ECONOMICS

24 April 2017

HUM 3115 (A) – Economics

RUBA RUMMANA

Associate Prof.
AE's
AUST

Economies + Accounting = Total

(65) + (35) (100)

Attendance – 7	Quizes – 3 (Best 2)
Quiz – 13	Assignments – 2
Final – 45	
Total – 65	

→ Economics

* Economics এর father ⇒ Adam Smith

26 April 2017

Lec - 1

Nature & Methodology of Economics

1. Definition of Economics

Economics: Economics is a social science concerned about the proper uses and allocation of resources for the achievement and maintenance of growth and stability.

* Economics is a decision-making science!

2. Study of Economics

- MICRO ECONOMICS = Individual
- MACRO ECONOMICS = Aggregate

* Developments, incomes are Macro-goals।

* Policy-making এর ক্ষেত্রে সফলতার জন্য Macro এবং Micro কে Blend করতে হবে যেন Maximum goal achievement হয়।

3. Scope of Economics

The base of economics is pure and simple observations which is necessary in decisions.

Science → positive
Science → Normative

Economics → positive (making a statement, fact or problem)
Economics → Normative (solution of a problem)

* The role of Economics should be Normative.
* Economics is basically a social science.

4. Methods of Economics → Deductive
Methods of Economics → Inductive

Deductive (from example to generalisation)

Inductive (from general rules to some examples)

* Basis of Deductive and Inductive method is pure observation.
* Deductive and Inductive methods are same then it will be a Universal truth.

03 May 2017

Lec – 1

(3) Whether economics is able to solve our real life problems ?

Major Economic Problems

1. What economic goods and services are to be produced ?

অর্থনৈতিক দ্রব্য হতে হলে ৭টি বৈশিষ্ট্য থাকা বাঞ্ছনীয়:-

(i) Visible হতে হবে অথবা invisible হলে অস্তিত্বের প্রমাণ থাকতে হবে।

(ii) হস্তান্তর- ownership change হবে।

(iii) ~~monitoring exchange value~~ থাকতে হবে।

(iv) -মজুদ করা যাবে না।

2. How to produce?

3. For whom to produce?

→ Unique হতে হবে

→ User-friendly

→ cost-effective হতে হবে।

Assignment – 1

Q. How would you solve Economic problems (Major) as a Computer Enginnering? (Ma'm এগুলো due use করা যাবে না)

তিনটি Question ↪ Max 6 to 8 lines হতে হবে।

Lec - 2

Theory of Demand & Supply

* চাওয়া - পাওয়া হচ্ছে মানবজীবনের মূল্য বিষয়।
* Economics এর base হচ্ছে চাওয়া-পাওয়া (Demand – Supply)
* 'আকাঙ্ক্ষা' ও 'চাহিদা' দুটো ভিন্ন জিনিস।
* "সকল চাহিদাই আকাঙ্ক্ষা, কিন্তু সকল আকাঙ্ক্ষা চাহিদা নয়।"
* A demand is a desire which has three characteristics ——

(i) willingness to buy
(ii) Ability to buy
(iii) willingness to spend

Q_D
Q_d
D_D
d_d
D
d

} Demand

Demand function

$$Q_{d\,tea} = f\left(P_{tea},\ P_{s\,(coffee)},\ P_{c\,(milk)},\ Y,\ T\right)$$

- P_{tea} → Own price
- $P_{s\,(coffee)}$, $P_{c\,(milk)}$ → cross price
- Y → Income
- T → Taste

Law of Demand

other thing remaining constant

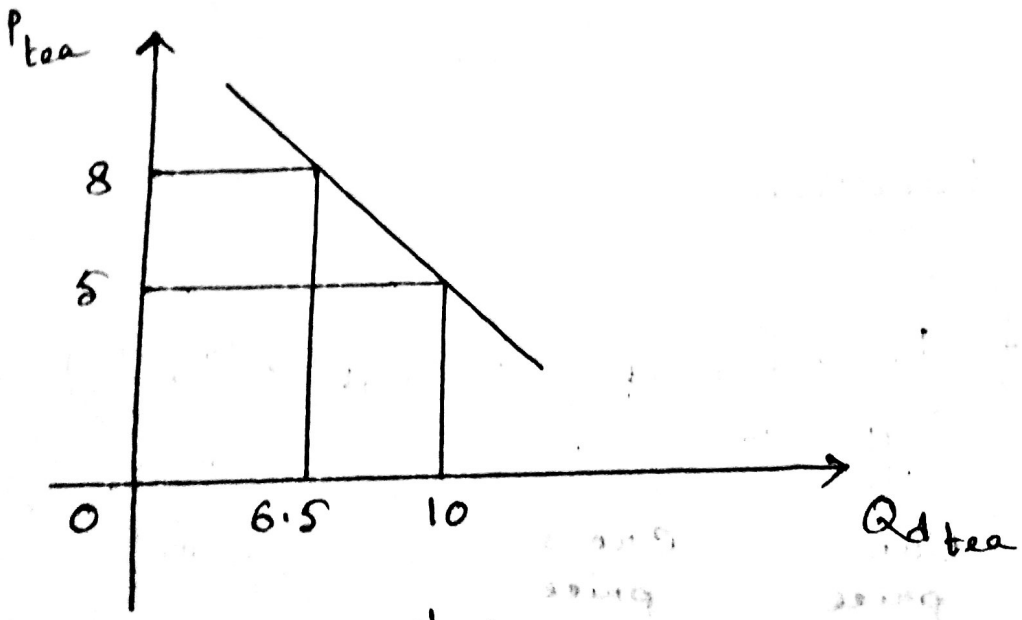
Ceteris Paribus

$$Q_{d\,tea} = f\left(P_{tea},\ P_{s\,(coffee)},\ P_{c\,(milk)},\ Y,\ T\right)$$

$P_{tea} \uparrow \quad Q_{d\,tea} \downarrow$

$P_{tea} \downarrow \quad Q_{d\,tea} \uparrow$

P_{tea}	$Q_{d\,tea}$
5	10
8	6.5
18	1
30	0.25



slope

$Q_d = \pm a - bp$

constant ⇓ ⇓ value of slope

$(= 20 - 0.5P)$

* Demand কর্ব সবচেয়ে strong side ⇒ যদি

08 May 2017

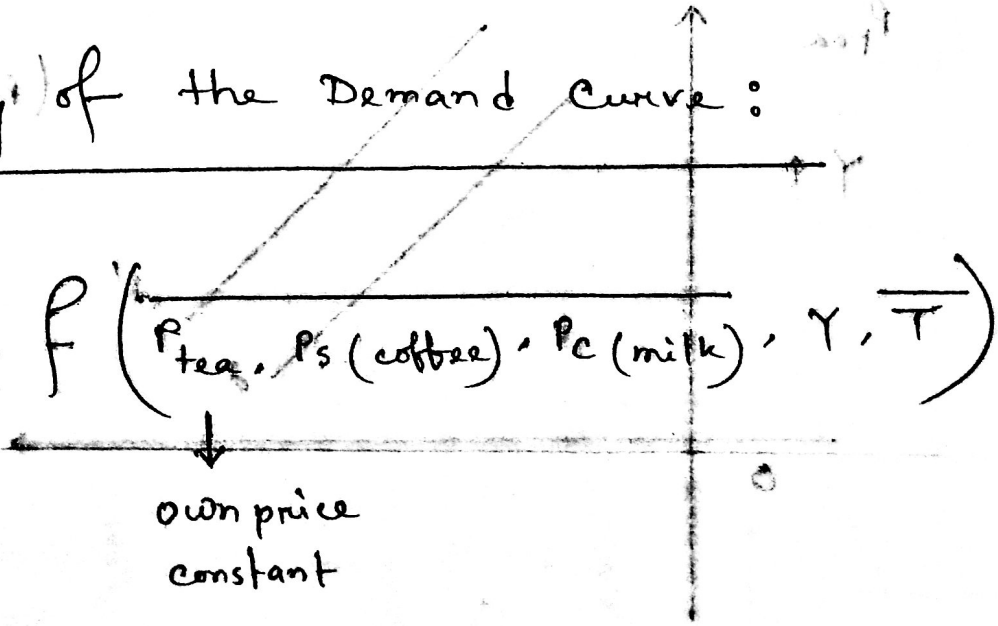
(a) Movement along the Demand Curve

$$Qd_{tea} = f\left(\overline{P_{tea}}, P_s(\text{coffee}), P_c(\text{milk}), Y, T\right)$$

