Understanding Market forces

Have you wondered why:

- How are the stock prices determined?
- How are the fuel prices determined?
- How is interest rate fixed ?
- How are gold prices fixed?

Overview

- Market (who, what, how)
- Supply and demand is an economic model
  - Designed to explain how prices are determined in certain types of markets
- What you will learn in this session?
  - How the model of supply and demand works and how to use it?

1. The law of demand
2. The law of supply
3. The determination of market equilibrium
4. Factors shifting demand or supply curves

Markets

- In economics, a market is not a place but a situation where a group of buyers and sellers with the potential to trade with each other
  - Market is defined not by its location but by its participants

- Economists think of the economy as a collection of individual markets

Buyers and Sellers

- Buyers and sellers in a market can be
  - Households
  - Business firms
  - Government agencies
    - All three can be both buyers and sellers in the same market, but are not always
- For purposes of simplification, this text will usually follow these guidelines
  - In markets for consumer goods, we'll view business firms as the only sellers, and households as only buyers
  - In most of our discussions, we'll be leaving out the "middleman"

What is Demand?

- By definition demand refers to **desire** for a commodity backed by **ability** and **willingness to pay** for it in a given period of **time**.
  - The DEPENDENT variable is the quantity demanded.
  - The INDEPENDENT variable is the good's own price.

Demand: Broad types

- **A household's** quantity demanded of a good
  - Specific amount household would choose to buy over some time period, given
    - A particular price that must be paid for the good
    - All other constraints on the household
- ✓ **Market** quantity demanded (or quantity demanded) is the specific amount of a good that all buyers in the market would choose to buy over some time period, given
  - A particular price they must be paid for the good
  - All other constraints on households

The Demand Function:

The relationship between quantity consumed and the factors determining that: $D = f(P, P_S, P_C, I, E, T, \text{etc.})$

■ **Price** of the good in question—determines the location along a demand curve

■ Other variables (relevant factors) determine the placement of a demand curve:

► Prices of related goods (substitutes and complements)
► Income of buyers
► Tastes (preferences) of buyers
► Expectations held by buyers, regarding the future
► Other matters particular to a certain good

Demand Functions

- Price of the commodity (**Px)**
- Income of the Consumer (**Y)**
- Consumer's taste and preference (**T)**
- Price of related commodities (**Pr)**
- Consumer Expectation
- Size and composition of population
- Advertising and Sales Promotion
- Other Factors e.g., natural calamities

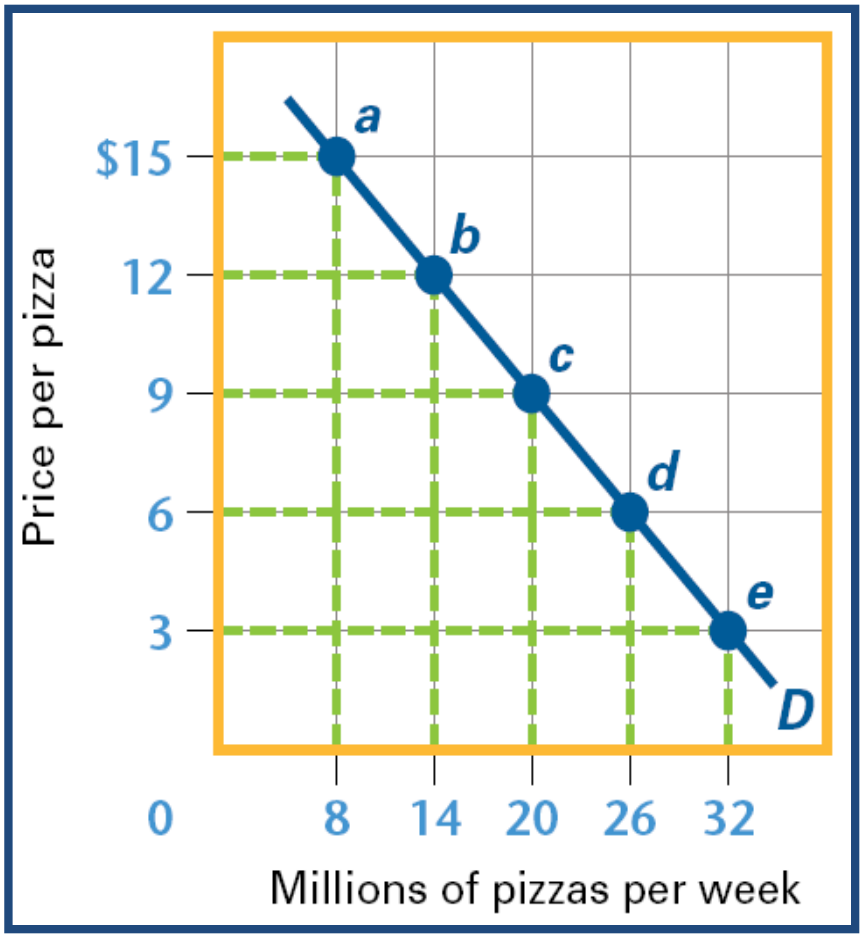
Qdx = f (Px, Pr ,Y , T, , …)

Demand schedule

- Demand Schedule: a tabular presentation showing different quantities of a commodity that would be demanded at different prices.

Demand Schedule and Demand Curve

	Price per unit	Quantity Demanded per Week (millions)
a	15	8
b	12	14
c	9	20
d	6	26
e	3	32



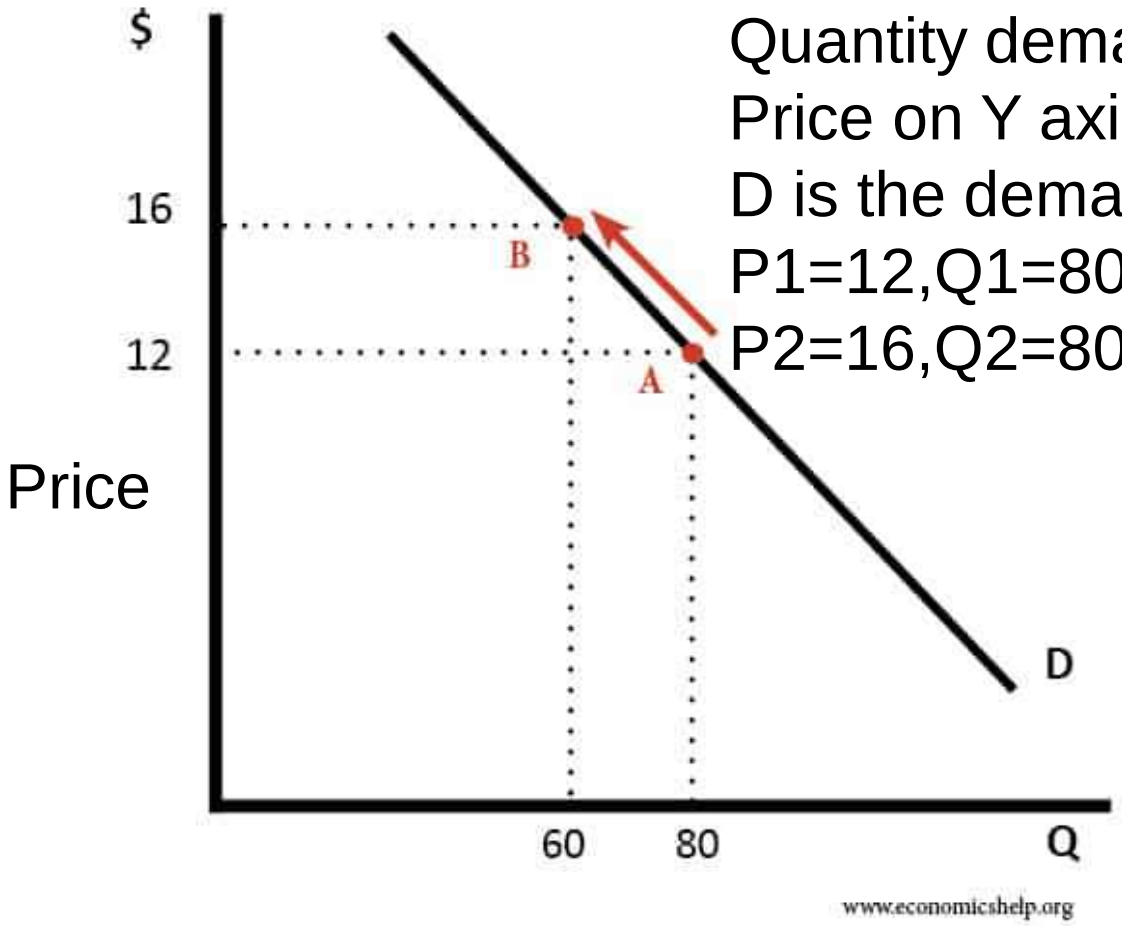
Law of Demand

- The **law of demand** says that quantity demanded varies inversely with price, other things remaining constant (*Ceteris paribus*).

- *Ceteris paribus*, a latin word is defined as "all else being equal," or "holding all else constant".(Here, demand function assumes income, taste and preferences etc as constant, while analyzing changes in demand due to price changes)

- Thus, the higher the price, the smaller the quantity demanded.

Demand curve



Price

Quantity

Quantity demanded on X axis
Price on Y axis
D is the demand curve
P1=12,Q1=80
P2=16,Q2=80

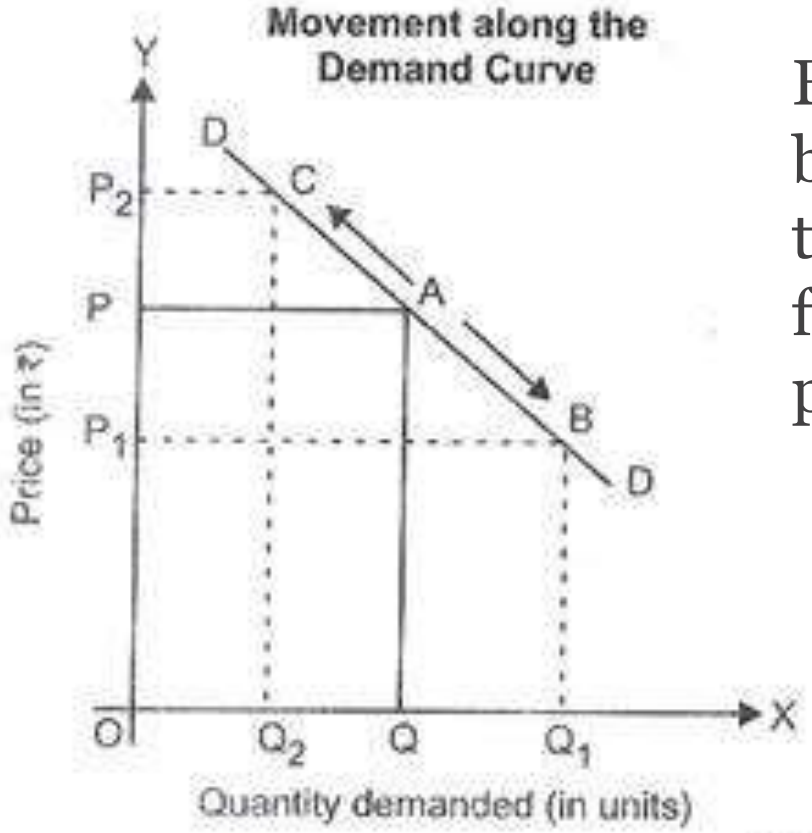


Fig. 3.4

Expansion in Demand is shown by downward movement from A to B. Quantity Demanded rises from OQ to OQ., due to fall in price from OP to OP_1

