Bule Hora University
College of Agricultural Science
Agricultural Economics

Chapter 3
Agricultural Product Price

Characteristics

- **Agricultural product price is determined by Food Marketing Efficiency**
- refers to providing consumers with desired levels of service at the lowest cost possible.
- **Characteristics of Food Products and Production.**
- Certain problems are introduced by the characteristics of agricultural production:
- *Large crop variations*. Weather and other environmental factors greatly influence the size of a crop during any given year.
- *Seasonal effects*. Certain products—demanded mostly during selected periods of the year.

- Other products—such as oranges for orange juice—are demanded more uniformly year-round.
- *Increasing production levels*. Scientific advances have enabled farmers to produce more crops on a given amount of land.
- *Geographic concentration and varying production costs.* Certain products are grown most efficiently in certain parts of the country.
- *Derived demand*. Farmers need farm supplies (e.g., fertilizer, seeds) and equipment (e.g., tractors).

Agricultural Product price

- Prices are important to buyers and sellers, determining factor in agent decisions.
- Prices are also important to economic theorists.
- because they enable convenient modeling of concepts like general equilibrium
- Prices are everywhere.
- Particular categories of goods or services are endowed with a specific price-name.
- e.g. wage as the price of labor, interest rate as the price of capital, discount rate as the price of time, risk premium as the price of uncertainty, etc.

Cont…

- Prices allow producers to break-even, or to make a profit per unit produced/sold.
- Prices allow consumers to determine if they wish to spend more than a specific amount for a specific good/service.
- The place where producers/sellers are charging (to make a profit)
- buyers are buying as much as they can afford, at that particular price, is the equilibrium price.

- An equilibrium price is a point at which the quantity of goods that buyers are willing and able to buy exactly balances the quantity that sellers are willing and able to sell.
- The equilibrium price is sometimes called the market clearing price because, at this price, everyone in the market has been satisfied:
- buyers have bought all they want to buy and sellers have sold all they want to sell.
- The price for maize that prevailed in a particular day at a given market place could be considered as an equilibrium price.

Equilibrium..

Equilibirum (a position of balance). A position where there is usually no inherent tendency to move away.

Equilibirum price: The price where the quantity demand equals the quantity supplied, ceteris paribus.

Market clearing: A market ‘clears’ when the supply demand matches the demand (with no shortage or surplus).

Equilibrium…

Movements in equilibrium

- Equilibrium price remains unchanged unless the demand or supply curves change.
- If either of them shifts, a new equilibrium is formed.
- If either of the curves shift, there will be a movement along the other curve to the new intersection (equilibrium) point.
- When both curves shift, the curves move to the new intersection point along the curves.

Equilibrium…

- The point of equilibrium (Pe) is where the (Qd) of consumers matches the Qs of producers

- D = The quantity consumers are willing to buy at various prices, as other determinants are unchanged.

- S = The quantity producers are willing to produced at various prices, as other determinants are unchanged.

- Where D increases, and S is unchanged, the price will rise.
- Where D decreases and S is unchanged, the price will drop.

Functions of prices

- The price mechanism is one which allows the prices of goods and services to be decided by the interplay between supply and demand.
- There is no centralized price fixing.
- It is the free market formulate fair prices of the goods or services on its own by the laws of supply and demand.
- price mechanism plays three important functions in any market based economic system:

- ✓ perform a signaling function,
- ✓ serve as incentives and
- ✓ as a rationing function

Signaling function -

- market prices will adjust to demonstrate where resources are required, and where they are not.
- Prices rise and fall to reflect scarcities and surpluses.
- So, for example, if market prices are rising because of high and rising demand from consumers
- a rise in the costs of production will induce suppliers to decrease supply, while consumers will react to the resulting higher price by reducing demand for the good or services.
- Price changes send contrasting messages to consumers and producers.

- Rising prices give a signal to consumers to reduce demand or withdraw from a market completely, and they give a signal to producers that they should increase production or enter the market.
- falling prices give a positive message to consumers, to consume more, but a negative message to producers, to produce less.
- It is important to note that the speed of adjustments in response to the signals is largely different in the agricultural sector vis-à-vis most other goods and services.
- Storability of the products, the length of time period required for production (which is related to the price elasticity of its supply.

- Thirdly prices serve as a rationing function.
- Price rationing is a method of rationing that allocates the limited quantities of goods and services using markets and prices.
- Rationing can be viewed in two ways
- rationing of resources among competing uses and rationing of goods and services among consumers
- Price mechanism rations commodities among consumers by limiting the purchase only to those buyers willing and able to pay the price.
- Only the buyers most willing and able to buy the commodity, and pay the higher price, obtain the good.