(b) Shifting of the Demand Curve:

$$Qd_{tea} = f\left(\overline{P_{tea}}, P_s(\text{coffee}), P_c(\text{milk}), Y, \overline{T}\right)$$

own price constant



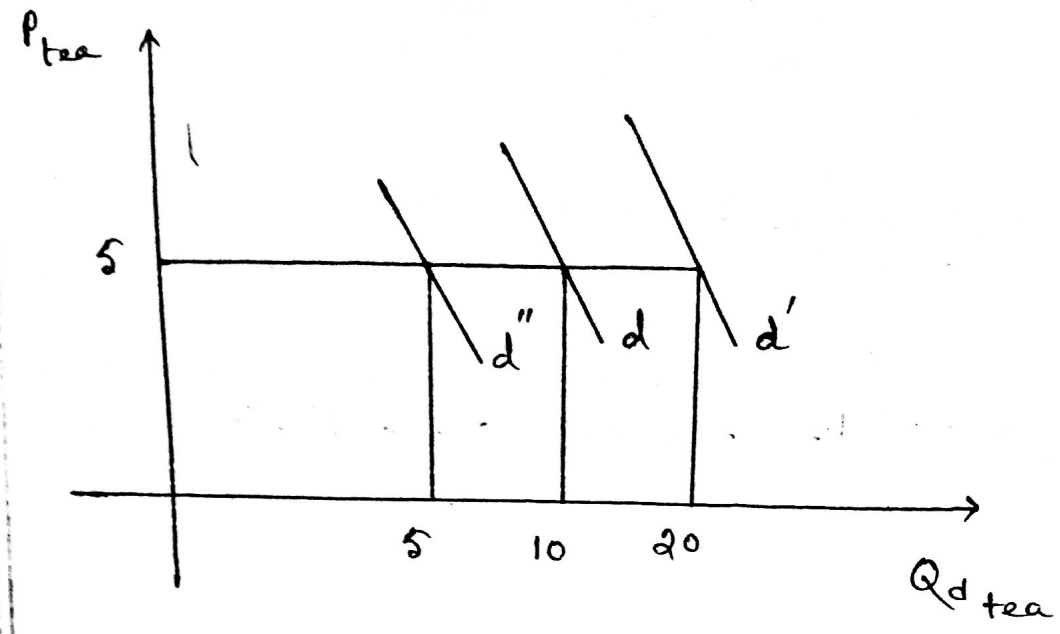
Y = 5000 tk → 5 tk @ 10 kg

Y = 10000 tk → 5 tk @ 20 kg

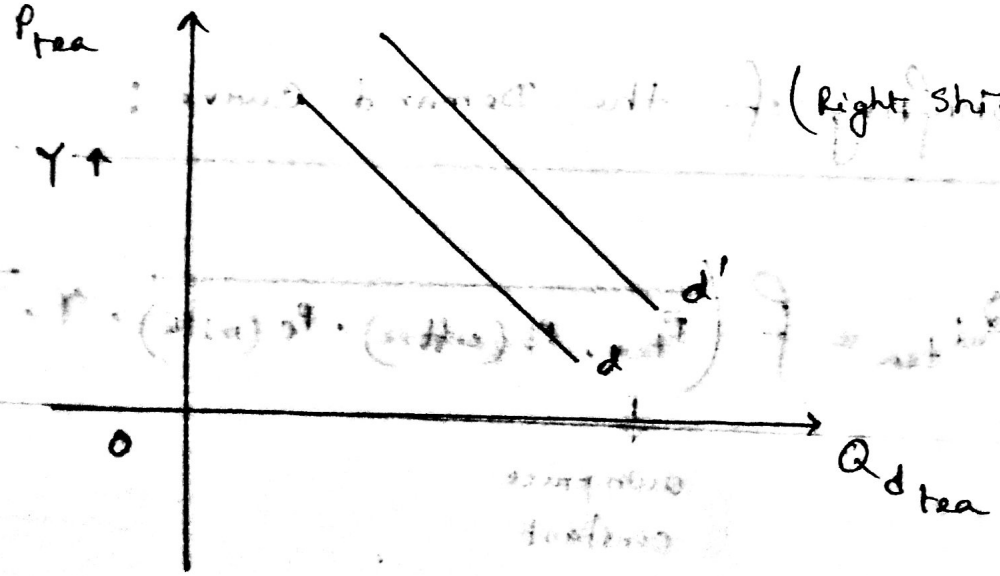
Y = 3000 tk → 5 tk @ 5 kg

MOVEMENT ⇒ Own Price Variable

SHIFTING ⇒ Own Price Constant



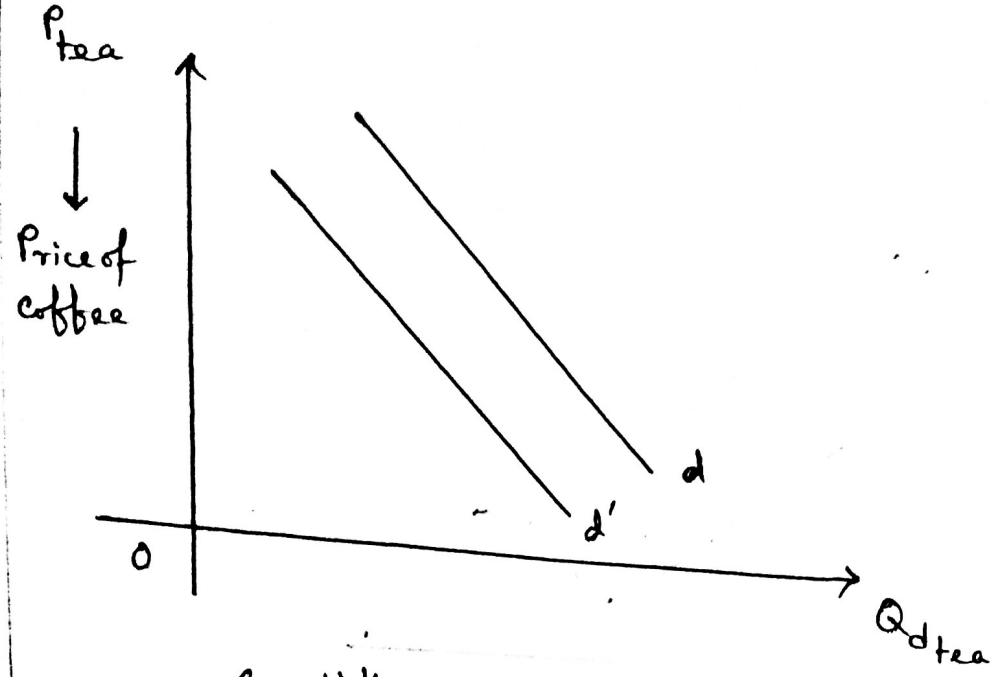
Ex. 1



(Right shift)

