MICROECONOMICS

utility: The ability of a good to satisfy the wants.

- Cardinal Utility

ASSUMPTIONS

1. Quantitative term

★ Total Utility is additive

Marginal Utility (MU)

→ 1st – 5
→ 2nd – 3
→ 3rd – 1

Total Utility (TU) = 9

$$MU = \frac{\Delta TU}{\Delta C} = \frac{8-5}{1} = (3)$$

★ • Random Utility Theory.

2. Marginal utility diminishes.

1. Rationale human being
2. Money limited
3. For money the marginal utility remains constant however for other comodities it decreases.

- Ordinal Utility measure

The utility is measured in relative terms.

★ Utility is Transitive.

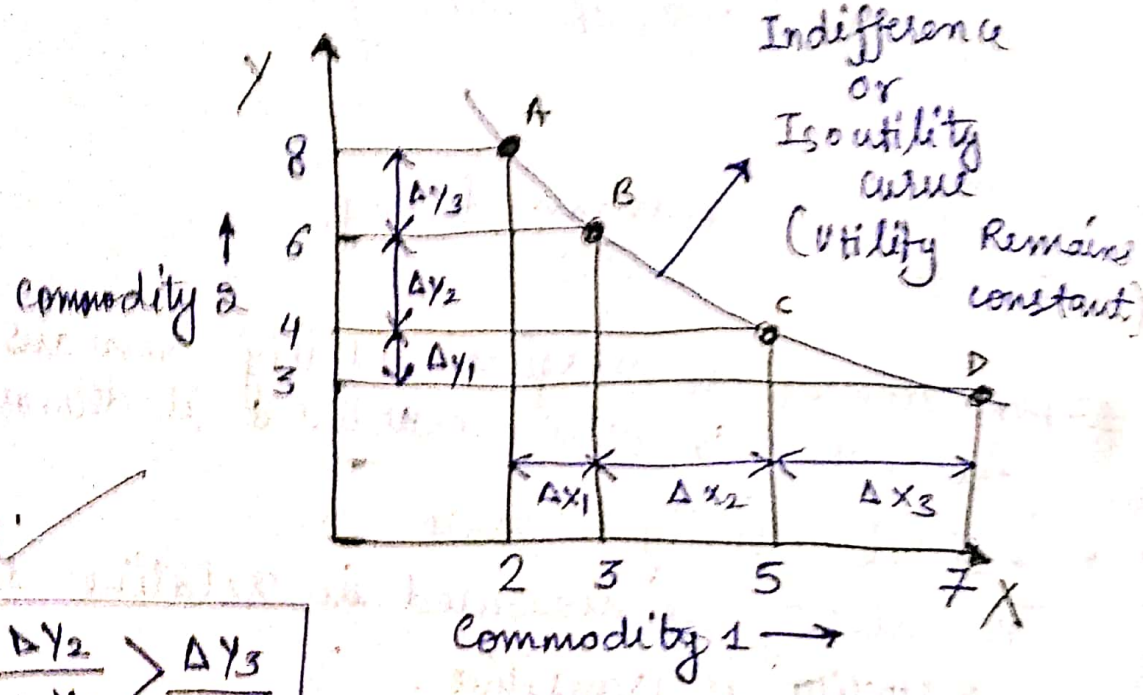
A > B B > C. > → preferred over.

A > C;

★ Diminishing Rate of Substitution.

For calculating ordinal utility 2+ comonodities are needed as for relative comparision.

Marginal Rate of Substitution (MRS)



Inferences:

① -ve slope. ✓

② $\left[\frac{\Delta y_1}{\Delta x_1} > \frac{\Delta y_2}{\Delta x_2} > \frac{\Delta y_3}{\Delta x_3}\right]$

Diminishing marginal Rate of Substitution.

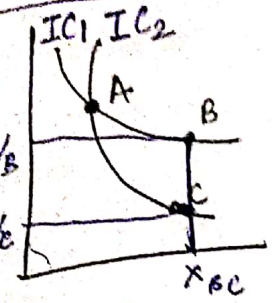
(Convex to the origin) MRS = (slope) (x, y)

★ As value of x keeps on increasing the utility of "commodity 1" decreases and as the y increases the utility of "commodity 2" keeps on increasing.

As Quantity decreases the Utility ~~decreases~~ increasing.
As Quantity increases the Utility ~~increases~~ decreases.

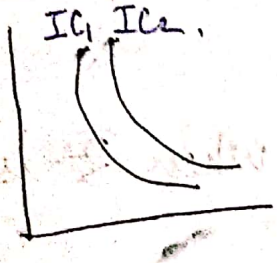
(3) ~~The Indifference~~ Two indifference / isoutility curve donot intersect.

Let



✗

✓



Bcoz IC shows the points of same utility it can never intersect

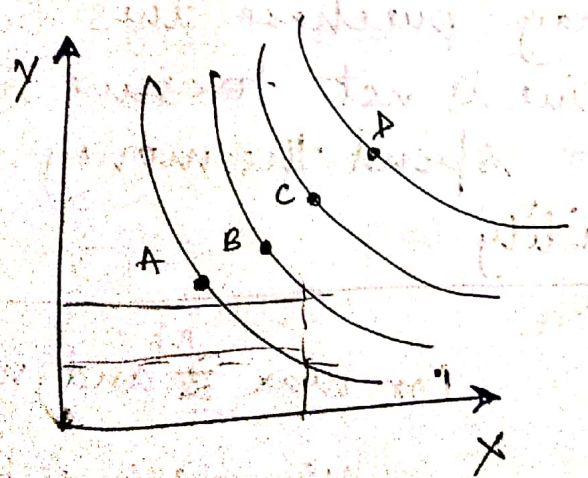
$U(A) = U(C)$.
$U(A) = U(B)$] $\Rightarrow U(B) = U(C)$

But for same x they have different values.

$\Rightarrow$ Contradiction.

Thus IC cannot intersect.

(4) further away from origin the utility increases.



$U(B) > U(A)$.
$U(C) > U(B)$
$\Rightarrow U(C) > U(A)$

Budget → let the Budget be ₹

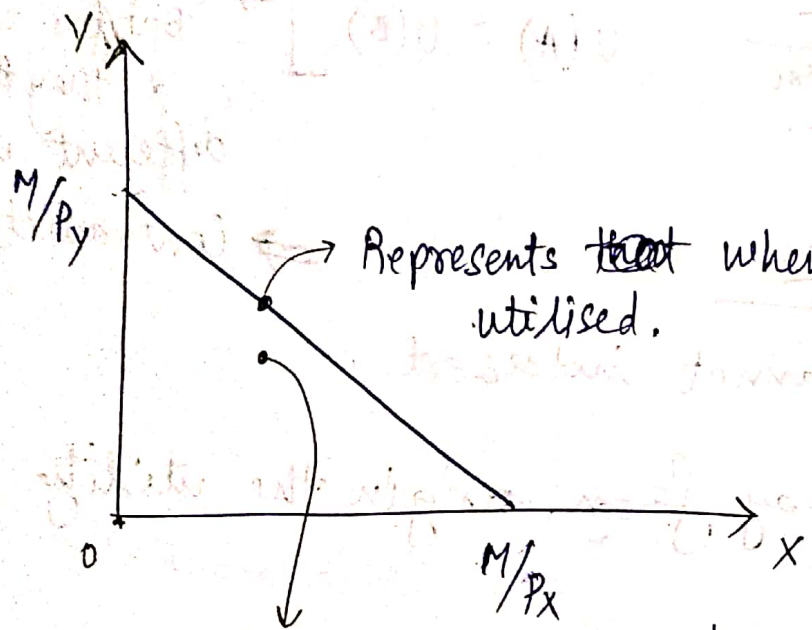
M → Budget
P_x → Price of x
P_y → Price of y.

