutes** – two goods for which an increase in the price of one good leads to an increase in the demand for the other
  - Example: hot dogs and hamburgers.
    An increase in the price of hot dogs increases demand for hamburgers, shifting hamburger demand curve to the right.
- **Complements –** two goods for which an increase in the price of one good leads to a decrease in the demand for the other
  - Example: computers and software.
    If price of computers rises, people buy fewer computers, and therefore less software.
    Software demand curve shifts left.

13

Shifts in the Demand Curve

3. Tastes

- Example:
  The Atkins diet became popular in the '90s, caused an increase in demand for eggs,
  shifted the egg demand curve to the right.

4. Expectations – future prices

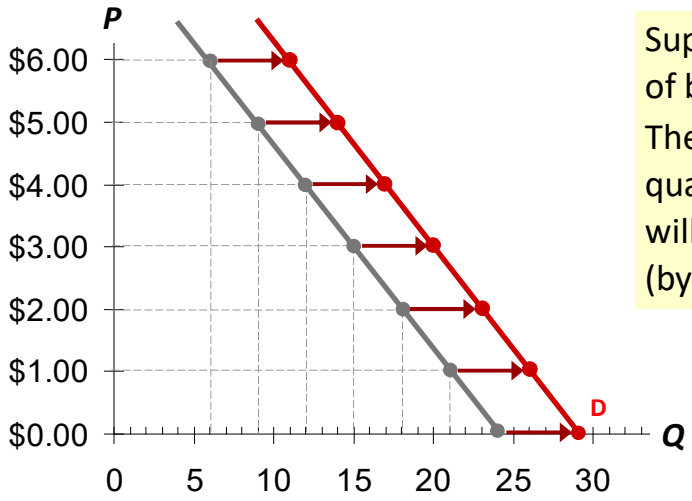
- Examples:
- If people expect price of the good to rise, demand for the good may increase now.

5. Number of buyers

- An increase in the number of buyers causes an increase in quantity demanded at each price, which shifts the demand curve to the right.

14

Demand Curve Shifters: # of buyers



Suppose the number of buyers increases.

Then, at each price, quantity demanded will increase (by 5 in this example).

15

Summary: Variables That Affect Demand

Variable	A change in this variable…
Price	
No. of buyers	
Income	
Price of related goods	
Tastes	
Expectations	

16

ACTIVE LEARNING 1:
Demand curve

Draw a demand curve for music downloads.
What happens to it in each of the following scenarios? Why?

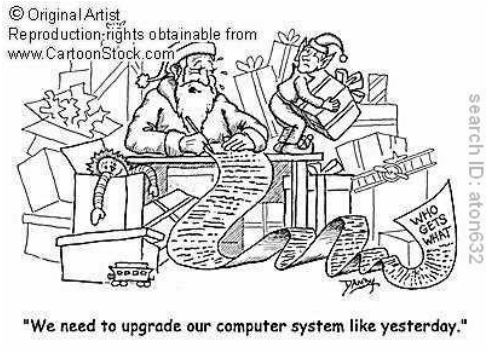
A. The price of iPods falls

B. The price of music downloads falls

C. The price of compact discs falls

17

Cartoons



"We need to upgrade our computer system like yesterday."

"GIVEN THE DOWNWARD SLOPE OF OUR DEMAND CURVE AND THE EASE WITH WHICH OTHER FIRMS CAN ENTER THE INDUSTRY, WE CAN STRENGTHEN OUR PROFIT POSITION ONLY BY EQUATING MARGINAL COST AND MARGINAL REVENUE. ORDER MORE JELLY BEANS."

18

2.3 Supply

- Supply comes from the behavior of sellers.
- **Quantity Supplied** – the amount of a good that sellers are willing and able to sell
  - Quantity supplied is positively related to price
- **Law of supply –** the claim that, other things equal, the quantity supplied of a good rises when the price of the good rises