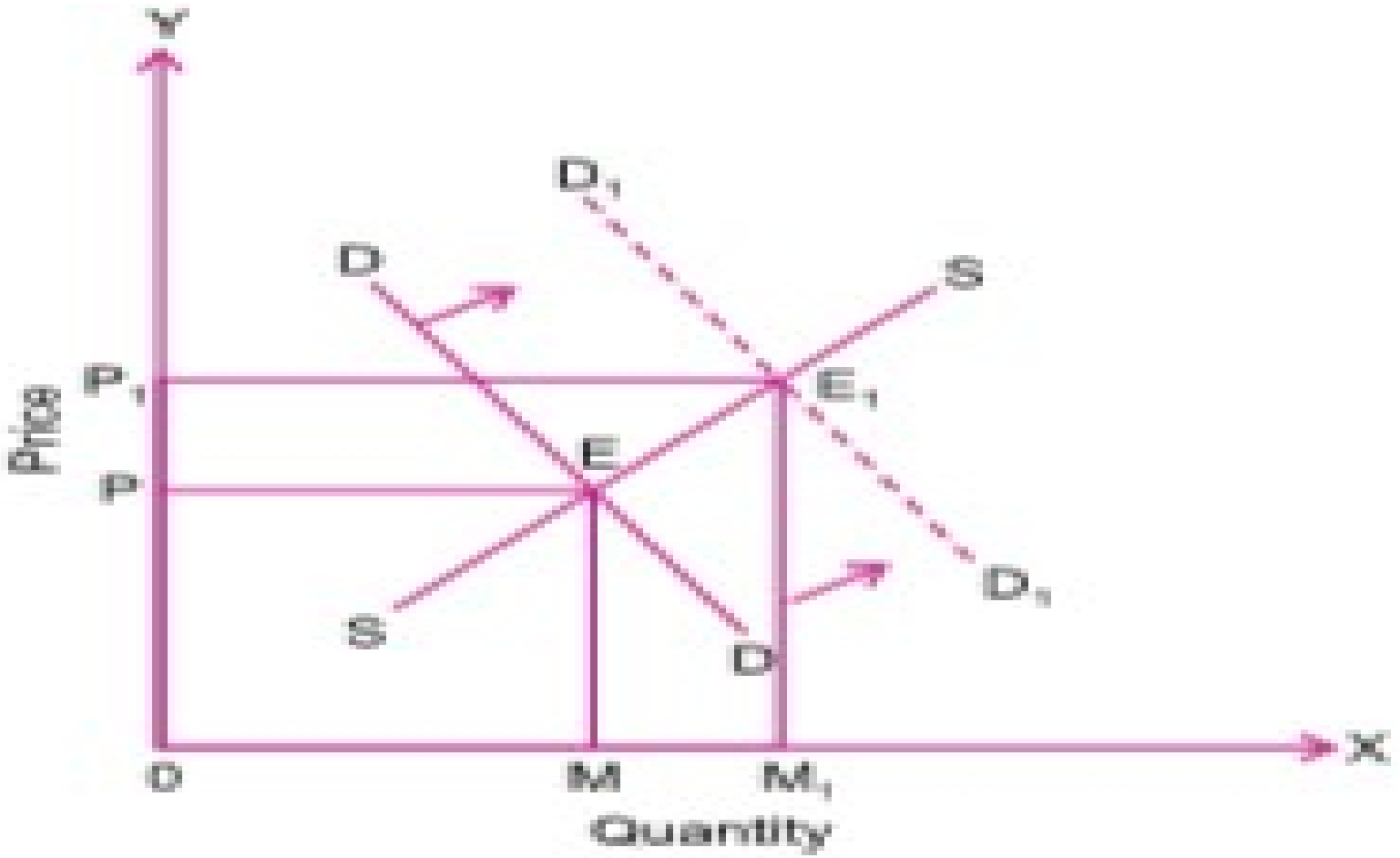
Structural Change and Shifts in Supply and Demand

- Effects of Change in Demand (or Shifts in the Demand Curve) when Supply Remains Constant

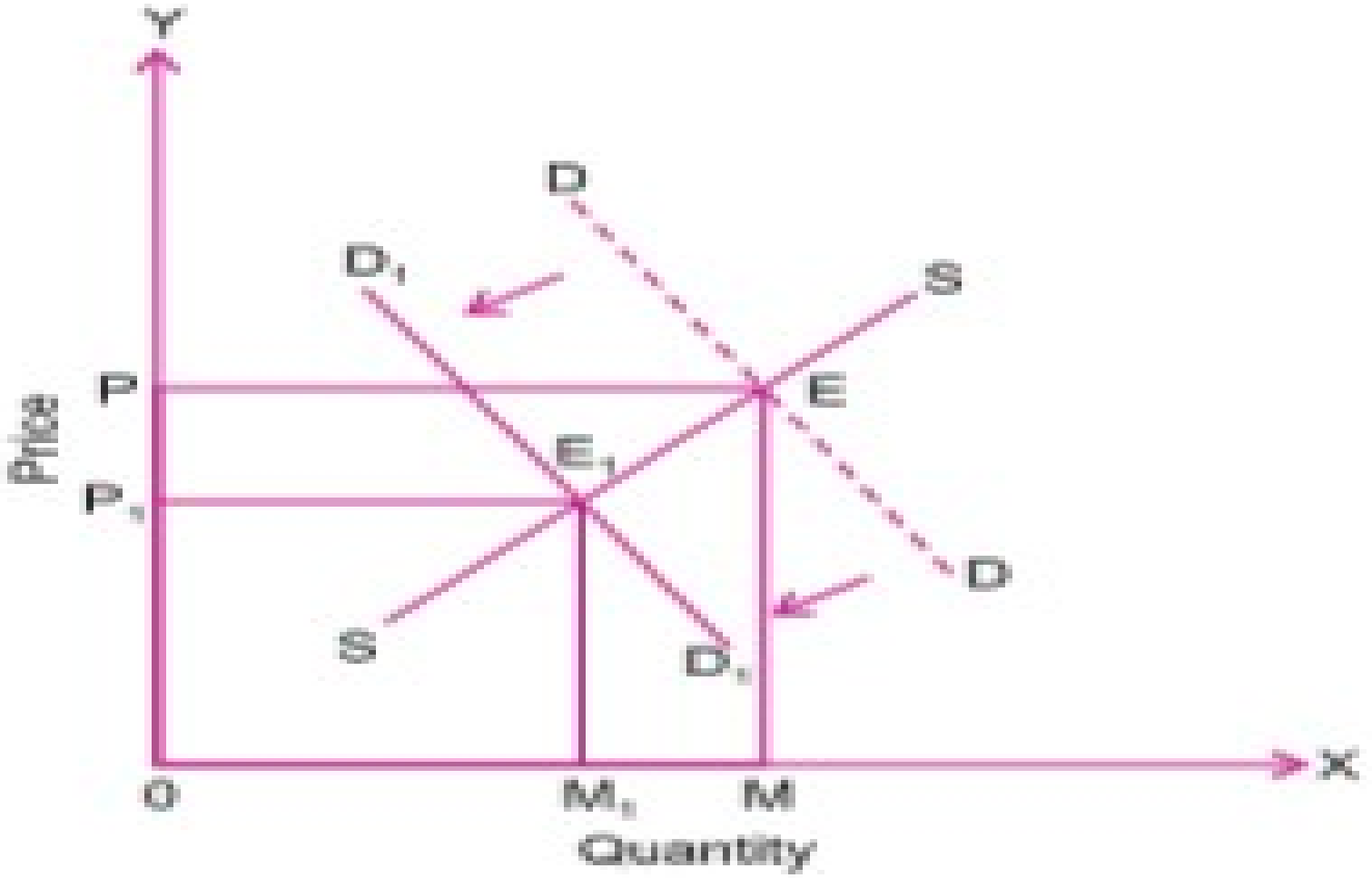
There can be two situations of change in demand.

