December 22, '16
Thursday

① Economics → studied due to scarcity of resources.

Scarcity - excess of demand over supply
Resource - anything which has benifits/capibilities.

Opportunity cost -
→ Every decision (deciding the alternatives) will have an opportunity cost
→ Defined as the benifits foregone from the second best alternative in selection of the first alternative
~~in selection of t~~
→ can be monitary or non-monitary

Demand - Demand is the desire to buy a product backed by willingness to pay and ability to pay.
- Demand always have a reference of place, price and time.

Imp references of demand :- Time
Place
Price ✱

Factors influencing demand (D_x) :- 1) Price of Product (P_x)
2) Income of consumers (Y)

3) Advertisement (A)
4) Taste & Preference (T)
5) Wealth & Accumulation (W)
6) Future expected Prices (P_f)
7) Price of related goods (P_y)
   - substitute / complements

Demand Function -

$D_x = f(P_x, Y, W, A \dots)$

The mathematical formulation of

January 9'17
Monday

Relation b/w P_x & Q_D → Unit Price otherwise (D_x)
↳ Quantity Demanded

⇒ **Law of Demand**

$P \uparrow, Q_D \downarrow$
$P \downarrow, Q_D \uparrow$

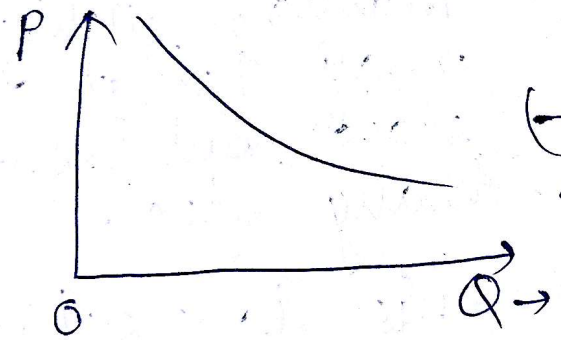
→ All other factors remaining constt
or,
Ceteris paribus

Represent" of QD - hypothetical demand (9) Schedule
Tabular arrangement of price & quality dem-and-ding
- for individual, large people (entire market)

P	Q.D
10	100
20	90
30	80
40	70

Demand Curve -

~~instead~~ Price → Y axis (
→ not independent
(never on x axis)



(-ve slope)
- downward slope

Why Demand Curve has -ve slope?
(Inverse relationship)
Price (P) - sacrifice (S) (in making payments)
P↑, S↑; P↓, S↓

When we consume product we derive utility satisfac"

If we perceive U < S (we dont buy)
but if U > S (we buy more)

Utility measured in terms of utils.

for eg - someone is hungry

Units of Apple	Total (satisfac") utility	Marginal utility → added 1 unit
1	100	↳ only by 1 unit
2	240	140
3	390	150
4	480	90
		1
		0
		-ve

b) Reason 1 :- → Psychological

Law of Demishing marginal utility - Marginal utility may ↑se at start but eventually dec.

Applicable all type of products except hobbies

- this law explains -ve slope

$M_{sacrifice} = M_{utility}$

$P\downarrow \rightarrow \downarrow \rightarrow QD\uparrow$ ↳ consume more

$P\uparrow \rightarrow \uparrow \rightarrow QD\downarrow$ (dec. consumption)

2) Substitution effect (Eg - Pepsi & Coke → substitutes)

price Pepsi ↓ | price P

qD ↑ | qD ↓ price +

but if price ↑ qD ↓

(Price ↓)

3) Income effect – whenever price effect changes consuming power changes.

– Income of household ↑sed
– There is a saving.

Initially $P_P = 30$ & Total income = 300.

30×10 = total consumpⁿ = 300
↳ 10 pepsi

but if $P_P = 25$ ↓ Tᵒᵗᵃˡ consumpⁿ = Rs 250/-
saving of 50/-

Income effect can be –ve | +ve
but subsⁿ effect always +ve
↳ (QD ↑)

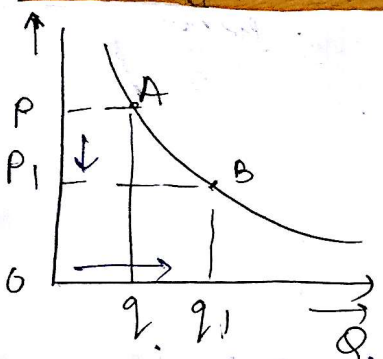
4) Cumulative effect :-
→ when prices ↑, we restrict the consumpⁿ.
& when consumpⁿ ↓, QD ↓,
→ but when price ↑, consumpⁿ (various purpose) QD ↑

* subsⁿ, Income & cumulative becoz of → part of Law of diminishing

Change in Quantity Demanded / Movement along the demand

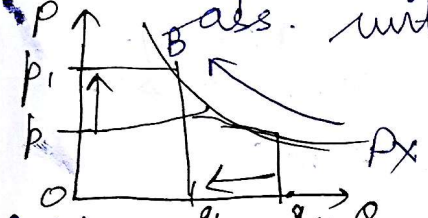
Whenever price of product changes, QD demand changes.

Case I
A → B (dec in price becoz of) → QD ↑
→ extension in QD = downward movt of c (Price ↓)
↳ or expansⁿ



P	Q
10	1
9	2
8	3
⋮	⋮
4	7

Case 2 – upward movt along curve is ass. with ↑ in prices, ↓ in QD (Contracⁿ in Demand)