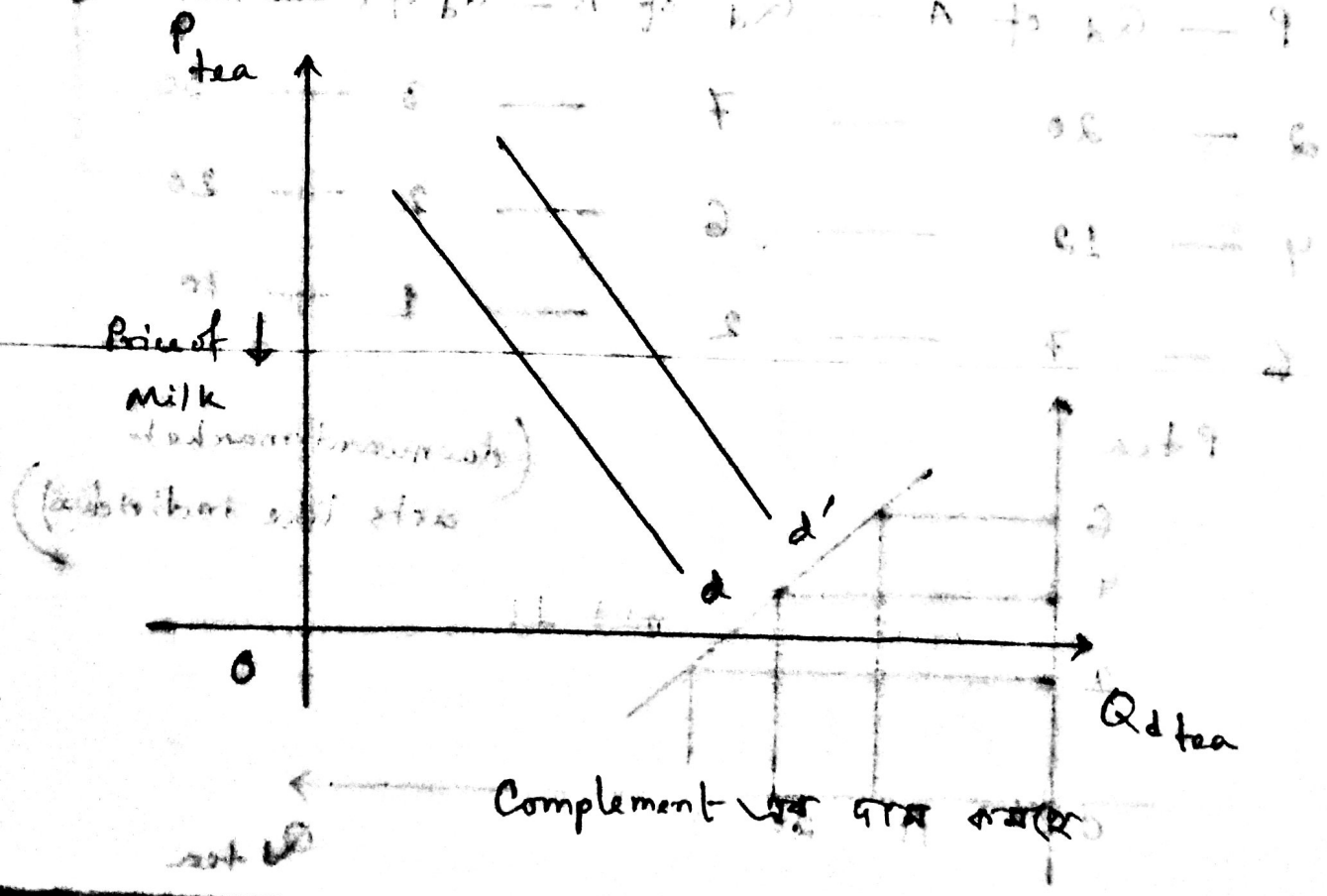
Income বাড়লে

Ex – 2

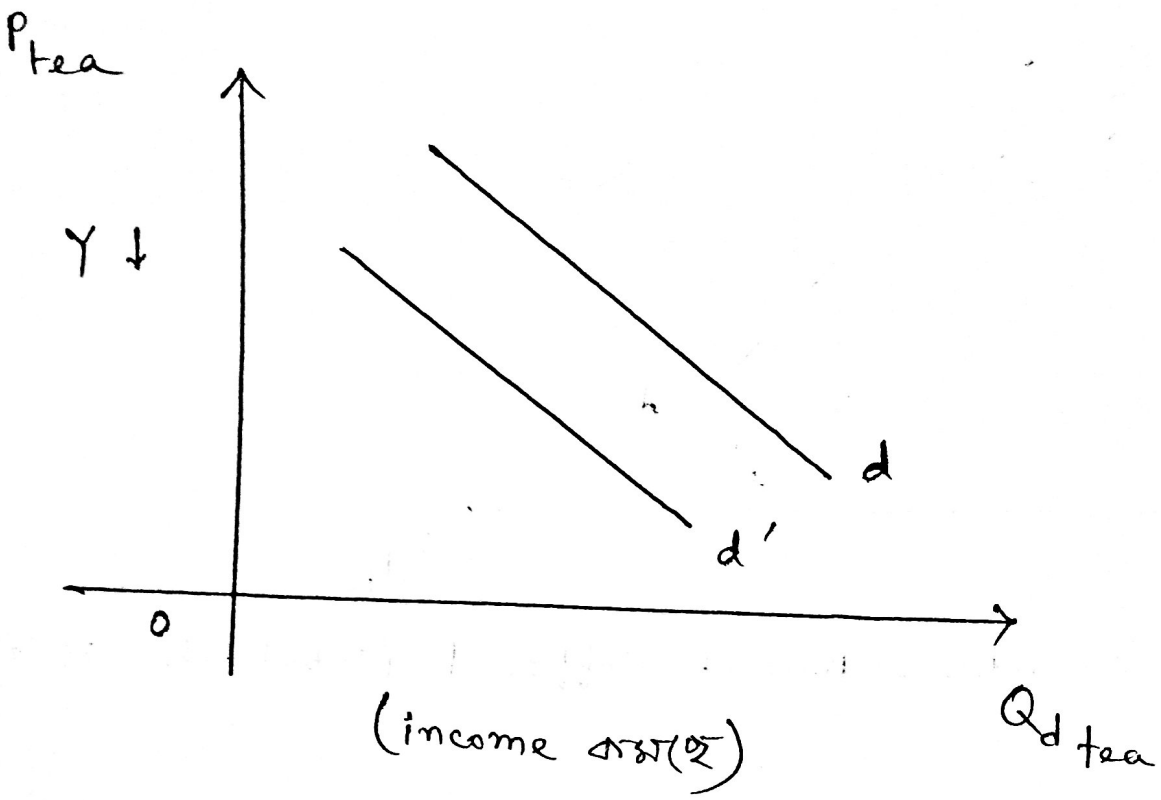


Condition – Price of Coffee ↓ (substitute হওয়ায় demand কমবে)

Ex – 3

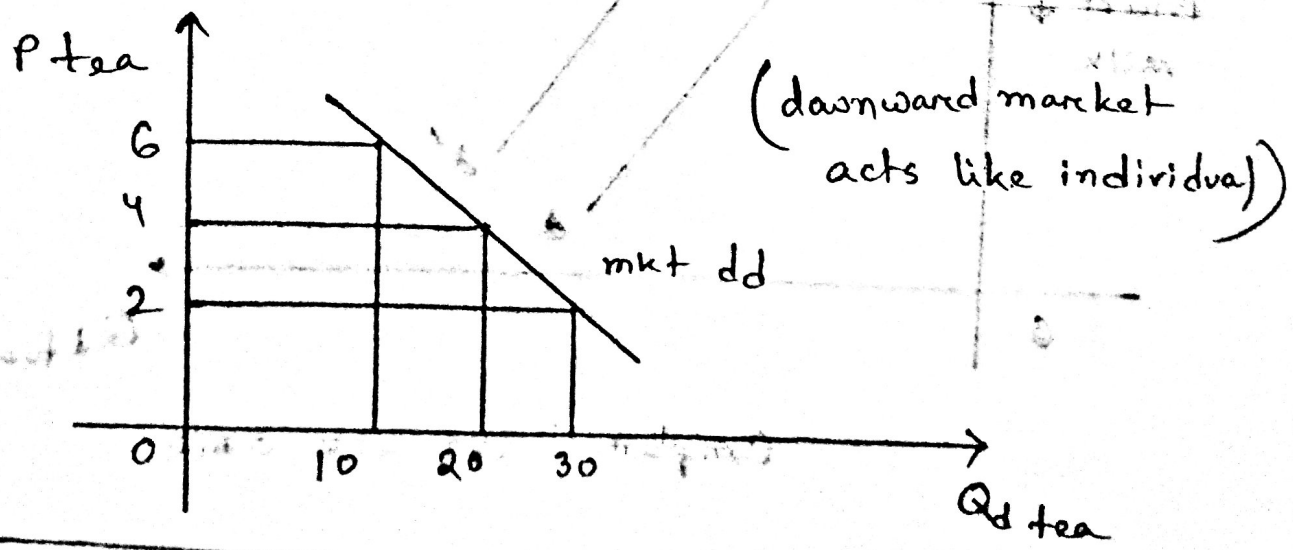


Ex-4



(income কমলে)

P	Qd of A	Qd of B	Qd of C	mkt dd
2	20	7	3	30
4	12	6	2	20
6	7	2	1	10



(downward market acts like individual)

import Tax এর সাথে "supply" inversely related!