Changes in demand/Movement along the demand curve

Expansion in demand

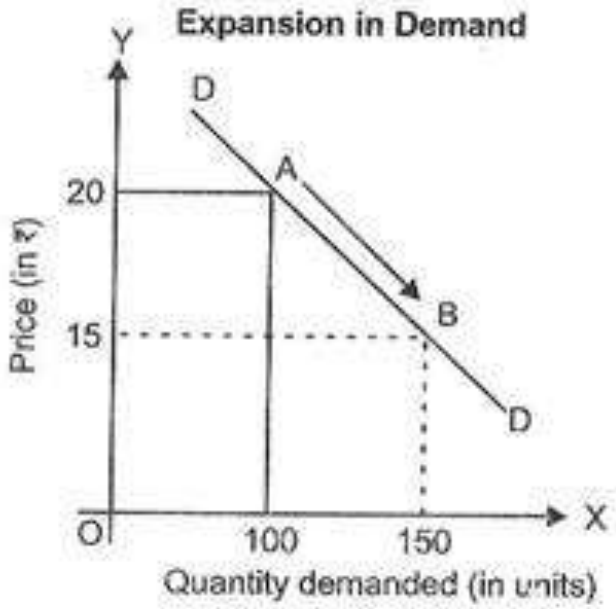


Fig. 3.5

Contraction in demand

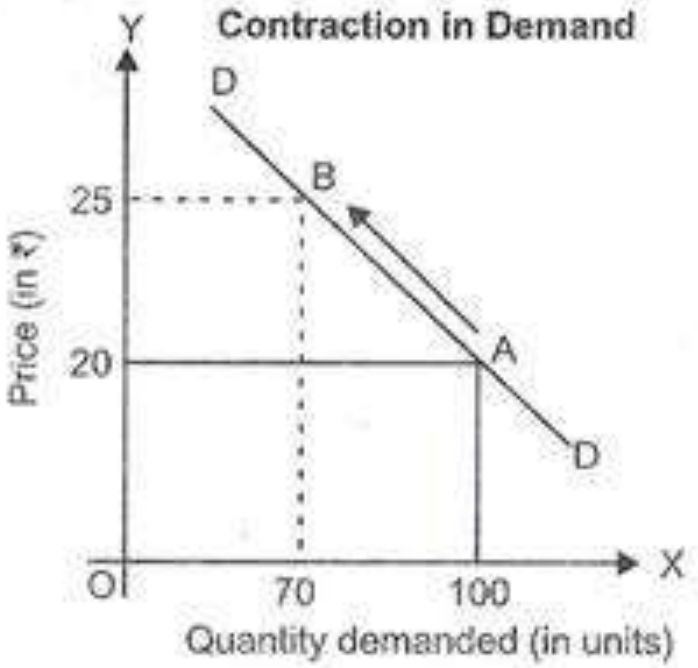
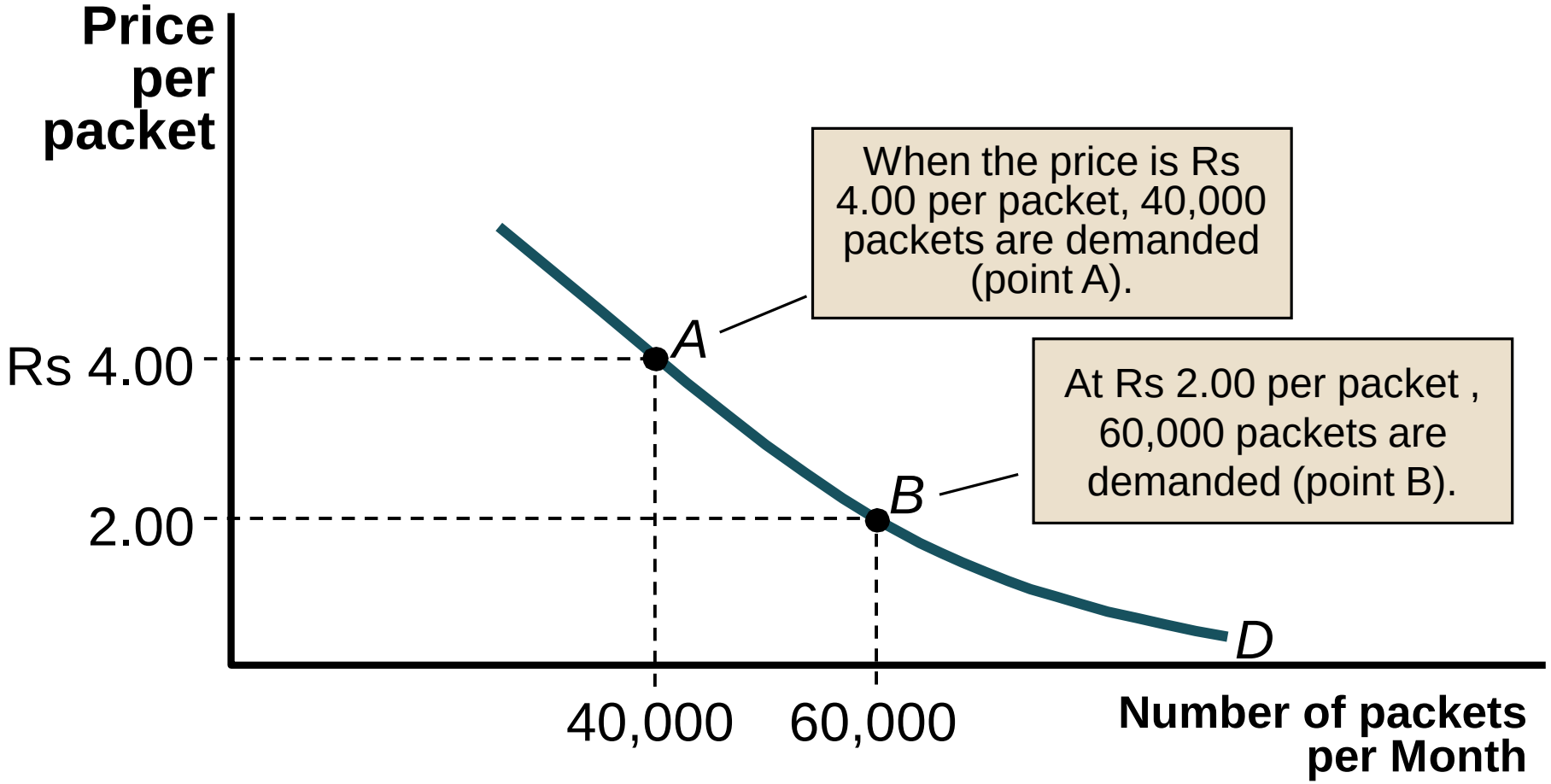
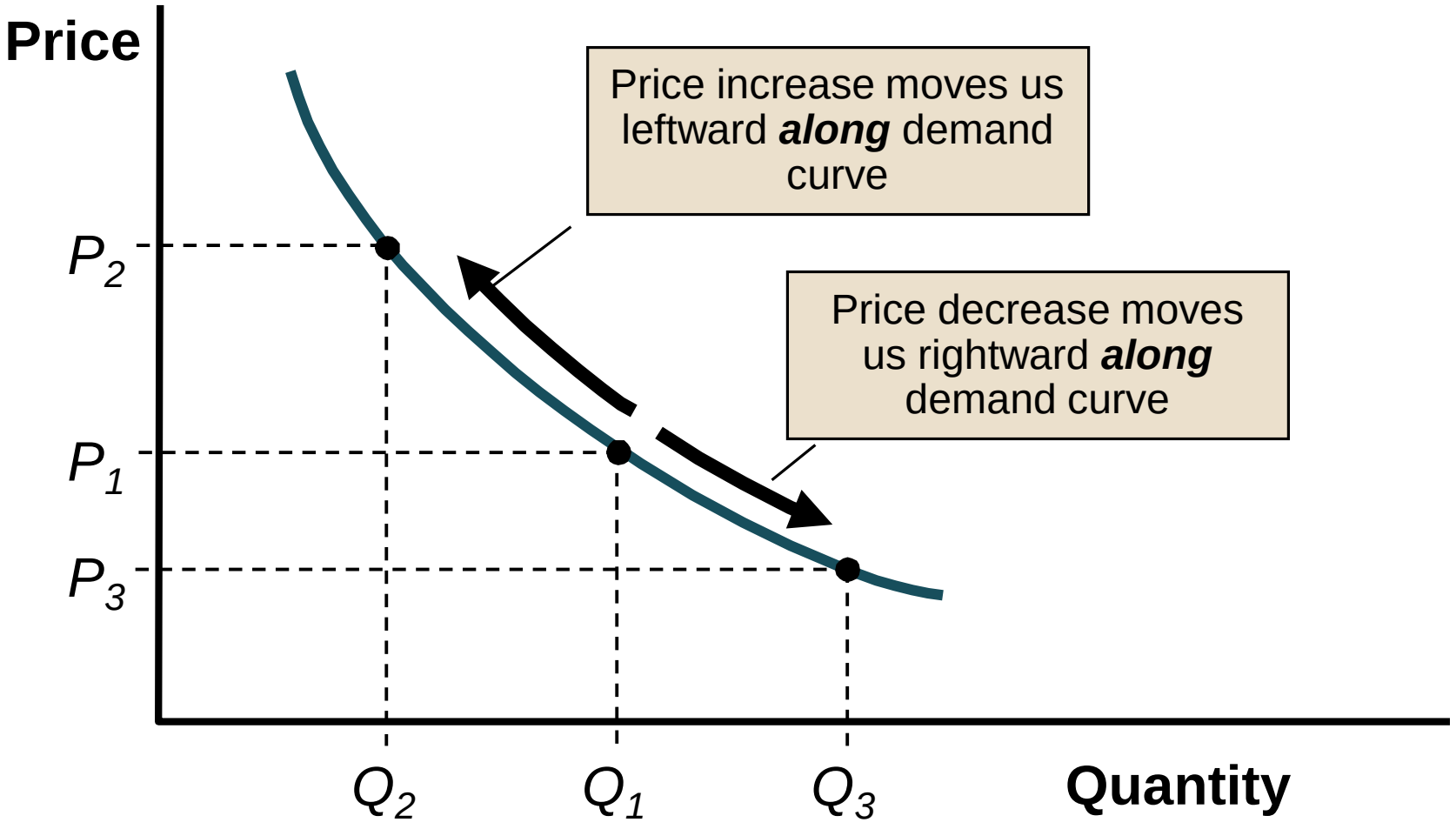


Fig. 3.6

The Demand Curve



Movements Along and Shifts of The Demand Curve



When price falls, what happens?

- You have a certain basket of goods for consumption per month.
- Now, price of one of the goods falls, your purchasing power increases. That is, you will have some savings to purchase additional quantity of any good. This is called rise in real income.
- That is, how much basket of goods which one can purchase ,that is called real income, where money income shows the amount of money which you have as income.
- So when, price falls, your real income increases. (This is called income effect)

When price falls, what happens? (Contd)

- Similarly, when price increases, the product becomes expensive(dearer) and the consumer substitutes with relatively cheaper product- Substitution effect.

Why does the demand curve slope downwards to the right?

- Income Effect – An increase in demand on account of increase in real income is known as income effect.
- Substitution Effect
- diminishing marginal utility

Exceptions to the Law of Demand

- Antique & other unique collection
- Gold, diamond etc
- Giffen paradox: In Britain, Robert Giffen observed that low paid British wage earners demanded more potatoes when its price increased.
- Conspicuous consumption/Dusenberry Effect, coined by James Dusenberry

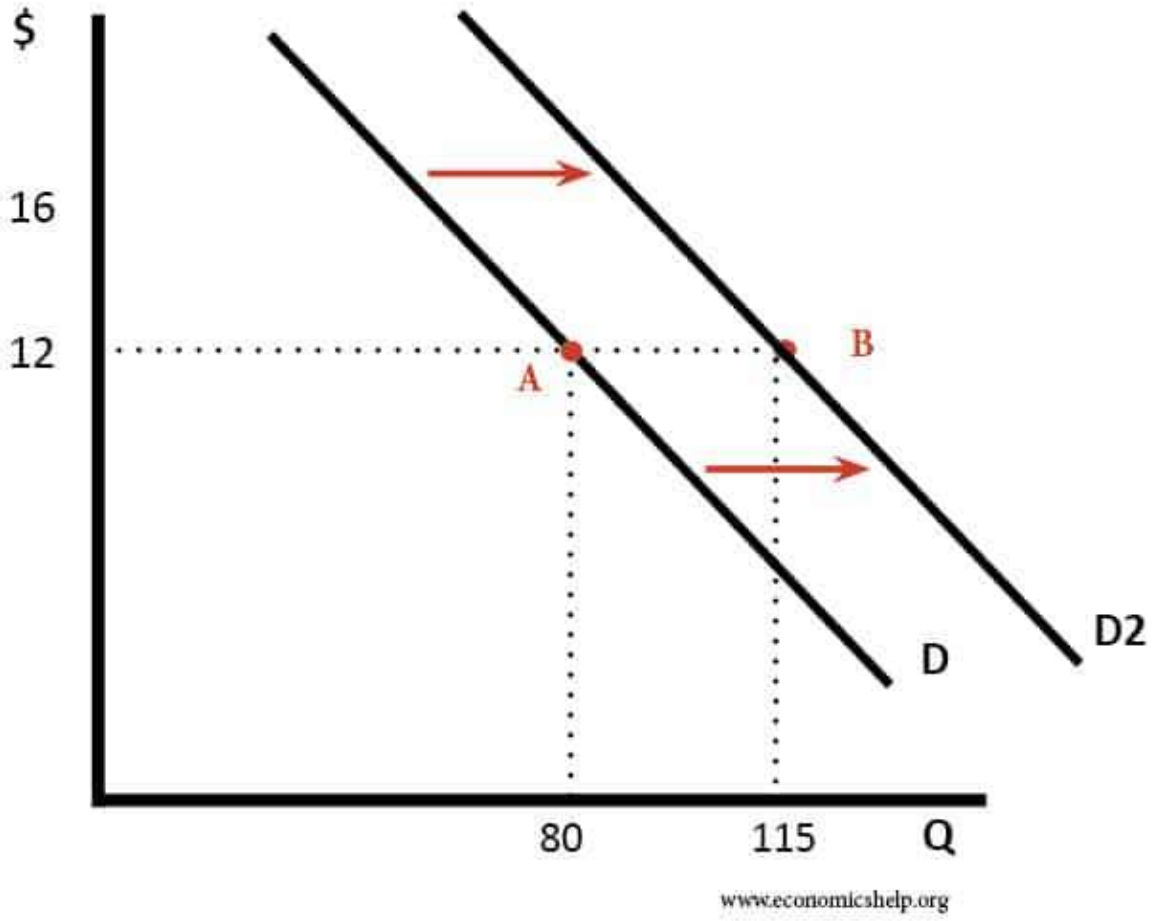
Giffen Goods

- A Giffen good describes an extreme case for an inferior good. In theory, a Giffen good would display the characteristic that as price increases, demand for the product increases. example is what Robert Giffen observed the purchase of potatoes (an inferior good) as prices continued to increase during the Irish potato famine.

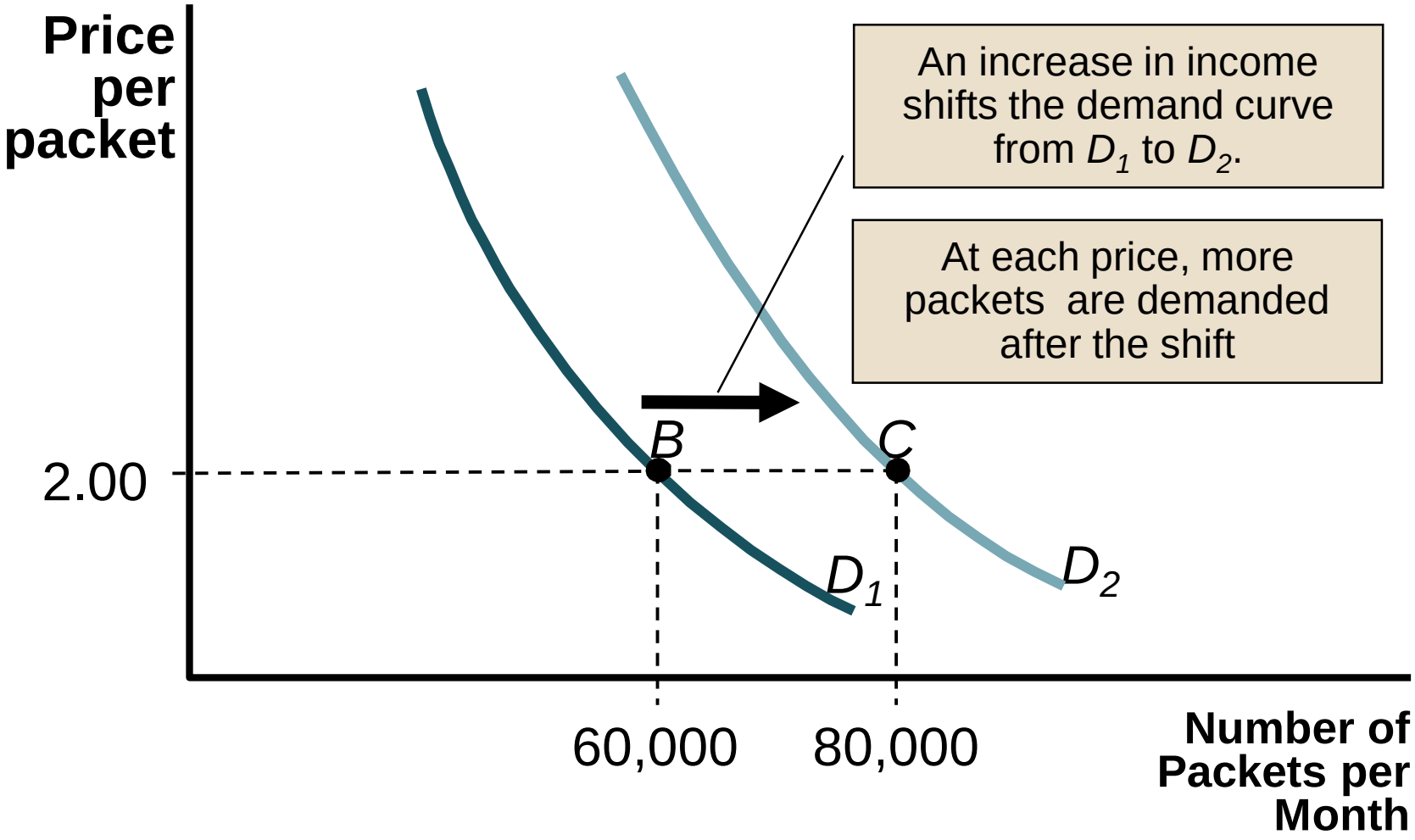
Veblen Goods

- Some expensive commodities like diamonds, expensive cars, designer clothing and other high-price limited edition items, are used as status symbols to display wealth. The more expensive these commodities become, the higher their value as a status symbol and the greater the demand for them. The amount demanded of these commodities increase with an increase in their price and decrease with a decrease in their price. These goods are known as a Veblen goods.(Dusenberry Effect)

