Demand and Supply Analysis

Demand

- The process to satisfy human wants/ needs/desires.
  - Want: having a strong desire for something
  - Need: lack of means of subsistence
  - Desire: an aspiration to acquire something
- Demand: effective desire
- Demand is that *desire* which backed by *willingness* and *ability* to buy a particular commodity.
  - Amount of the commodity which consumers are willing to buy per unit of time, at that price.
- Things necessary for demand:
  - Time
  - Price of the commodity
  - Amount (or quantity) of the commodity consumers are willing to purchase at the price

Types of Demand

- **Direct and Derived Demand**
  - Direct demand is for the goods as they are such as Consumer goods
  - Derived demand is for the goods which are demanded to produce some other commodities; e.g. Capital goods
- **Recurring and Replacement Demand**
  - Recurring demand is for goods which are consumed at frequent intervals such as food items, clothes.
  - Durables are purchased to be used for a long period of time
    - Wear and tear over time needs replacement
- **Complementary and Competing Demand**
  - Some goods are *jointly demanded* hence are complementary in nature, e.g. software and hardware, car and petrol.
  - Some goods compete with each other for demand because they are *substitutes* to each other, e.g. soft drinks and juices.

Determinants of Demand

- **Price of the product**
  - Single most important determinant
  - Negative effect on demand
    - Higher the price-lower the demand
- **Income of the consumer**
  - Normal goods: demand increases with increase in consumer's income
  - Inferior goods: demand falls as income rises
- **Price of related goods**
  - Substitutes
    - If the price of a commodity increases, demand for its substitute rises.
  - Complements
    - If the price of a commodity increases, quantity demanded of its complement falls.

Determinants of Demand

- **Tastes and preferences**
  - Very significant in case of consumer goods
- **Expectation of future price changes**
  - Gives rise to tendency of hoarding of durable goods
- **Population**
  - Size, composition and distribution of population will influence demand
- **Advertising**
  - Very important in case of competitive markets

Demand Function

- Interdependence between demand for a product and its determinants can be shown in a mathematical functional form

- Dx = f(Px, Y, Py, T, A, N)
    - Independent variables: Px, Y, Py, T, A, N
    - Dependent variable: Dx
    - Px: Price of x
    - Y: Income of consumer
    - Py: Price of other commodity
    - T: Taste and preference of consumer
    - A: Advertisement
   - N: Macro variable like inflation, population growth, economic growth

Law of Demand

- A special case of demand function which shows relation between price and demand of the commodity

  Dx = f(Px)

- Other things remaining constant, when the price of a commodity rises, the demand for that commodity falls or when the price of a commodity falls, the demand for that commodity rises.

- Price bears a negative relationship with demand

- **Reasons**

  - **Substitution Effect** : When the price of a commodity falls (rises), its substitutes become more (less) expensive assuming their price has not changed.

  - **Income Effect**: When the price of a particular commodity falls, the consumer's real income rises, hence the purchasing power of the individual rises.

  - **Law of Diminishing Marginal Utility**: as a person consumes successive units of a commodity, the utility derived from every next unit (marginal unit) falls.