Then, → $M = P_x * X + P_y * Y$ ✓

M is not disposable income Rather it is budget for purchasing commodity 1 and 2.

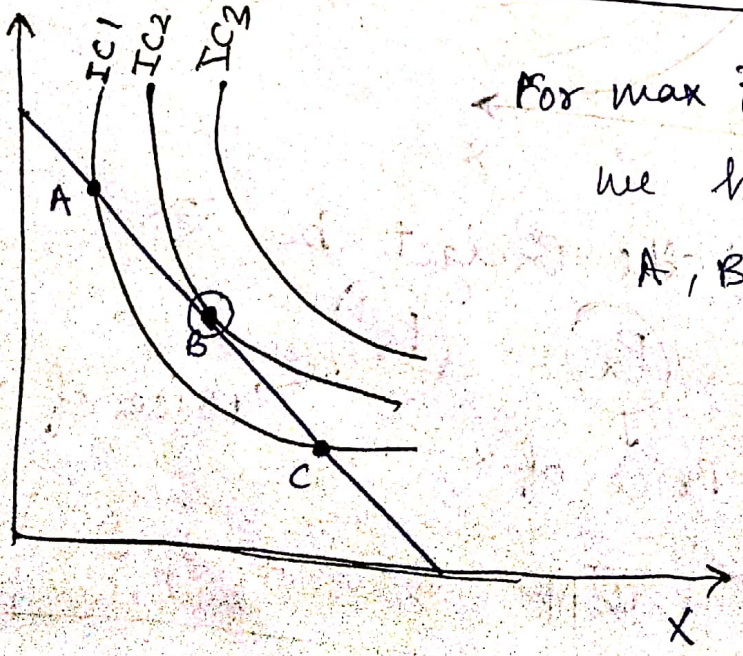
$$X = \frac{M}{P_X} - \frac{P_Y}{P_X} Y$$

$$Y = \frac{M}{P_Y} - \frac{P_X}{P_Y} X$$



Someone may purchase this but his objective is not to save rather it is to spend the money for utility.

Budget with IC



For max M and max U we have 3 points A, B, C

(B) is best because it gives more balanced utility.

Consumer's Equilibrium: Point where we can maximise utility with budget constraint.

2 conditions to be fulfilled :-

(1.) Marginal Rate of Substitution (MRS) = Price Ratio (P_x/P_y)

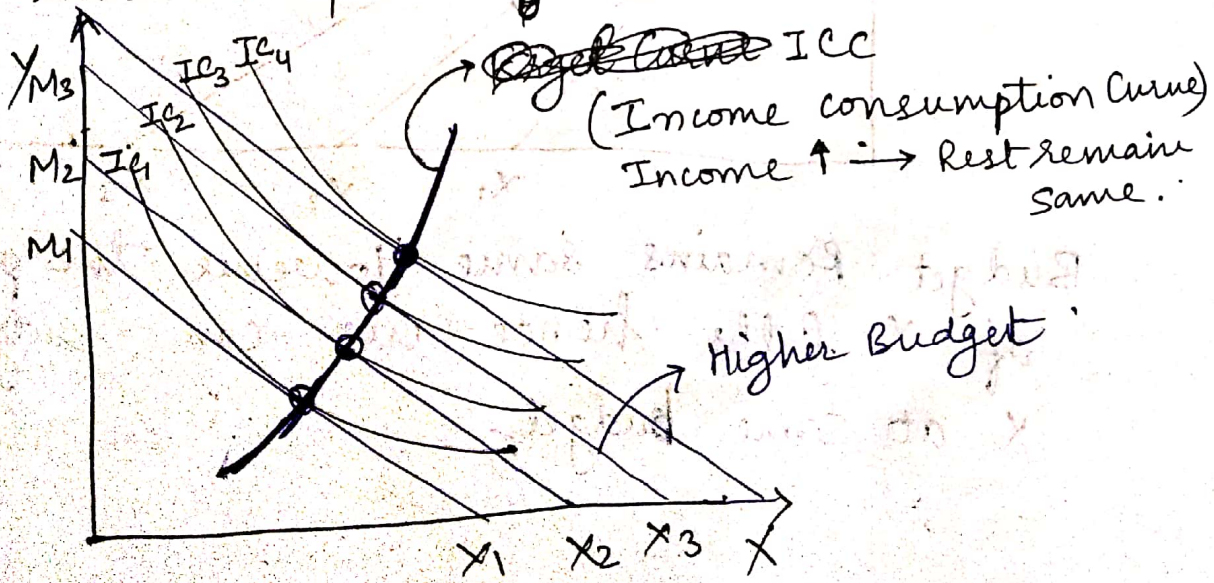
i.e (Slope)$_{IC}$ = (Slope)$_{Budget\ curve}$.

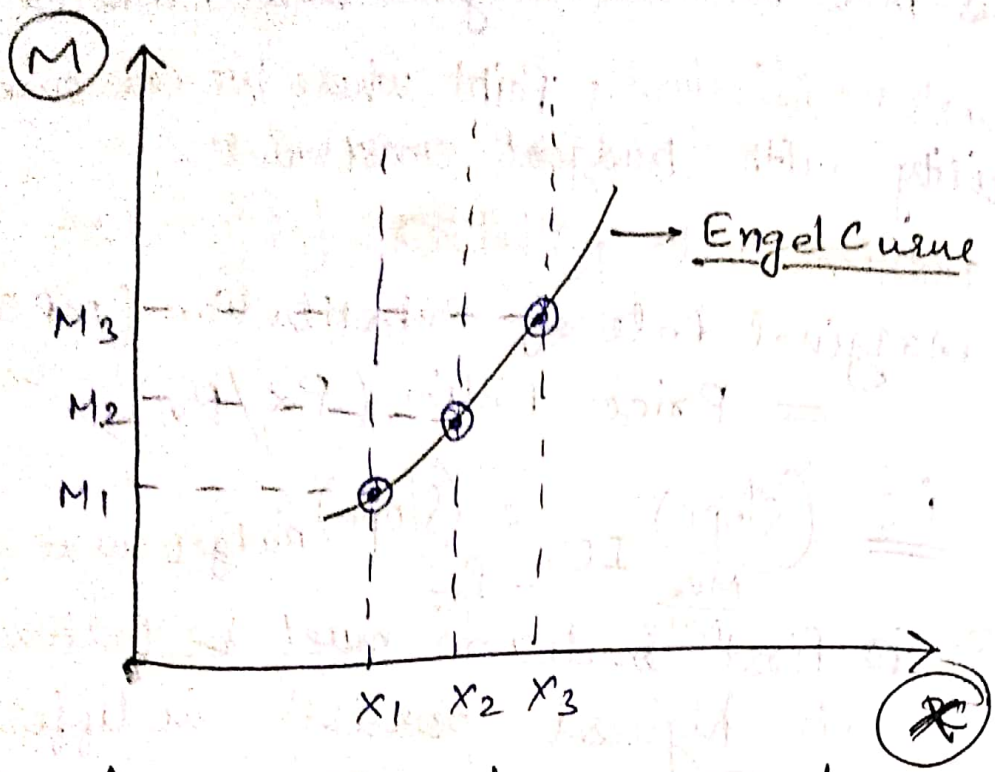
$\frac{MU_x}{MU_y} = \frac{P_x}{P_y}$

(2) First condition must be fulfilled at highest possible indifference curve i.e (B) in above case.