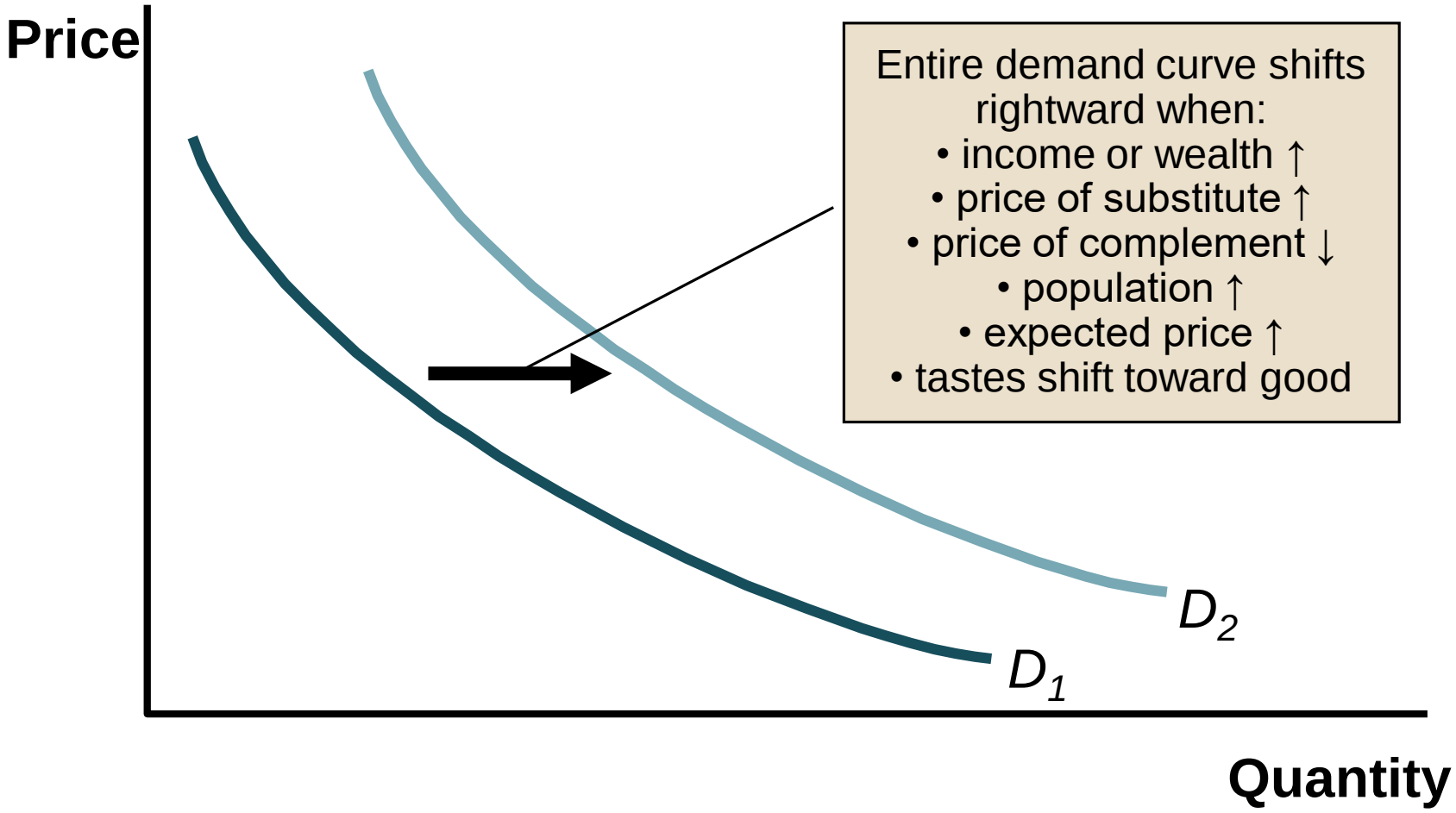
Shifts in demand curve



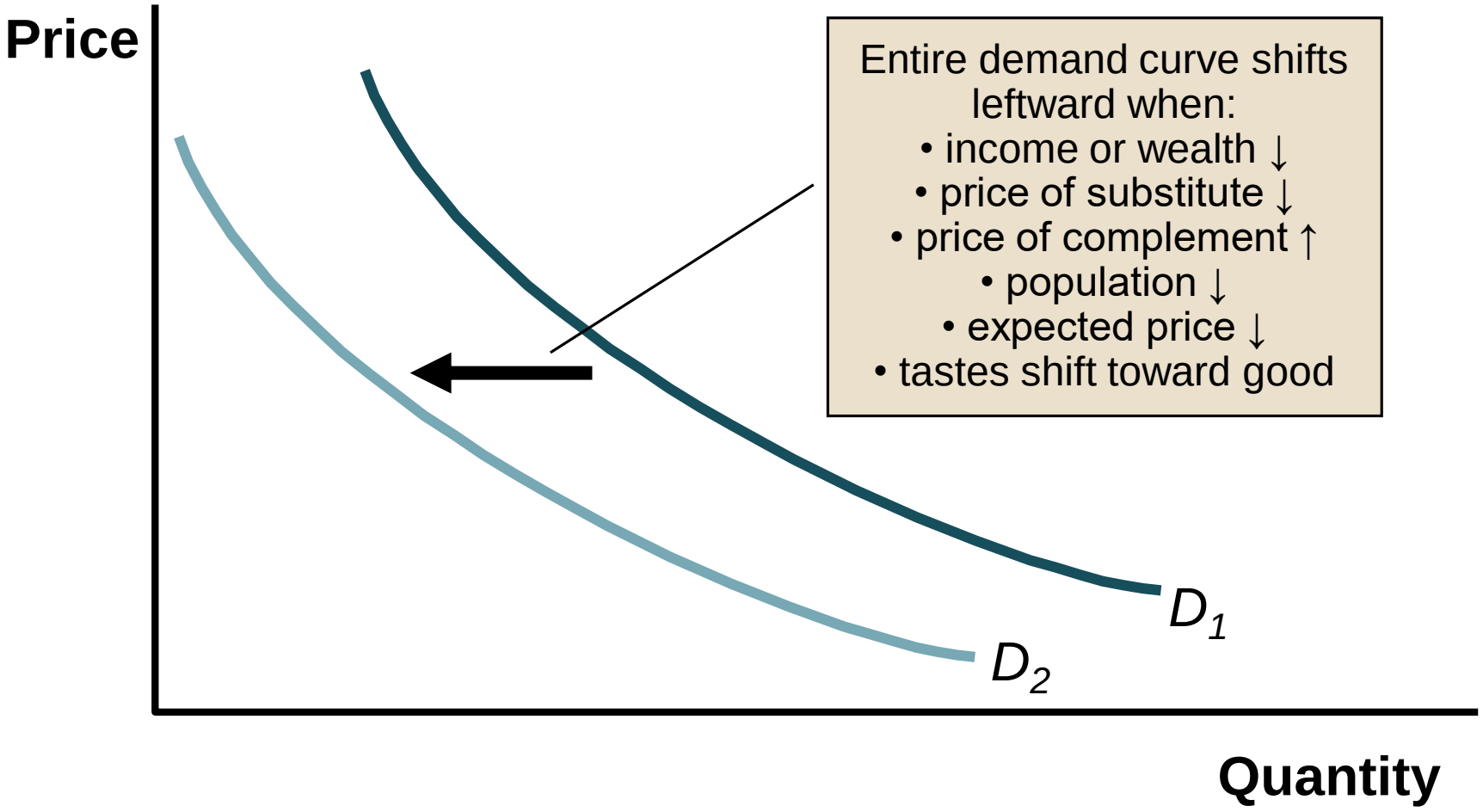
A Shift of The Demand Curve



Rightward Shift of The Demand Curve



Leftward Shift of The Demand Curve



Are goods related?

- What happens to the demand for Airtel sim cards when price of Jio falls?
- What happens to the quantity demanded for the laptops, smartphones when the telecom companies slash their rates(Considering the covid times)?
- Yes former is called a substitute and the latter a complementary good

Substitute Goods:

- Substitute goods are those goods which can be used in place of one another for requirement to meet a particular want.
- Eg: tea and coffee
- Demand for a given commodity varies directly with the price of a substitute good. For example, if price of a substitute good (say, coffee) increases, then demand for given commodity (say, tea) will rise as tea will become relatively cheaper in comparison to coffee.

Demand curve of substitute goods

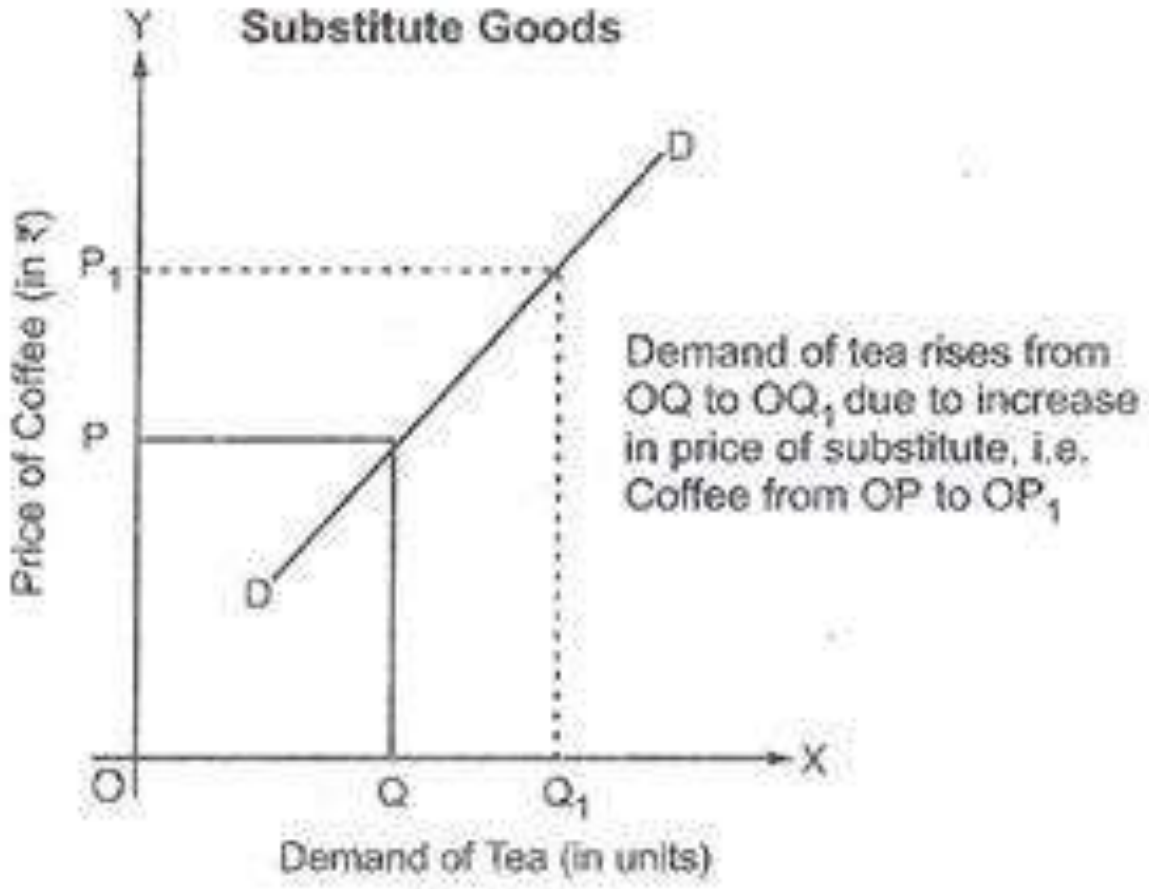


Fig. 3.10

Complementary Goods:

- **Complementary goods** are those goods which are used together to meet a particular requirement.
- Demand for a given commodity varies inversely with the price of a complementary good. For example, if price of a complementary good (say, sugar) increases, then demand for given commodity (say, tea) will fall as it will be relatively costlier to use both the goods together.

Demand curve of complementary goods

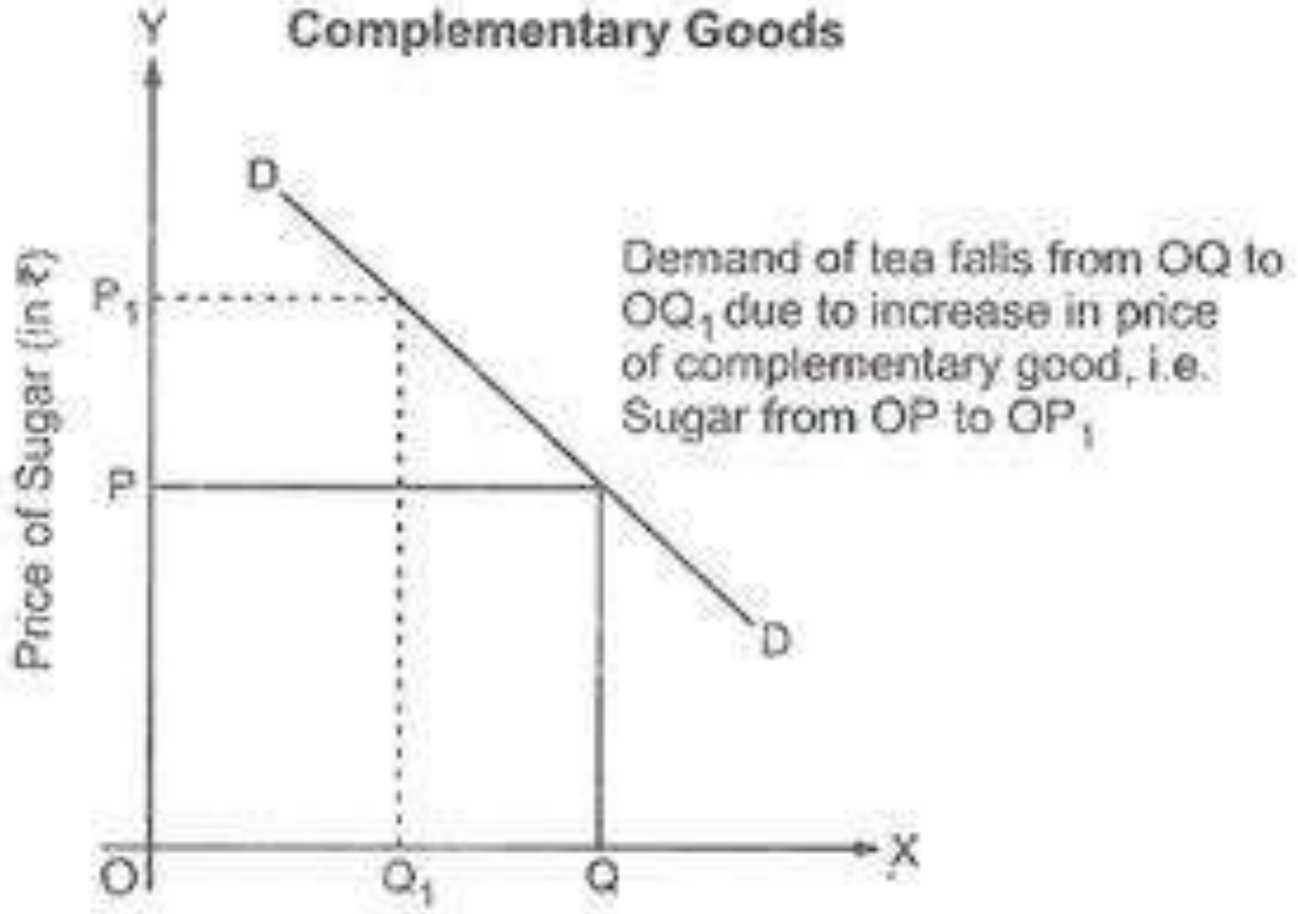


Fig. 3.11

Types of Demand

- Individual demand
- Market demand
- Income demand
- Direct Demand
- Derived Demand
- Cross demand

