17 December 2023 06:27 PM

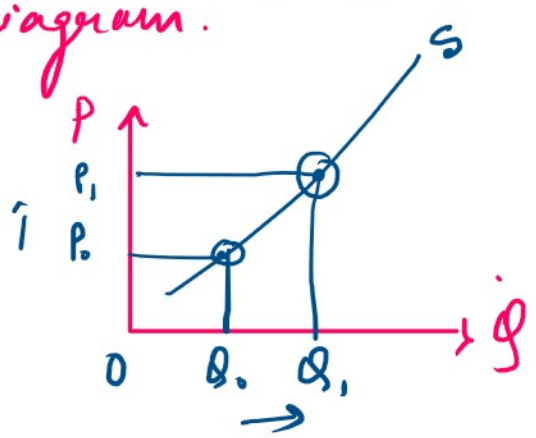
Law of Supply

↓

when all other factors affecting the quantity supplied remain constant, then there is a positive relation between price changed and quantity supplied and vice-versa.

This is known as Law of Supply.

∴ A supply curve is upward sloping as shown in the diagram.



Supply curve will shift when following factors will change ① Cost / price of inputs

(price of inputs increases → supply decreases i.e supply curve shift left.)

② ~~Techno~~ Technology advancement

↓

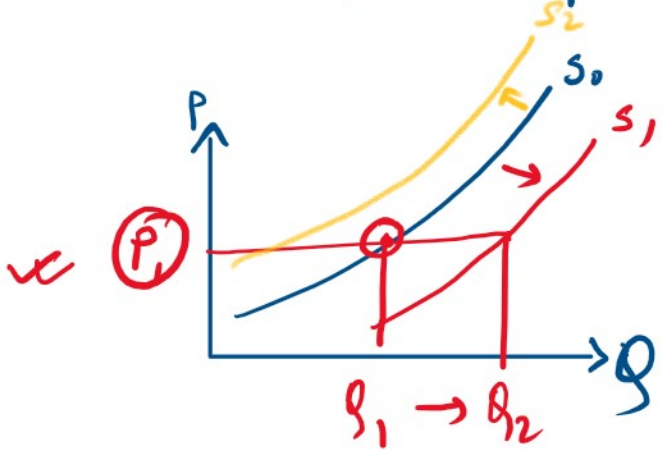
productivity will increase

productivity ...

↓

increase the supply
(supply curve shifts right).

③ Government Policy
(for example → subsidy)



a) Supply increases
→ supply curve shifts right from S_0 to S_1.

b) Supply decreases
→ supply curve shifts left from S_0 to S_2

Market Equilibrium

↳ both buyers and sellers are present together.

Market equilibrium is a point at which demand is exactly equals to supply.

that is there is no excess demand or excess supply in the market.