Supply

(50kg)

ⓐ 35 tk ⟶ 50 kg → 50 kg ⇒ mkt ⇒ ss (small 's')

→ ⓐ 30 tk ⟶ 50 kg → 40 kg ⇒ mkt ⇒ ss (small 's')

Q_s
Q_s
S_s
ss
S
s

} Supply

Supply Function

Nature factor ↑ , Import Tax ↑

$$Q_{s_{rice}} = f\left(P_{rice}, P_s\,(wheat), P_{factors}, N, T, S\right)$$

S ↓ Subsidy (ভর্তুকি)

* "Subsidy" ⇔ "Intensive" (ব্যবহার)
* "Subsidy" directly affects "Supply"

Law of Supply

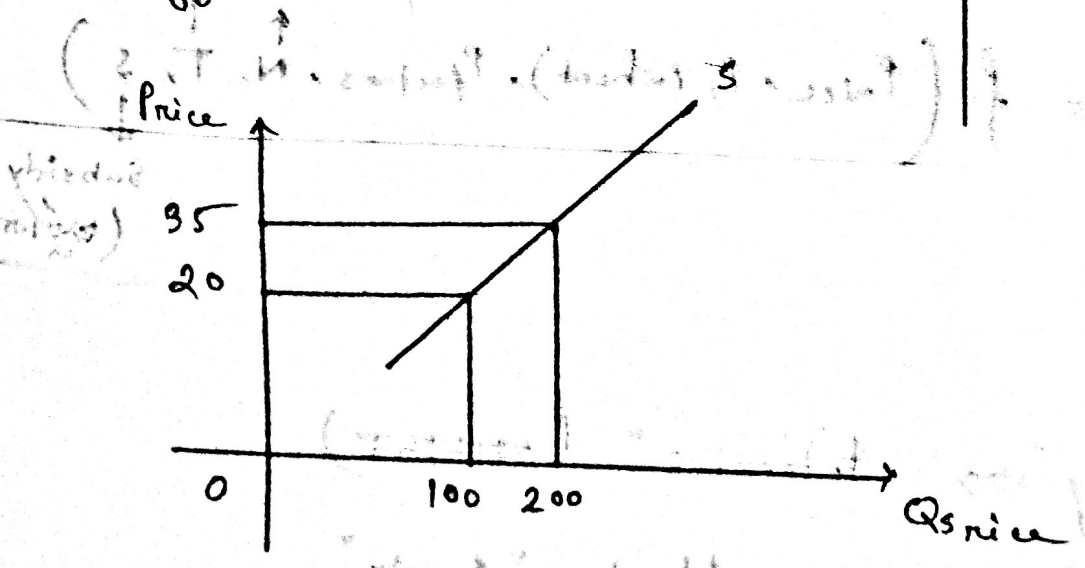
$$Q_{s\,rice} = f\left(\text{Price}, P_s(\text{wheat}), P_{factors}, N, T, S \;\middle|\; \text{Ceteris Paribus}\right)$$

Price ↑ $Q_{s\,rice}$ ↑
Price ↓ $Q_{s\,rice}$ ↓

Price	$Q_{s\,rice}$
20	100
35	200
55	500
60	1000

$$Q_s = \pm a + bp$$

$$= 200 + 0.5p$$



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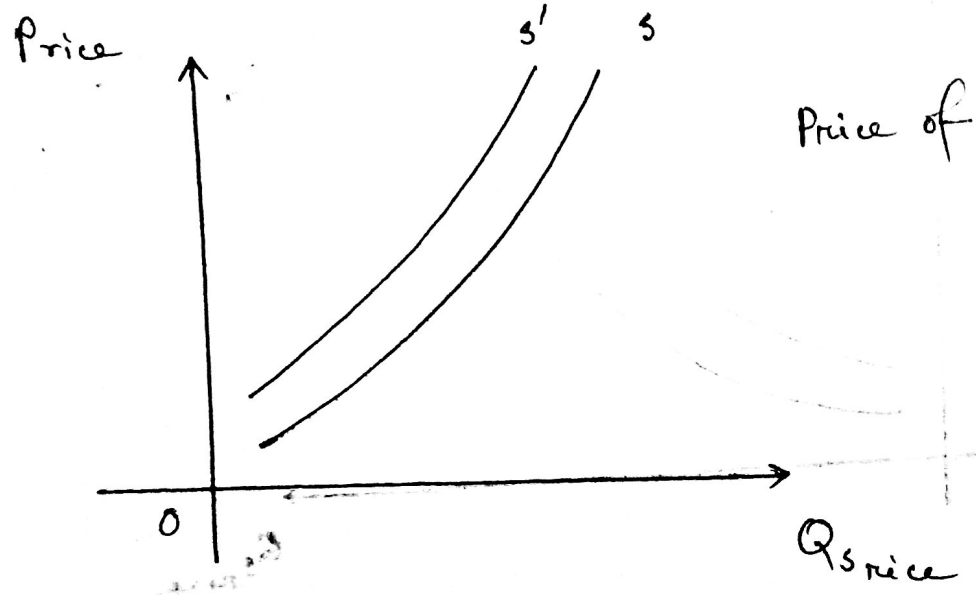
* যারা বেশি হলে Supply বাড়ে।

Factors affecting Supply → Cost of Production
→ Production Substitute

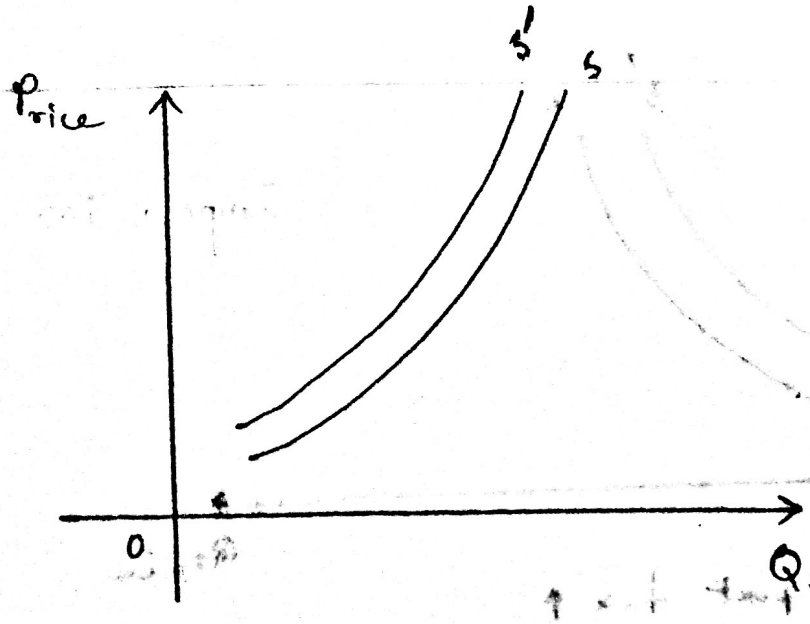
Ex-1.



Price of wheat ↑

① Price of wheat ↑

Ex-2.