19

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

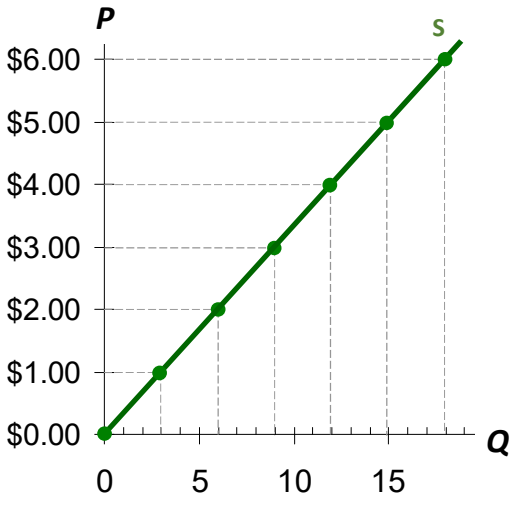
20

Supply Curve

- Supply curve – a graph of the relationship between the price of a good and the quantity supplied

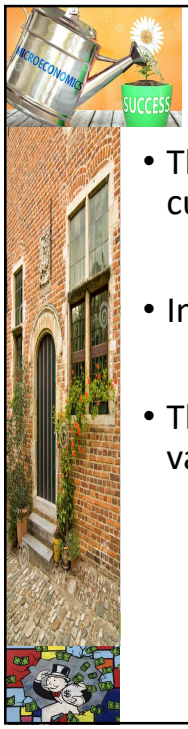
21

Starbucks' Supply Schedule & Curve



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

22



Market Supply vs. Individual Supply

- The market supply curve can be found by summing individual supply curves
- Individual supply curves are summed horizontally at every price
- The market supply curve shows how the total quantity supplied varies as the price of the good varies

23

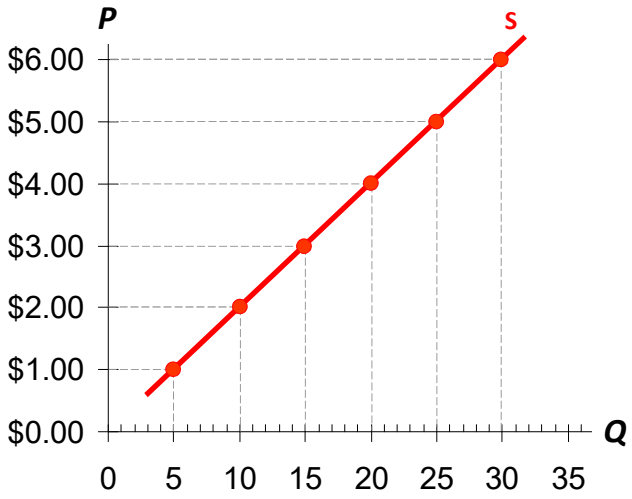
Market Supply versus Individual Supply

- Suppose Starbucks and Jitters are the only two sellers in this market. (Q^S = quantity supplied)

Price	Starbucks		Jitters		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

24

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

25

Shifts in the Supply Curve

- The supply curve shows how much producers offer for sale at any given price, holding constant all other factors that may influence producers' decisions about how much to sell

$$Q_S = f(P)$$

- When any of these factors change, the supply curve will shift
  - An increase in supply can be represented by a shift of the supply curve to the right
  - A decrease in supply can be represented by a shift of the supply curve to the left

$$Q_S = f(P = \text{const}, \text{other variables})$$

26

Shifts in the Supply Curve

1. Input prices/Resource(factor) prices

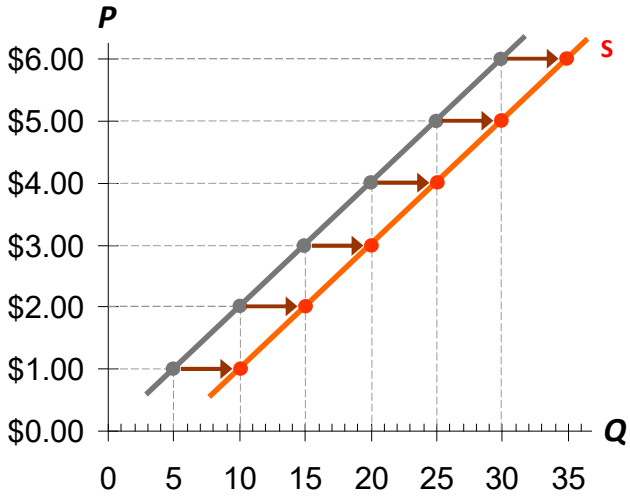
- Examples of input prices:
  wages, prices of raw materials.
- A fall in input prices makes production more profitable at each output price, so firms supply a larger quantity at each price, and the **S** curve shifts to the right.