“Shifts” vs. “Movements Along” The Demand Curve

- a change in other things than price of the good causes a shift in the demand curve itself, for example, income
- Movement along the demand curve shows the changes in demand due to change in price of the product

- Price factor & Non price factor

Income: Factors That Shift The Demand Curve

- An increase in income has effect of shifting demand for **normal goods** to the right
  - However, a rise in income shifts demand for **inferior goods** to the left
- A rise in income will increase the demand for a normal good, and decrease the demand for an inferior good
- Normal good and inferior good are defined by the relation between demand and income

Prices of Related Goods: Factors that Shift the Demand Curve

- Substitute—good that can be used in place of some other good and that fulfills more or less the same purpose

  Example

  – A rise in the price of a substitute increases the demand for a good, shifting the demand curve to the right

- Complement—used together with the good we are interested in

  Example

  – A rise in the price of a complement decreases the demand for a good, shifting the demand curve to the left

Other Factors That Shift the Demand Curve

- Population
  - As the population increases in an area
    - Number of buyers will ordinarily increase
    - Demand for a good will increase
- Expected Price
  - An expectation that price will rise (fall) in the future shifts the current demand curve rightward (leftward)
- Tastes
  - Combination of all the personal factors that go into determining how a buyer feels about a good
  - When tastes change toward a good, demand increases, and the demand curve shifts to the right
  - When tastes change away from a good, demand decreases, and the demand curve shifts to the left

Small Summary
-- Factors Affecting Demand

- *Income* (depends on good's nature: normal or inferior)
- *Prices of substitutes* (positively related)
- *Prices of complements* (negatively related)
- *Population* (positively related)
- *Expected price* (positively related)
- *Tastes* (positively related)

Supply

- ✓ **Market** quantity supplied (or quantity supplied) is the specific amount of a good that all sellers in the market would choose to sell over some time period, given
  - A particular price for the good
  - All other constraints on firms

The Law of Supply

- The *law of supply* holds that other things equal, as the price of a good rises, its quantity supplied will rise, and vice versa.
- Why do producers produce more output when prices rise?
  - They seek higher profits
  - They can cover higher marginal costs of production

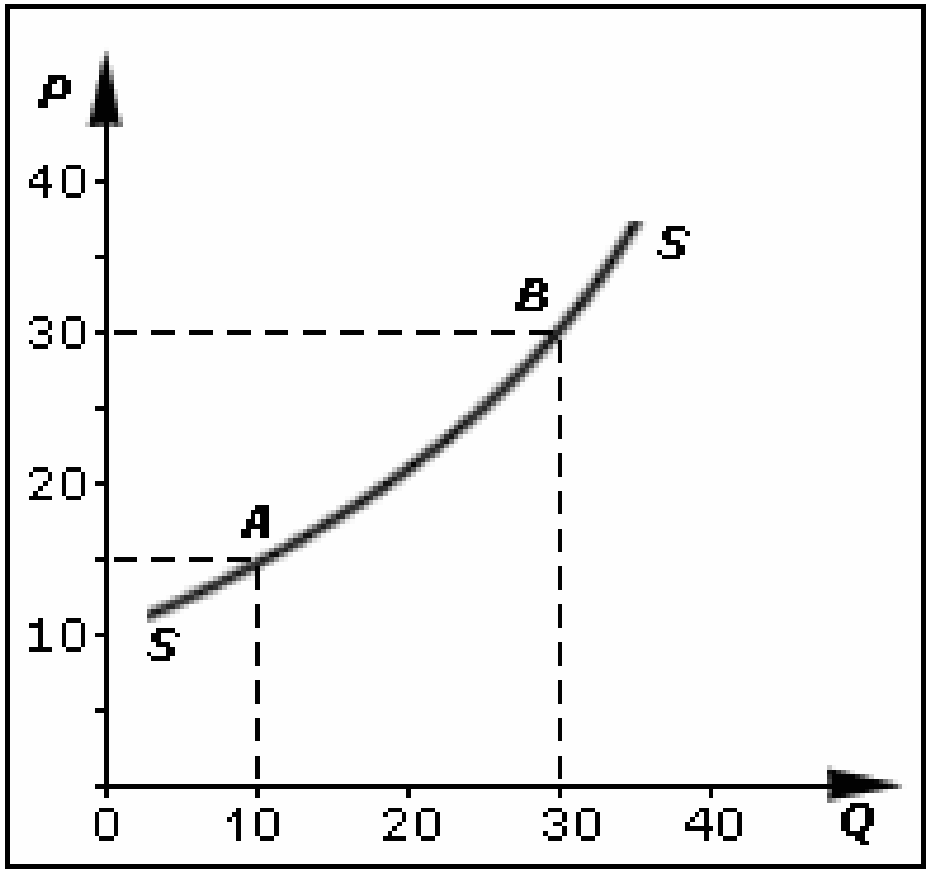
The Law of Supply

- States that when the price of a good rises and everything else remains the same(ceteris paribus), the quantity of the good supplied will rise
  - The words, “everything else remains the same” are important
    - In the real world many variables change simultaneously
    - However, in order to understand the economy we must first understand each variable separately
    - We assume “everything else remains the same” in order to understand how supply reacts to price

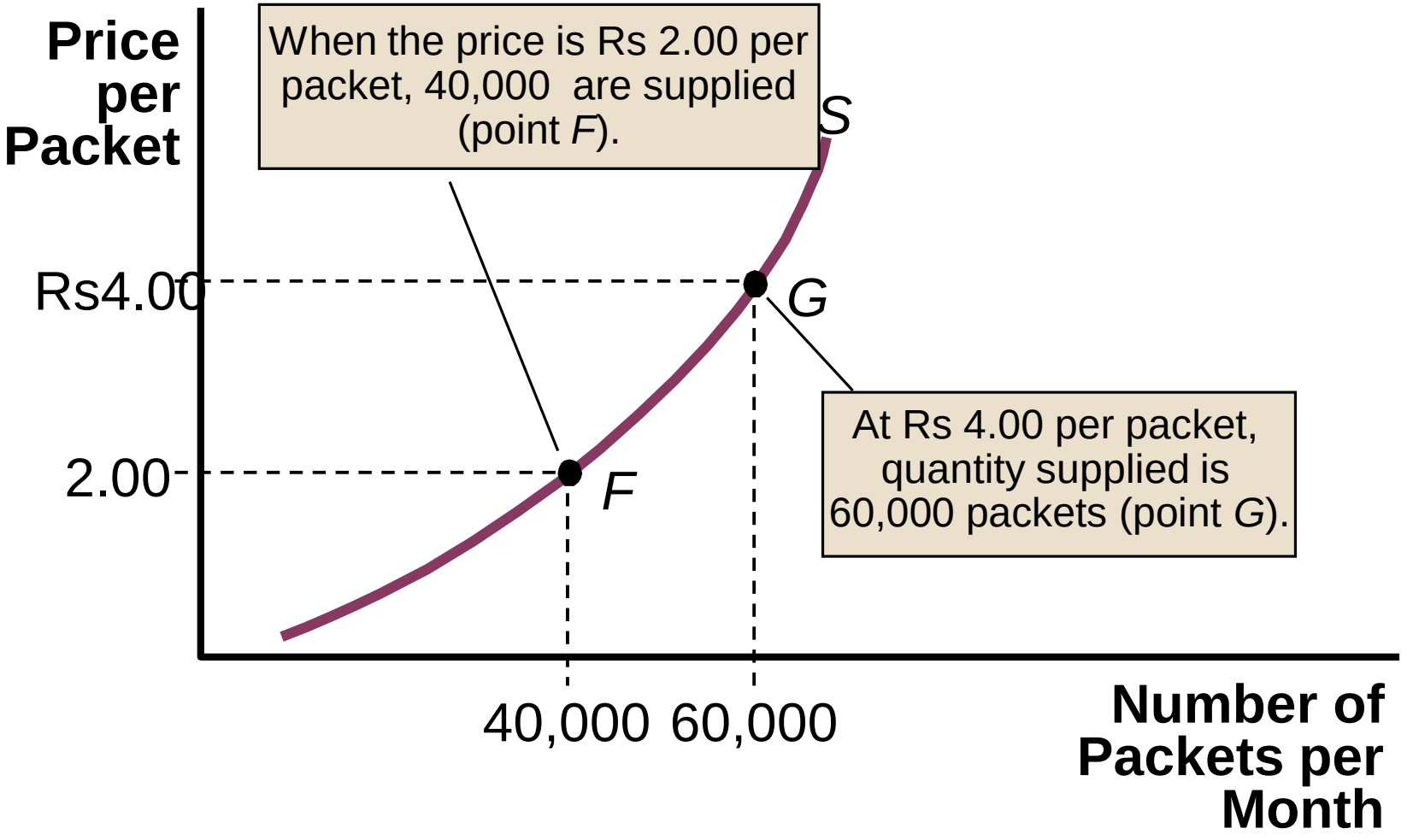
The Supply Schedule and The Supply Curve

- **Supply schedule**—shows quantities of a good or service firms would choose to produce and sell at different prices, with all other variables held constant
- **Supply curve**—graphical depiction of a supply schedule
  - Shows quantity of a good or service supplied at various prices, with all other variables held constant