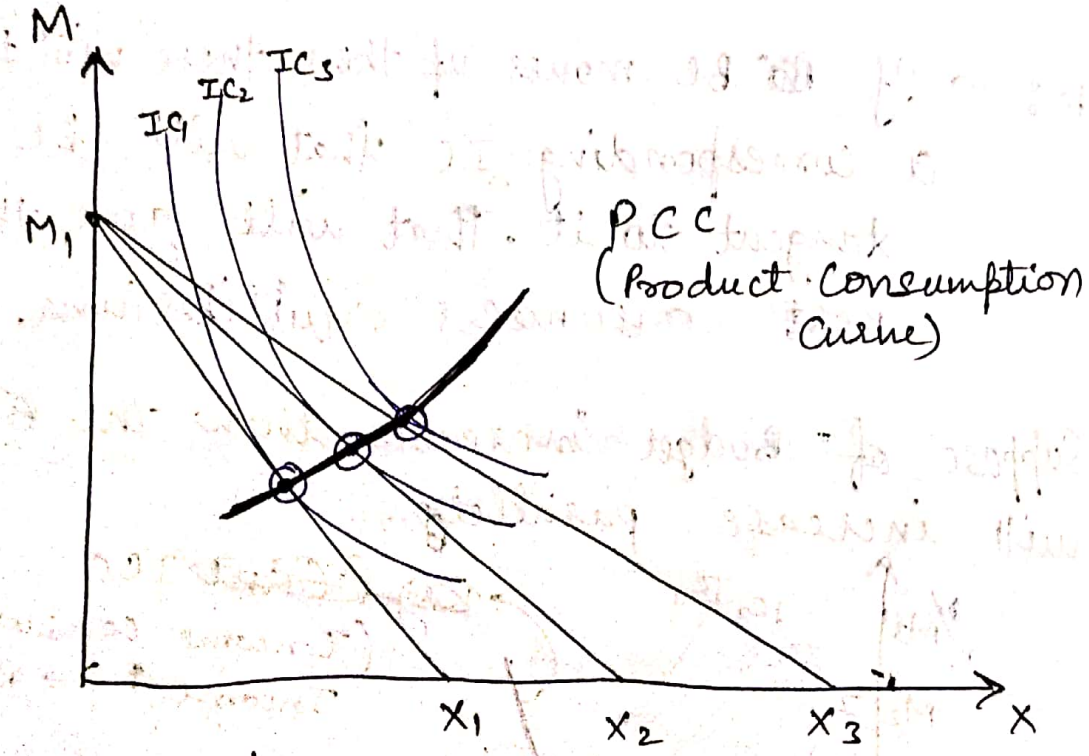
Note: → If BC moves up then there will be a corresponding IC that will be tangent to it. That will give the consumer's equilibrium.

Suppose of Budget increases then the BC will increase parallelly.





If Price of commodities increase or decrease



Budget Remains same However the price of X falls hence we can buy more X at same budget.

SUBSTITUTION EFFECT: We always try to substitute products of same utility and quality for the cheaper one.

#HICKSIAN APPROACH

Inferior goods: If income increases then the choices of goods change. Those goods that get substituted on ~~increa~~ increasing income are inferior goods.

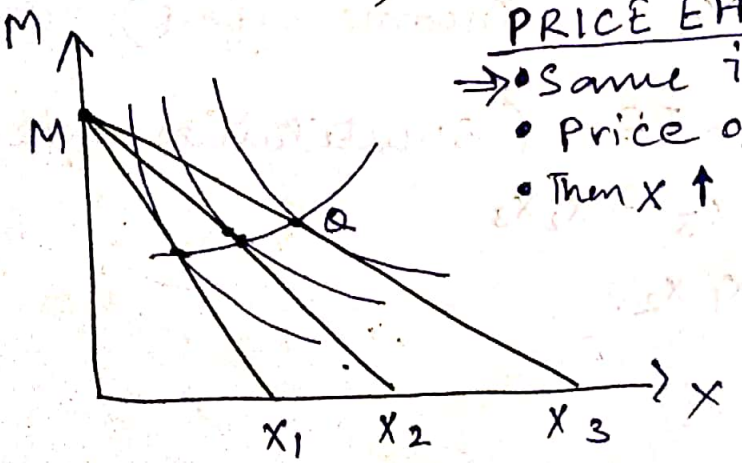
Rice → ₹30 × 10kg = ₹300 → Budget (1).

₹500 = Budget (2) > Budget (1).

Rice → ₹30 × 5kg = ₹150
₹70 × 5kg = ₹350.] → ₹500.

Rice → ₹30 → Inferior good.

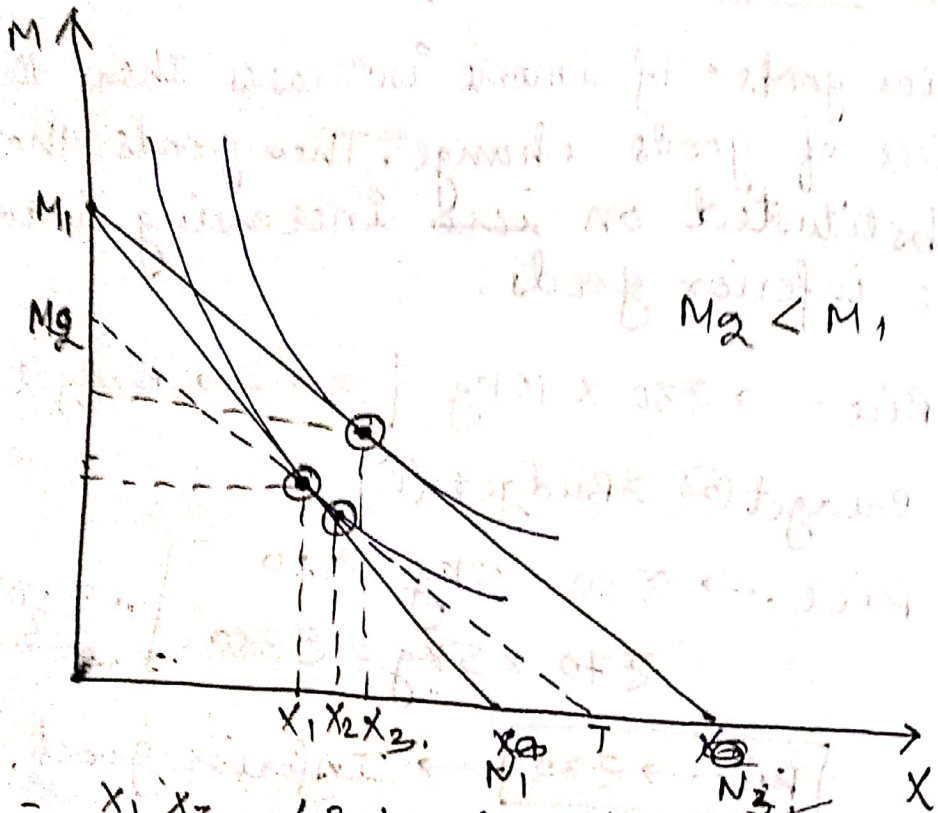
For Normal Goods;



PRICE EFFECT
- Same income
- Price of X P_x ↓
- Then X ↑

HICK's assumption

The income decreases in such a way that even due to the decrease in the P_x we will purchase same quantity of x as earlier.