- i Effect of Increase in Demand:

- When stable supply curve,if there is increase in demand (that is, a rightward shift of the demand curve), both equilibrium price and equilibrium quantity increase.
- When demand curve shifts to the right (DD to D1D1), the equilibrium price (OP to OP1)
- equilibrium quantity (OM to OM1) both increase.

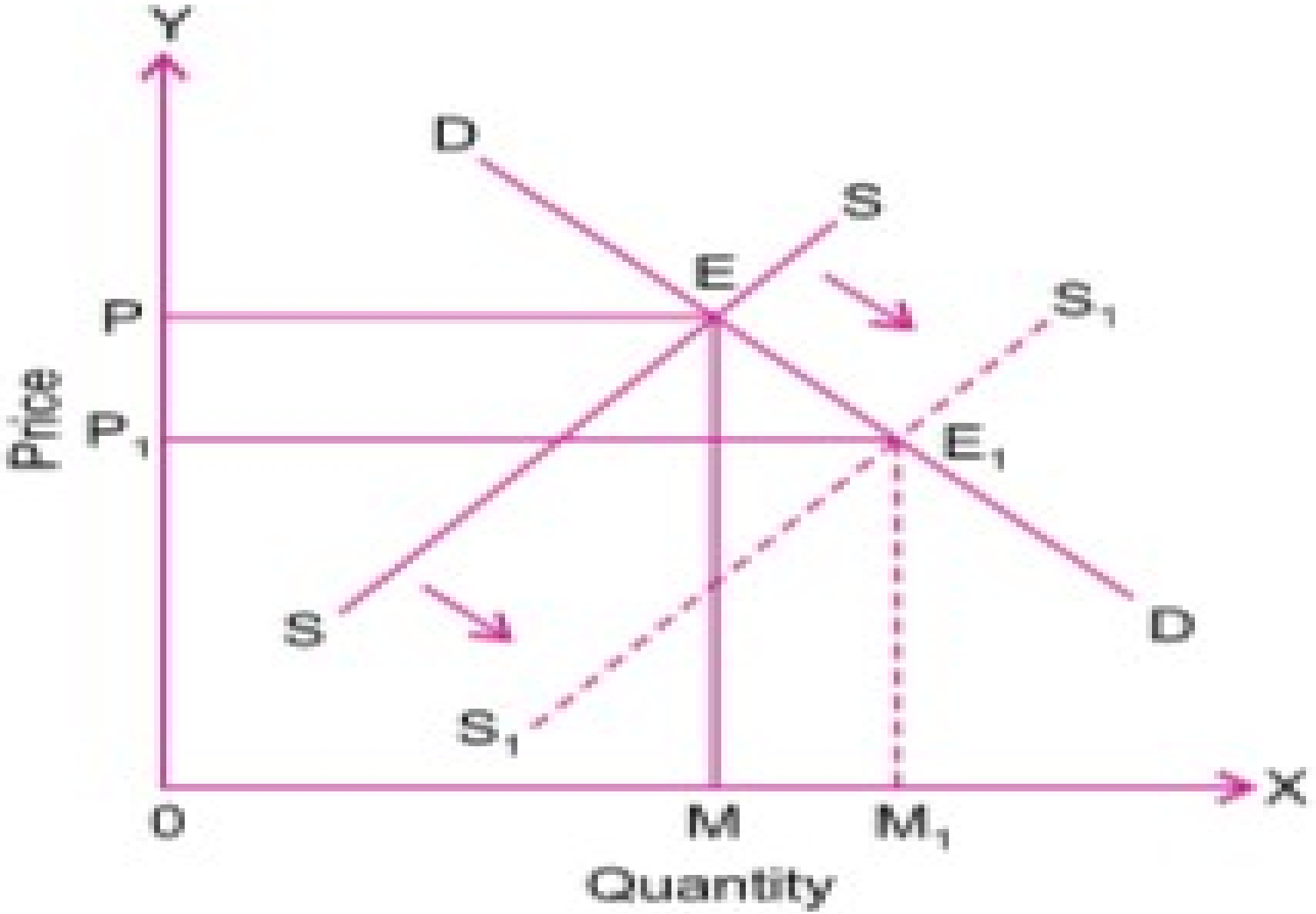

Y
D1
D
S
P1
E1
Price
E
P
D1
S
D
O
M
M1
X
Quantity

- Effect of Decrease in Demand:
- When supply curve is constant, if there is decrease in demand (i.e., a leftward shift of the demand curve),
- both the equilibrium price and equilibrium quantity decreases.
- When demand curve shifts to the left (DD to D1D1), both the equilibrium price (OP to OP1) and equilibrium quantity (OM to OM1) decrease.