Demand Schedule and Individual Demand Curve

Point on Demand Curve	Price (Rs per cup)	Demand ('000 cups)
a	15	50
b	20	40
c	25	30
d	30	20
e	35	10
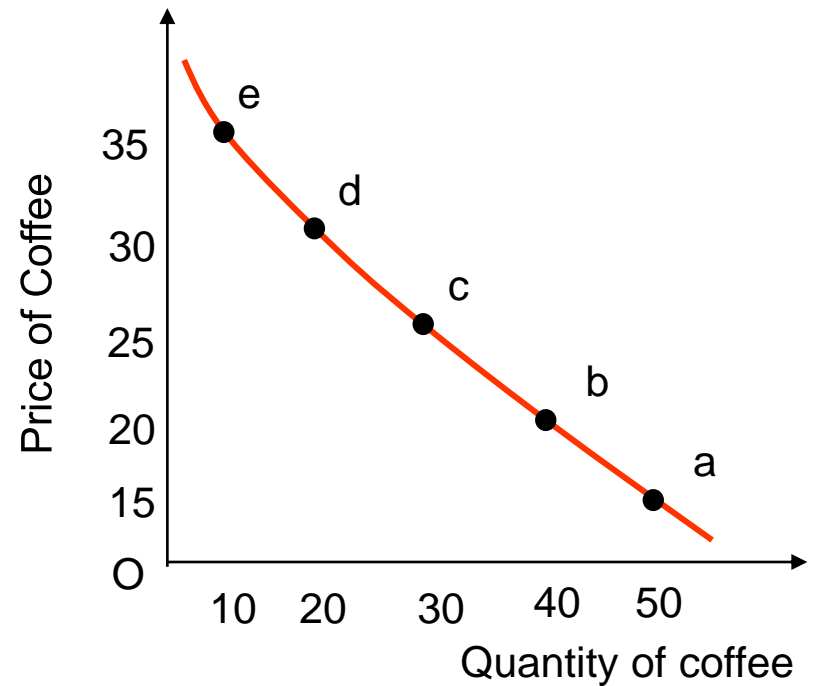
Change in Demand

- Shift in demand curve from D_0 to D_1
  - More is demanded at same price ($Q_1 > Q$)
- Increase in demand caused by:
  - A rise in the price of a substitute
  - A fall in the price of a complement
  - A rise in income
  - A redistribution of income towards those who favour the commodity
  - A change in tastes that favours the commodity
- Shift in demand curve from D_0 to D_2
  - Less is demanded at each price ($Q_2 < Q$)

Exceptions to the Law of Demand

Law of demand may not operate due to the following reasons:

- Giffen Goods
- Snob Appeal
- Demonstration Effect
- Bandwagon effect
- Future Expectation of Prices (Panic buying)
- Addiction
- Neutral goods
    - Life saving drugs
    - Salt
- Amount of income spent
    - Match box

Market Demand

- Market: interaction between sellers and buyers of a good (or service) at a mutually agreed upon price.

- Market demand

  - Aggregate of individual demands for a commodity at a particular price per unit of time.

  - Sum total of the quantities of a commodity that all buyers in the market are willing to buy at a given price and at a particular point of time (ceteris paribus)

- Market demand curve: horizontal summation of individual demand curves

Supply

- Indicates the quantities of a good or service that the seller is willing and able to provide at a price, at a given point of time, other things remaining the same.
- Supply of a product X (S_x) depends upon:
    - Price of the product (P_x)
    - Cost of production (C)
    - State of technology (T)
    - Government policy regarding taxes and subsidies (G)
    - Other factors like number of firms (N)
- Hence the supply function is given as:

$S_x = (P_x, C, T, G, N)$

Law of Supply

- Law of Supply states that *other things remaining the same, the higher the price of a commodity the greater is the quantity supplied.*

- Price of the product is revenue to the supplier; therefore higher price means greater revenue to the supplier and hence greater is the incentive to supply.

- Supply bears a positive relation to the price of the commodity.

Supply Schedule

| Point on Supply Curve	Price (Rs. Per cup)	Supply ('000 cups per month)
a	15	10
b	20	20
c	25	30
d	30	45
e	35	60