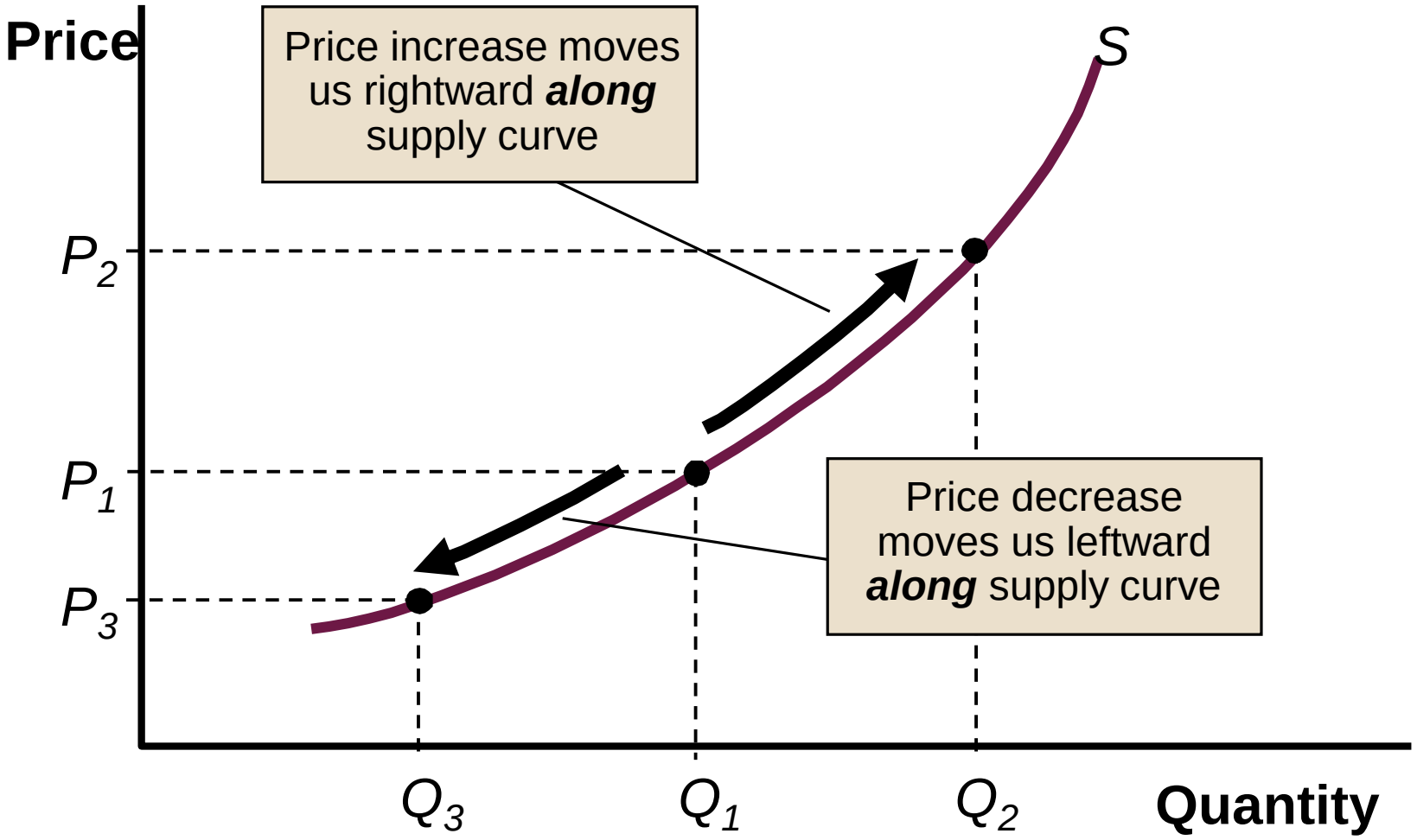
Supply curve



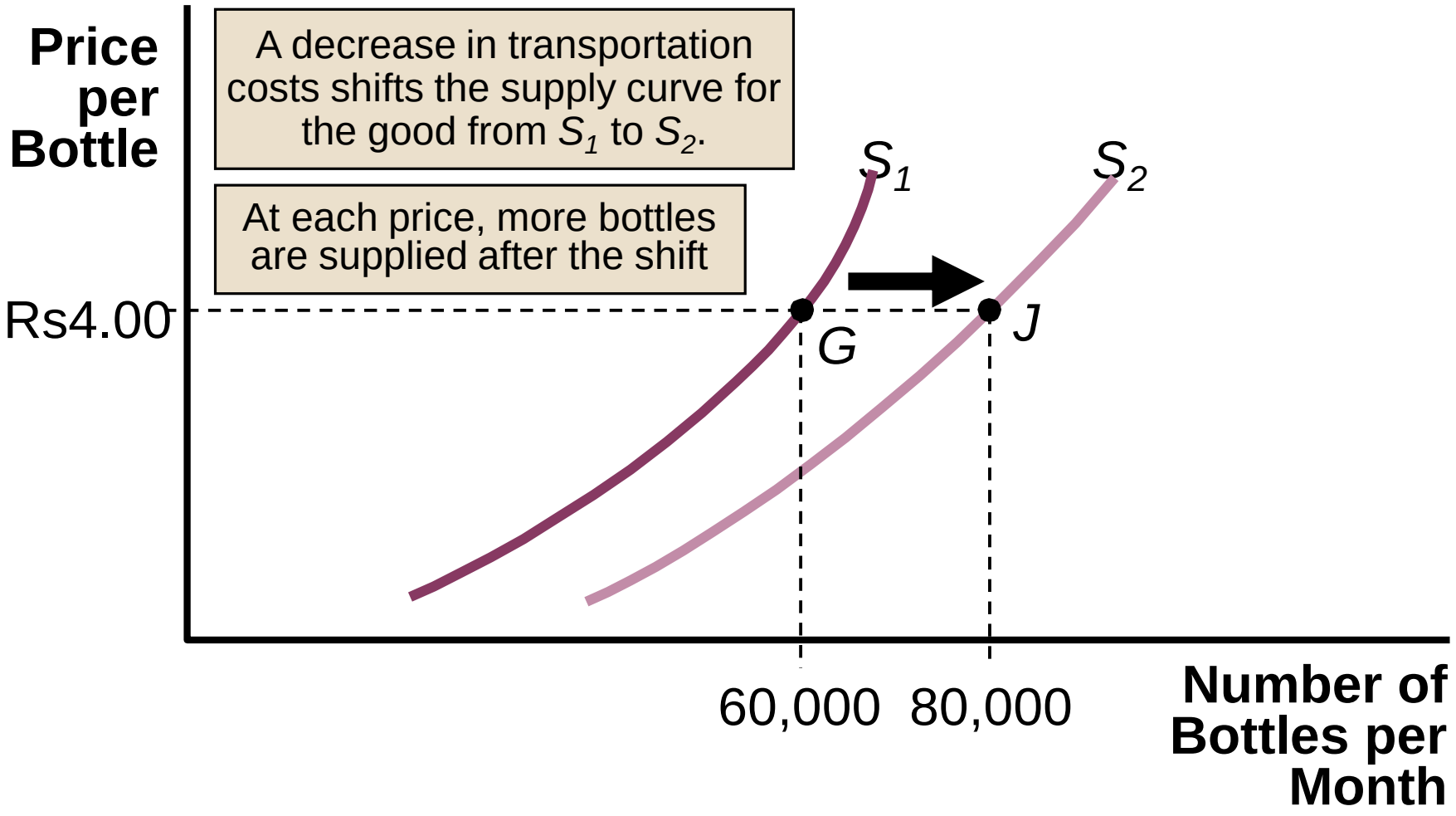
Interpreting The Supply Curve



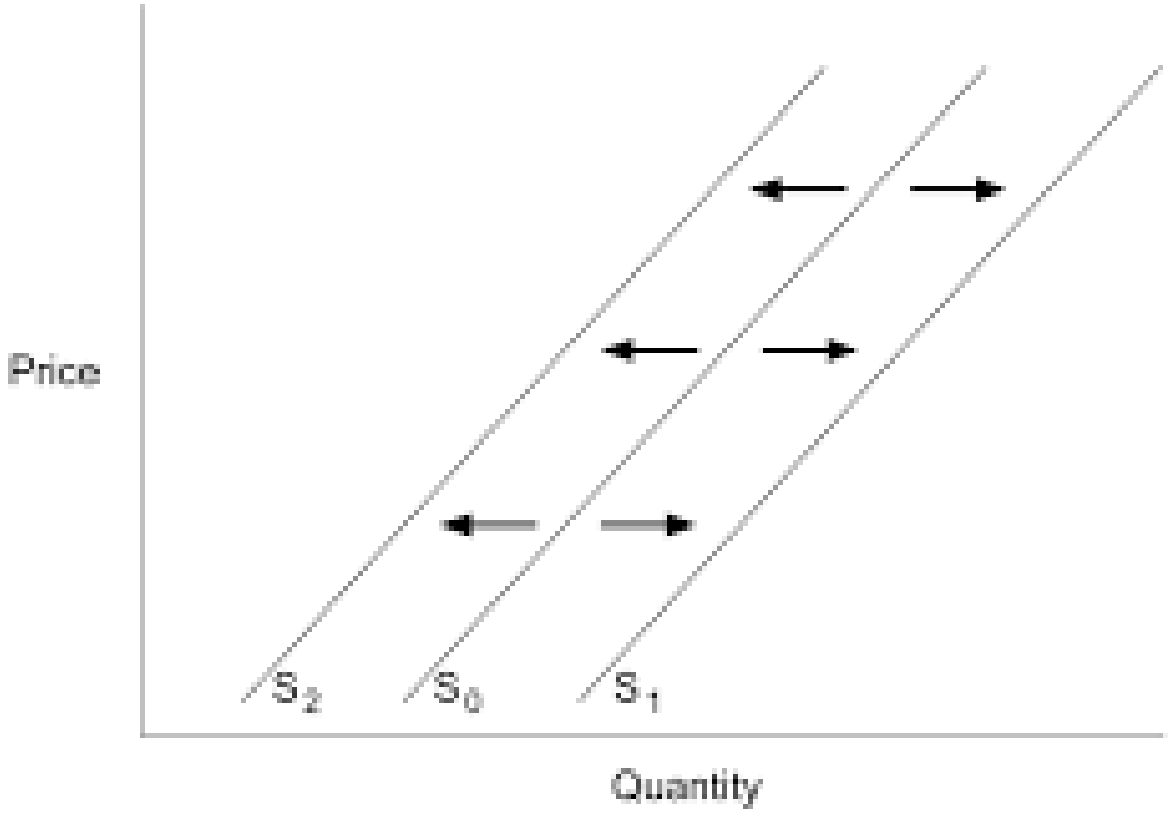
Changes in Supply and in Quantity Supplied



A Shift of The Supply Curve

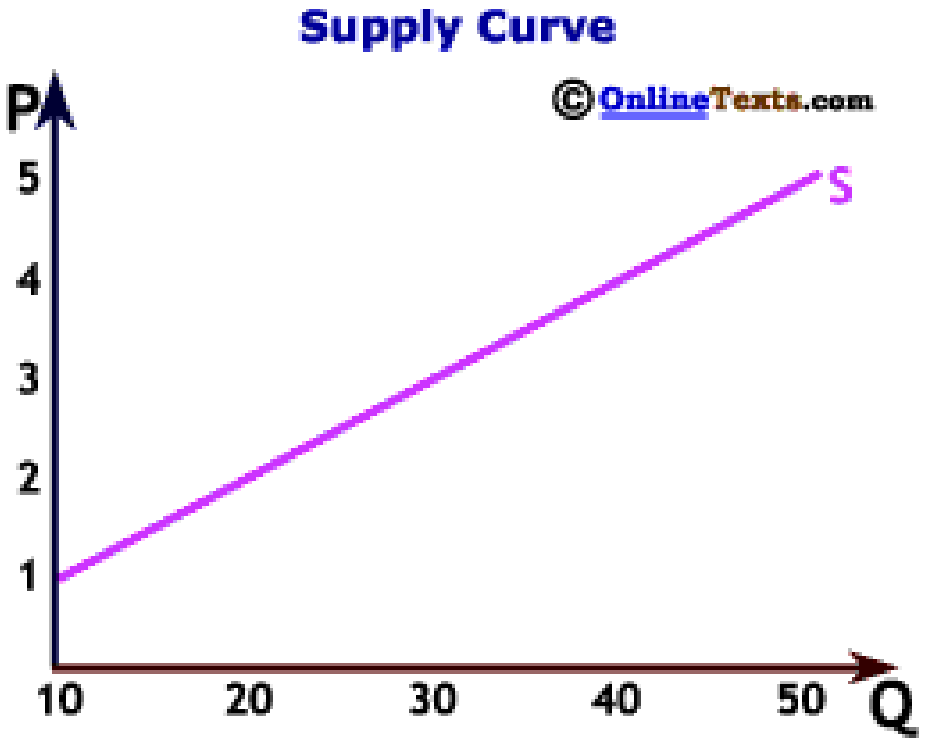


Shifts in supply curves



Supply Curve

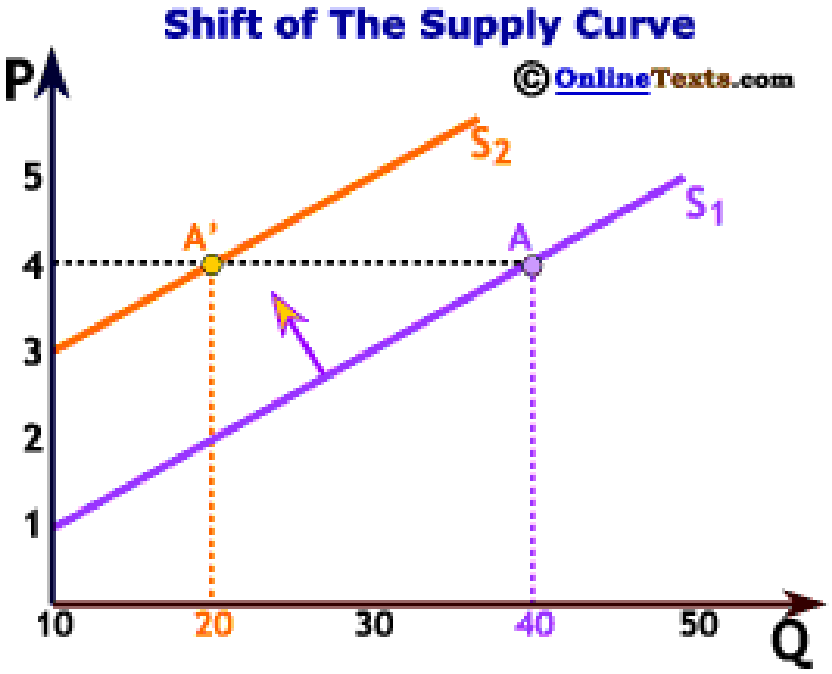
TABLE 2 Supply of Videos	
Price	Quantity Supplied
$5	50
$4	40
$3	30
$2	20
$1	10



The supply curve has a positive slope, consistent with the law of supply.

Shift in the Supply Curve

TABLE 5 Change in Supply due to an Increase in Video Costs			
Price	**Quantity Demanded**	**Initial Quantity Supplied**	**New Quantity Supplied**
$5	10	50	30
$4	**20**	40	**20**
$3	30	30	10
$2	40	20	0
$1	50	10	0



For an given rental price, quantity supplied is now lower than before.

Shifts vs. Movements Along the Supply Curve

- A change in the price of a good causes a movement along the supply curve
    - A rise (fall) in price would cause a rightward (leftward) movement along the supply curve
- A drop in transportation costs will cause a shift in the supply curve itself
  - Supply curve has shifted to the right of the old curve as transportation costs have dropped
    - A change in any variable that affects supply—except for the good's price—causes the supply curve to shift

Factors That Shift the Supply Curve

- Input prices
  - A fall (rise) in the price of an input causes an increase (decrease) in supply, shifting the supply curve to the right (left)
- Price of Related Goods
  - When the price of an alternate good rises (falls), the supply curve for the good in question shifts leftward (rightward)
- Technology
  - Cost-saving technological advances increase the supply of a good, shifting the supply curve to the right

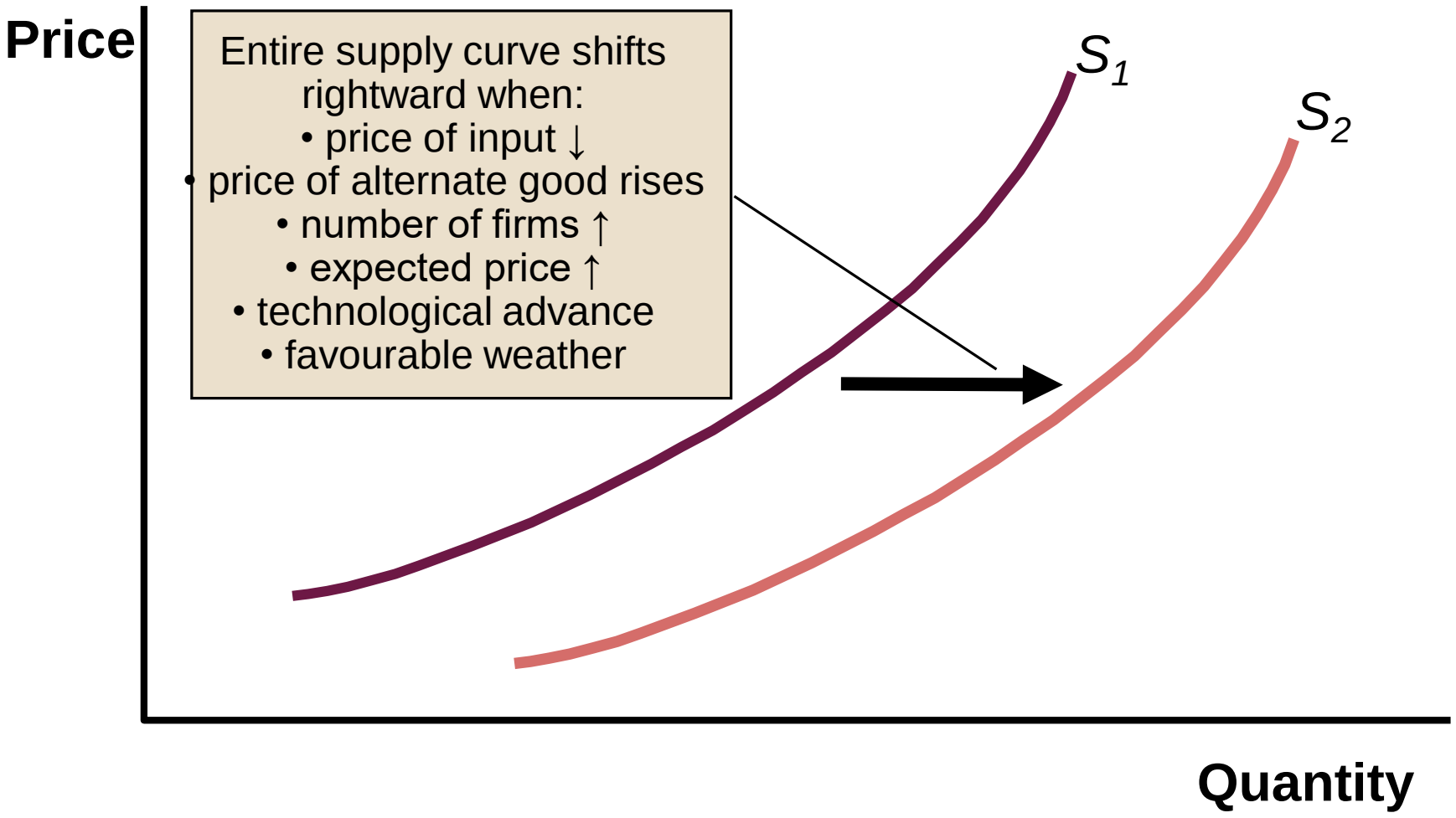
Factors That Shift the Supply Curve

- Number of Firms
  - An increase (decrease) in the number of sellers—with no other changes—shifts the supply curve to the right (left)
- Expected Price
  - An expectation of a future price increase (decrease) shifts the current supply curve to the left (right)