left – Decrease in QD, price ↑

right – Inc in QD, price ↓

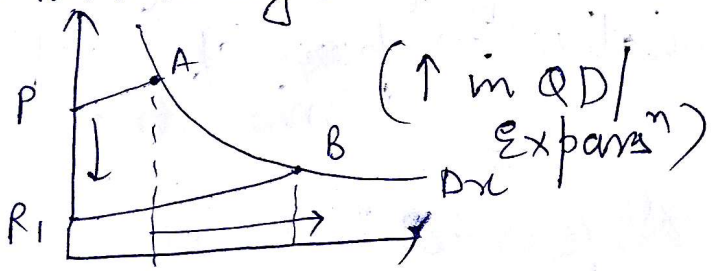
January 12'17

Thursday

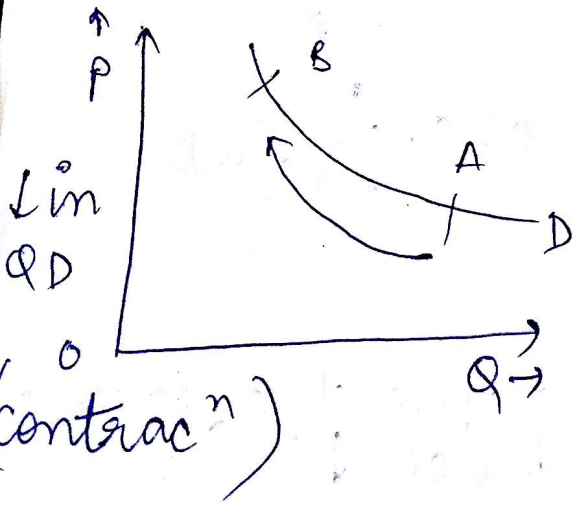
Changes in Q.D

Reason: change in Price

Movt along the Demand curve



(↑ in QD / Expansⁿ)

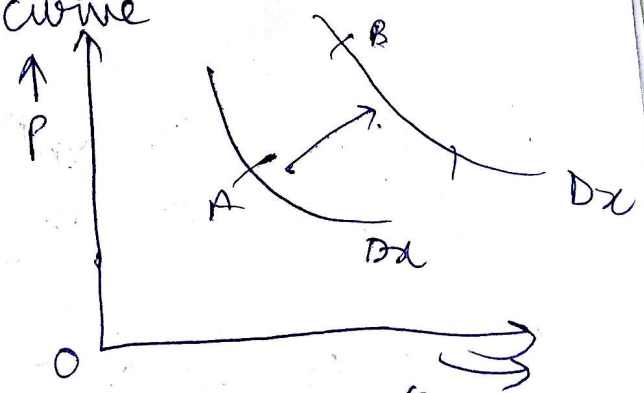


Contracⁿ)

Change in Demand

Reason – change in other factors

Shift in Demand curve



↑ in demand

Exception to law of Demand -

1) Speculation
2) Ignorance
3) Band Wagon Effect (tend to buy a product which another person has, no matter what the price is)
4) Veblen goods
→ Snob, appeal, prestige
→ Conspicious Consumption
5) Giffin goods (spcl type of inferior goods that donot follow law of demand)

Goods	Price	SE	I.E		Law of Demand
→ Normal	P↓	+ve	+ve	Q↑	✓
→ Inferior	P↓	+ve (strong)	-ve (not very strong)	Q↑	✓
→ Giffin (Inferior)	P↓	+ve (not very strong)	-ve (very strong)	Q↓	X
→ Veblen	P↓	(+ve) (not strong)	(-ve) more strong)	Q↓	X

January 16'17 Monday

Types of Demand:-

1) Consumption Demand
2) Intermediate Demand
3) Final Demand
4) Producer's Demand
5) Direct Demand
6) Derived Demand

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7) Household Demand

8) Industrial Demand
   ↳ commercial

9) Total Demand

10) Segmented market Demand

11) New - buying Demand something for 1st demand.

12) Replacement Demand

P	q	TR
2	9	18
1	10	10

The

↳ Elasticity of Demand - This concept measures the magnitude of change in demand wrt Δ in factors affecting demand

(Responsiveness of demand)

→ If we refer P_x

→ It becomes price elasticity demand - change in demand wrt Δ in price

→ Illy for all other factors

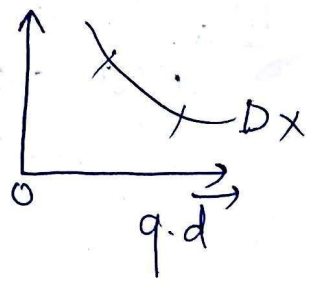
Price elasticity - → n types of elasticity of Dem and Responsiveness of quantity demand wrt Δ in price of product i.e proportionate Δ in quantity demand wrt prop. Δ in price

or, % Δ in quantity demand wrt % Δ in price

$$\Rightarrow \text{Price } E_D = \frac{\%\ \Delta q_d}{\%\ \Delta \text{ price}} = \frac{\frac{\Delta Q}{Q_1} \times 100}{\frac{\Delta P}{P_1} \times 100} = \frac{\Delta Q}{\Delta P} \cdot \frac{P_1}{Q_1}$$

1) Unit of elasticity - no unit → as its a coeff

2) Slope of D.C at any pt $= \frac{\Delta P}{\Delta Q}$



⇒ Slope of demand curve ≠ slope of elasticity

Slope of elasticity $= \frac{\Delta Q}{\Delta P} \cdot \frac{P_1}{Q_1}$ = (reciprocal of slope of D.C × Price / quantity)

→ perfectly substitutes → imperfect

P. q.

3) Price elasticity → If law of demand is obeyed - slope of D.C always -ve
∴ slope of elasticity = -ve
(∵ price & quantity ≠ -ve
↳ never -ve)

Price $E_D = -2.5$

eg- If we change price by 1%, q.D changes by 2.5
dec price by 1%, q.d ↑ by 2.5%.

eg - change price by 10%, q.d change by 25%.

eg - change price by 1%, q.d change by 0.9%.

-5% elasticity | -2.5 elasticity

while comparing dont consider -ve sign.

Types of price elasticity -

Defined as % change in q.d wrt % Δ in price

$$\text{Price } E_D = \frac{\% \Delta \text{ q.d}}{\% \Delta \text{ price}}$$

1) % Δ in q.d = 0 (no matter if ↑ or ↓ in price)

eg if salt = Rs 20 ↳ consumpⁿ not change

P d = Rs 15 ↳ but demand changes even with Δ of Rs 2.