2. Technology

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

27

Supply Curve Shifters: input prices



Suppose the price of milk falls.
At each price, the quantity of Lattes supplied will increase (by 5 in this example).

28

Shifts in the Supply Curve

3. Expectations

- Suppose a firm expects the price of the good it sells to rise in the future.
- The firm may reduce supply now, to save some of its inventory to sell later at the higher price.
- This would shift the **S** curve leftward.

4. Number of sellers

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

29

Shifts in the Supply Curve

5. Taxes/subsidies

- When a tax is added to a good the supply will decrease;
- when a subsidy is added to a good the supply will increase.

6. Price of other goods => production substitution

- Example: Corn syrup cheaper than sugar. Coca-Cola replaces sugar with corn syrup and increases the supply.

30

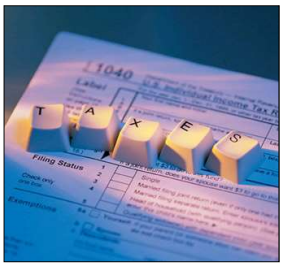
Summary: Variables That Affect Supply

Variable	A change in this variable…
Price	
Input prices	
Technology	
No. of sellers	
Expectations	

31

ACTIVE LEARNING 2:
Supply curve

Draw a supply curve for tax return preparation software. What happens to it in each of the following scenarios?



A. Retailers cut the price of the software.

B. A technological advance allows the software to be produced at lower cost.

C. Professional tax return preparers raise the price of the services they provide.

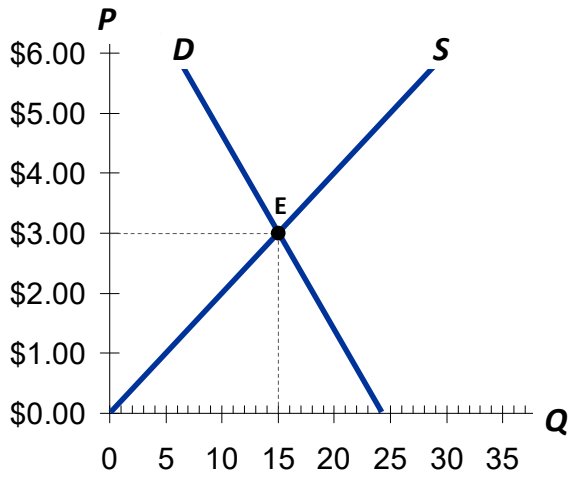
32

2.4 Market Equilibrium

- **Equilibrium**
  - **Equilibrium** – a situation in which the price has reached the level where quantity supplied equals quantity demanded
    - The point where the **supply** and **demand** curves intersect is called the market's equilibrium
  - **Equilibrium price –** the price that balances quantity supplied and quantity demanded
    - the equilibrium price is often called the "market-clearing" price because both buyers and sellers are satisfied at this price
  - **Equilibrium quantity –** the quantity supplied and the quantity demanded at the equilibrium price

33

Supply and Demand Together

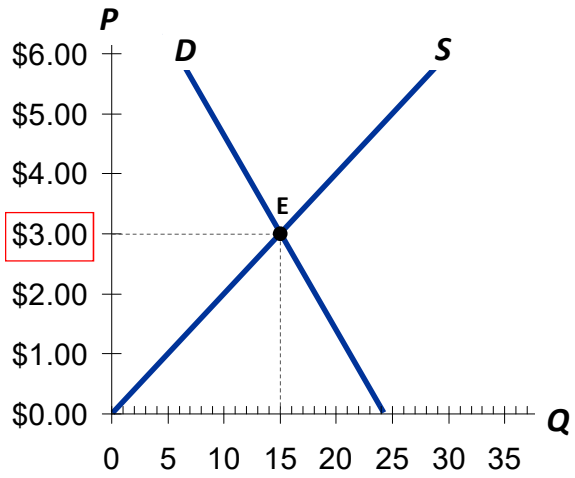


Market Equilibrium:
P has reached the level where quantity supplied equals quantity demanded

34

Equilibrium price:

The price that equates quantity supplied with quantity demanded

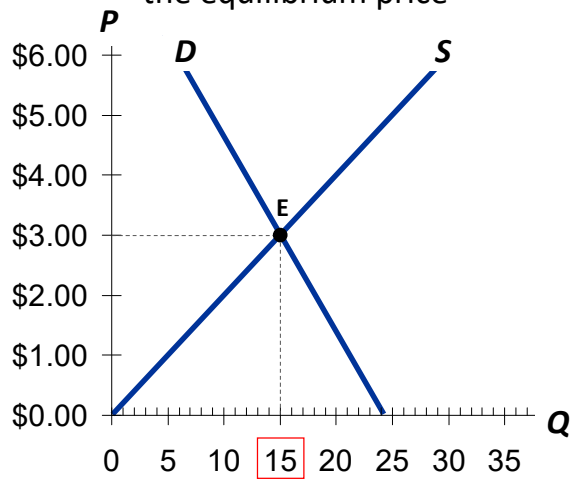


P	Q^D	Q^S
$0	24	0
1	21	5
2	18	10
3	15	15
4	12	20
5	9	25
6	6	30

35

Equilibrium quantity:

The quantity supplied and quantity demanded at the equilibrium price

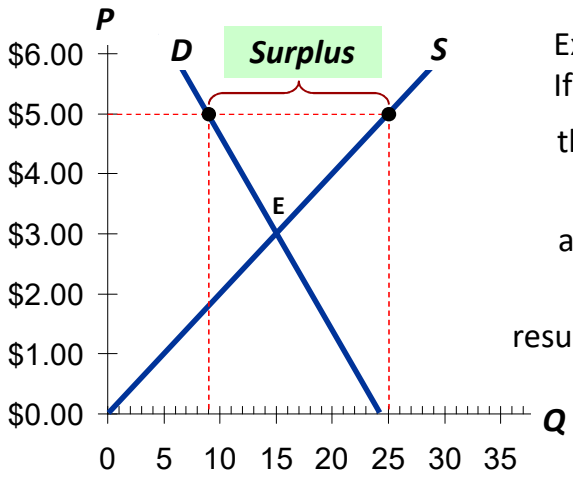


P	Q^D	Q^S
$0	24	0
1	21	5
2	18	10
3	15	15
4	12	20
5	9	25
6	6	30

36

Surplus:

when quantity supplied is greater than quantity demanded



Example:
If P = \$5,

then
Q^D = 9 lattes

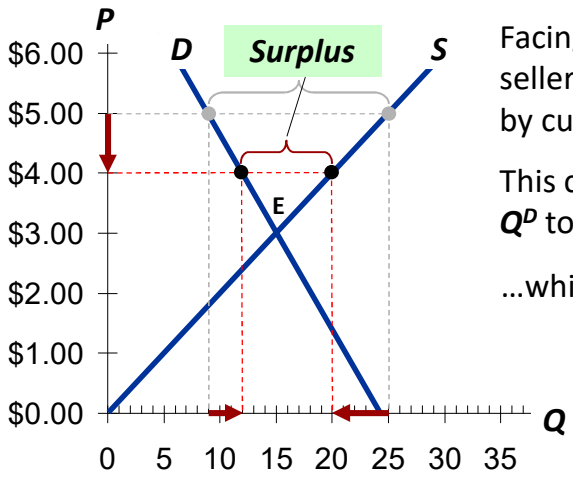
and
Q^S = 25 lattes

resulting in a surplus of 16 lattes

37

Surplus:

when quantity supplied is greater than quantity demanded



Facing a surplus,
sellers try to increase sales
by cutting the price.

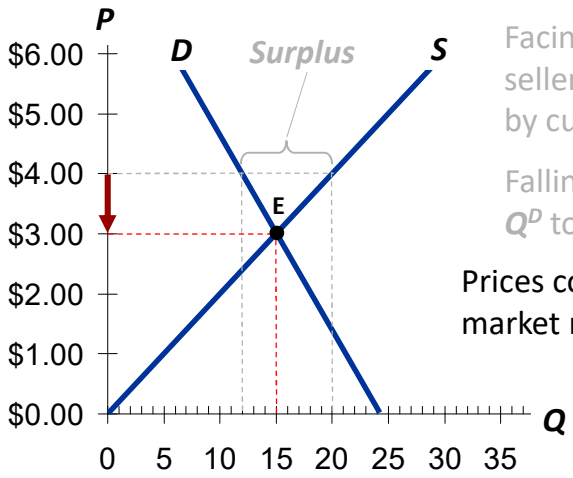
This causes
Q^D to rise and Q^S to fall…

…which reduces the surplus.