PE = X_1X_3 (Price effect)

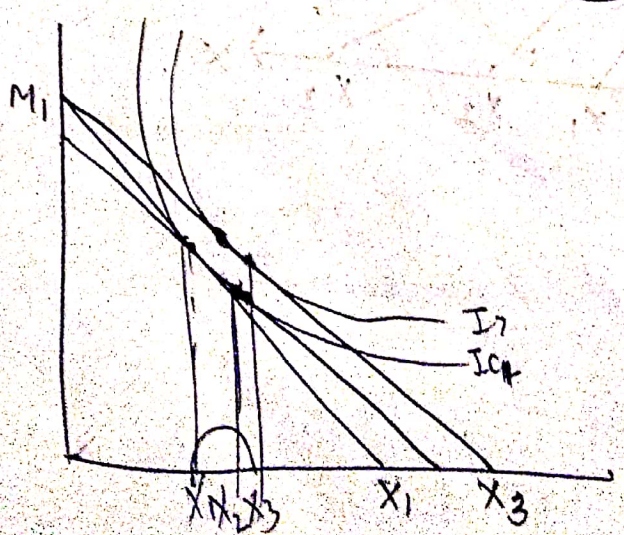
IE = X_2X_3 (Income effect)

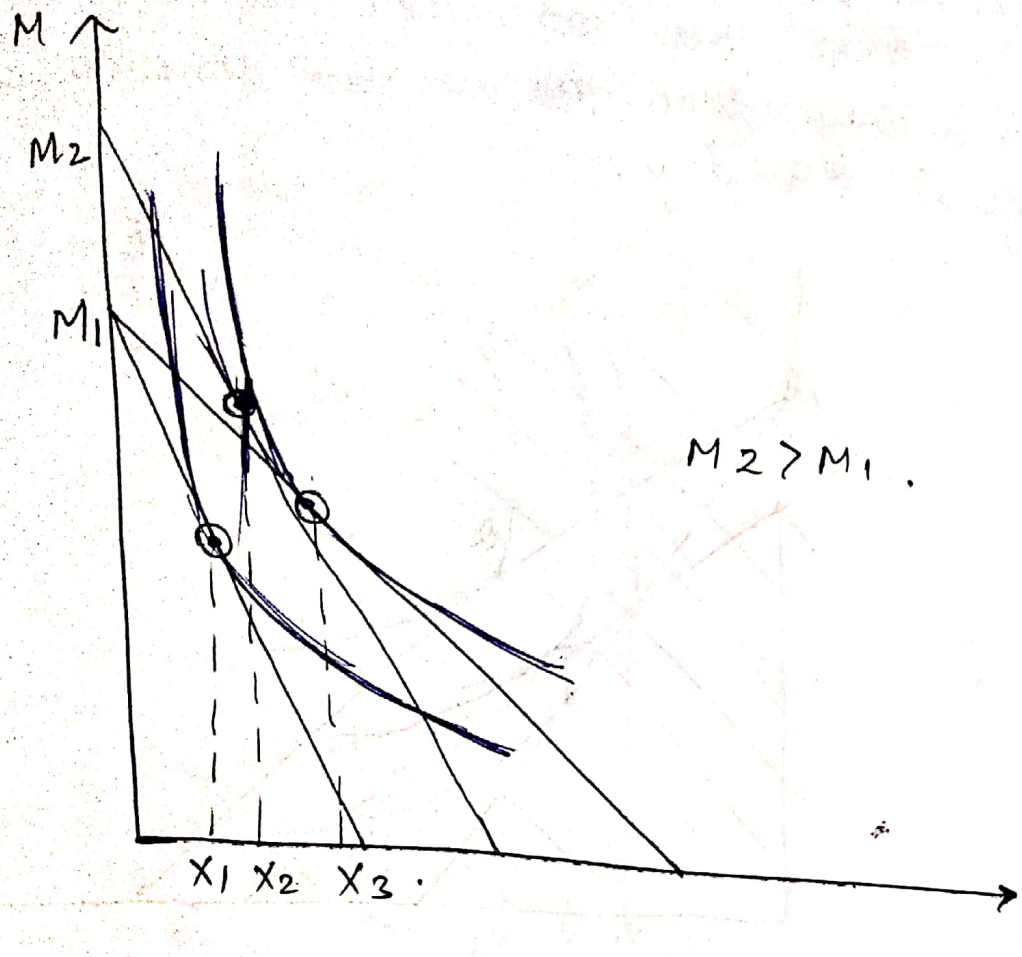
SE = PE - IE (Substitution effect)

= $X_1X_3 - X_2X_3$

= X_1X_2.

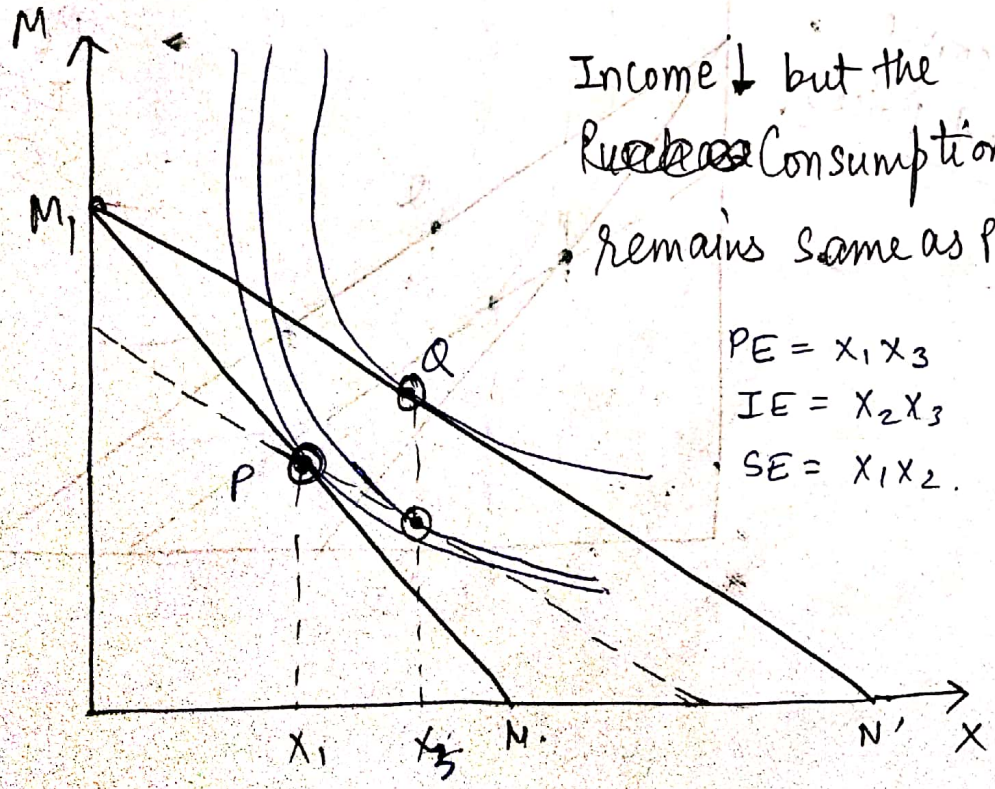
X_1X_2





$M_2 > M_1$.