$E_d = 0$

q q.d

Types

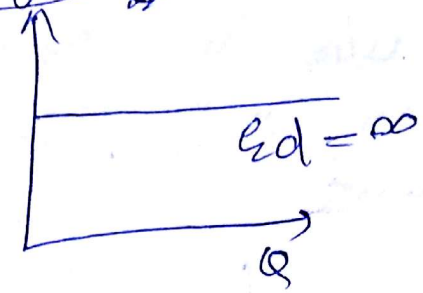
i) Perfectly inelastic - Price = 0
(hypothetical situatⁿ) E_D
- no substitutes in market

2) %. $\Delta P = 0$ → perfectly elastic (Hypothetical)

(II) → perfectly substitutes → identical products

eg-

P	q
10/kg	1
10/kg	2
10/kg	200
10/kg	300



* only if product features are identical only then perfect (all)

eg - Coke & Pepsi - close substitutes.

3) %. Δ in qd < %. Δ in price

price elasticity E_D	<1

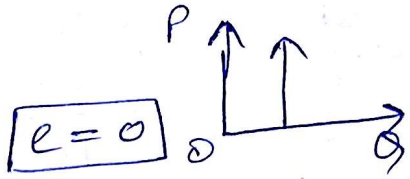
→ less substitutes are available in mkt or no close substitute

January 19'17
Thursday

Price elasticity of Demand

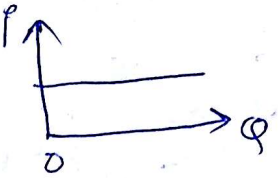
Types-

1) Perfectly inelastic
$\% \Delta Q = 0$

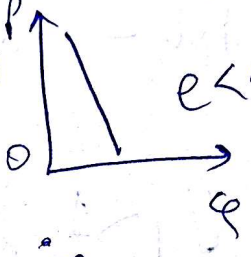


2) Perfectly elastic
$\% \Delta P = 0$

$e = \infty$

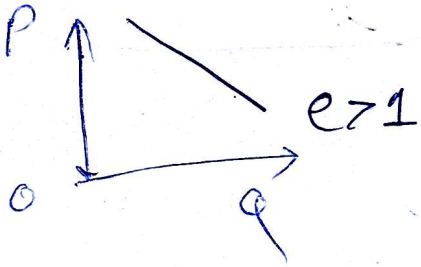


3) Relatively inelastic → Perishable/neccessary goods
$\% \Delta Q < \% \Delta P$ $0 < e < 1$



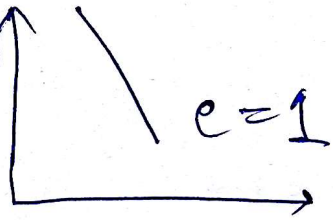
(eg- Breads, milk - necessary goods

4) Relatively elastic → superior
(- durable good - cars, furniture)
(luxurious)



$\% \Delta Q > \% \Delta P$ $1 < e < \infty$

5) Unit elastic
$\% \Delta Q = \% \Delta P$ $e = 1$



3rd Factors influencing P_{ed} (Price elasticity of demand)

i) Availability of substitutes in market
(no close substitute → inelastic demand)

2) Nature of the good
i) Perishable goods - inelastic demand
ii) Durable " - elastic "

3) MR = $TR_n - TR_{n-1}$

3) Amt of income spent on product
higher spent income → higher the elasticity

4) Urgency of Demand
no urgency – inelastic demand.
urgency – elastic demand.

5) Time period –
Short run elasticity will always be less than long run elasticity
– ppl not aware abt substitutes.
– not enough time to adjust with environ.

Methods of calculating price elasticity –

1) Point method –

$$Ped = \frac{dQ}{dP} \cdot \frac{P}{Q}$$

values diff depending on initial prices

2) ~~Arc method~~

* Price $ed = \frac{\Delta Q}{\Delta P} \cdot \frac{P_1}{Q_1}$

P	Q
3	25
4	16

2) Arc method –
we consider midpt of arc → eg value b/w 3 & 4 remains same

$$\therefore Ped = \frac{\Delta Q}{\Delta P} \cdot \frac{\frac{P_1+P_2}{2}}{\frac{Q_1+Q_2}{2}} = \frac{\Delta Q}{\Delta P} \cdot \frac{P_1+P_2}{Q_1+Q_2}$$

3) Average method.

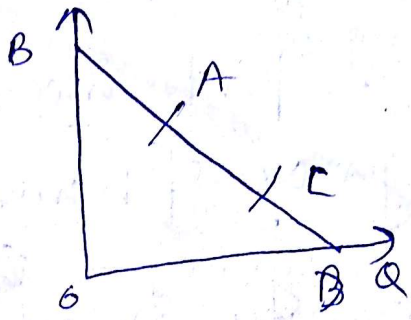
2) MR – TR_n – TR_{n-1}.

4) Graphical method –

Ped = $\frac{\text{Lower segment}}{\text{upper segment}}$

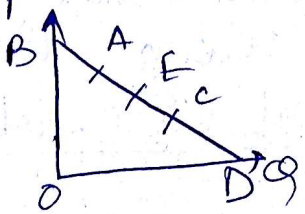
eg –

At pt. A = $\frac{AD}{AB}$.



Price elasticity –

Thm 1 – On st line D.C elasticity varies from 0 to ∞.



prices low → elasticity low

prices high → elasticity tends to high.

Total Revenue & Price elasticity –

1) TR

Total receivings from sale
or
Total reciepts from sales

$TR = Pq$

2) AR – Avg Rev.

TR per unit sale

$AR = \frac{Pq}{q} = P$

3) MR –

↳ Marginal – addnal

Revenue generated from last unit sold

3) $MR = TR_n - TR_{n-1}$

$MR = \frac{\Delta TR}{\Delta q} = \frac{d}{dq}(TR)^{n-1}$

Prices-demand schedule-

Calc elasticity.

P	Q	TR	e	Decisions
10	1	10	} (elastic) $e>1$	↓P, ↑TR
9	2	18		
8	3	24		
7	4	28		
6	5	30	$e=1$	not gain by ↑P or ↓P $\because \Delta P = \Delta Q$
5	6	30		
4	7	28		
3	8	24	$e<1$	↑P, ↓TR
2	9	18		
1	10	20		

Decision rule-

1) for inelastic product → ↑ in P, ↑ses consumer expenditure & hence ↑ses TR

2) for elastic products
↳ expensive,

↓ in P, ↑ses consumer expenditure & ↑ses TR

Q - A person spends his entire income on 2 goods x, y, price of x ↑ses but consumⁿ of y dont change. What is Ped of x product?