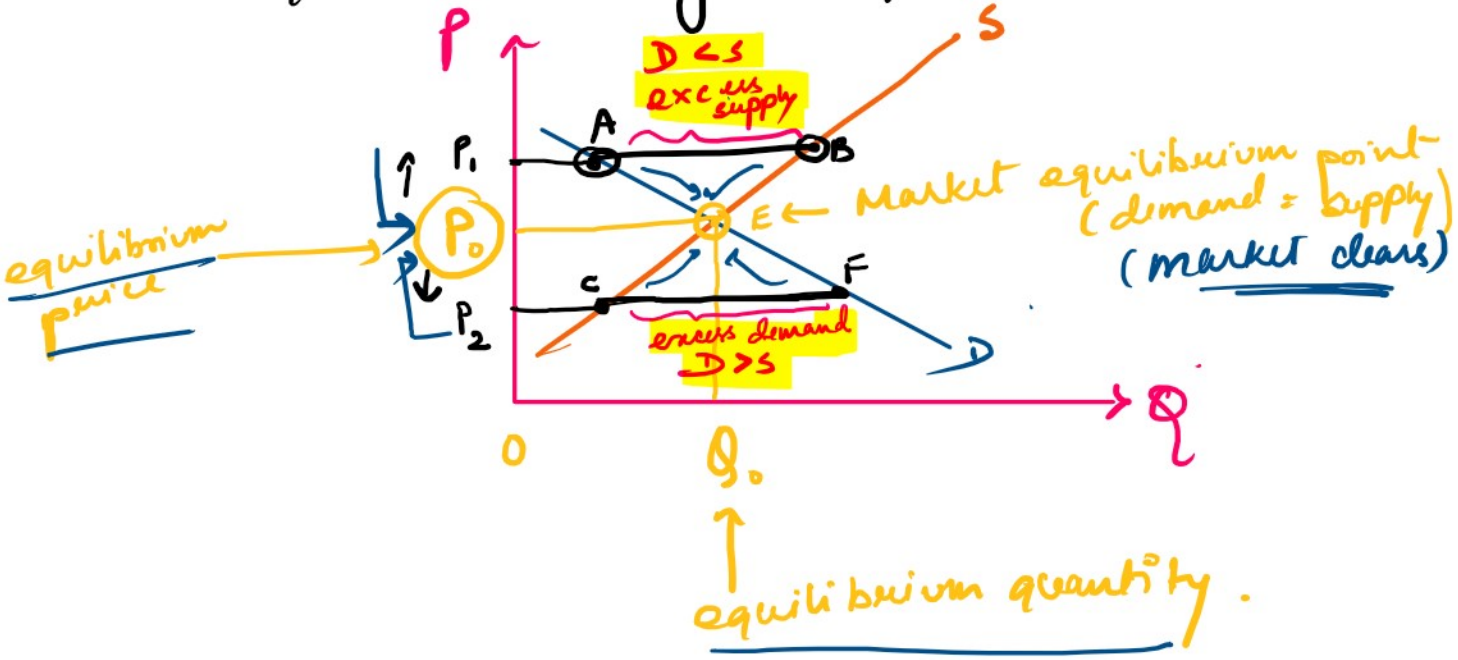
... is called

market.

* The price at which demand = supply is called market / equilibrium price

* The quantity which both buyer and seller agrees to buy and sell respectively at equilibrium price is known as equilibrium quantity.

Let us understand the concept of market equilibrium using diagram.



Q Suppose the quantity supplied S and quantity demanded D of T-shirts at a concert are

consist are

$Q^S = -200 + 50P$ and $Q^D = 1000 - 25P$.

Calculate the equilibrium price and equilibrium quantity.

Solu:

In market equilibrium,

$$Q^d = Q^s$$

$$1000 - 25P = -200 + 50P$$

$$1200 = 75P$$

$$P = \frac{1200}{75} \quad 16$$

1

$P^* = ₹16$ ← equilibrium price

∴ equilibrium Quantity, $Q^* = -200 + 50P^*$

$= -200 + (50 \times 16)$

$= -200 + 800$

$= 600$ units

Carnwise)

Point
-Elasticity of Demand

1. Own price elasticity of demand.

responsiveness of quantity demand w.r.t price of the same commodity.

or % change in quantity demand due to % change in price of same commodity

$$\text{ie, } e_p = \frac{\%\text{ change in quantity demand of } x}{\%\text{ change in price of } x}$$

Let Q_0 => initial demand at P_0

Q_1 => decrease in demand due to increase P_1

$\therefore$ change in demand, $\Delta Q = Q_1 - Q_0$

change in price, $\Delta P = P_1 - P_0$

$$\% \text{ change in demand} = \frac{\Delta Q}{Q_0} \times 100$$

$$\% \text{ change in price} = \frac{\Delta P}{P_0} \times 100$$

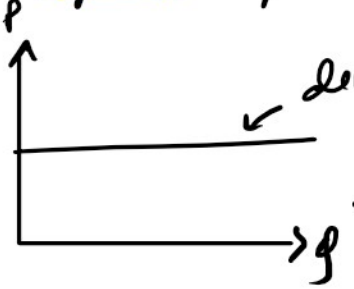
ΔQ ↓ with

change in price P_0

∴ Own price elasticity of demand $e_p = \frac{\frac{\Delta Q}{Q_0} \times 100}{\frac{\Delta P}{P_0} \times 100}$