Slutsky's Approach



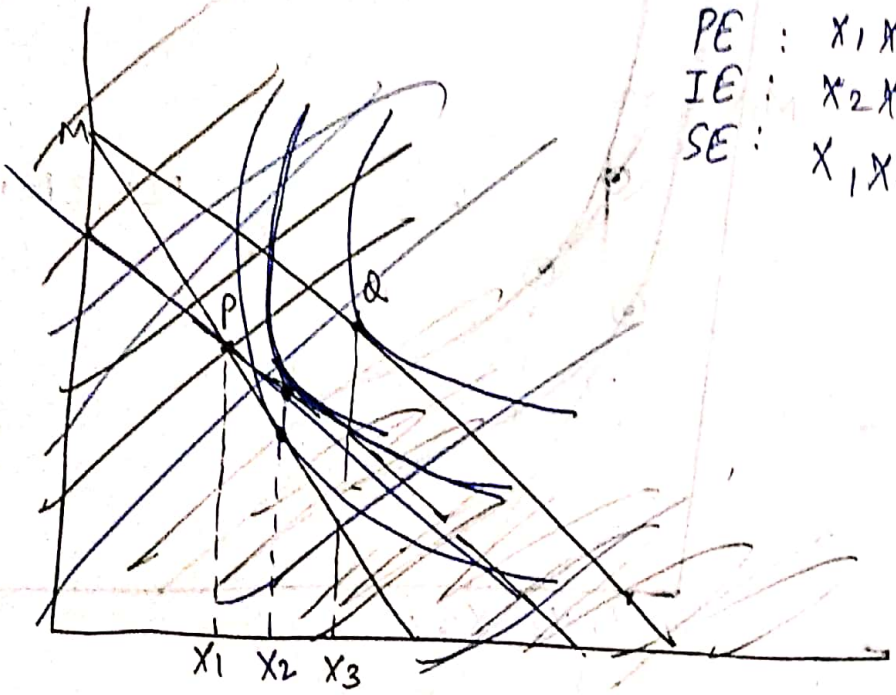
Income ↓ but the Consumption remains same as P.

$PE = X_1X_3$

$IE = X_2X_3$

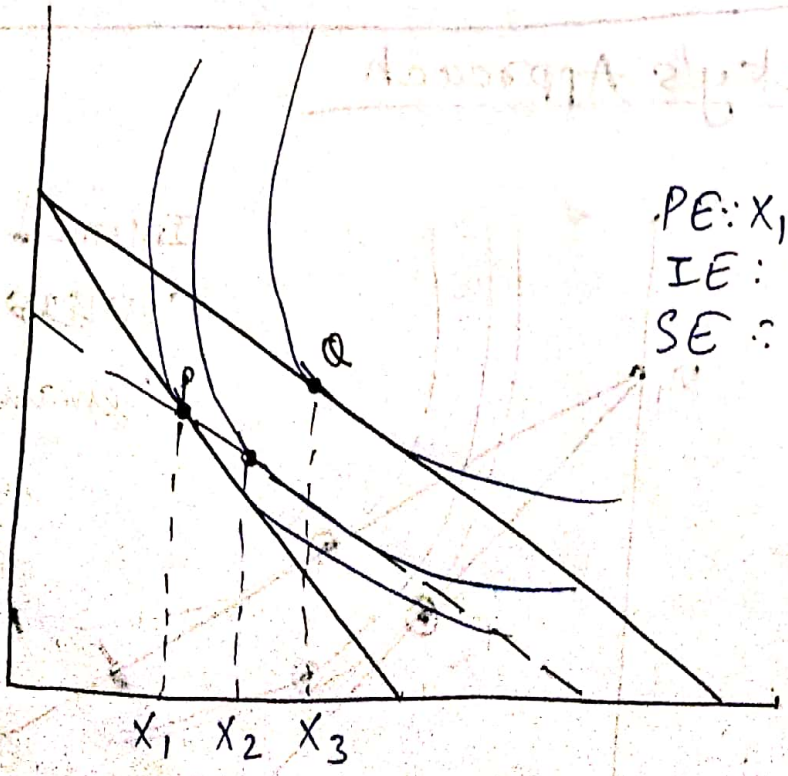
$SE = X_1X_2$.

In slutsky's approach the prices decrease so consumption increases, but at the same time our income decreases in such a way that we can consume our original x and y.



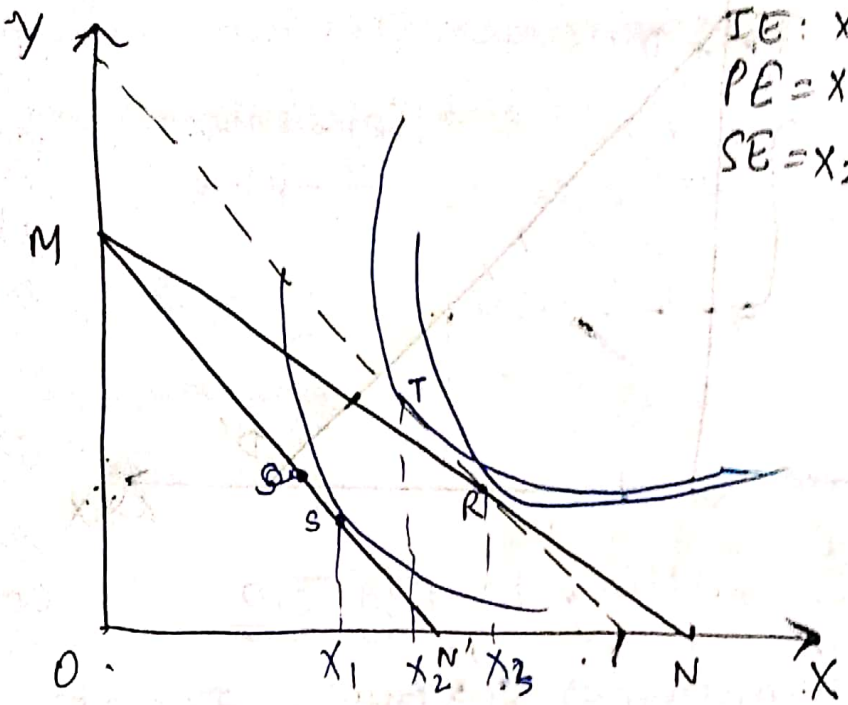
PE : X_1X_3
IE : X_2X_3
SE : X_1X_2.

for decreasing Income and Prices



PE : X_1X_3
IE : X_2X_3
SE : X_1X_2

for increasing income and Prices

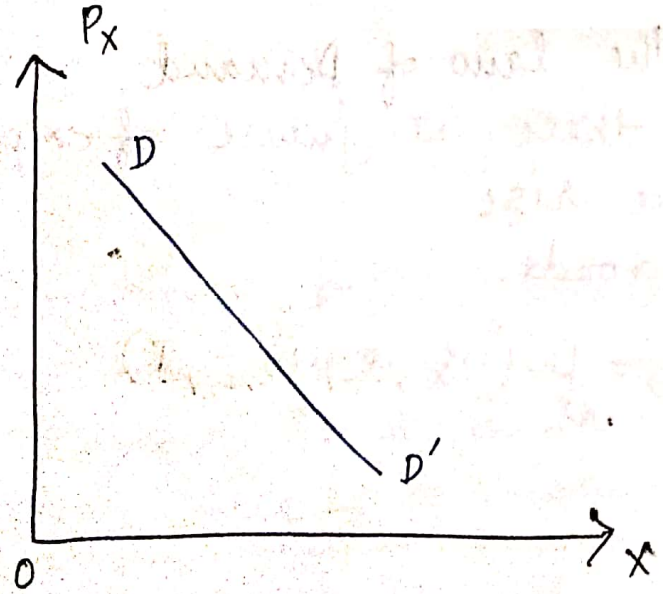


IE : X_1X_2
PE = X_1X_3
SE = X_2X_3.