Y ↑, demand ↓
- Inferior, quality, brand...
when ($\Delta P \leq \Delta Q$) exp ↑ or esp ↓
or $\Delta P > \Delta Q$

i) expenditure - same
to $\boxed{\Delta P = \Delta Q}$

$(e = 1)$

Ped =

January 30'17
Monday

INCOME ELASTICITY

$$Yed = \frac{\text{proportionate } \Delta \text{ in demand}}{\text{prop. } \Delta \text{ in Y (income)}}$$

$$= \frac{\%\ \Delta \text{ in demand}}{\%\ \Delta \text{ in income (Y)}}$$

$$Yed = \frac{\Delta Q}{\Delta Y} \cdot \frac{Y}{Q}$$

Two methods to calc Yed -

i) Point method -

$$Yed = \frac{dQ}{dY} \cdot \frac{Y}{Q}$$

ii) Arc method -

$$Yed = \frac{\Delta Q}{\Delta Y} \cdot \frac{Y_1 + Y_2}{Q_1 + Q_2}$$

Types of Yed -

i) $Yed < 0$ (-ve)

ii) $0 < Yed \leq 1$ (+ve but less than equal to 1)

3) $1 < Yed < \infty$

i) $Y_{ed} < 0$

Y ↑, demand ↓

- Inferior quality products

ii) $0 \leq Y_{ed} < 1$

Y ↑, demand ↑ (but Δ demand < Δ in Y)

(Y ↑, demand of necc doesn't ↑)

- for normal necessary goods

iii) $K Y_{ed} < \infty$

→ for luxury products

Δ in quantity > Δ in dem

Least effected by income - necessary goods.

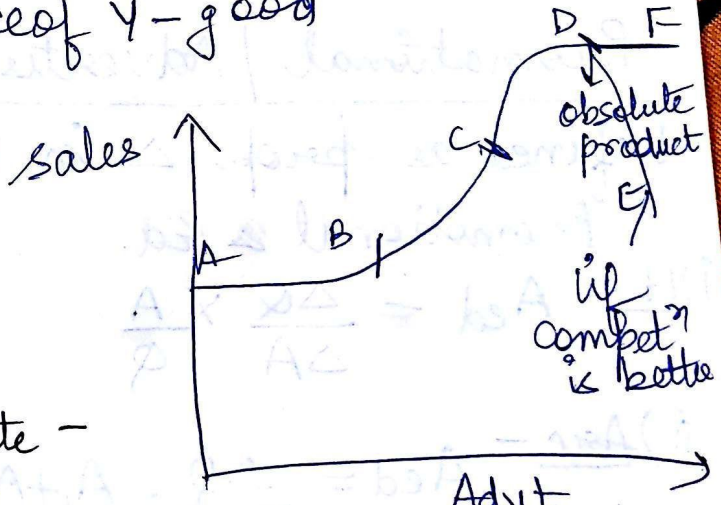
depression proof industry.

Gross - Price Ed (measures magnitude in Δ of demand of two goods)

$$\text{cross Ped} = \frac{\text{Prop } \Delta \text{ Demand for X-good}}{\text{Prop } \Delta \text{ in Price of Y-good}}$$

$$= \frac{\% \Delta Q_x}{\% \Delta P_y}$$

$$\text{cross Ped} = \frac{\Delta Q_x \cdot P_y}{\Delta P_y \cdot Q_x}$$



Two methods to calculate -

i) Point -

$$\text{cross Ped} = \frac{dQ_x}{dP_y} \cdot \frac{P_y}{Q_x}$$

ii) Arc method – cross Ped = $\frac{\Delta Q_x}{\Delta P_y} \cdot \frac{P_{y1}+P_{y2}}{Q_{x1}+Q_{x2}}$

i) If 2 products are unrelated
Cross Ped = 0

ii) If 2 goods are substitutes →
cross Ped = +ve

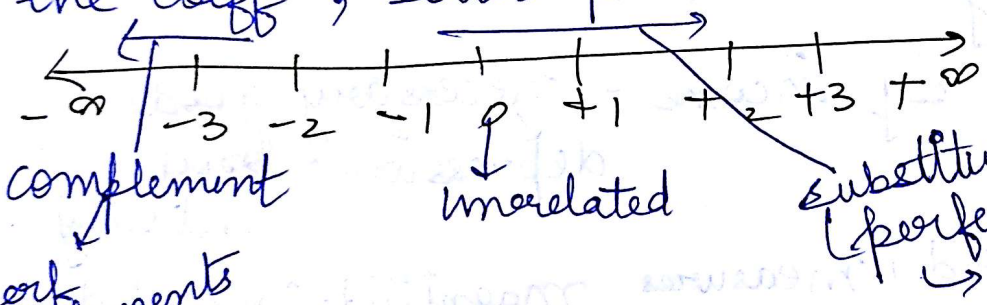
iii) If 2 goods are complements (↳ Petrol, Diesel)
cross Ped = −ve

eg Cross Ped b/w

A & B	→ 1·5
B & C	+ 4·5

Which is better?

→ ↑ the coeff, better product.



Promotional / Advertisement Ed –

Defined as prop. Δ in demand wrt prop Δ in Promotional Ed.

i) Pt – $A_{ed} = \frac{\Delta Q}{\Delta A} \times \frac{A}{Q}$

ii) Arc – $A_{ed} = \frac{\Delta Q}{\Delta A} \cdot \frac{A_1+A_2}{Q_1+Q_2}$

A_{ed} → depends on stage in which product is.
(can be 0, +ve, -ve, ∞ etc)
(min sale w/o Advt also)

Advt exp – may ↑ proportionately

from graph

AB → $\%\Delta P = 0$; $\Delta F = \%\Delta Q = 0$

$\Delta E = \%\Delta Q < 0$

BC → $\%\Delta Q > \%\Delta A$

CD → $\%\Delta Q < \%\Delta A$

* Koi bhi elasticity nikalna h toh – $\frac{\Delta Q}{\Delta (\text{jiski bhi elasticity nikalni hai})}$

Revenue - P_x × quantity ?