$$e_p = \frac{\Delta Q}{\Delta P} \times \frac{P_0}{Q_0}$$

Case 1 : perfectly elastic demand $(e_p \to \infty)$

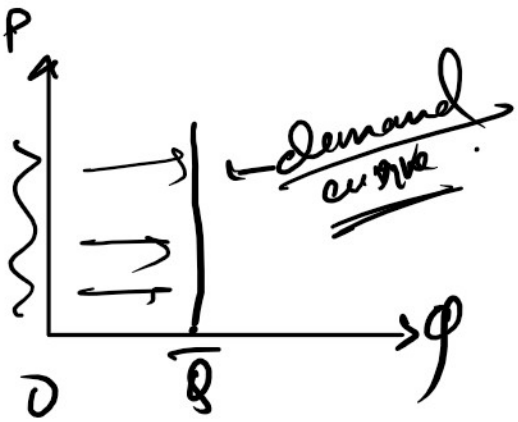


$\Rightarrow \frac{\Delta Q}{\Delta P} \to \infty$

$\Rightarrow \Delta Q \to \infty$

(demand curve is horizontal)

Case 2 : perfectly inelastic demand



$|e_p| \to 0$

$\frac{\Delta Q}{\Delta P} \to 0$

$\Delta Q \to 0$

change in $Q \to 0$

(Demand curve is vertical)

Case 3 : Unit elastic demand

Case 3 : Unit elastic demand

$|e_p| = 1$

$$\frac{\%\text{ change in } Q_d \text{ demand}}{\%\text{ change in } P} = 1$$

$\Rightarrow$ % change Q_d demand = % change in price.

(demand curve is a rectangular hyperbola.)