Y
D
D1
S
P
E
E1
P1
Price
D
S
D1
O
M1
M
X
Quantity

- with the same supply curve:
  - the effect of increase in demand is higher equilibrium price
  - and larger equilibrium quantity,
  - the effect of decrease in demand is lower equilibrium price
  - and smaller equilibrium quantity.

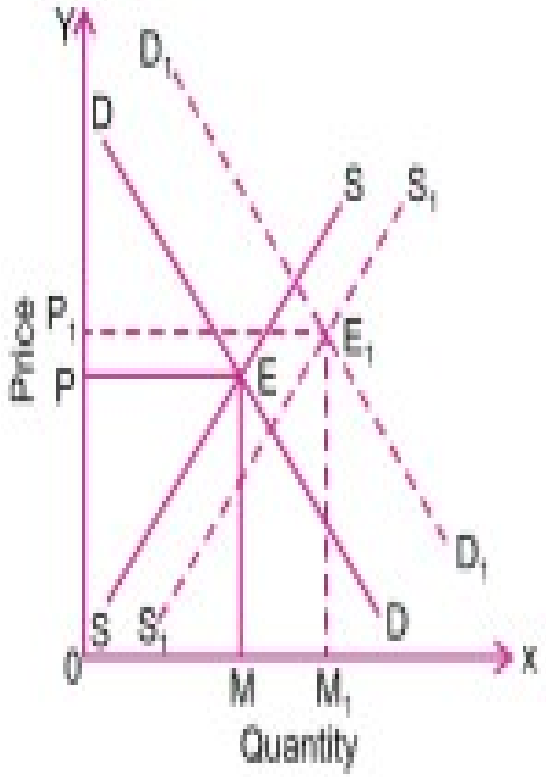
- Effects of Change in Supply (or Shifts in the Supply Curve) when Demand Remains Constant
- Effect of Increase in Supply:
  - When demand curve is constant, increase in supply a rightward shift of the supply curve.
  - equilibrium price decreases and equilibrium quantity increases.
  - When supply curve shifts to the right, price falls (OP to OP1) but equilibrium quantity increases (OM to OM1


Y
D
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S1
Price
P1
E1
S
D
S1
X
O
M
M1
Quantity

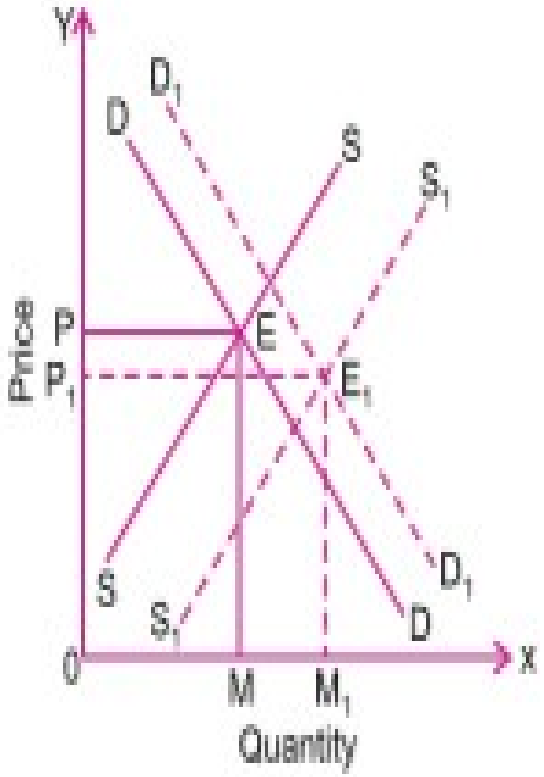
- When same demand curve:
  - the effect of increase in supply is lower equilibrium price
  - and larger equilibrium quantity, and
- the effect of decrease in supply is higher equilibrium price
- and smaller equilibrium quantity.

Effect of Simultaneous Change in Demand and Supply (Simultaneous Shifts in Demand and Supply Curves)

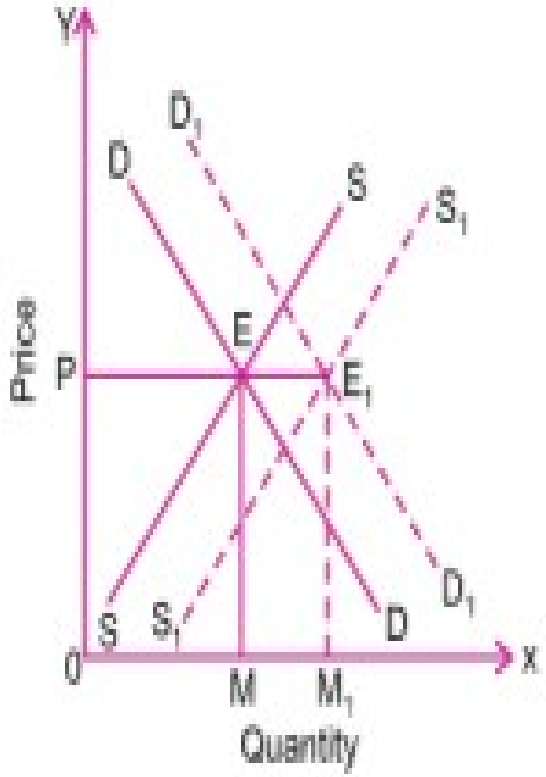
- Although there are various possibilities
- When Both Demand and Supply Increase:
- If both demand and supply increase (that is, both demand curve and supply curve shift to the right),
- the equilibrium quantity would certainly rise.
- But the equilibrium price may rise, fall or remain unchanged.
- It depends on the comparative increase in demand and supply.
- a If the increase in demand is greater than the increase in supply, the equilibrium price rises.