2/2/17
Thursday

Supply -

supply refers to amt of product offered for sale

supply ≤ production

(supply ≯ prodⁿ)
(never)

Factors influencing supply -

1) Price (P_x)
P_x↓, profit ↓, demotivates supplier.

2) Availability of Raw product
raw product limited, supply limited.

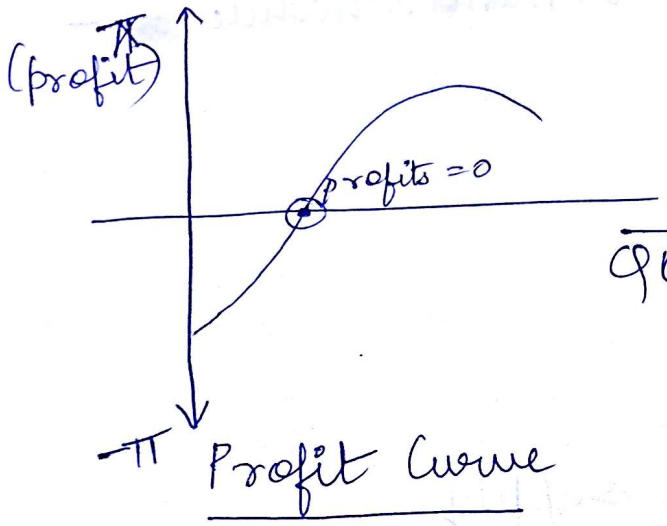
3) Prices of raw material - (inputs)
P↑, lowers profit margins

4) Government policies of Quota, tax, subsidies -
→ Govt imposes no quota, supply ↑
→ cost of prodⁿ ↑ demotivate producers

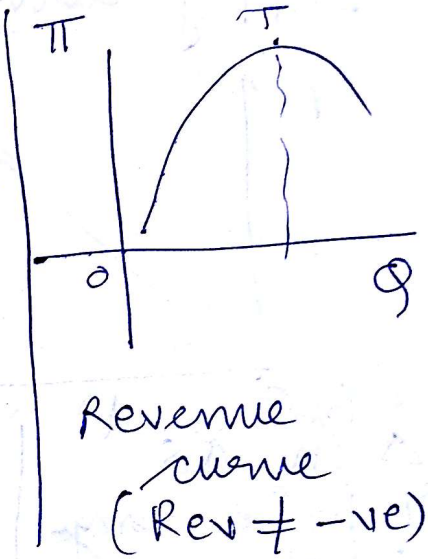
5) Technology - improved technology, less cost of prodⁿ
prodⁿ ↑ (in multiples of 10000 units), supply ↑
⇒ Technology sets upper limit of prodⁿ - above that efficiency ↓ses. (optimum cap ↑)

6) Objective of the firm - maximise sale revenue → aim is to sell
maximise profits
produce more sell more

Revenue – p_x × quantity (TR) } TR ↓, no selling in market
cost of prodn (TC)
TT (profit) = TR – TC ⇒ when profit max, produc^n is more



Profit Curve



Revenue curve (Rev ≠ -ve)

Supply fn –
Mathematical formula – $S_x = f(P_x, A, P_i, G, T, O)$

QS
The term quantity supplied is used in relation to just price
↓
Amt supplied

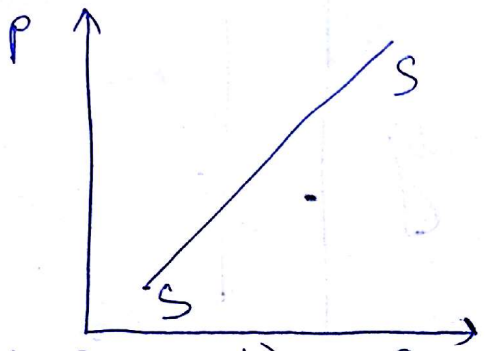
Supply
Supply is sum total of all factors

Law of Supply – p ↑ qs ↑
p ↓ qs ↓
(all other factors remaining consett.)
($p \propto q.s$)

Supply schedule - Tabular arrangement of P and q.s at those prices

P	Q
10	100
20	200
30	300
40	400

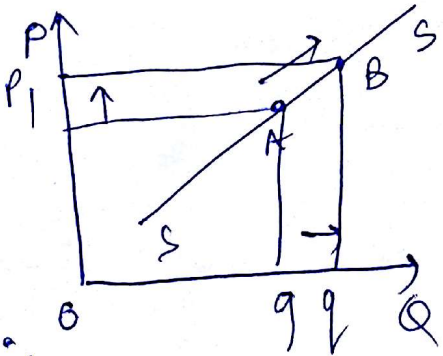
Graphical repres^{n} of demand schedule or - Supply curve



(movement) Δ in QS (if price changes or changes) (affected by price)

→ Reason - Δ in Px

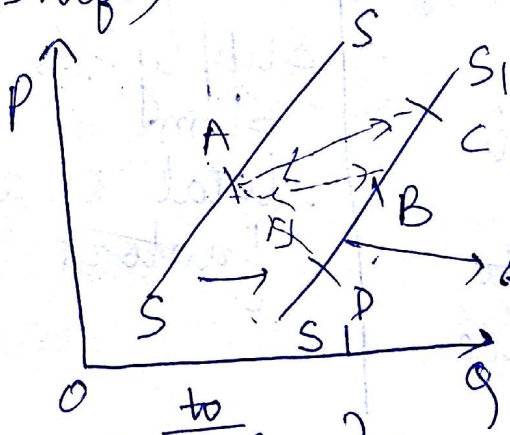
2) P↑, Q↑,



↑ in Qs happen cos of ↑ of Px (upward movt along supply curve) (A to B) Q.S or expan^{n} in Q.S

Δ in supply

Reason - Δ in any one or many other factors (shift)