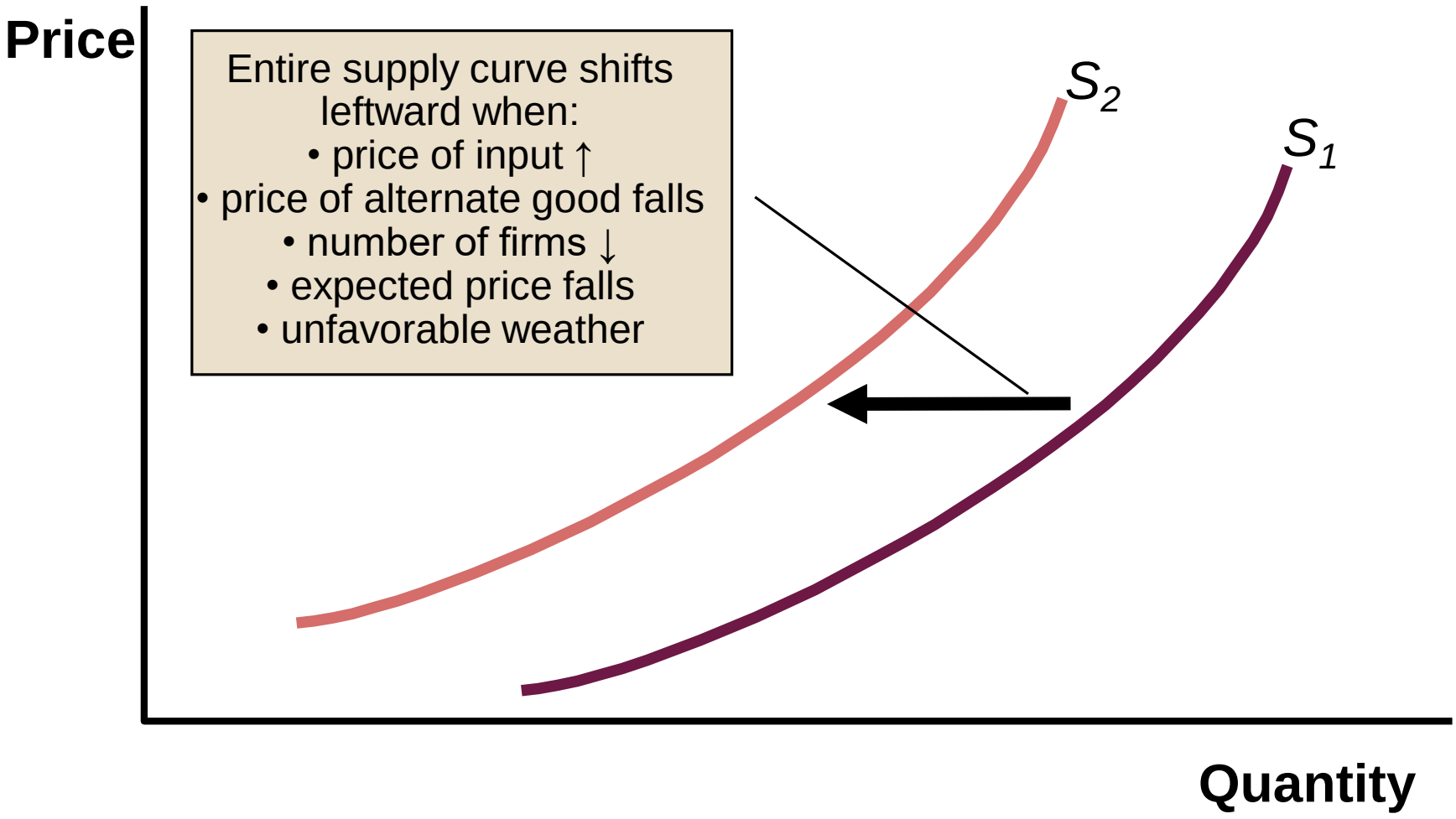
Factors That Shift the Supply Curve

- Changes in weather
  - Favourable weather
    - Increases crop yields
    - Causes a rightward shift of the supply curve for that crop
  - Unfavourable weather
    - Destroys crops
    - Shrinks yields
    - Shifts the supply curve leftward
- Other unfavourable natural events may effect all firms in an area
  - Causing a leftward shift in the supply curve

Changes in Supply and in Quantity Supplied



Changes in Supply and in Quantity Supplied



Summary: Factors That Shift The Supply Curve

- The short list of shift-variables for supply that we have discussed is far from exhaustive
- In some cases, even the threat of such events can cause serious effects on production
- Basic principle is always the same
  - Anything that makes sellers want to sell more or less of a good at any given price will shift supply curve

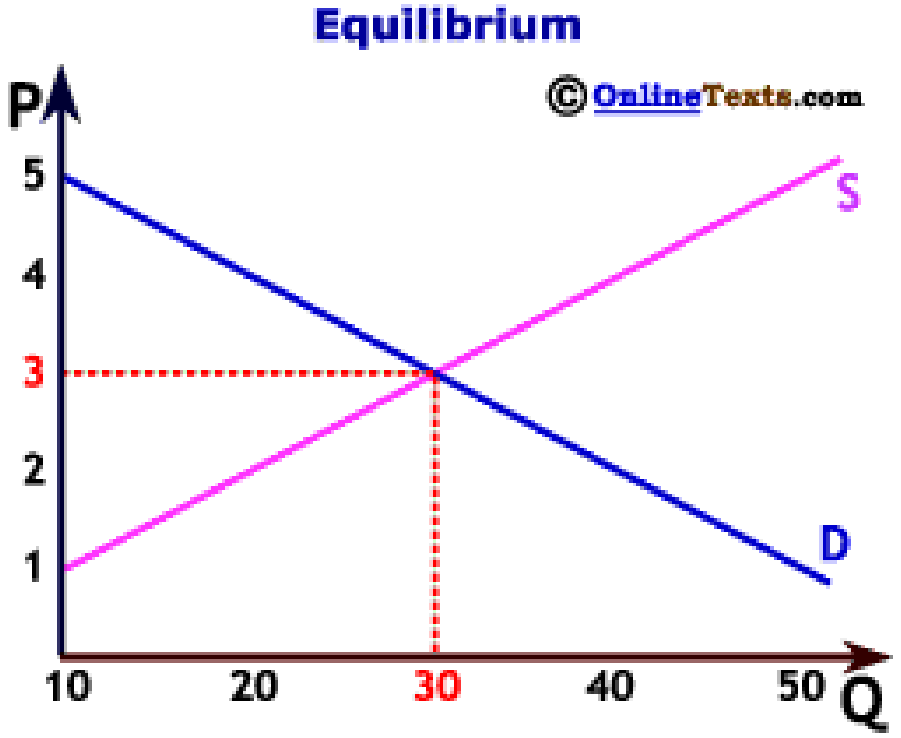
Market Equilibrium

Equilibrium

- In economics, an *equilibrium* is a situation in which:
  - there is no inherent tendency to change
  - quantity demanded equals quantity supplied, and
  - the market just clears.

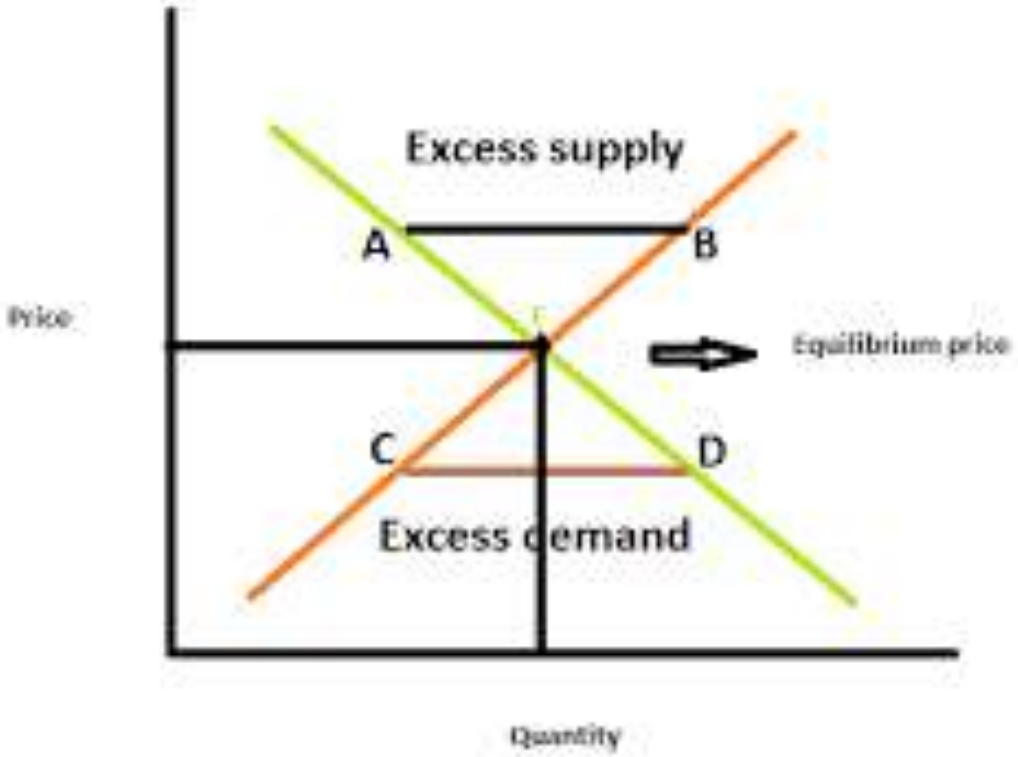
Market Equilibrium

TABLE 3 Video Market Equilibrium		
Price	Quantity Demanded	Quantity Supplied
$5	10	50
$4	20	40
$3	**30**	**30**
$2	40	20
$1	50	10



Equilibrium occurs at a price of $3 and a quantity of 30 units.

Market equilibrium



Shortages and Surpluses

- A *shortage* occurs when quantity demanded exceeds quantity supplied.
  - A shortage implies the market price is too low.
- A *surplus* occurs when quantity supplied exceeds quantity demanded.
  - A surplus implies the market price is too high.

Excess Demand

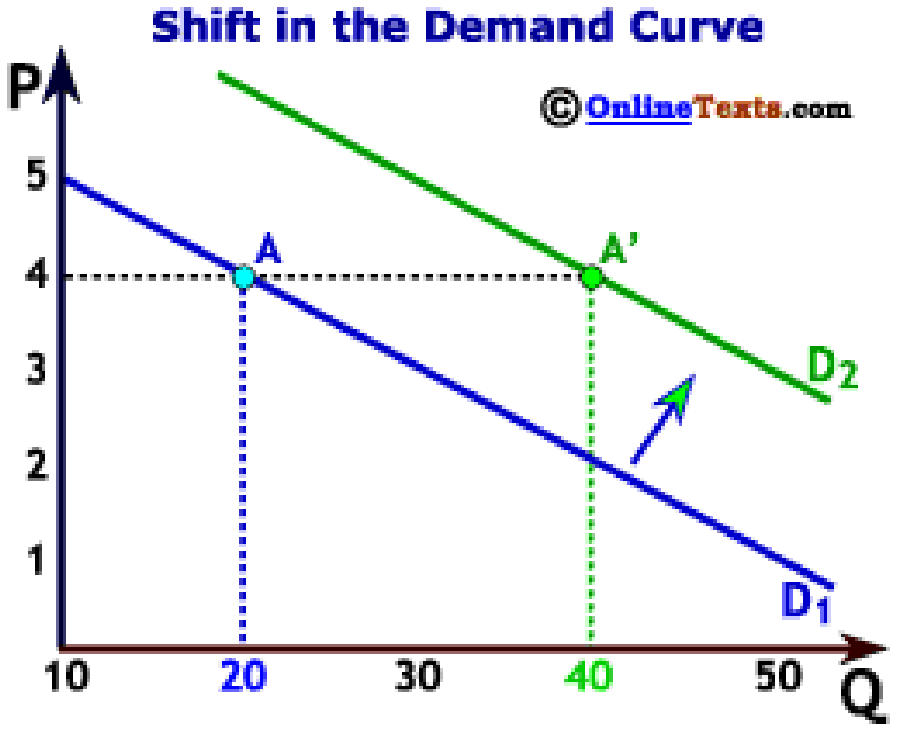
- Excess demand
  - At a given price, the excess of quantity demanded over quantity supplied
- Price of the good will rise as buyers compete with each other to get more of the good than is available

Shift in the Demand Curve

- A change in any variable other than price that influences quantity demanded produces a *shift in the demand curve* or a change in demand.
- Factors that shift the demand curve include:
  - Change in consumer incomes
  - Population change
  - Consumer preferences
  - Prices of related goods:
    - Substitutes: goods consumed in place of one another
    - Complements: goods consumed jointly

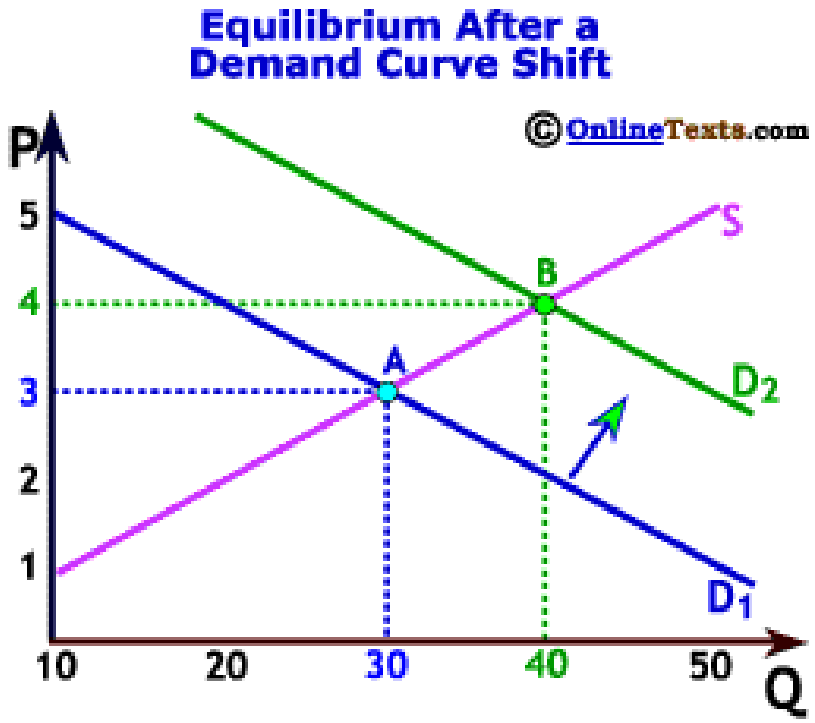
Shift in the Demand Curve

TABLE 4 Change in Demand for Videos after Incomes Rise			
Price	Initial Quantity Demanded	New Quantity Demanded	Quantity Supplied
$5	10	30	50
$4	20	40	40
$3	30	50	30
$2	40	60	20
$1	50	70	10



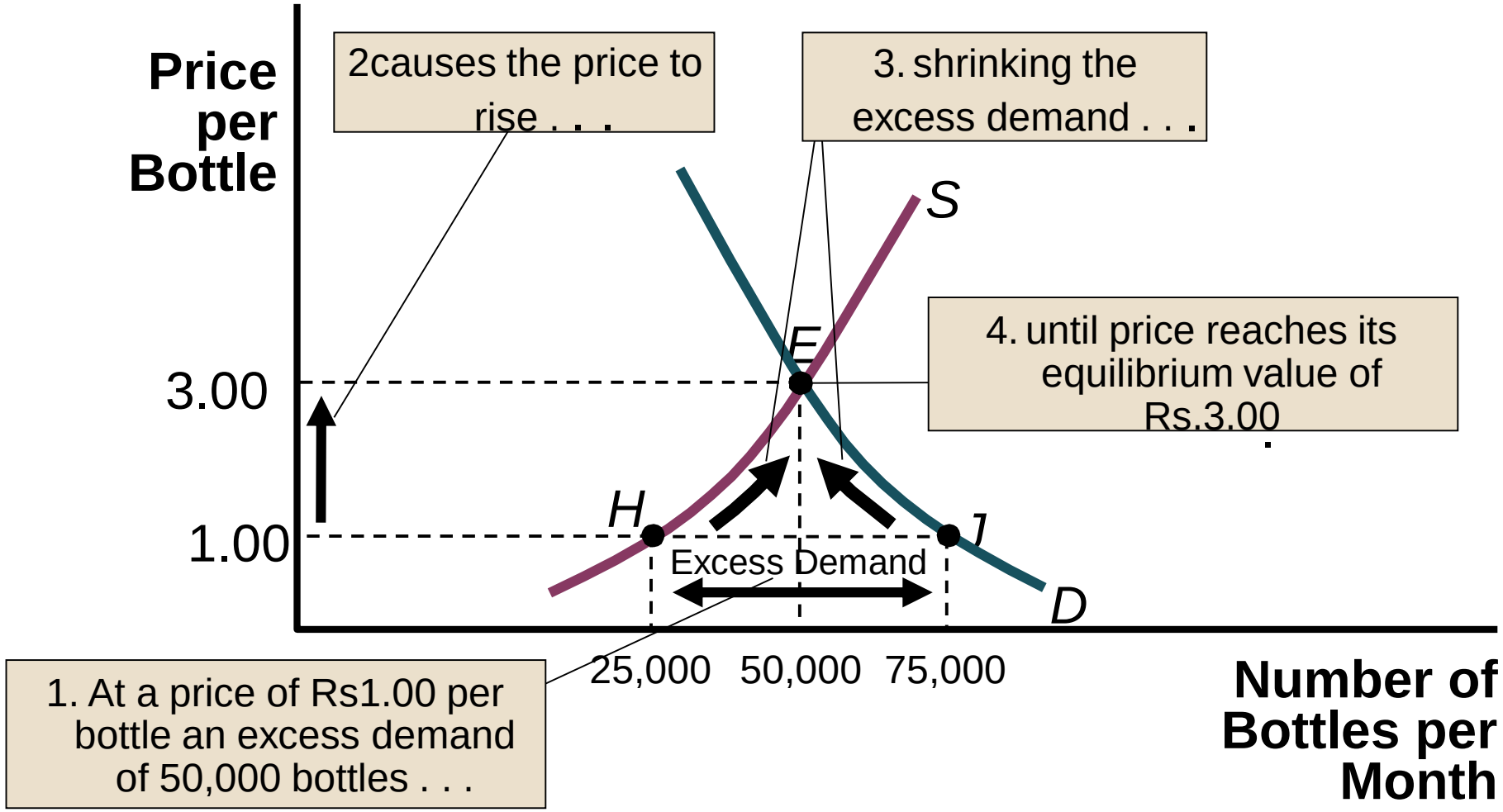
This demand curve has shifted to the right. Quantity demanded is now higher at any given price.