A) When increase in demand is greaterthan increase in supply



B) When Increase in demand smallerthan increase in supply



C) When increasing demand and increase in supply are equal

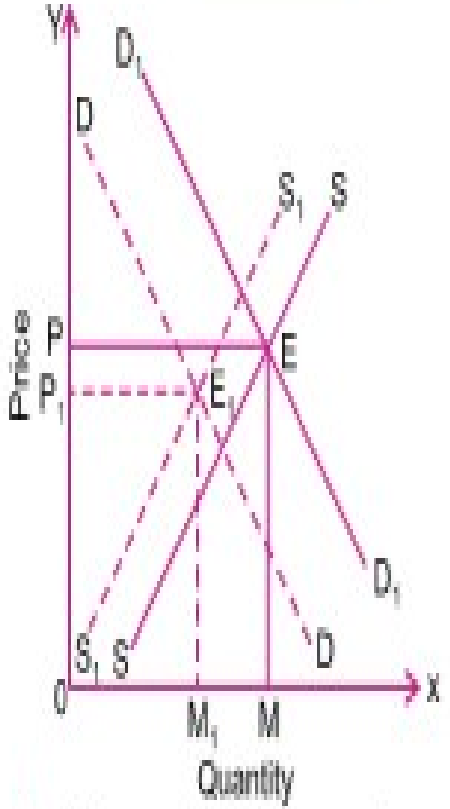
- When Both Demand and Supply Decrease:
  - If both demand and supply decrease (that is both demand curve and supply curve shift to the left), the equilibrium quantity would certainly fall.
  - decrease in demand is greater than the decrease in supply, the equilibrium price falls.

(A) When increase in DD is greater than increase in SS

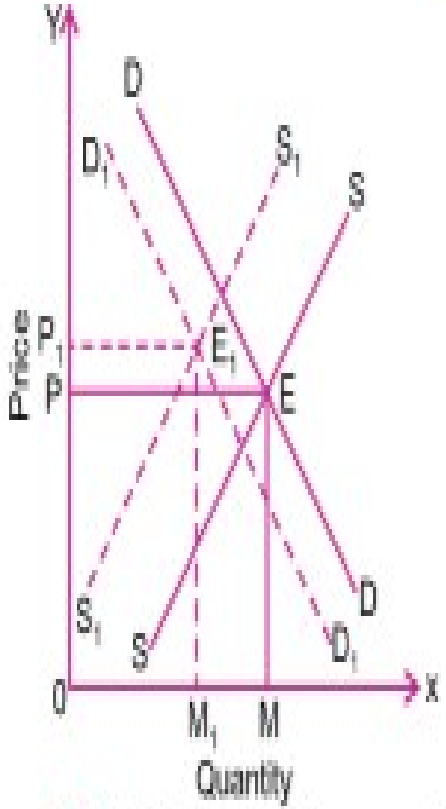
B) When increase in DD smaller than increase in SS

C) When increasing DD and increase in SS are equal

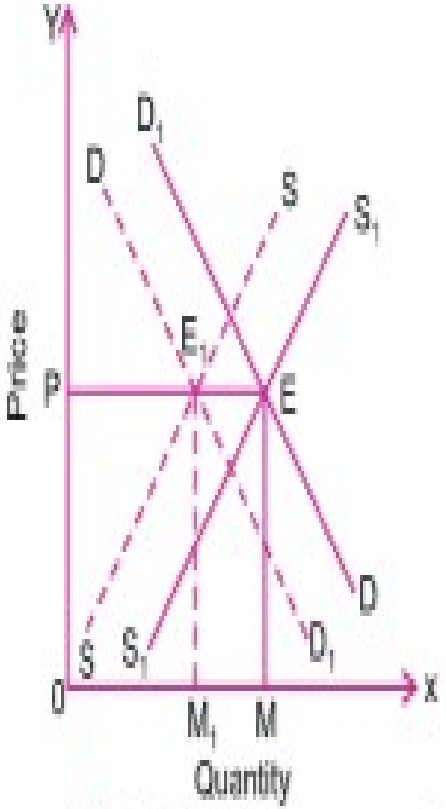
- If the decrease in demand and decrease in supply are equal, the equilibrium price remains unchanged.



A) When the decrease in demand is greater than the decrease in supply



B) When the decrease in demand is smaller than the decrease in supply



C) When the decrease in demand and decrease in supply are equal

Cont.....

Changes in demand and supply	Effect on equilibrium price	Effect on equilibrium quantity
Increase in demand	price rises	quantity increases
Decrease in demand	price falls	quantity decreases
Increase in supply	price falls	quantity increases
Decrease in supply	price rises	quantity decreases
Increase in both (I.e., demand and supply)	price may rise, fall or remain unchanged	quantity increases
Decrease in both (I.e., demand and supply)	price may rise, fall or remain unchanged	quantity decreases