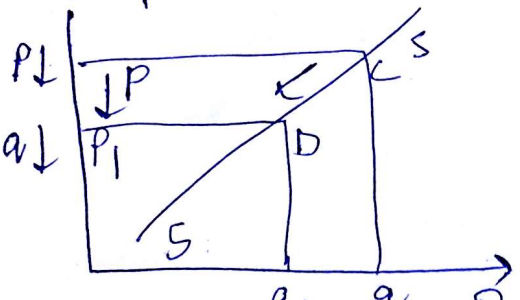


shift / Δ in supply

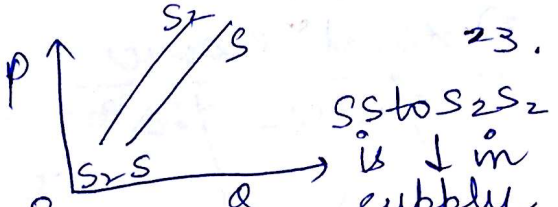
to
A ⟷ B
A ⟷ C
A ⟷ D
} More quantity (↑ in supply)

→ Rightward shift (Ss to S1S1) indicates ↑ in ↓ ↑ in supply

2) If price ↓, Q.s ↓



downward movt indicates ↓ in Q.s



SS to S_2S_2 is ↓ in supply (leftward shift)

{movt – due to prices
shift – due to other factors}

February 6'17
Monday

Elasticity of Supply – ↳ only of 1 type ↳ (Price Es)

$$E_S = \frac{\%\ \Delta \text{ Q.S}}{\%\ \Delta \text{ Price}} = \frac{\text{prop } \Delta \text{ in Q.S}}{\text{prop } \Delta \text{ in P}} = \frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q}$$

~~Factors affecting~~

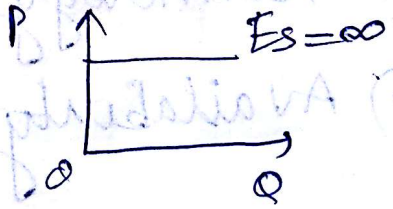
Es ≠ –ve
↳ no exceptions

P ↑, supply ↑ & vice versa –

5 types of Price Es → (elasticity)

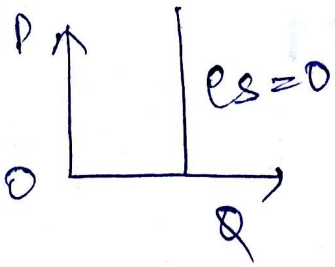
1) Perfectly elastic – ($e_s = \infty$)

$\%\ \Delta P = 0$



2) Perfectly inelastic –

$\%\ \Delta Q = 0$



Determination of prices -

3) Unit elastic -

$\% \Delta Q = \% \Delta P$

$es = 1$

4) Relatively elastic -

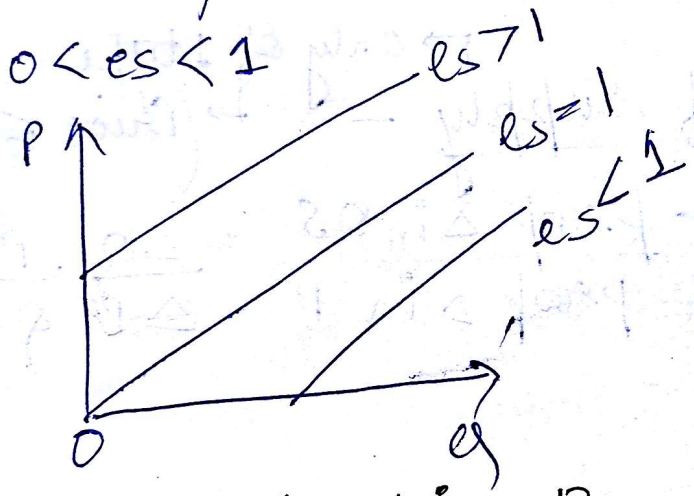
$\% \Delta Q > \% \Delta P$

$1 < es < \infty$

5) Relatively inelastic -

$\% \Delta Q < \% \Delta P$

$0 < es < 1$



Factors affecting Es -

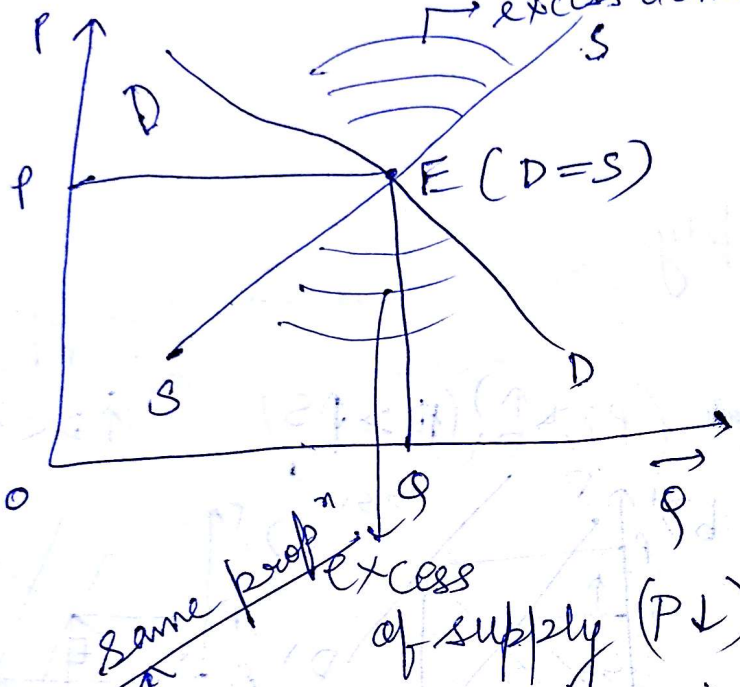
1) Nature of the products i) perishable ii) durable

2) Technology

3) Availability of i/p (cheap substitutes)

4) Time

Determination of prices -
(equilibrium of demand and supply)
In a free market (no govt intervention) forces of D & S interact with each other to determine equilibrium level of P & Q.