38

Surplus:

when quantity supplied is greater than quantity demanded



Facing a surplus, sellers try to increase sales by cutting the price.

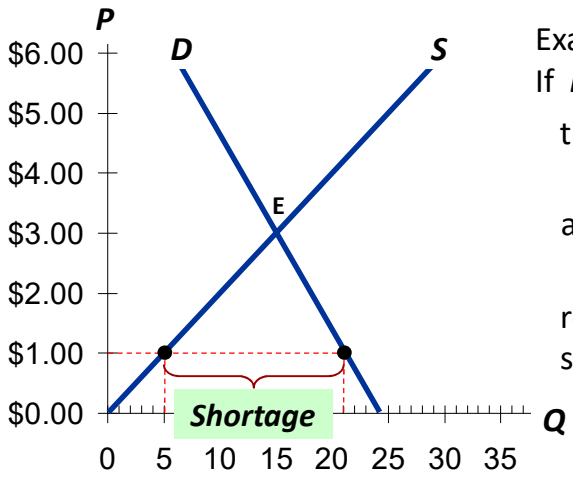
Falling prices cause Q^D to rise and Q^S to fall.

Prices continue to fall until market reaches equilibrium.

39

Shortage:

when quantity demanded is greater than quantity supplied



Example:
If P = \$1,

then
Q^D = 21 lattes

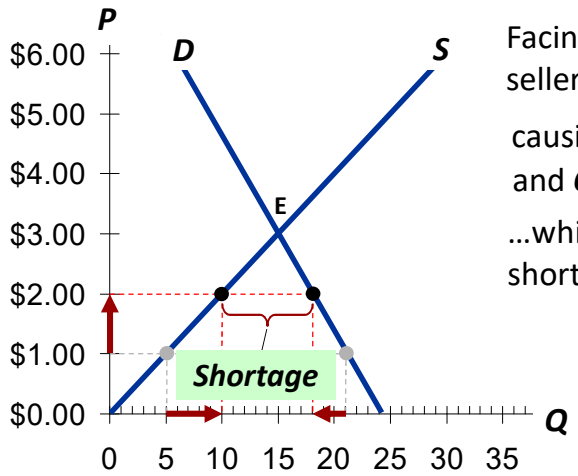
and
Q^S = 5 lattes

resulting in a shortage of 16 lattes

40

Shortage:

when quantity demanded is greater than quantity supplied



Facing a shortage, sellers raise the price,

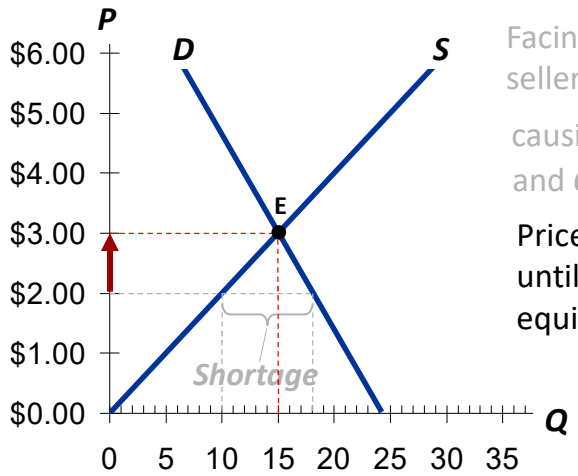
causing Q^D to fall and Q^S to rise,

…which reduces the shortage.

41

Shortage:

when quantity demanded is greater than quantity supplied



Facing a shortage, sellers raise the price,

causing Q^D to fall and Q^S to rise.

Prices continue to rise until market reaches equilibrium.