There occurs a Draught

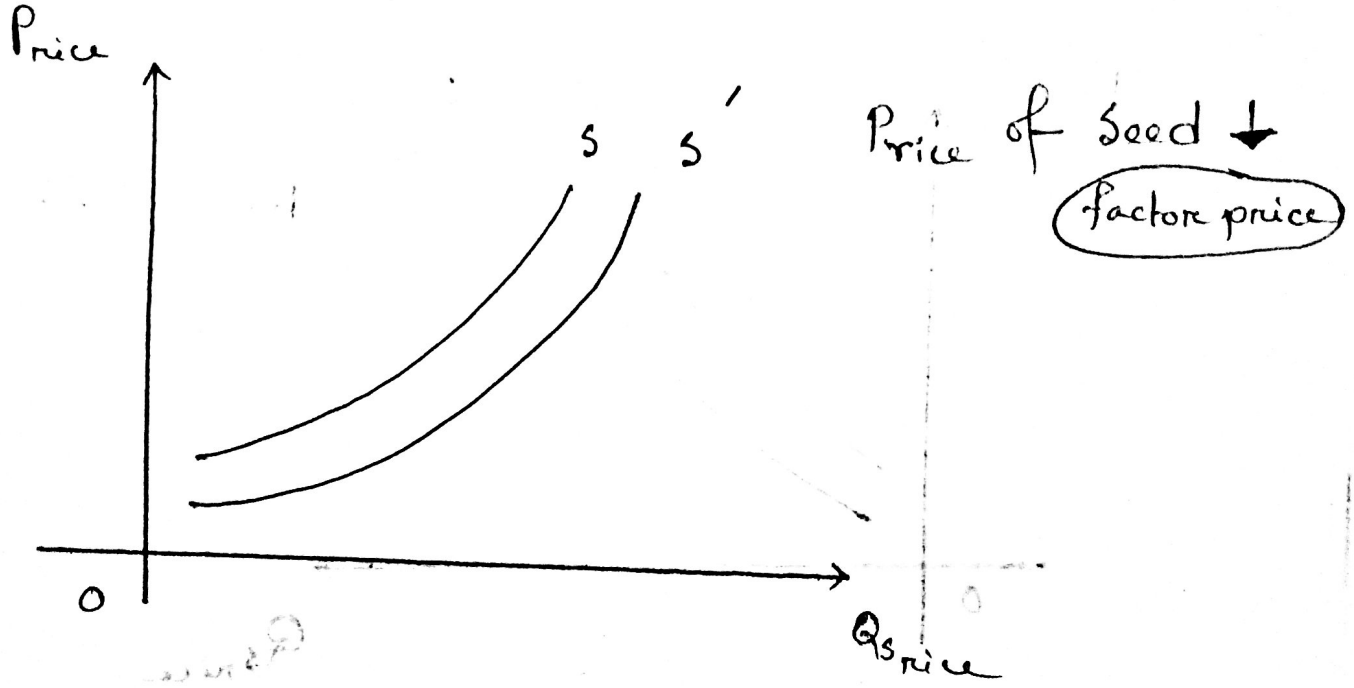
② There occurs a Draught.

↓

(가뭄)