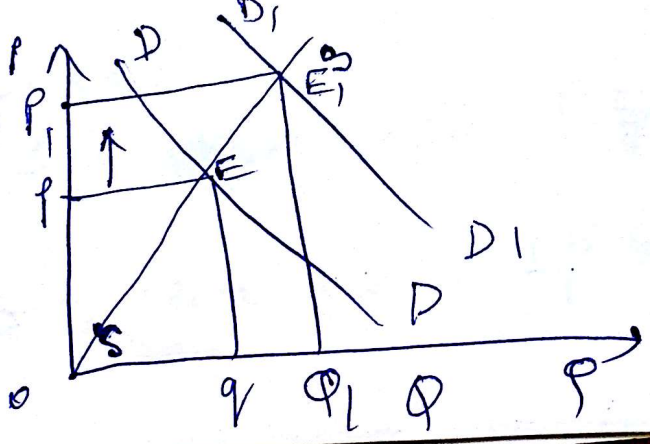


→ If inc in supply = inc in demand (no Δ in P)

~~Situation 1:~~

Q → Show with help of diagram (affect on eqm price & quantities.

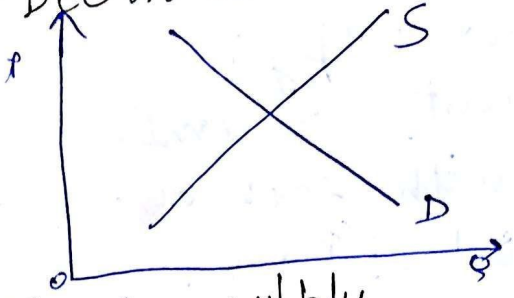
1) Inc in Demand



P ↑, Q ↑

Q→ Find

2) Dec in demand

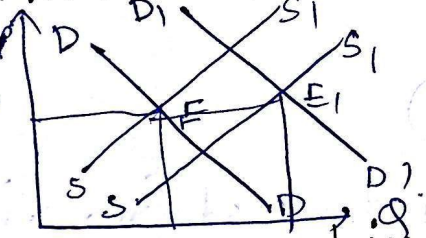


3) Inc in supply

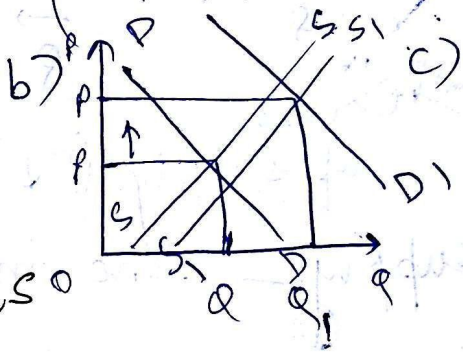
4) Decrease in supply

5) ↑ in D & ↑ in S

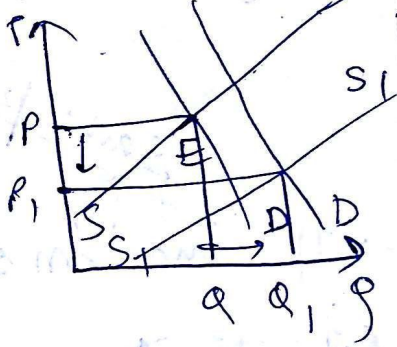
a) (D=S) P ↑ Q ↑



b) (P↑, Q↑) (↑D > ↑S)



c) P↑ Q↑ (↑D < ↑S)



6) ↑ in D ↓ in S

7) ↓ in D & ↓ in S

February 9'17
Thursday

Q→ Find out equilibrium prices & quantities.

Demand fn : $q^d = 750 - 25p$

Supply fn : $q^s = 300 + 2p$

@ at eqm, $q_d = q_s$

$750 - 25p = 300 + 2p$

$450 = 27p$

$p = \frac{450}{27}$

→ Demand is more important than supply.

PRODUCTION – conversions of I/P into O/P

I/P → factors of production / factors
↳ raw materials, land, labour, capital, enterpreneur

N, L, K, E → land

1) I/Ps → (fixed) dont change with level of O/P
↳ machines

(variable) I/P which Δ's with level of O/P
• ↑ses with ↑se in O/P

2) Technology & Prodn –

1) I/P combination is set by the technique of prodn
2) sets upper limit for prodn

⇒ Δ in tech = Δ in I/P combo.

3) Prod^n fn –

→ Fn of technology & I/P

• Relationship b/w O/P & combo of I/Ps assuming val re

1) Technology to be constt

2) firms utilises sources efficiently

L (labour)	K (capital)	O/P
1	20	200
2	40	400

4) Time period and production –

In short run – of time – prod^n ↑ only till optimum capacity of plant

– limitation to prod^n

In long run – of time – no limitation.

5) short run prod^n fn –

Relationship b/w O/P & combo of I/Ps (atleast 1 I/P fixed) assuming:

1) Technology to be constt

2) firm utilises sources efficiently.

$Q = f(L, \bar{K})$

↓ short run prod^n fn

Names of short run prod^n fn –

1) One variable I/P

2) Law of variable proportions

3) Law of diminishing Marginal returns
4) Returns to a factor
5) Stages of prodn.

Febru
Monda

Total Production - (TP)
Total amt of units produced using given I/Ps

1) TP ↑ as
2) TP dim

L	K	O/P
0	10	0
1	10	10
2	10	30

Average product (AP) - Total product per unit I/P is avg product.
↳ TP/units of I/P

L	K	O/P	AP
0	10	0	—
1	10	10	10/1 = 1
2	10	30	30/10 = 3

3) Marginal Product (MP) - Contribution of the last unit of I/P employed.

on Δ in TP wrt 1 unit ↑se in I/P

$$MP = TP_n - TP_{n-1}$$

or, $$MP = \frac{\Delta TP}{\Delta \text{input units}}$$

L	K	O/P	MP
0	10	0	—
1	10	10	10
2	10	30	20

Algebraic form prodn fn - cubic - $Q = a + bL + cL^2 - dL^3$
$(Q, L \to \text{not-ve})$

February 13'17
Monday

Law of variable proportions → 1 variable prodⁿ fn (of TP) in terms

	AP ↑ (Avg productivity)	MP ↑	Reason-
1) TP ↑ at ↑ing rate	AP ↑, AP max (APL) at optimum capacity; at over utilizⁿ	MP ↓ (+ve)	i) under utilized capacity of plant 2) Division of labour.
2) TP ↑ at diminishing rate			i) under utilized capacity of plant + optimum utilizⁿ 2) limited scope for division of labour
3) TP ↓	AP ↓	MP (-ve)	1) over utilization of plant 2) over employment

→ no employment (MP = 0)

- more I/P, total Prodⁿ ↑
, more labour, ↑ efficiency, MP ↑

K	L	Q	MP_L
10	1	10	—
			15
10	2	25	
			20
10	3	45	

i) ↑

→ optimum division of labour -

1) Law of variable proportion states that as we go on ↑sing 1 variable I/P to the existing system of fixed I/Ps. Total Prodn 1st ↑ses at ↑sing rates then Total Prodn ↑ses at diminishing rate and finally if we keep on adding more & more variable I/P, T.P will start ↓sing.