price discovery process

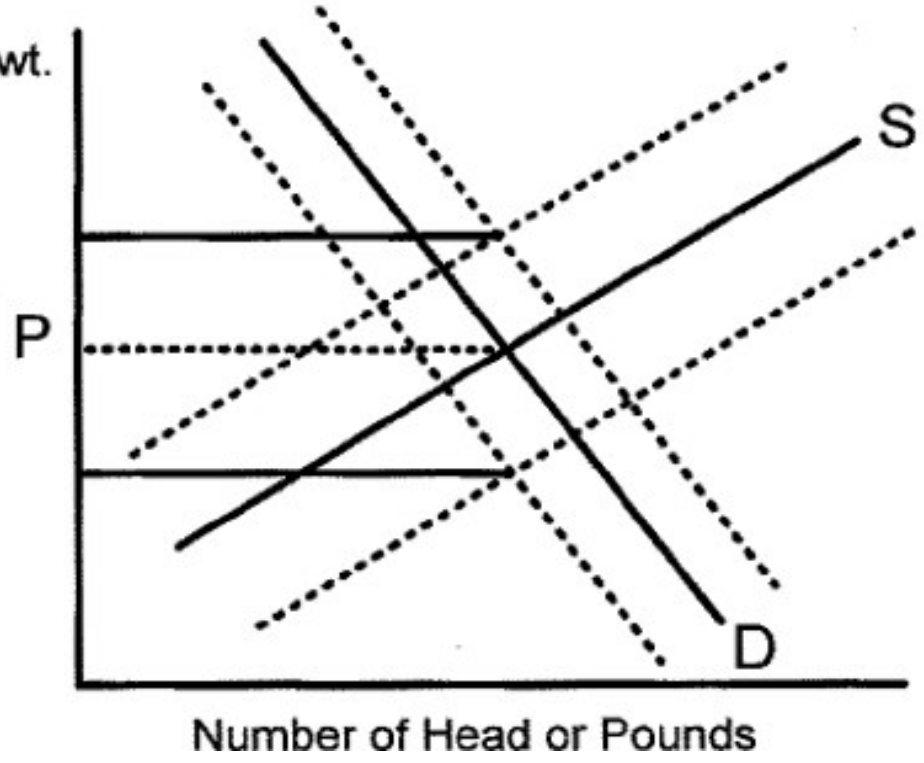
- is the process of determining the price of an asset in the marketplace through the interactions of buyers and sellers.
- The individuals with *better information and judgement* participate in markets to take advantage.
- When new information arrives, some good news about the economy
- Price discovery process involves buyers and sellers arriving at a transaction price for a specific item at a given time.

- It involves the following:
  - Buyers and seller (number, size, location, and valuation perceptions)
  - Market mechanism (bidding and settlement processes, liquidity)
  - Available information (amount, timeliness, significance and reliability)
  - Risk management choices.
  - "Market" is covers buyers and sellers.

- Price determination and price discovery
- Price discovery is the process of buyers and sellers arriving at a transaction price for a given quality and quantity of a product at a given time and place.
- Price discovery involves several concepts, among them:
  - Market structure: number, size, location, and competitiveness of buyers and sellers
  - Market behavior: buyer procurement and pricing methods

- Market information and price reporting: amount, timeliness, and reliability of information
- Futures markets and risk management alternatives
- ✓ Considerable diversity in systems currently used and variation among commodities
- ✓ Increased amount of value-adding marketing activities doesn’t always result in more transfers of ownership

- Price discovery begins with the market price level
- Because buyers and sellers discover prices on the basis of uncertain expectations
- transa ound marke



Classifications of price discovery mechanisms

- Schrimper (2001):
  - Individualized Agreements
  - Group Actions
  - Government Influences
- Tomek and Robinson (2003):
  - Negotiations
  - Auctions
  - Administrative decisions
  - • Private
  - • Public

- Characteristics of group actions
  - Auctions
    - Buying, selling, or double auctions
  - Group bargaining
    - Negotiations on behalf of group
    - Requires group solidarity and willingness to finance costs of activity
  - Government administered marketing orders sometimes available to facilitate accomplishing group objectives

Economic consequences of price discovery arrangements

- What are the economic incentives influencing pricing arrangements
  - Economic development
  - Per capita growth
  - Greater diversity
  - Specialization in the economy
  - Changing demand

Measuring Changes in the General Level of Prices

- measuring inflation means a measurement of variations in general price level.
- various types of price index numbers or simply price indexes, such as consumer price index
- These price indexes are indicators of the overall or general price level.
- The Consumer Price Index (CPI) is the most widely accepted index for measuring the rate of inflation.

$$CPI = \frac{\text{Cost of a market basket of consumer goods and sevices in a particular year}}{\text{cost of same basket during the base year}} \times 100$$

- The consumer buys 50 kg of wheat and 10 liters of oil per year and assume that the prices of these basket of goods in three different years are the following

YEAR	Price of a kilo of wheat	Price of a liter of oil
2000 E.C.	Birr 2	Birr 10
2001 E.C.	3	13
2002 E.C.	2	14
2003 E.C.	4	24

Cont....

Step 1: Compute the cost of the basket of goods in each year.

Year	Price of a kilo of wheat	Price of a liter of oil	
2000 E.C.	(Birr 2 per kg × 50 kg)	+ (Birr 10 per liter × 10 liter)	= birr 200
2001 E.C.	(Birr 3 per kg × 50 kg)	+ (Birr 13 per liter × 10 liter)	= birr 280
2002 E.C.	(Birr 2 per kg × 50 kg)	+ (Birr 14 per liter × 10 liter)	= birr 240
2003 E.C.	(Birr 4 per kg × 50 kg)	+ (Birr 20 per liter × 10 liter)	= birr 400

Step 2: Choose one year as a base year (2000) and compute the consumer price index in each year

$$\text{Consumers Price Index in 2000 E.C.} = \left(\frac{\text{Birr 200}}{\text{Birr 200}}\right) \times 100 = 100$$

$$\text{Consumers Price Index in 2001 E.C.} = \left(\frac{\text{Birr 280}}{\text{Birr200}}\right) \times 100 = 140$$

Cont...