Equilibrium After a Demand Shift

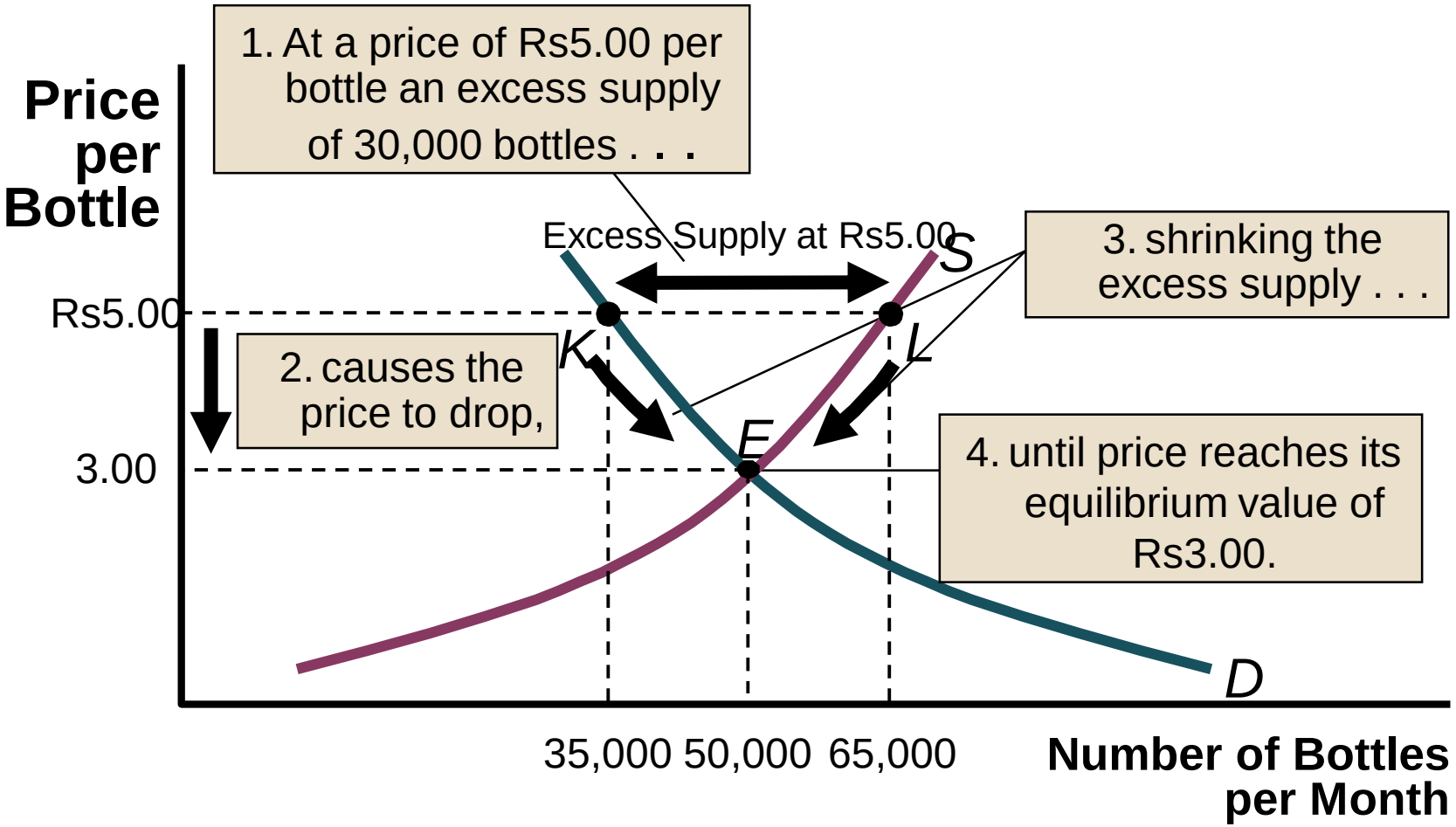


The shift in the demand curve moves the market equilibrium from point A to point B, resulting in a higher price and higher quantity.

Market Equilibrium



Excess Supply and Price Adjustment



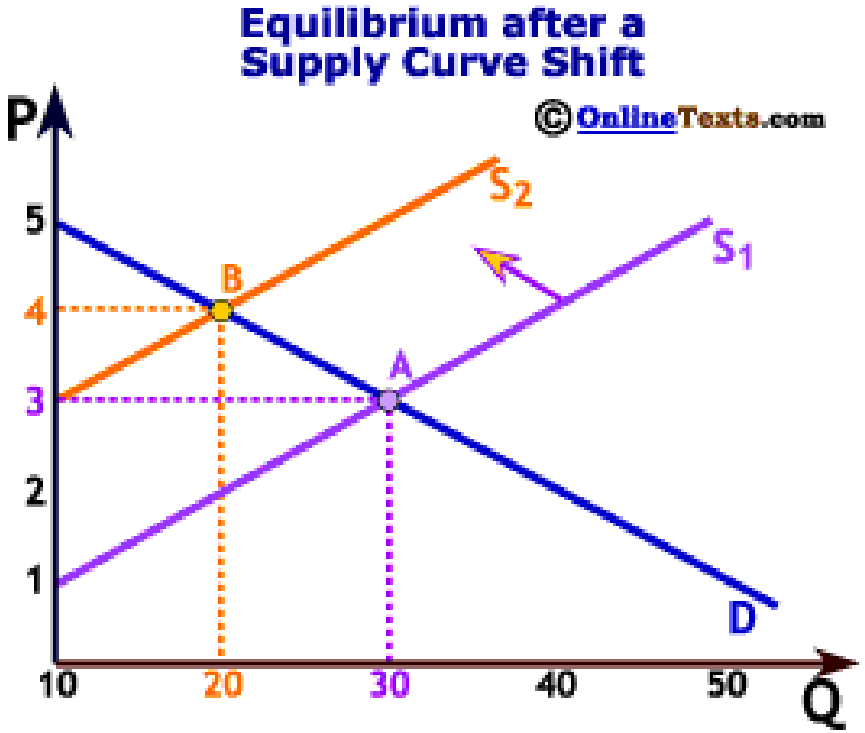
Excess Supply

- Excess Supply
  - At a given price, the excess of quantity supplied over quantity demanded
- Price of the good will fall as sellers compete with each other to sell more of the good than buyers want

Shift in the Supply Curve

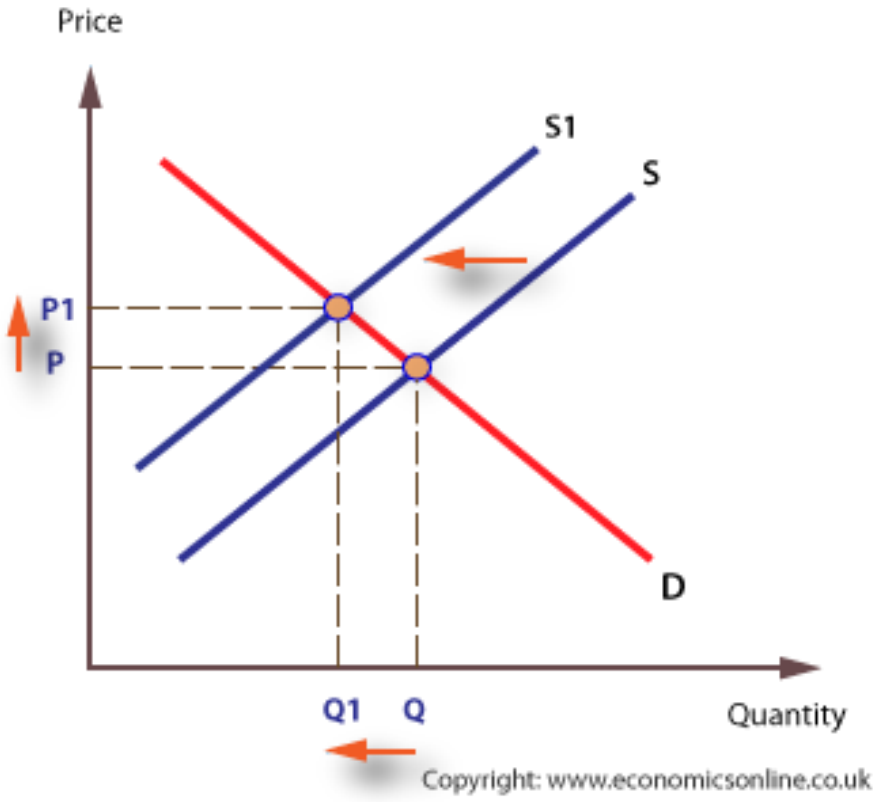
- A change in any variable other than price that influences quantity supplied produces a *shift in the supply curve* or a change in supply.
- Factors that shift the supply curve include:
  - Change in input costs
  - Increase in technology
  - Change in size of the industry

Equilibrium After a Supply Shift



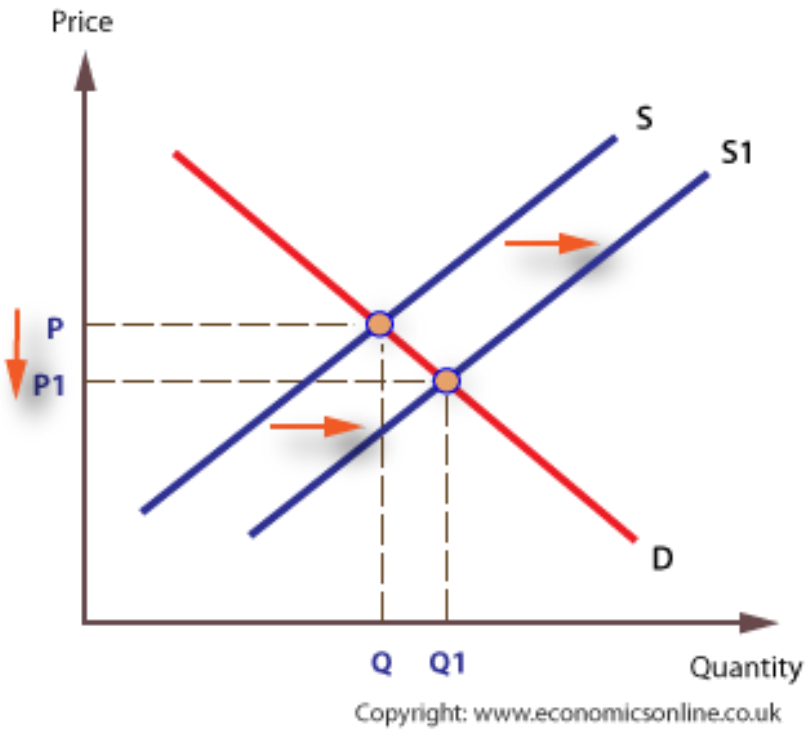
The shift in the supply curve moves the market equilibrium from point A to point B, resulting in a higher price and lower quantity.

Rising costs of production and change in supply



If costs of production rise, less can be produced at any given price, and the supply curve will shift to the left.

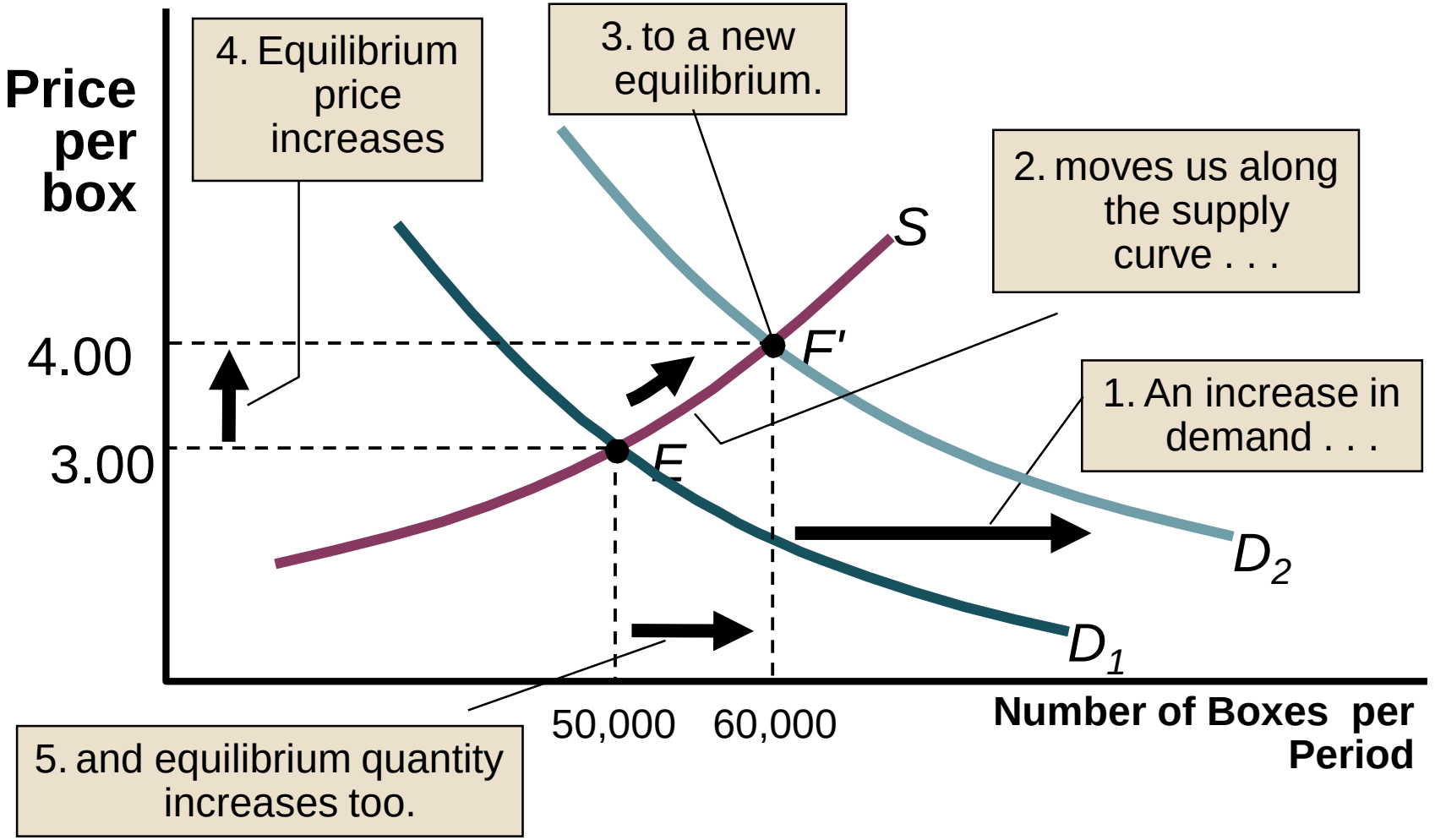
Falling costs of production and change in supply



Any change in an underlying determinant of supply, such as a change in the availability of factors, or changes in weather, **taxes**, and **subsidies**, will shift the supply curve to the left or right.