2) Law of diminishing marginal returns -
↳ (in terms of MP)

It states as we go ↑sing 1 variable I/P to the existing system of fixed I/Ps, MP 1st ↑ses reaches max & if we keep on adding MP ↓ses then MP reaches =0 then -ve eventually.

3) Returns to @ factor

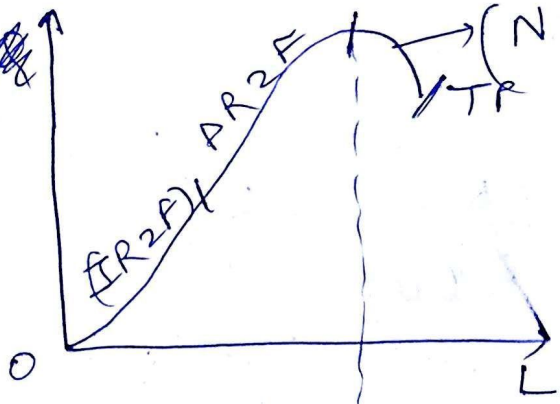
3 types of returns -

i) ↑sing returns to factor (bcoz of MP↑, not yet reached optimum cap of plant under utilisn)

ii) diminishing returns to factor
↳ (bcoz of limited scope)

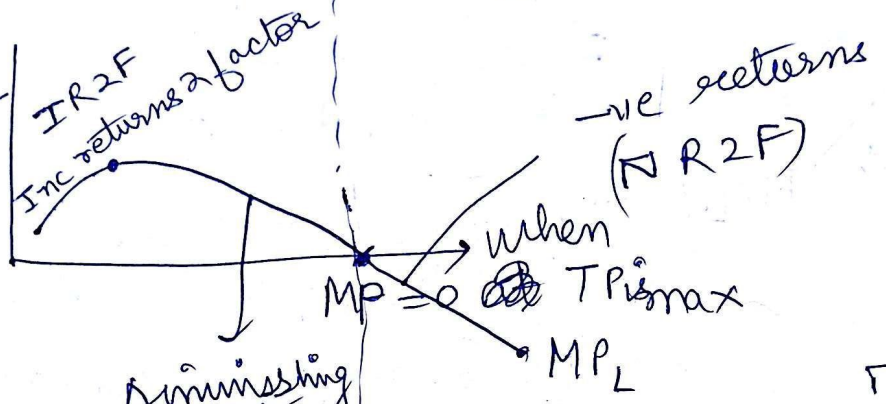
iii) -ve returns to @ factor
↓
over employment

i) TP



(TP ≠ -ve never)

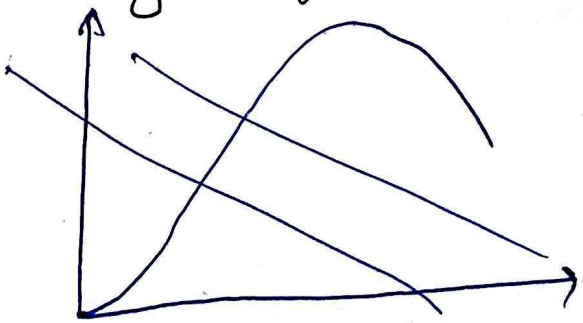
ii) MP



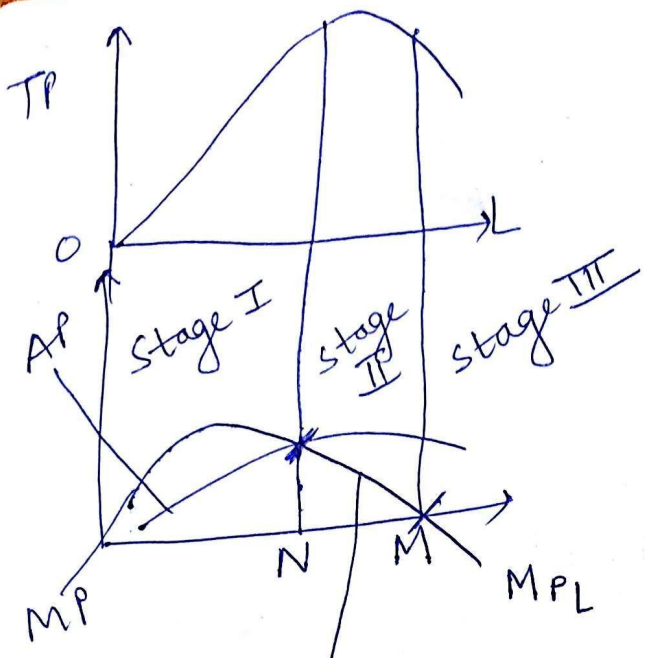
Diminishing returns to factor (DR2F)

AP

Stages of Production



AP = TP



1) stage I –
It is described as –
– It starts from O level of prodn (I/P) till A.P is max – (start prod till optimum prodn)

2) stage II –
– Avg prod max, MP = 0

3) stage III – (hiring more of I/P using MP = –ve

yaha no employment bcoz even if MP↓ there'll be no hiring

→ A rational producer doesn't operate stage III
→ they'll operate at stage I but not be in eqm.
→ OL →

Stage II – RATIONAL range of production
– Exact employement will be decided on basis of wages & efficiency of I/P

on basis of efficiency

on basis of labour

Q → Calc AP & MP on basis of TP –

* eqn for TP curve = $A + bL + CL^2 - dL^3$

$AP = \frac{TP}{L} = b + cL - dL^2$

$MP = b + 2L - 3L^2$

eg - $200 + 200L - 200L^2$

↳ ↑ing Diminishing rate.