Supply Curve
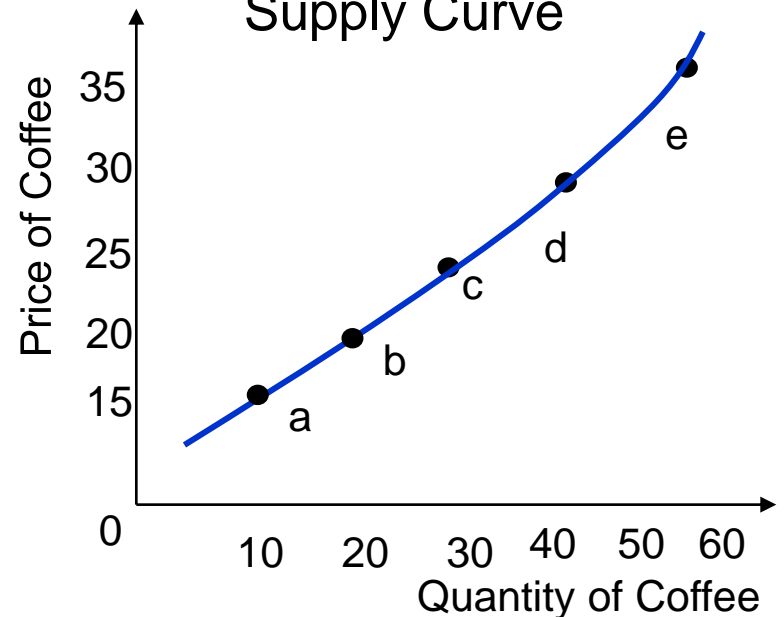
Change in Supply

- Shift in the supply curve from S_0 to S_1
  - More is supplied at each price ($Q_1 > Q_0$)
- Increase in supply caused by:
  - Improvements in the technology
  - Fall in the price of inputs
- Shift in the supply curve from S_0 to S_2
  - Less is supplied at each price ($Q_2 < Q_0$)
- Decrease in supply caused by:
  - A rise in the price of inputs
  - Change in government policy (VAT)
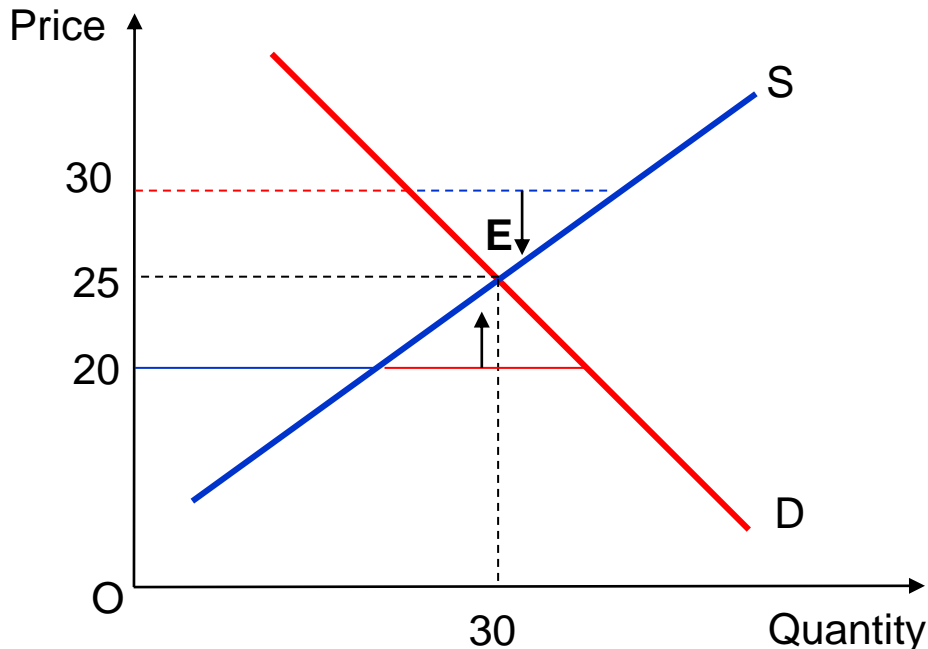
Market Equilibrium