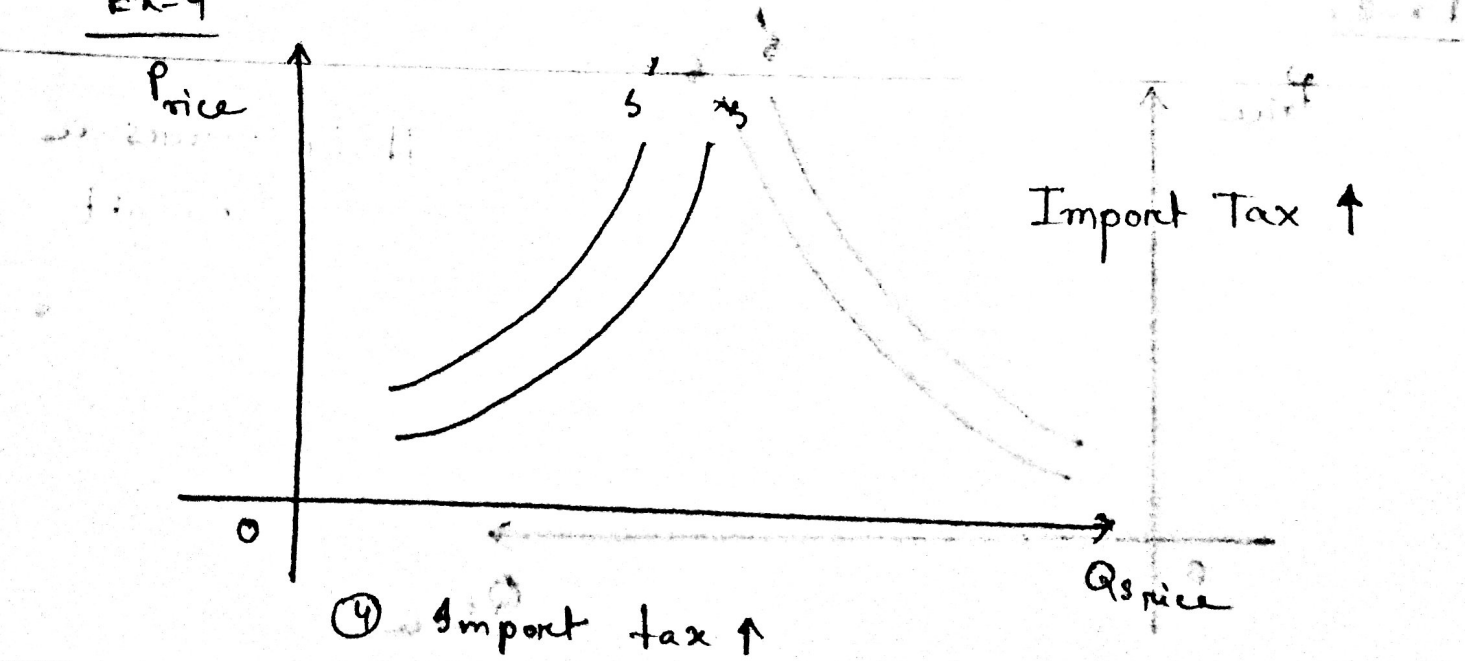
③ Price of seed ↓

Ex-3

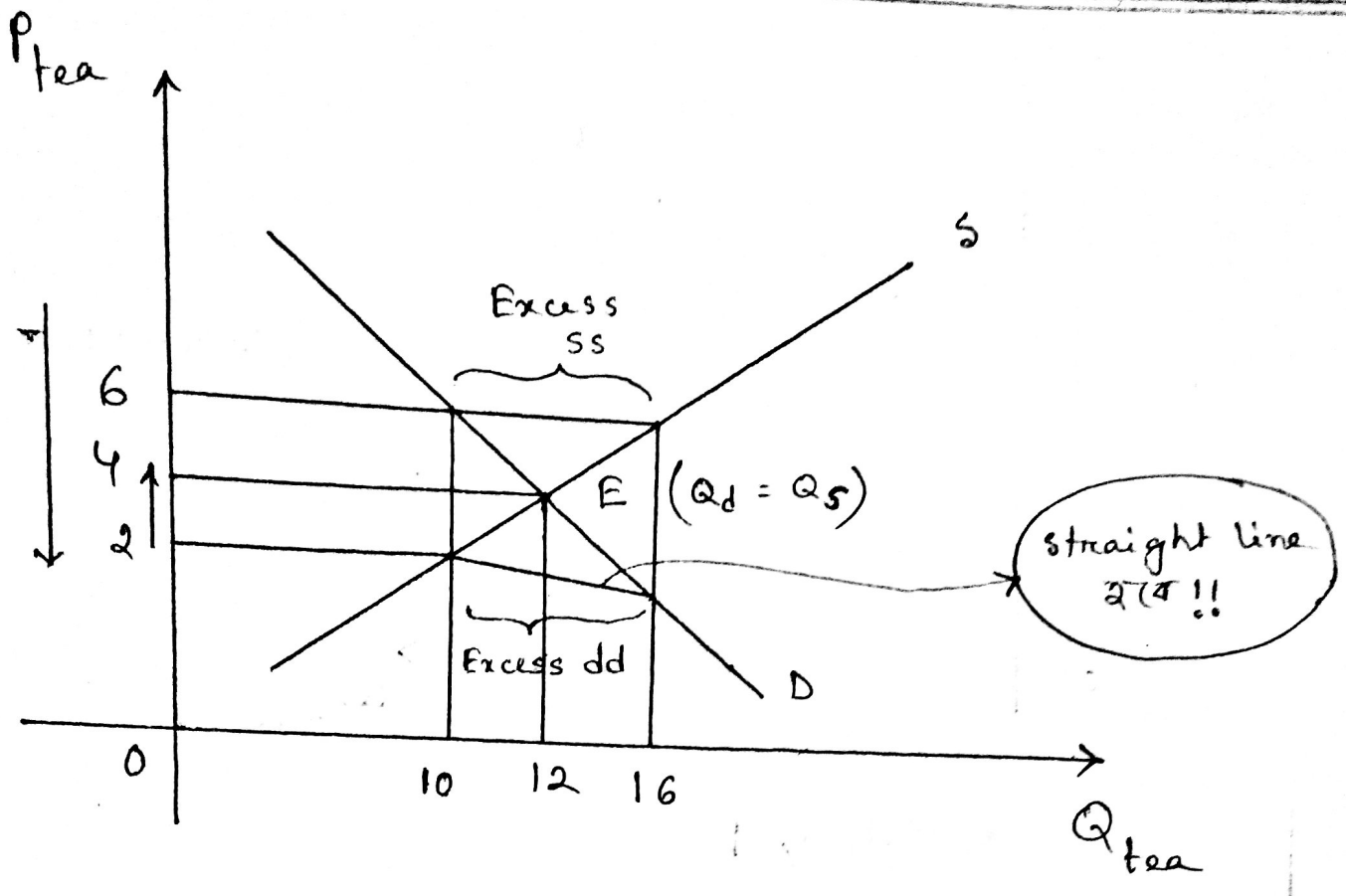


③ Price of seed ↓

Ex-4

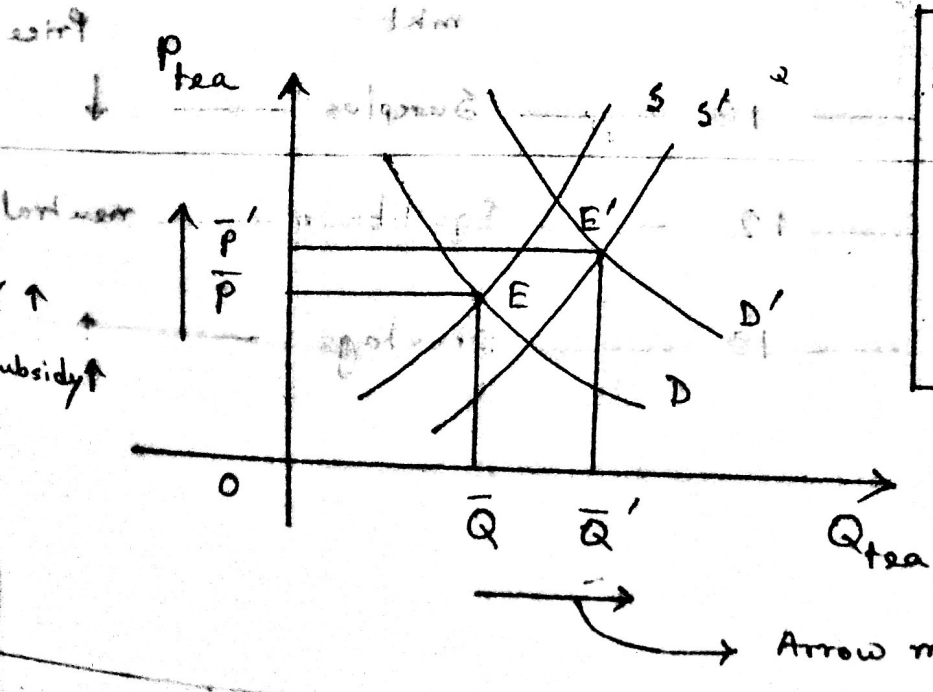


④ Import tax ↑



Shift in Equilibrium

Case-1:

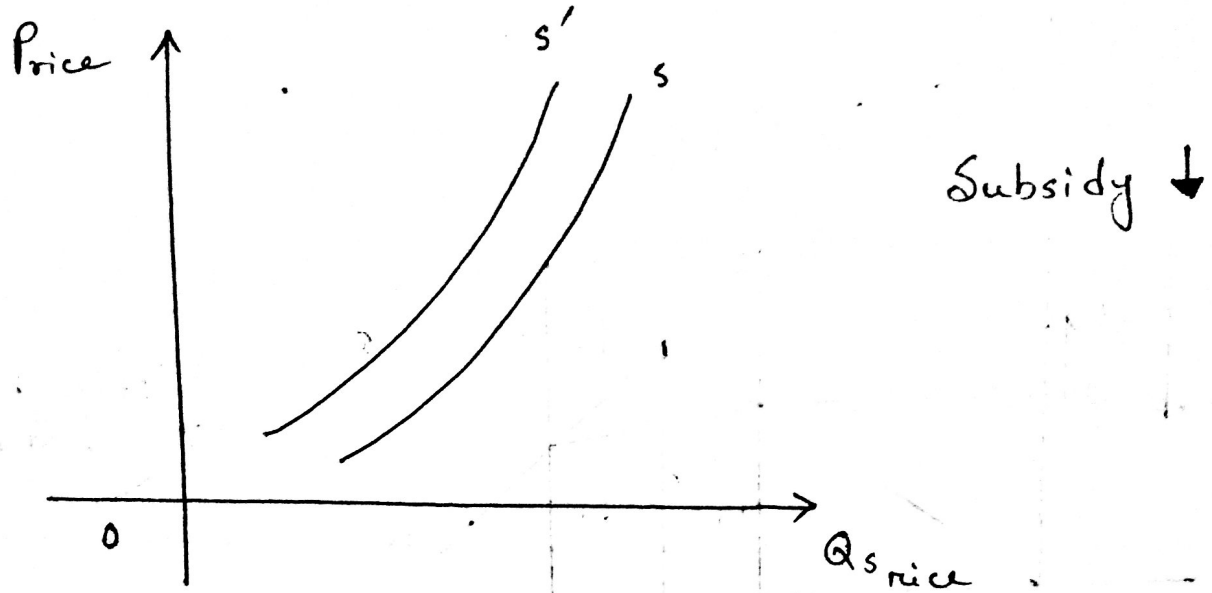


State of the mkt	Pressure on Price
Surplus	↓
Equilibrium	neutral
shortage	↑

Without any Disturbance

i) Y (income) ↑
ii) Subsidy ↑

Ex – 5

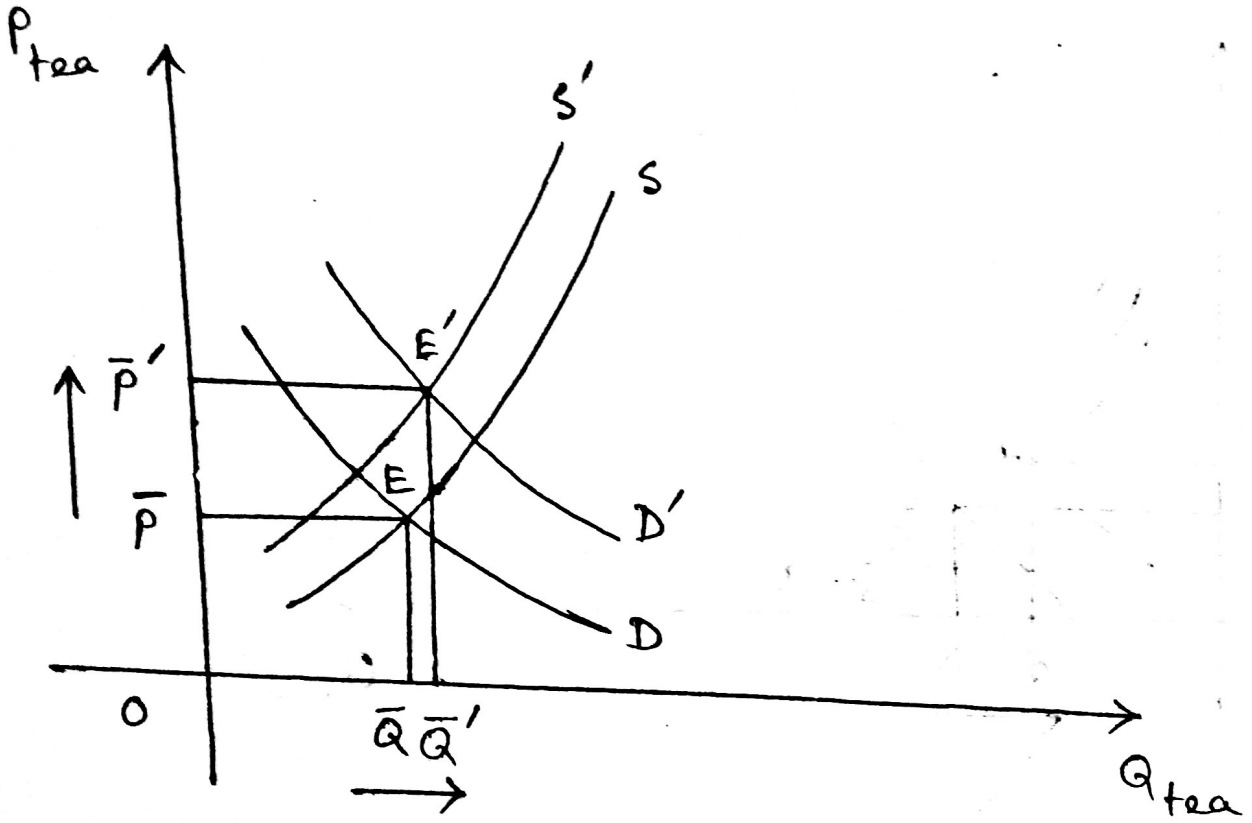


⑤ Subsidy ↓

Equilibrium of Demand & Supply

P	Q_d	Q_s	State of the mkt	Pressure on Price
6	10	16	Surplus	↓
4	12	12	Equilibrium	neutral
2	16	10	Shortage	↑

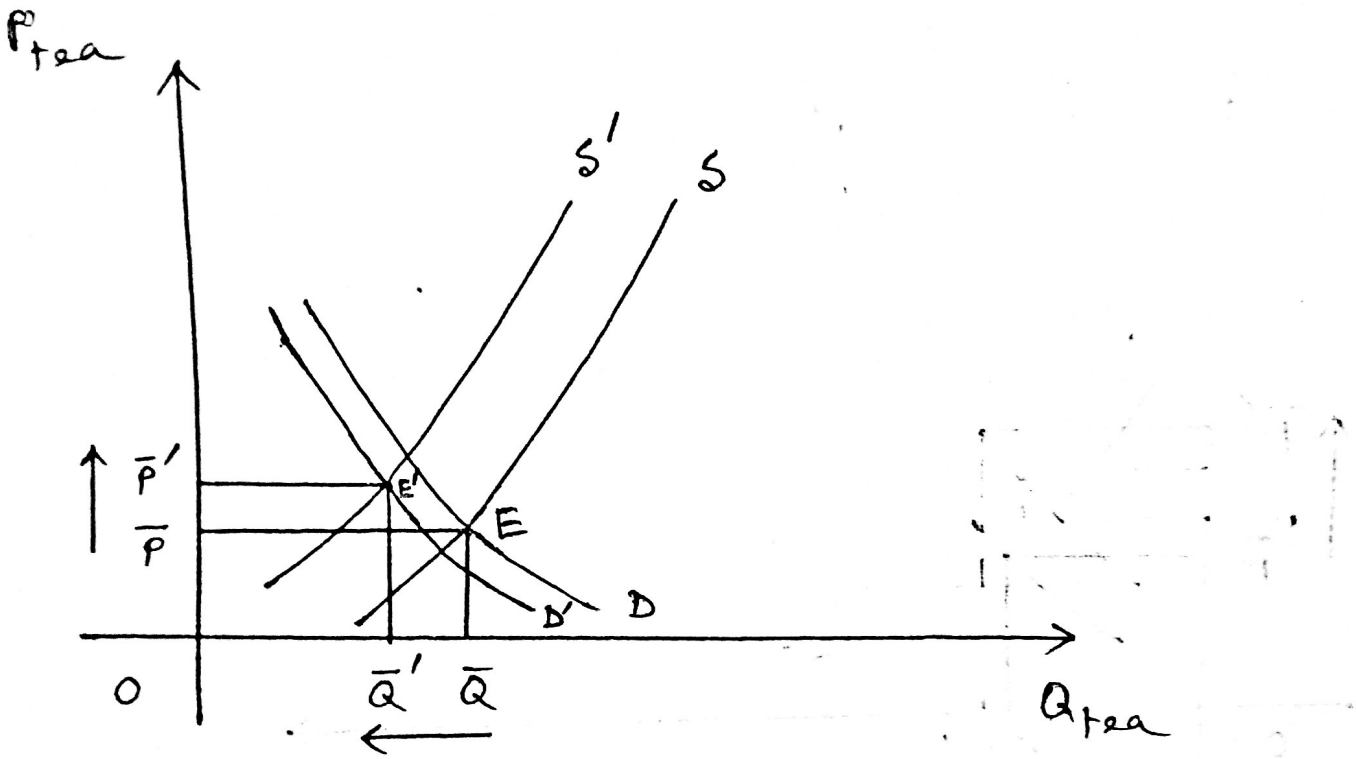
Case-2:



① Price of coffee ↑ ——————— dd

② Price of coffee ↑ ——————— ss

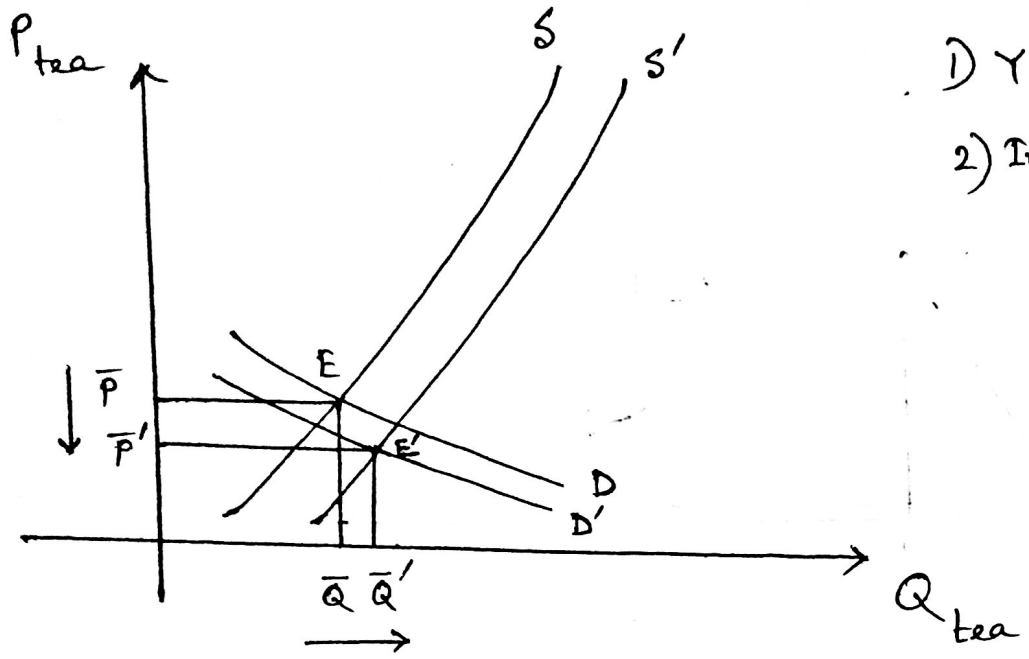
Case-3 :