Income Rises: What Happens When Things Change

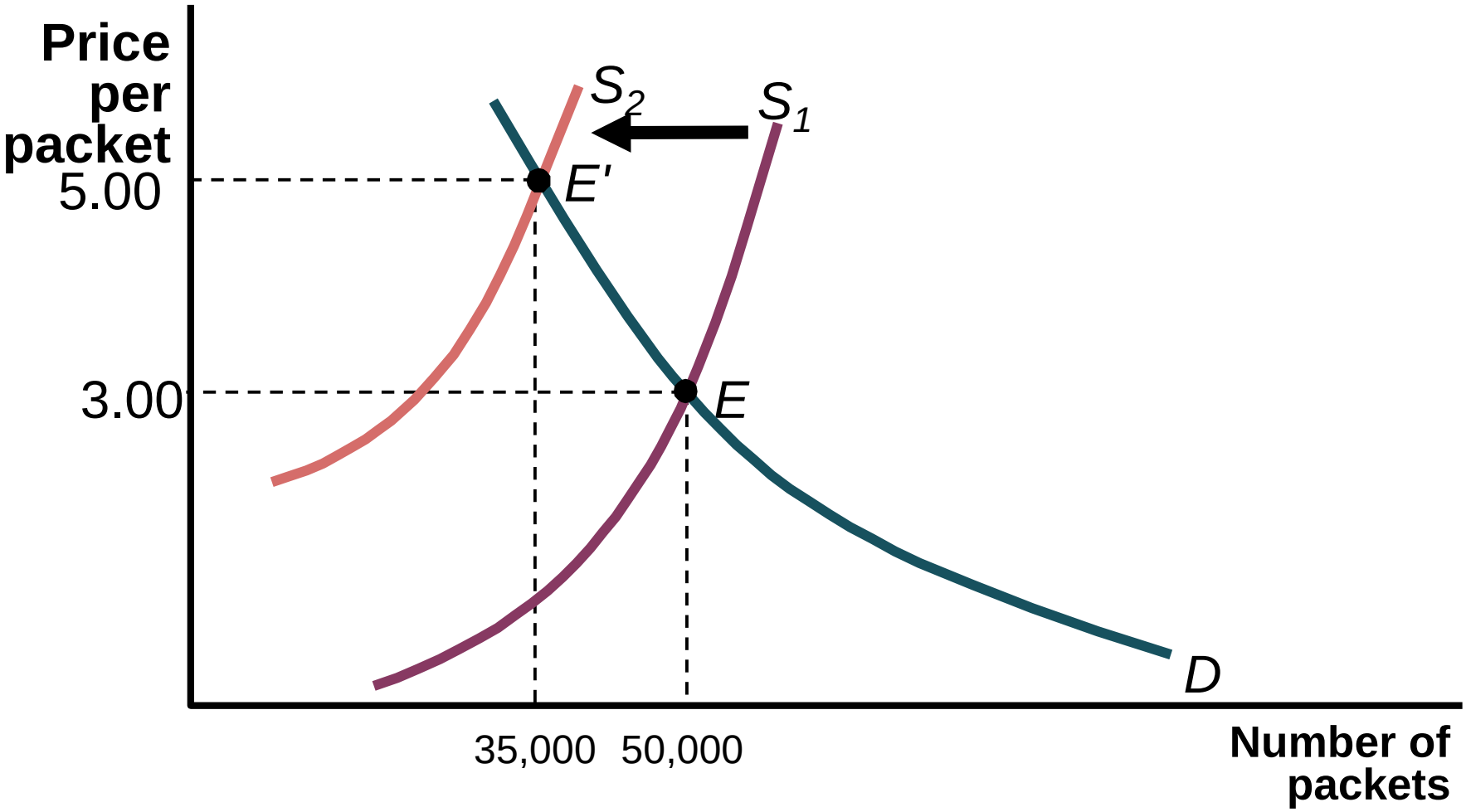
- Income rises, causing an increase in demand
  - Rightward shift in the demand curve causes rightward movement along the supply curve
  - Equilibrium price and equilibrium quantity both rise
- Shift of one curve causes a movement along the other curve to new equilibrium point


Price per box
4. Equilibrium price increases
3. to a new equilibrium.
2. moves us along the supply curve . . .
1. An increase in demand . . .
S
F′
E
4.00
3.00
D_2
D_1
50,000
60,000
Number of Boxes per Period
5. and equilibrium quantity increases too.

A natural calamity hits: What Happens When Things Change

- Say a Tsunami/ severe drought causes a decrease in supply
  - Weather is a shift variable for supply curve
    - Any change that shifts the supply curve leftward in a market will increase the equilibrium price
      - And decrease the equilibrium quantity in that market

A Shift of Supply and A New Equilibrium

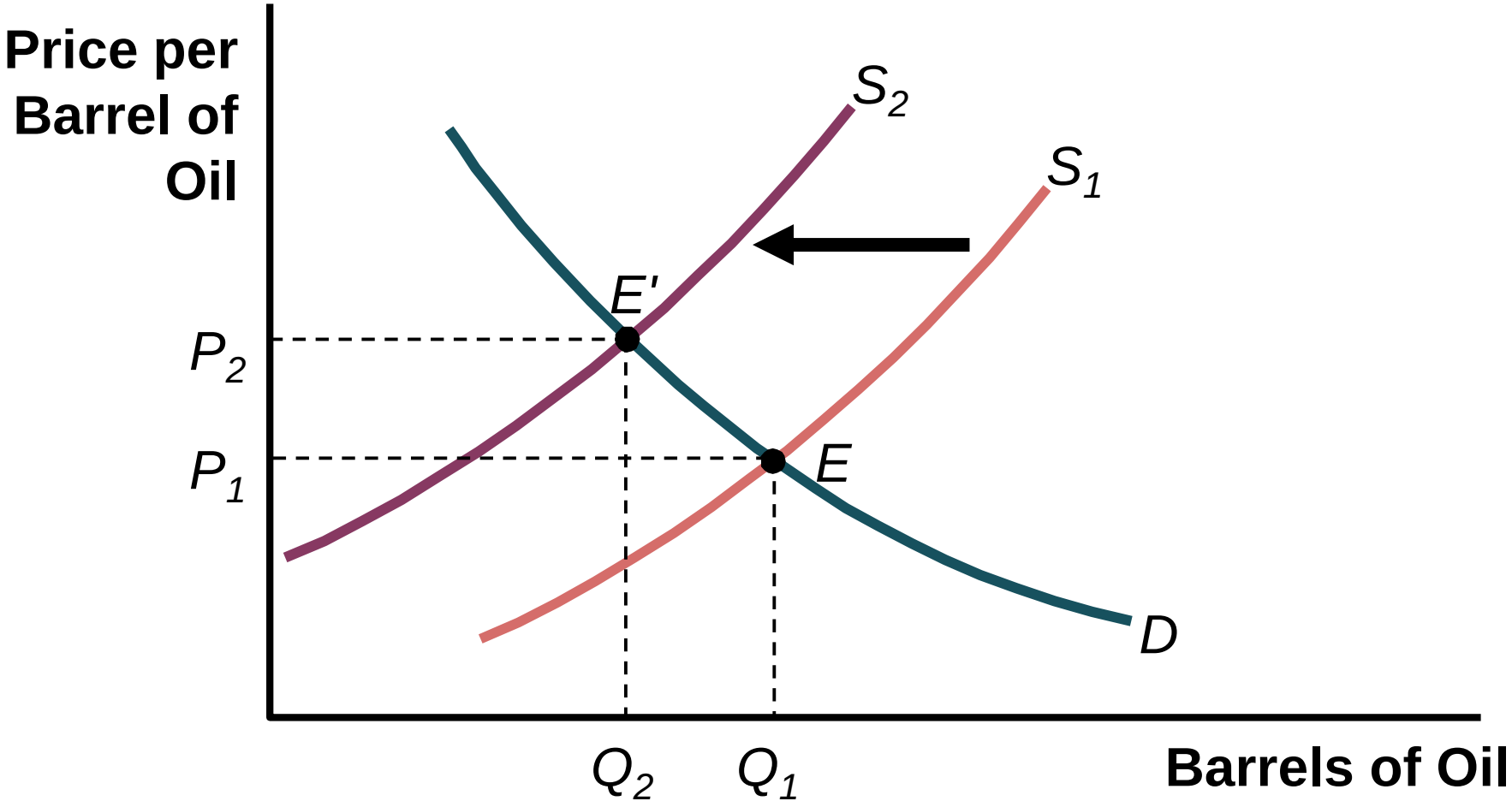


A Case of Oil Market

Using Supply and Demand: The Invasion of Kuwait

- Why did Iraq's invasion of Kuwait cause the price of oil to rise?
  - Immediately after the invasion, United States led a worldwide embargo on oil from both Iraq and Kuwait
  - A significant decrease in the oil industry's productive capacity caused a shift in the supply curve to the left
    - Price of oil increased

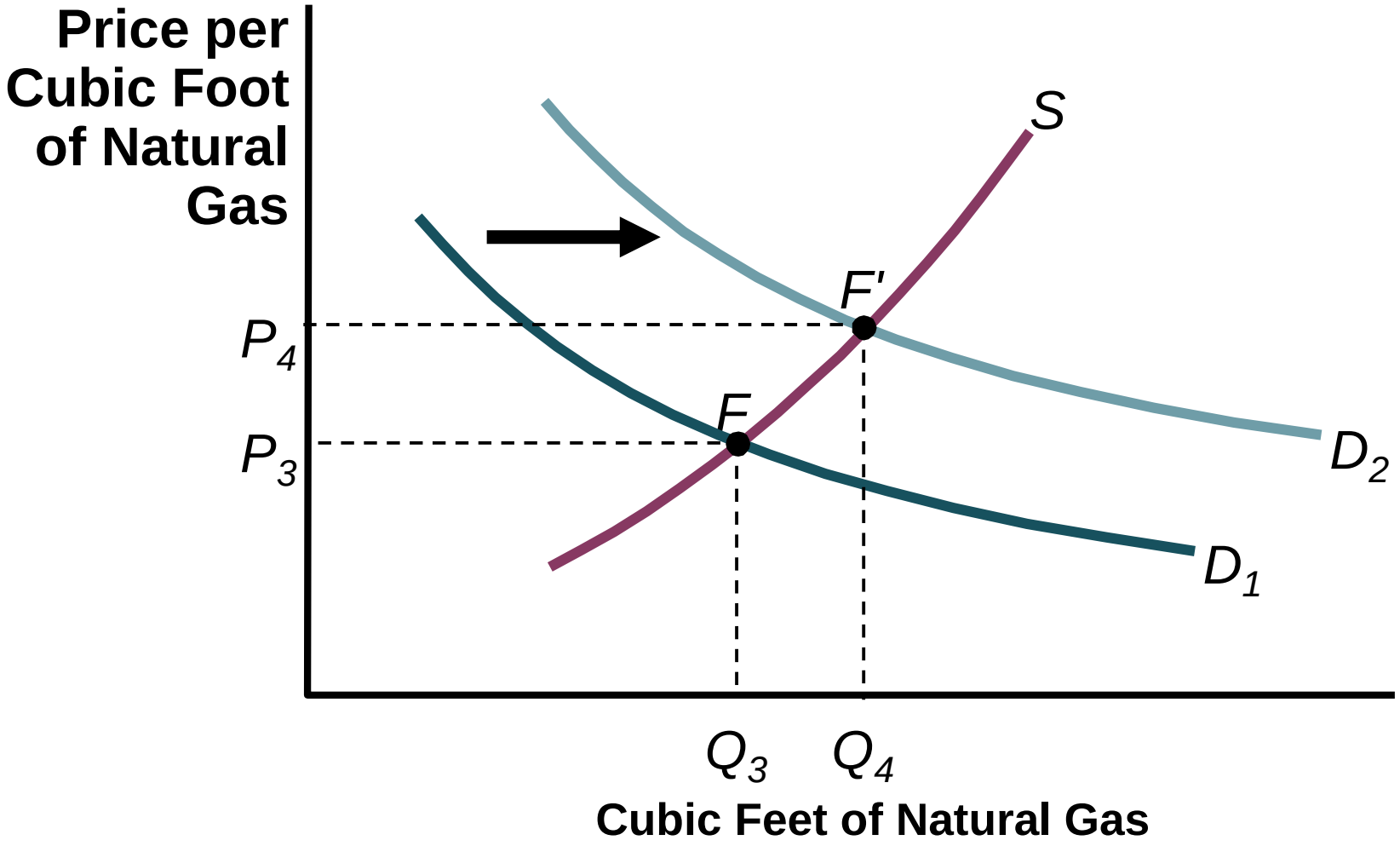
The Market For Oil



Using Supply and Demand: The Invasion of Kuwait

- Why did the price of natural gas rise as well?
  - Oil is a substitute for natural gas
  - Rise in the price of a substitute increases demand for a good
  - Rise in price of oil caused demand curve for natural gas to shift to the right
    - Thus, the price of natural gas rose

The Market For Natural Gas



Both Curves Shift

- When just one curve shifts (and we know the direction of the shift) we can determine the direction that both equilibrium price and quantity will move
- When both curves shift (and we know the direction of the shifts) we can determine the direction for either price or quantity—but not both
  - Direction of the other will depend on which curve shifts by more

Price ceiling Vs price floor

- A price ceiling is the mandated maximum amount a seller is allowed to charge for a product or service.
- A price floor is the lowest legal price a commodity can be sold at. Price floors are used by the government to prevent prices from being too low. Price floors are also used often in agriculture to try to protect farmers by fixing minimum wage.

The Three Step Process

- Key Step 1—Characterize the Market
  - Decide which market or markets best suit problem being analyzed and identify decision makers (buyers and sellers) who interact there
- Key Step 2—Find the Equilibrium
  - Describe conditions necessary for equilibrium in the market, and a method for determining that equilibrium
- Key Step 3—What Happens When Things Change
  - Explore how events or government polices change market equilibrium

Summary

- Through the study of this session, you will be able to characterize a market.
- Use a demand schedule and a demand curve to demonstrate the law of demand.
- Explain the difference between a *change in demand* (shift of the curve) and a *change in quantity demanded* (movement along the curve).
- Explain how equilibrium price and quantity are determined in a competitive market.
- Explain what will happen in a competitive market after a shift in the supply curve, the demand curve, or both.