- Equilibrium occurs at the price where the quantity demanded and the quantity supplied are equal to each other.
- At point E demand is equal to supply hence 25 is equilibrium price
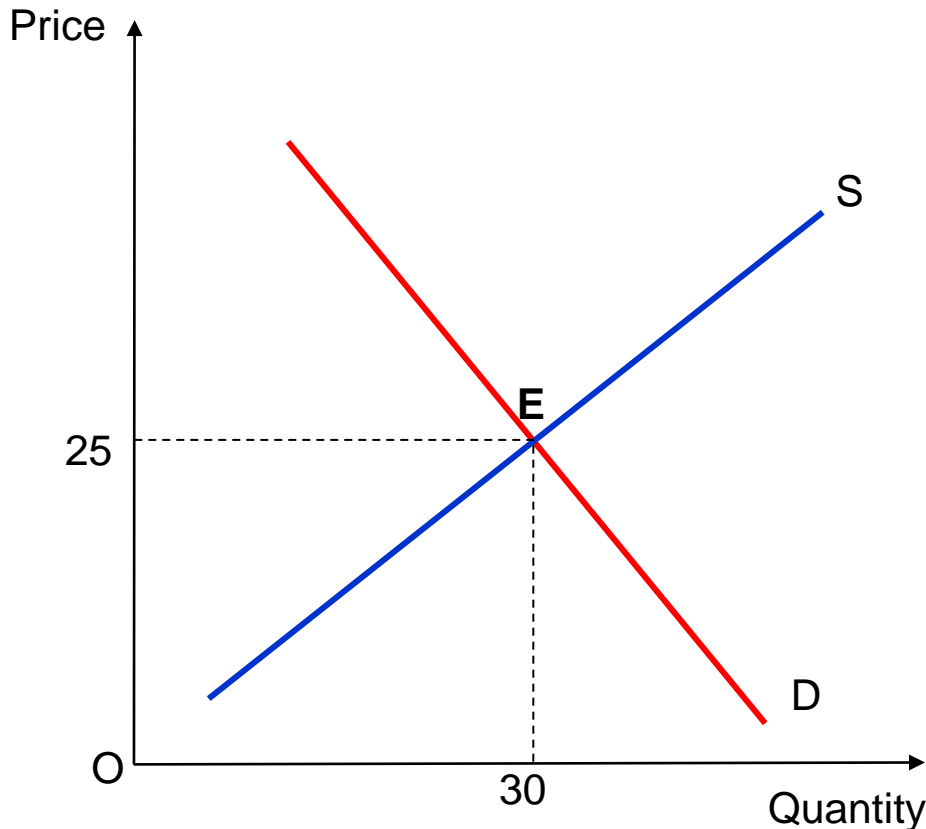
Price (Rs)	Supply ('000 cups/ month)	Demand ('000 cups/ month)
15	10	50
20	15	40
25	**30**	**30**
30	45	15
35	70	10

Market Equilibrium

- For prices below the equilibrium, Quantity demanded exceeds quantity supplied (D>S)
    - Price pulled upward
- For prices above the equilibrium, Quantity demanded is less than quantity supplied (D<S)
    - Price pulled downward.
- At point E demand is equal to supply hence 25 is equilibrium price.

Price (Rs)	Supply ('000 cups/ month)	Demand ('000 cups/ month)
15	10	50
20	15	40
25	30	30
30	45	15
35	70	10