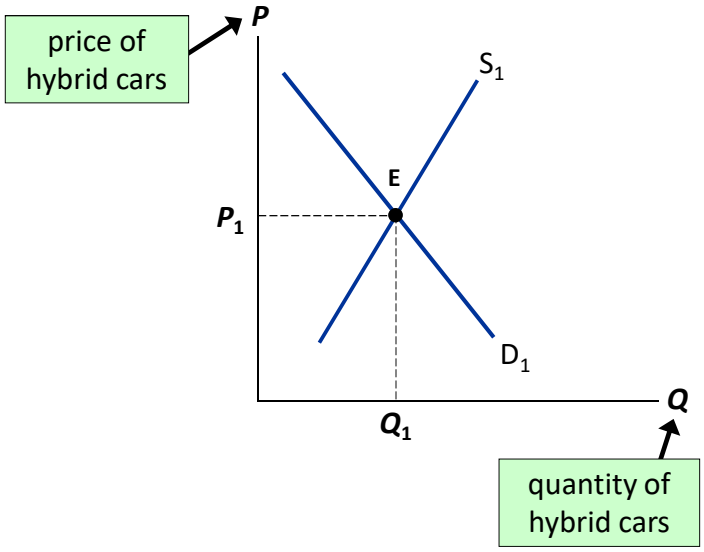
42

2.5 Price Determination Analysis

- **Three Steps of Analysis: (Static Analysis)**
  1. Decide whether the event shifts the supply or demand curve
  2. Decide in which direction the curve shifts
  3. Use the supply-and-demand diagram to see how the shift changes the equilibrium price and quantity
     - A shift in the demand curve is called a "change in demand." A shift in the supply curve is called a "change is supply."
     - A movement along a fixed demand curve is called a "change in quantity demanded." A movement along a fixed supply curve is called a "change in quantity supplied."

43

EXAMPLE: The Market for Hybrid Cars



44

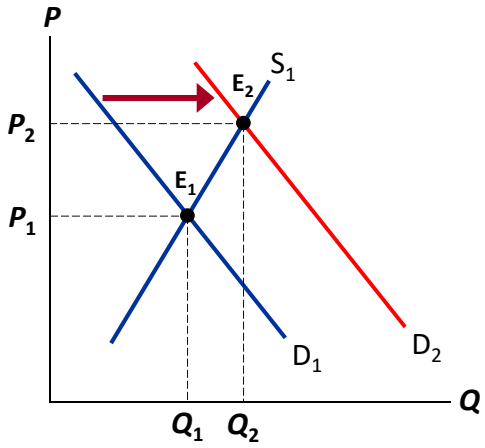
EXAMPLE 1: A Change in Demand

EVENT TO BE ANALYZED: Reduce in price of petrol.

STEP 1: D curve shifts
because price of petrol affects demand for hybrids.
S curve does not shift, because price of gas does not affect cost of producing hybrids.

STEP 2: D shifts right because low petrol price makes hybrids more attractive relative to other cars.

STEP 3:
The shift causes an increase in price and quantity of hybrid cars.

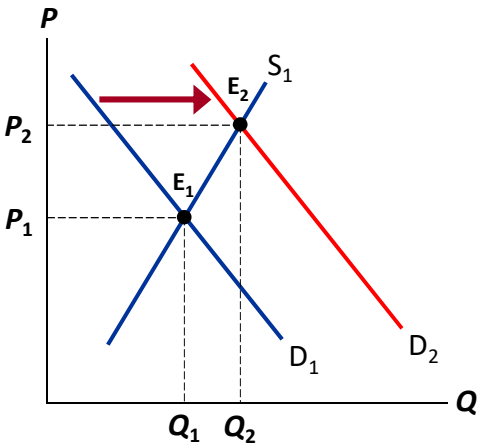


45

EXAMPLE 1: A Change in Demand

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

Always be careful to distinguish b/w a shift in a curve and a movement along the curve.



46

Shift vs. Movement Along Curve

- **Change in supply:** a shift in the **S** curve
  - occurs when a non-price determinant of supply changes (like technology or costs)
- **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 (like income or # of buyers)
- **Change in the quantity demanded:** a movement along a fixed **D** curve
  - occurs when ***P*** changes

47

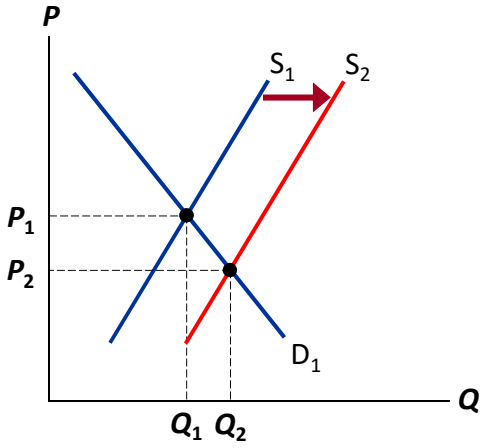
EXAMPLE 2: A Change in Supply

EVENT: New technology reduces cost of producing hybrid cars.