$$\text{Consumers Price Index in 2002 E.C.} = \left(\frac{\text{Birr } 240}{\text{Birr } 200}\right) \times 100 = 120$$

$$\text{Consumers Price Index in 2003 E.C.} = \left(\frac{\text{Birr } 400}{\text{Birr}200}\right) \times 100 = 200$$

Step 3: Use the consumer price index to compute the inflationrate from previous year

$$\text{Inflation Rate in year 2} = \frac{(CPI_2 - CPI_1)}{CPI_1} \times 100$$

$$\text{Inflation rate in 2001 E.C. from 2000 E.C.} = \frac{(140 - 100)}{100} \times 100 = 40\%$$

$$\text{Inflation rate in 2002 E.C. from 2001 E.C.} = \frac{(120 - 140)}{140} \times 100 = -14.3\%$$

(Approximately)

$$\text{Inflation rate in 2003 E.C. from 2002 E.C.} = \frac{(200 - 120)}{120} \times 100 = 66.6\%$$

Approximately)

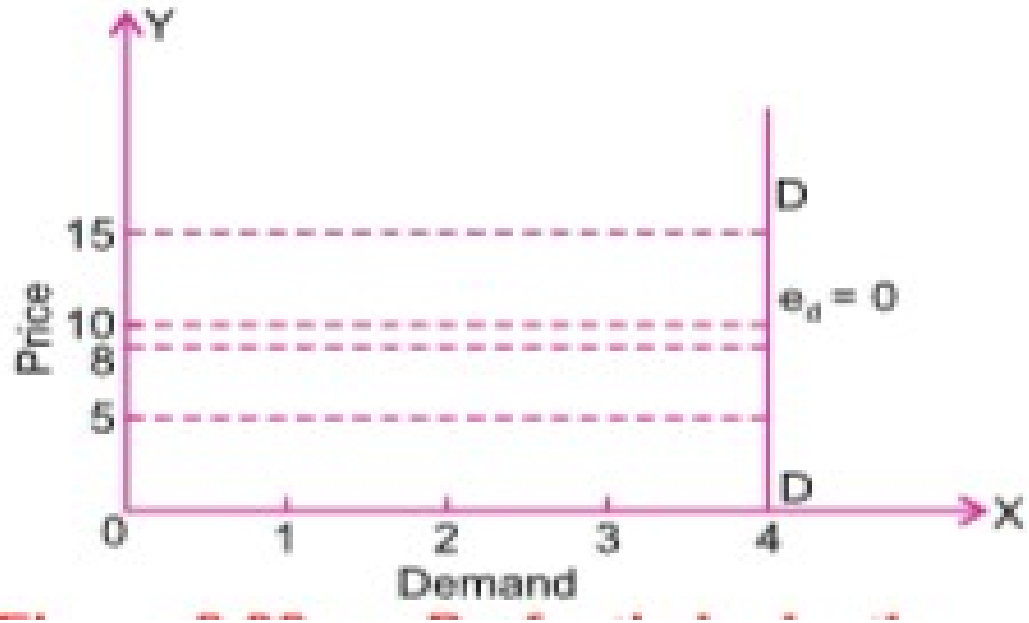
Price effect

- Price Effect
- The price effect is a concept that looks at the effect of market prices on consumer demand.
- The price effect can be an important analysis for businesses in setting the offering price of their goods and services.
- In general, when prices rise, buyers will typically buy less and vice versa when prices fall.
- Price elasticity of demand describes the expected change in demand per price change.
- It can be calculated at give point =

$$\frac{\Delta Q}{\Delta P} \times \frac{P}{Q} \text{ (Point) and } \frac{Q2-Q1}{P2-P1} \times \frac{P1+P2}{Q1+Q2}$$

Types of Elasticity of Demand

- Perfectly inelastic demand (|ep|= 0):
- When the demand of a commodity does not change at all irrespective of any change in its price, it is said to be perfectly inelastic demand. Q1= 100,Q2=
- Here ela ero).



- Less than unit elastic demand (|ep|<1):
  - When %age change in demand of commodity is less than the percentage change in price.
  - Here elasticity of demand is less than 1.
  - Eg