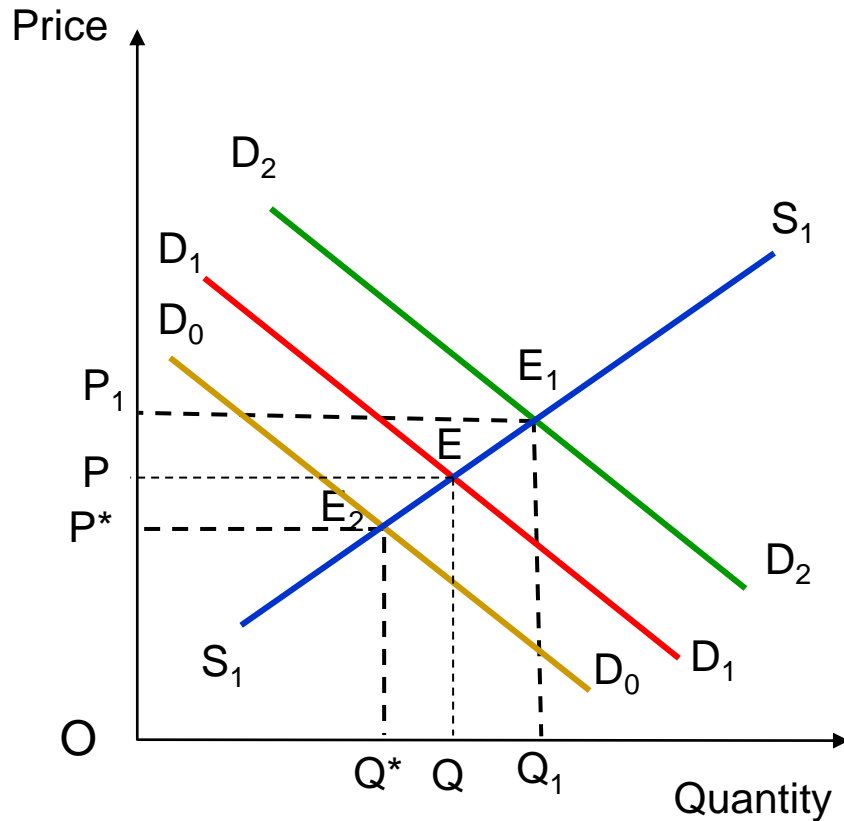# Changes in Market Equilibrium
(Shifts in Supply Curve)

- The original point of equilibrium is at *E,* the point of intersection of curves D_1 and S_1, at price P and quantity Q

- An increase in supply shifts the supply curve to S_2

- Price falls to P_2 and quantity rises to Q_2, taking the new equilibrium to E_2

- A decrease in supply shifts the supply curve to S_0. Price rises to P_0 and quantity falls to Q_0 taking the new equilibrium to E_0

- Thus an increase in supply raises quantity but lowers price, while a decrease in supply lowers quantity but raises price; demand being unchanged
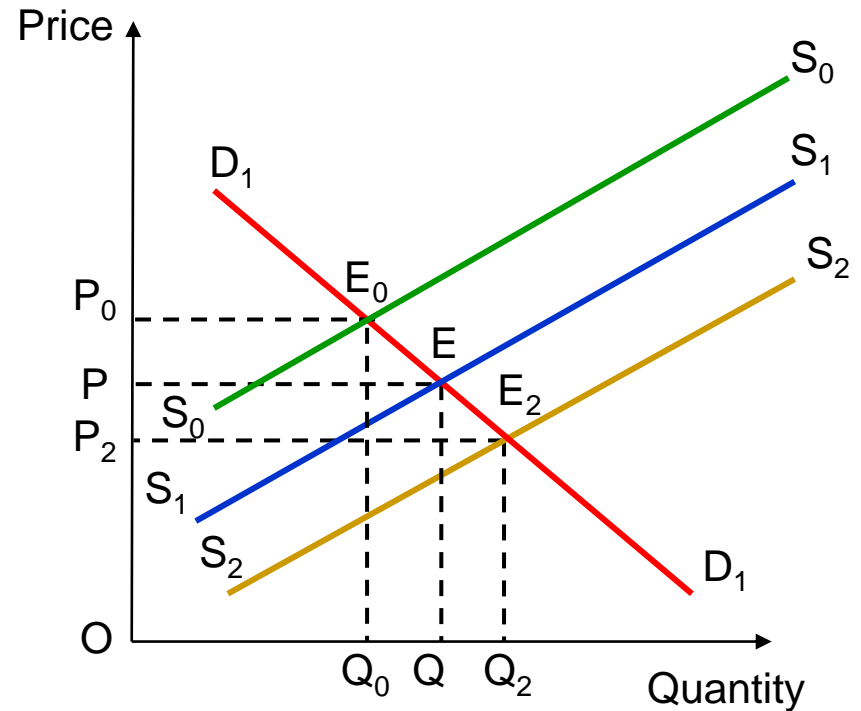
Changes in Market Equilibrium
(Shifts in Demand Curve)