DEMAND & SUPPLY

Demand : Buyer

Supply : Producer



Price ↑ Demand ↓

Price ↓ Demand ↑

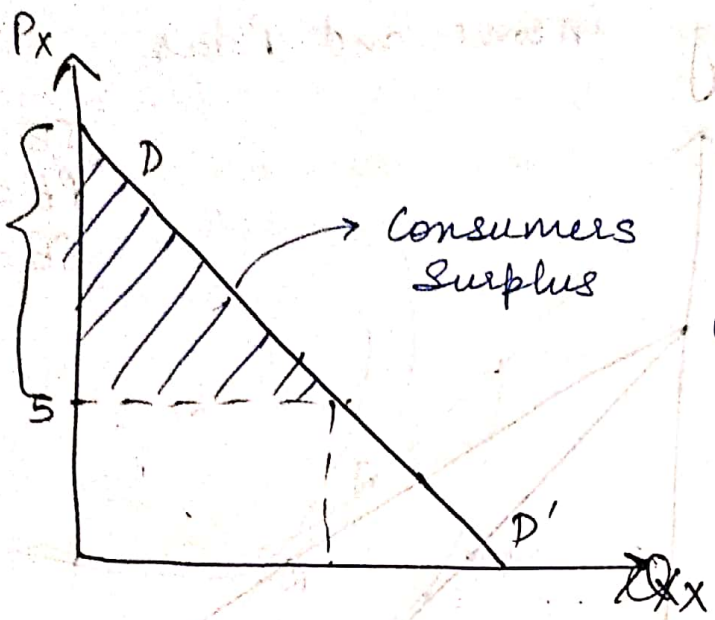
$Q_x = f(P_x)$

⊙ $Q_x = a - bP_x$.

⊙ $Q_x = aP_x^{-b}$

⊙ $Q_x = \frac{a}{C+P_x}.b$

$a, b, c > 0$



Product Market Price = ₹5

People are willing to pay more than ₹5 also So this Region represents consumers Surplus

Ram willing to Pay ₹10

Consumer Surplus = ₹10 - ₹5

= ₹5

Consumers Surplus

Law of demand: Price ↑ demand ↓

$$\text{Price} \propto \frac{1}{\text{demand}}$$

- Exception to the law of Demand
  1. When there is future ~~of~~ expectation of price rise.
  2. Giffen goods.

$$Q_D = f(P_x, I, P_{c,s}, T)$$

Exceptions to the Law of Demand

29/01/19

① Example : on special occasion, gift item.
② If we are expecting a rise in price in future.
③ Giffen Goods : They are not any special goods.

suppose a family is consuming Rice

Total consumption = 15 kg.

10 kg @ ₹10	5 kg @ ₹20
₹100	₹100

Total Budget = ₹200

Now suppose tha Cheaper rice @₹10 → @₹12

Then

15 kg

13 kg @ ₹12	2 kg @ 20
156	40

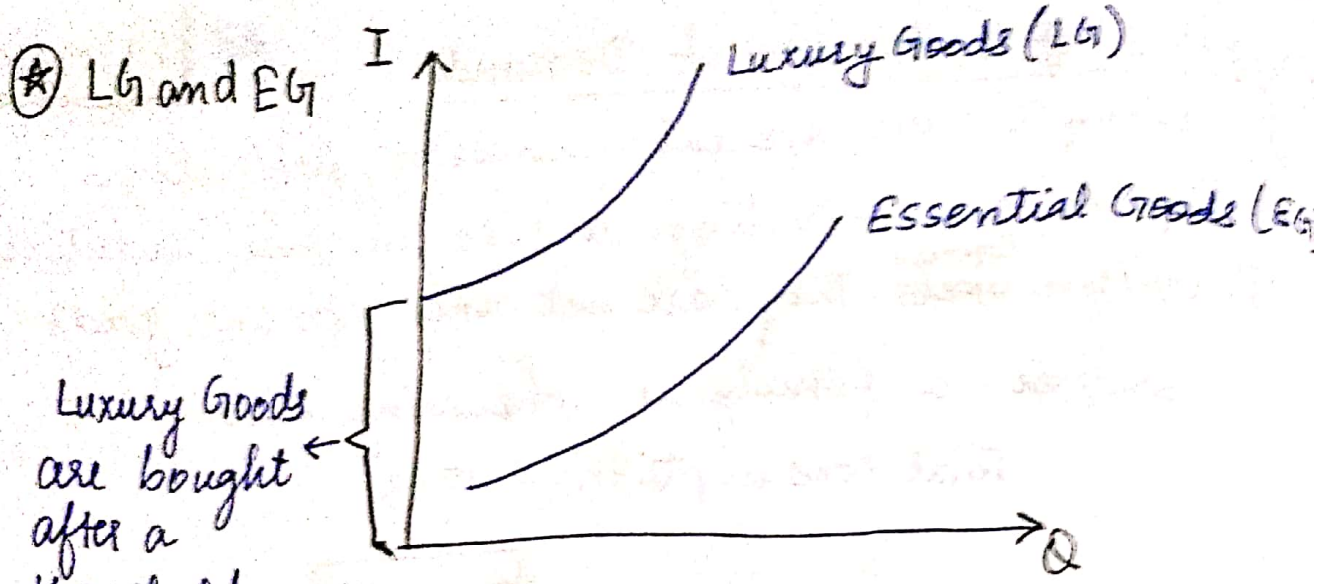
→ Hence when price ~~decreases~~ increases then the demand for cheaper rice increased. Hence in this situation cheaper rice is a Giffen good.

LONG RUN : A time frame which is long enough to change income, price change, preferences.

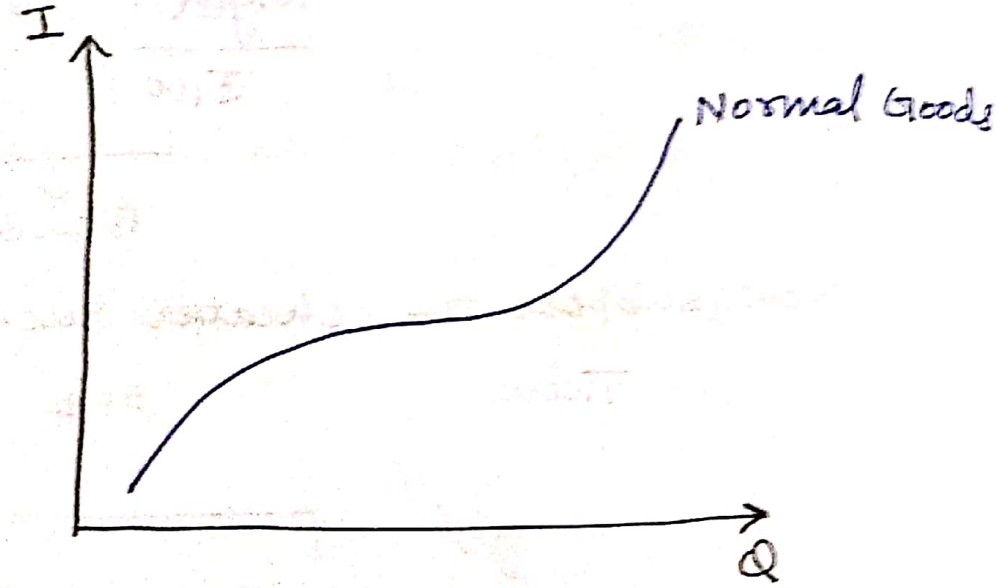
$Q_x = f(P_x, I, P_s, C$

As the income increases the effect on consumption for different types of goods :-