STEP 1: **S** curve shifts because event affects cost of production. **D** curve does not shift, because production technology is not one of the factors that affect demand.

STEP 2: **S** shifts right because event reduces cost, makes production more profitable at any given price.

STEP 3: The shift causes price to fall and quantity to rise.



48

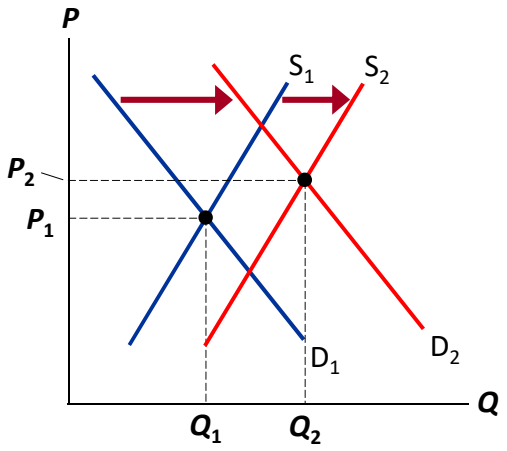
EXAMPLE 3: A Change in Both Supply and Demand

EVENTS: price of gas rises AND new technology reduces production costs

STEP 1: Both curves shift.

STEP 2: Both shift to the right.

STEP 3:
Q rises, but effect on ***P*** is ambiguous:
If demand increases more than supply, ***P*** rises.



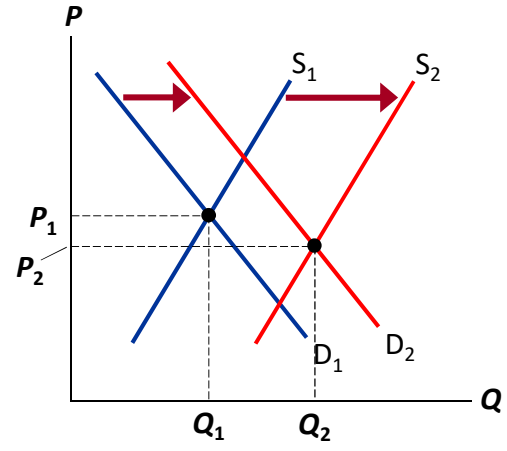
49

EXAMPLE 3: A Change in Both Supply and Demand

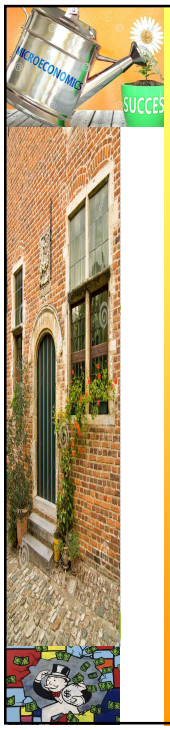
EVENTS:
price of gas rises AND new technology reduces production costs

STEP 3, cont.

But if supply increases more than demand, ***P*** falls.



50

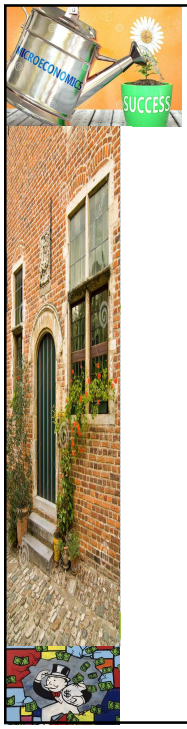


ACTIVE LEARNING 3:
Changes in supply and demand

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

Event A:	A fall in the price of compact discs
Event B:	Sellers of music downloads negotiate a reduction in the royalties they must pay for each song they sell.
Event C:	Events A and B both occur.

51



CONCLUSION: How Prices Allocate Resources

- One of the Ten Principles from Chapter 1: *Markets are usually a good way to organize economic activity.*

- In market economies, prices adjust to balance supply and demand. These equilibrium prices are the signals that guide economic decisions and thereby allocate scarce resources.

52