- The original point of equilibrium is at *E*, the point of intersection of curves D_1 and S_1, at price P and quantity Q

- An increase in demand shifts the demand curve to D_2
  - Price rises to P_1 and quantity rises to Q_1 taking the new equilibrium to E_1

- A decrease in demand shifts the demand curve to D_0
  - Price falls to P* and quantity falls to Q* taking the new equilibrium to E_2.

- Thus, an increase in demand raises both price and quantity, while a decrease in demand lowers both price and quantity; when supply remains same.

Change in Both Demand and Supply
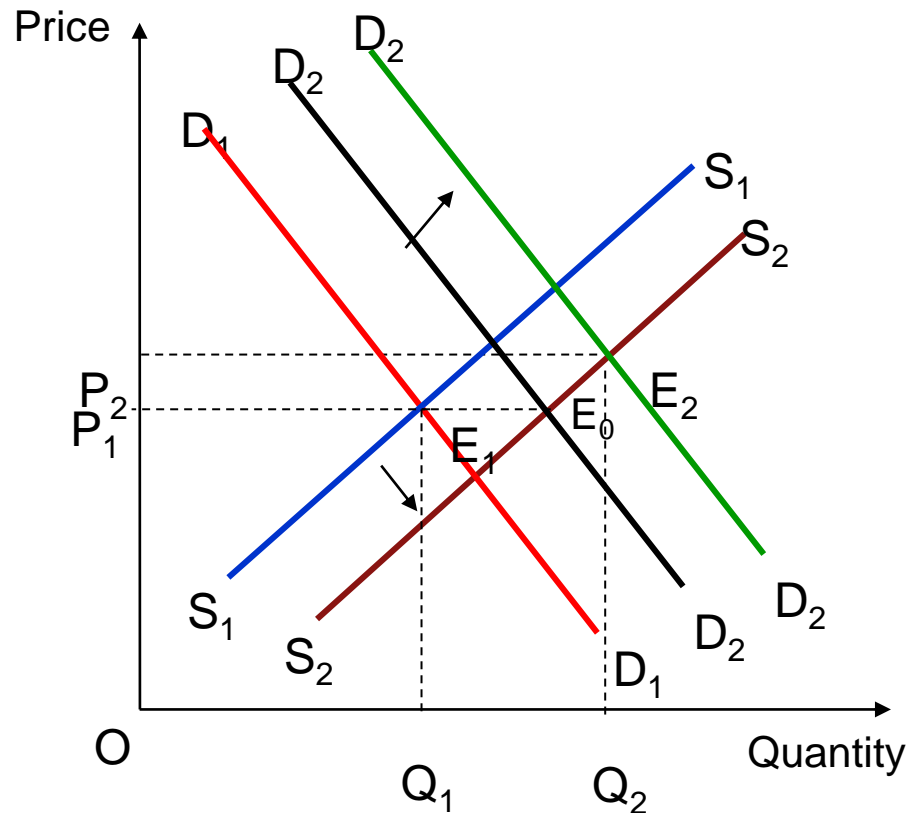
- Initial equilibrium is at E_1, with price quantity combination (P_1, Q_1).
- An increase in both demand and supply takes place;
  - demand curve shifts to the right from D_1 D_1 to D_2 D_2
  - supply curve also shifts to the right from S_1 S_1 to S_2 S_2.
  - The new equilibrium is at E_2, and price quantity is (P_2, Q_2).
- An increase in both supply and demand will cause the sales to rise, but
  - the price will increase if increase in D>S (as at E_2)
  - No change in price if increase in D=increase in S (as at E_0)