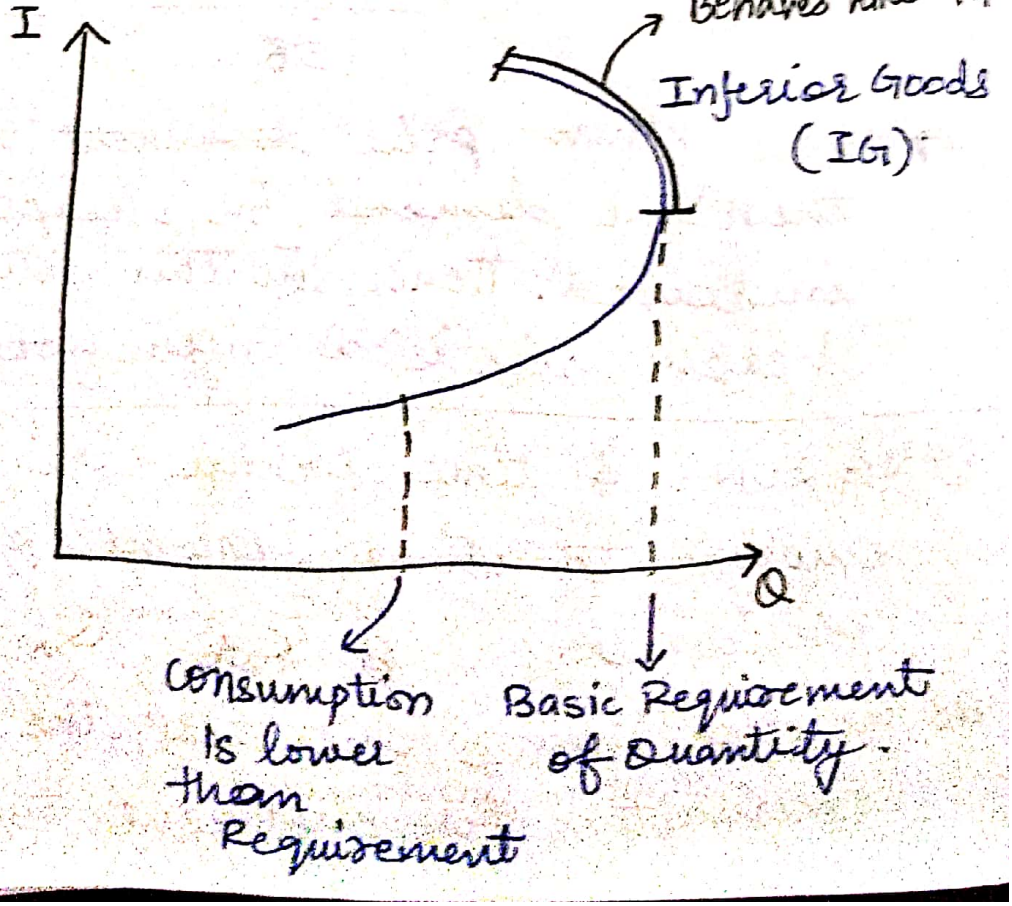
⊛ LG and EG



⊛ NG



⊛ IG



@ Complementary Goods: Tea and Sugar, Tea and coffee.

~~D(Sugar)~~

$P_{sugar} \uparrow \Rightarrow D_{Tea} \downarrow$

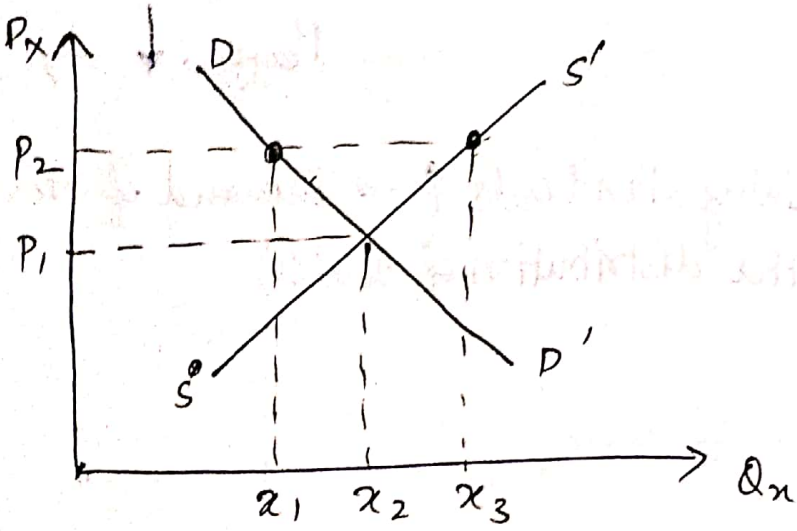
$P_{coffee} \downarrow \Rightarrow D_{Tea} \downarrow$

Living standards ↑ → Demand of Normal Goods ↑
(Better distribution of wealth)

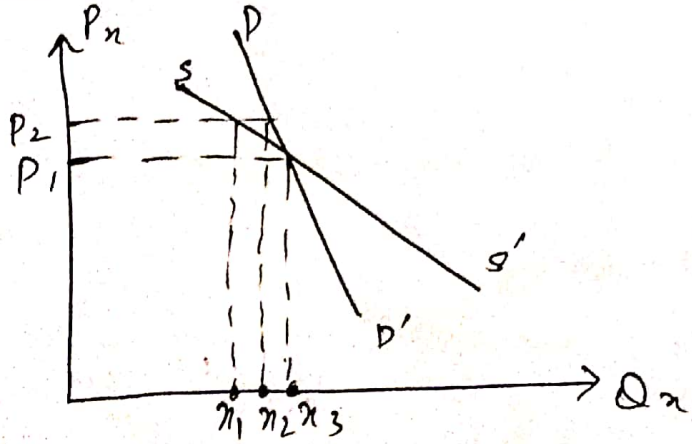
Equilibrium under Static Economy:

① STABLE EQUILIBRIUM under STATIC ECONOMY

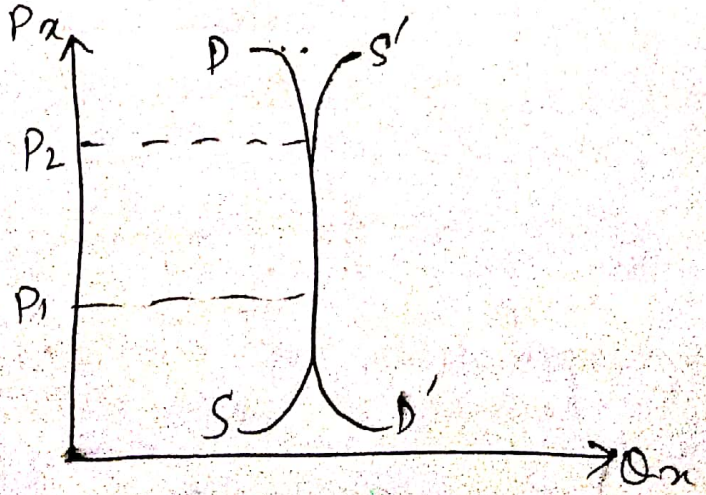
If Price ↑ to P_2 there is surplus supply so price ↓ Hence comes again to P_1



② UNSTABLE EQUILIBRIUM under STATIC ECONOMY



③ Neutral EQUILIBRIUM under STATIC ECONOMY

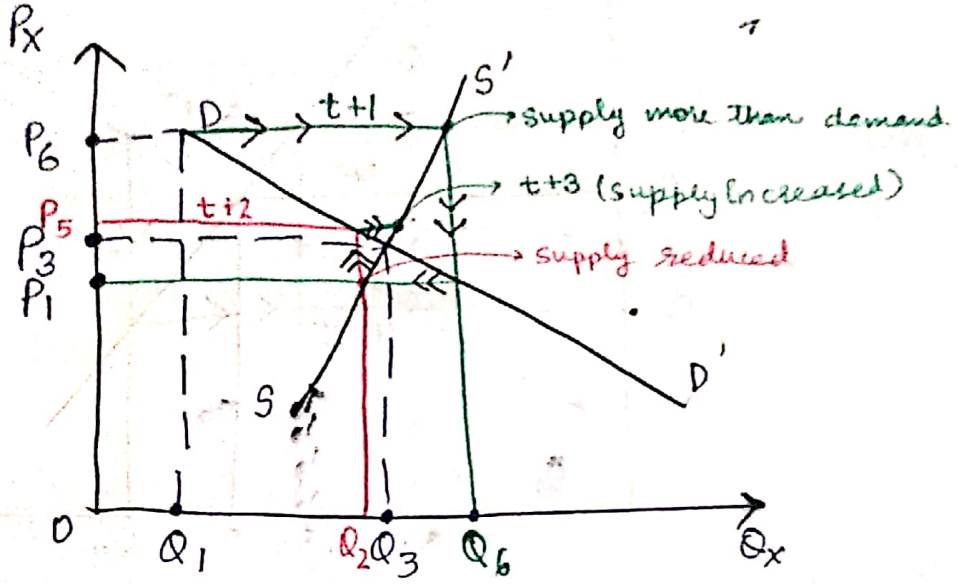


Cobweb Theorem

12-2-19

(I) Stable equilibrium under dynamic conditions.