Case 4 : Relatively elastic $|e_p| > 1$

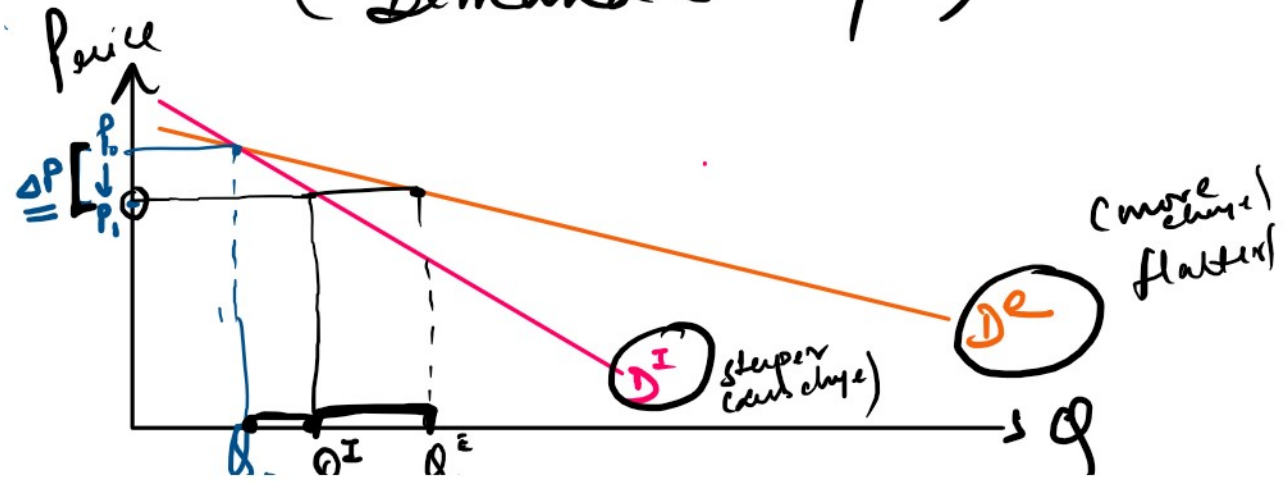
% change in Q^d > % change in price

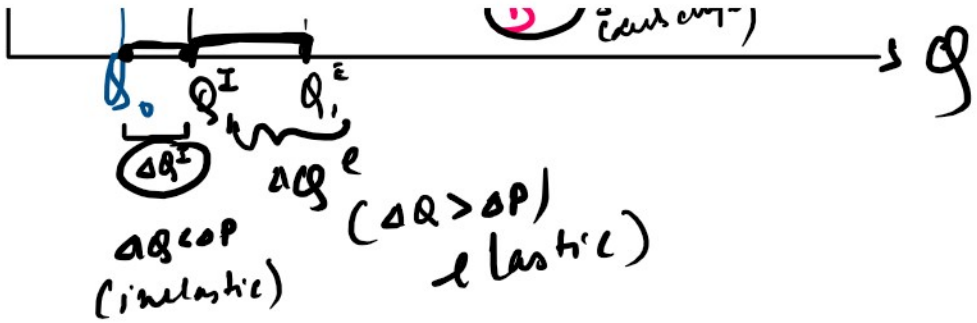
(Demand is flatter)

Case 5 : Relatively inelastic $|e_p| < 1$

$\Rightarrow$ % change in Q_d demand < % change in price

(Demand is steeper).





Q 2. The price of petrol per litre falls from ₹105 (P_0) to ₹102 (P_1) and hence the quantity demand for petrol by a consumer increases from 200 litres (Q_0) to 220 litres (Q_1). Calculate the price elasticity of demand.

Given: initial price $P_0 = ₹105$

initial quantity $Q_0 = 200$ litres.

final price $P_1 = ₹102$

~~initial~~ final quantity $Q_1 = 220$ litres.

$$e_p = \frac{\Delta Q}{\Delta P} \times \frac{P_0}{Q_0}$$

$$= \left\{ \frac{Q_1 - Q_0}{P_1 - P_0} \right\} \times \frac{P_0}{Q_0}$$

$$[220 - 200] \cdot 105$$

$$= \left[\frac{220-200}{102-105}\right] \times \frac{105}{200}$$

$$= \frac{20}{-3} \times \frac{105}{200} = -\frac{10.5}{3}$$

$$= -3.5$$

$$\therefore |e_p| = 3.5 > 1$$

Demand is elastic.

② Income elasticity of Demand

$$e_m = \frac{\% \text{ change in Quantity Demand}}{\% \text{ change in price}}$$

$$= \frac{\Delta Q}{\Delta M} \times \frac{M_0}{Q_0}$$

$$e_m = \left(\frac{Q_1 - Q_0}{M_1 - M_0}\right) \times \frac{M_0}{Q_0}$$

③ Cross price Elasticity of Demand

3) Cross [illegible]

↳ Related goods price change

$$e_c^{x,y} = \frac{\% \text{ change in Quantity demand for } X}{\% \text{ change in Price of } Y}$$

$$e_c^{x,y} = \frac{\Delta Q^x}{\Delta P_y} \times \frac{Q_0^x}{P_y^0}$$

1. $e_c^{x,y} > 0 \Rightarrow \frac{\Delta Q^x}{\Delta P_y} > 0 \Rightarrow$ Substitute goods

($P_y \uparrow \Rightarrow Q^y \downarrow \Rightarrow Q^x \uparrow$)

positively related

2. $e_c^{x,y} < 0 \Rightarrow \frac{\Delta Q^x}{\Delta P_y} < 0 \Rightarrow$ complimentary goods

($P_y \uparrow \Rightarrow Q_y \downarrow \Rightarrow Q_x \downarrow$ because x and y consumed together)

-vely related

3. $e_c^{x,y}$ [illegible]

-ve ly related

(3) $e_c^{x,y} = 0 \Rightarrow \frac{\partial q^x}{\partial P_y} = 0 \Rightarrow$ Not related.

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