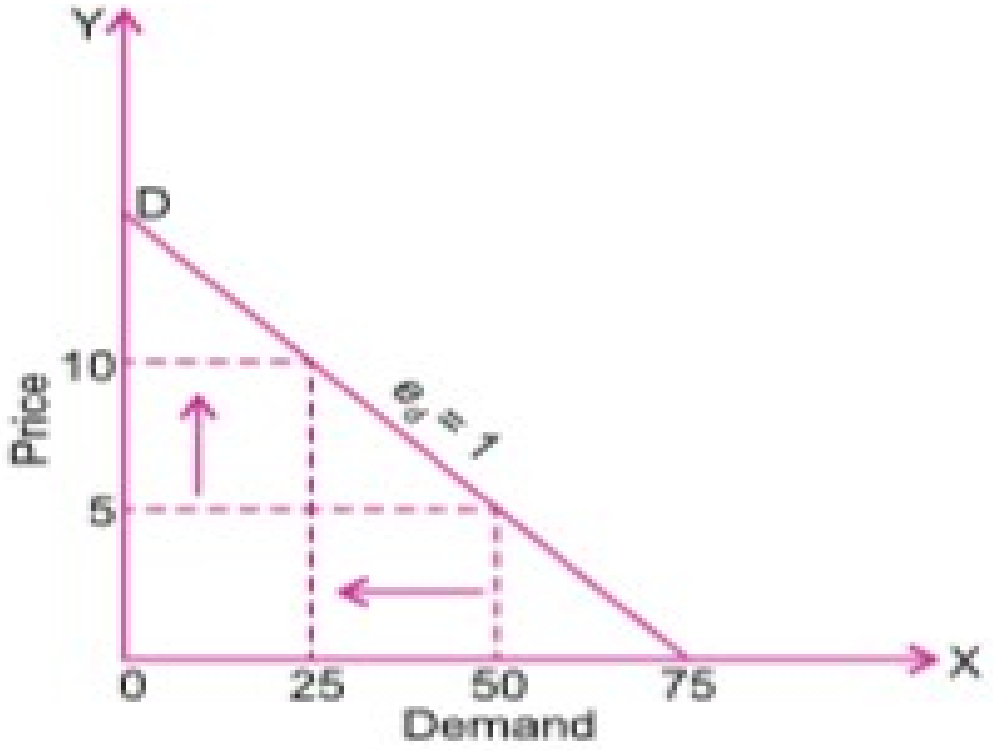
Price (Birr per kg)	Demand (kg)
6	3
2	4

- Unit elastic demand (|ep| = 1):
  - When percentage change in the demand of a commodity and percentage change in price are equal.
  - Here elasticity of demand is equal to 1.

- Eg

Price (Birr per kg)	Demand (kg)
5	50
10	25

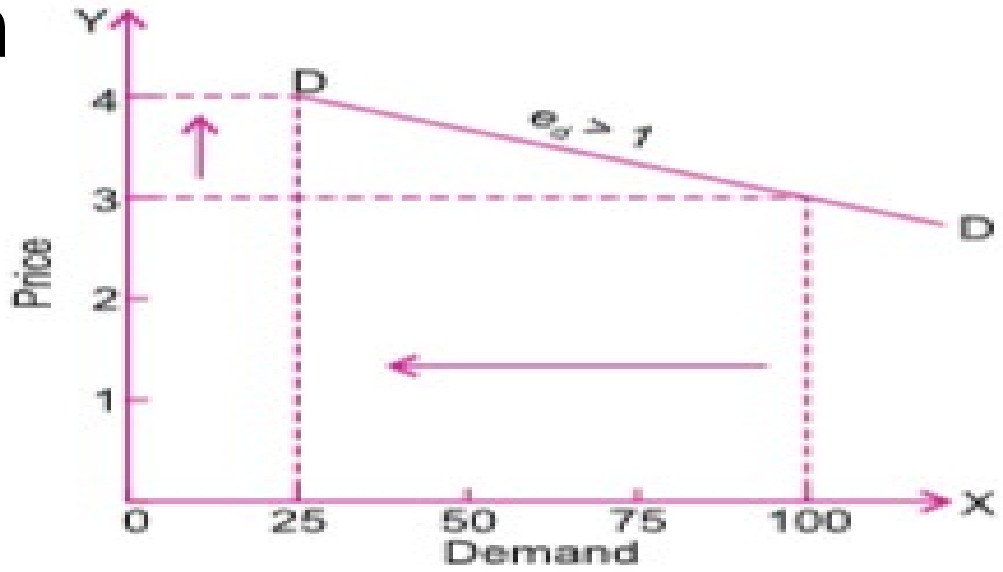
- Graphically expressed



- More than unit elastic demand (|ep| > 1)
- When percentage change in demand of commodity is more than the percentage change in price.
- han 1.

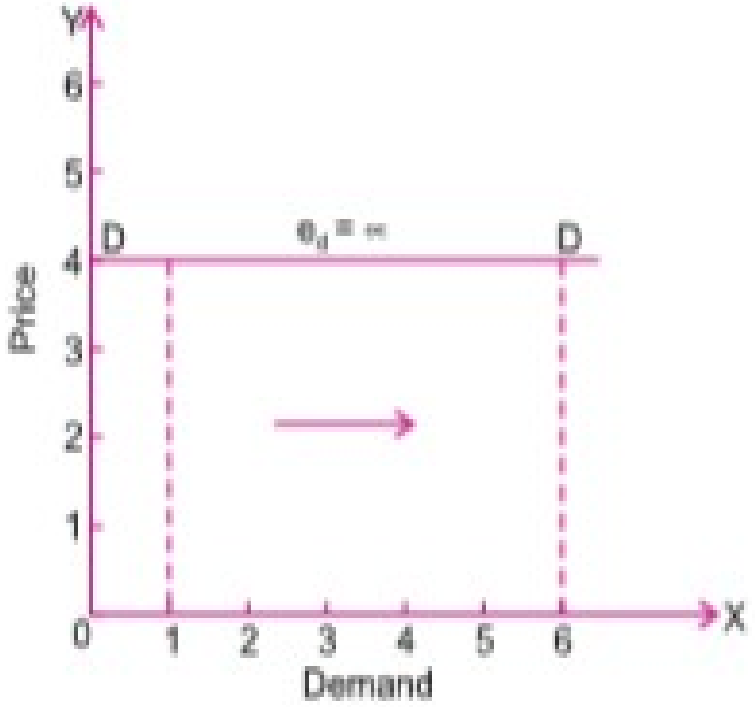
Price (Birr per kg)	Demand (kg)
3	100
4	25

- Graph l as:



- Perfectly elastic demand (|ed| = ∞):
- When demand of a commodity rises or falls to any extent without change in price, infinitely elastic demand.
- Here elasticity of demand = ∞.

Price (Birr per kg)	Demand (kg)
4	1
4	6



Cont…

- Prices across the economy can be influenced by several factors.
- When an economy is expanding it usually comes with rising inflation due to increased demand.
- demand for all types of goods and services is higher and therefore businesses charge more.
- Prices can also be influenced by other factors influencing costs such as tariffs, shortages, or surpluses.
- Price increases for a good or service offered by your small business will have an effect on the sales volume of that good or service.