Slope of supply curve is greater than slope of demand curve then there is stable economy.



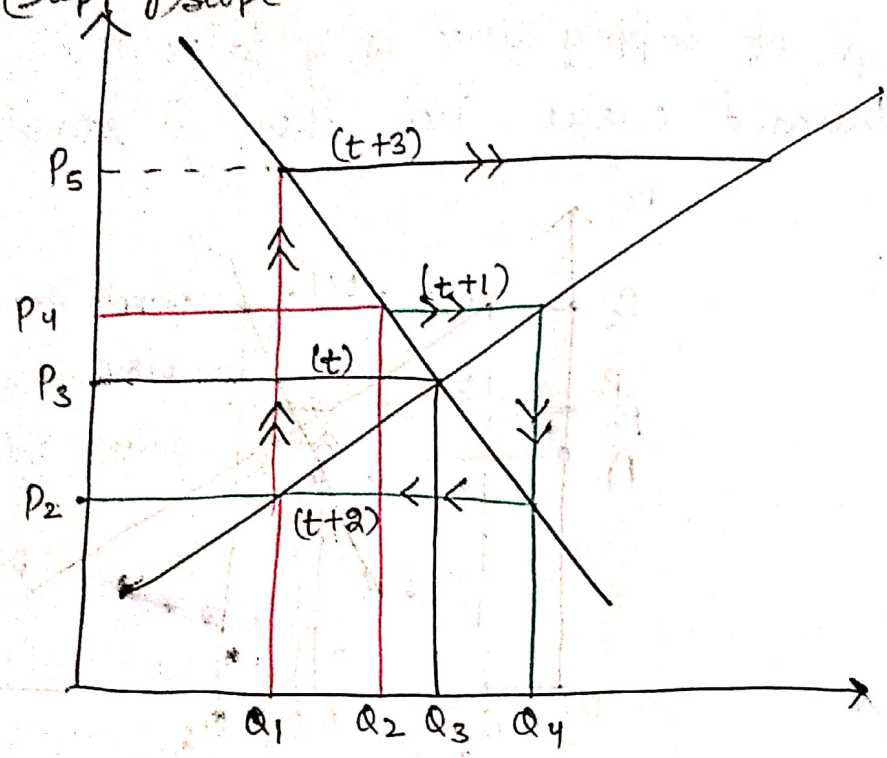
Supplier buys at P_6 on day t and sells on t+1. On t+1 day the supply in the market is Q_6 which is more than Q_1 (demand) Hence the price will decrease to the level where the demand will become = to the Q_6 quantity.

Next day the seller will reduce the supply by buying Q_2 quantity. However the demand is still Q_6 which will result in the price going up.

~~Slowly will slow~~ Slowly the supply / demand will converge

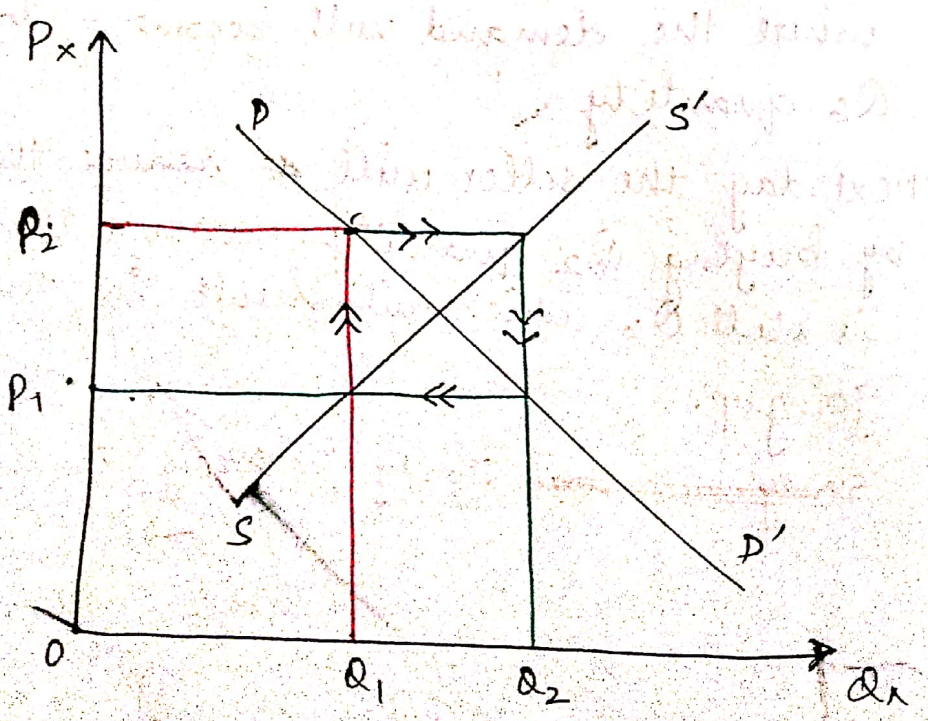
(II) Unstable equilibrium under dynamic condit

$(\text{Demand})_{\text{slope}} > (\text{Supply})_{\text{slope}}$



(III) Oscillating Equilibrium

$(\text{Demand})_{\text{slope}} = (\text{Supply})_{\text{slope}}$

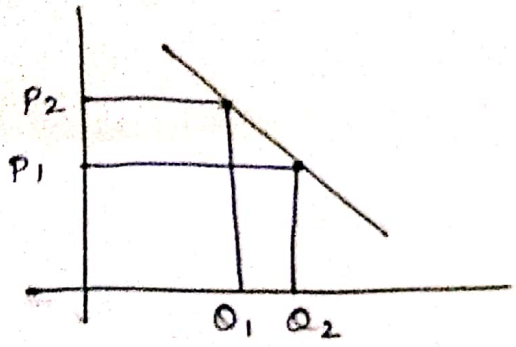


PRICE ELASTICITY OF DEMAND

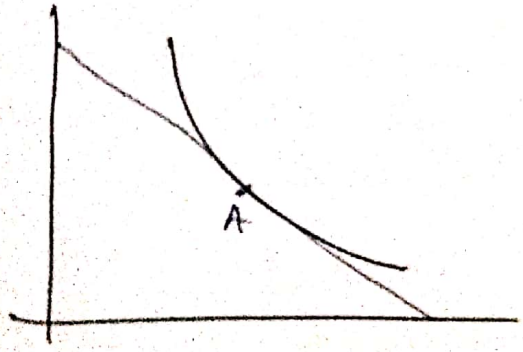
$$e_p = \frac{\%\text{ change in Qty demanded}}{\%\text{ change in Price of the same commodity}}$$

$\sim$ Slope of the demand curve.

$$= \frac{\Delta Q/Q}{\Delta P/P} = \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$



ARC ELASTICITY



$$e_p = -\frac{dQ}{dP} \times \frac{P}{Q}.$$

$e_p = 0.8 \Rightarrow$ P ↑ 1% then Q by 0.8%