① There occurs a draught —— ss

② Price of milk ↑ —— dd

case-4:



1) Y ↓ —— dd

2) Import Tax ↓ — ss

(*) Given,

$P = 200 - 3Q \Rightarrow Q_d = \frac{200}{3} - \frac{P}{3}$ → Demand Eqⁿ

[Graph আবশ্যক! না বললেও দিব, জোড়পূর্বক দিব।

$P = 20 + Q \Rightarrow Q_s = -20 + P$ → Supply Eqⁿ

Find Equilibrium P & Q

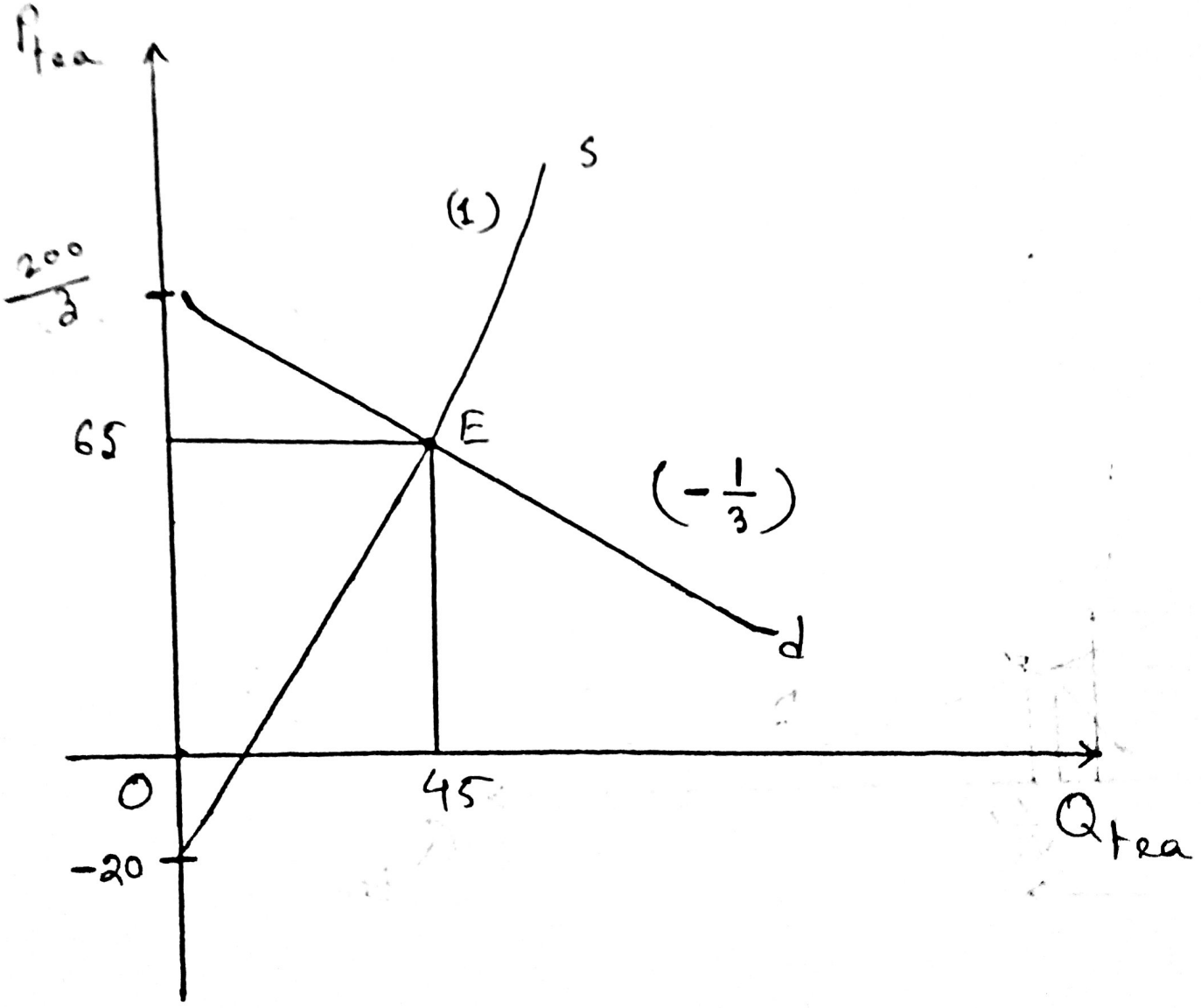
In Equilibrium $Q_d = Q_s$

$\Rightarrow \frac{200}{3} - \frac{P}{3} = -20 + P \Rightarrow 200 - P = -60 + 3P$

$\Rightarrow 4P = 260 \Rightarrow P = 65$ {65 টাকা চাহিদা নির্দেশ}

$\Rightarrow \bar{P} = 65$ {65 টাকা বিক্রেতা উদ্যম করে}

$\bar{Q}_d = 45 = \bar{Q}_s = 65 - 20$


P_{tea}
S
(1)
$\frac{200}{3}$
65
E
$(-\frac{1}{3})$
d
0
45
Q_{tea}
-20

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Lec- 3

Elasticity of Demand & Supply

Elasticity

Demand

Supply

⇓

1) Down Price Elasticity (η_{px}) [চা] (Own Price)

2) Cross Price Elasticity (η_{pxy}) [দুধ, কফি]

3) Income Elasticity (η_y) [Income এর পরিবর্তনে চা — খাওয়ার পরিবর্তন]

* Demand "Elastic" হলে পণ্য ⇒ LUXURY [Vice-Versa]

* Demand "In-Elastic" হলে পণ্য ⇒ Necessary [Vice-versa]

* "Supply" এর ক্ষেত্রেও same relation as followed [previously described]

(*) Given,

$$Q_{d_{desktop}} = 20 - 0.2P_{desktop} + 0.3P_{laptop} - 0.5P_{MoBo} + 0.0001Y$$

where,

$P_{desktop} = 50,000$

$P_{laptop} = 60,000$

$P_{MoBo} = 10,000$

$Y = 1,00,000$

$Q_{d_{desktop}} = 50,000$

(1) Own Price Elasticity ($\eta_{P_{desktop}}$)

$$\eta_{P_{desktop}} = \frac{\Delta}{\Delta P_{desktop}}\left(Q_{d_{desktop}}\right) \times \frac{P_{desktop}}{Q_{d_{desktop}}}$$

$$= -0.2 \times \frac{50,000}{50,000}$$

$$= -0.2$$

$$= |0.2| < 1 \rightarrow \text{price এর পরিবর্তন}$$

↓ Quantity এর পরিবর্তন

* "Elasticity" মানে "Quantity" এর পরিবর্তন।

$\rightarrow$ = Change in $Q_{d\,desktop}$ < Change in $P_{desktop}$

∴ Desktop is necessary good as Demand is "In-elastic".

[N.B] → If $\eta_{desktop} > 1$ [Demand is Elastic]

② Cross price Elasticity $(\eta_{desktop,\ laptop,\ mobile})$

a) $\eta_{P_{desktop},\ laptop} = \frac{\Delta}{\Delta P_{laptop}} \left(Q_{d\,desktop}\right) \times \frac{P_{laptop}}{Q_{d\,desktop}}$

$= 0.3 \times \frac{60000}{50,000} = 0.36$

∴ Laptop and Desktop are substitutes.

N.B. = If $\eta_{\substack{\text{desktop,} \\ \text{laptop}}} = (+1)$

↳ Laptop and Desktop are perfect substitutes.

b) $P_{\text{desktop, mobo}} = \frac{\Delta}{\Delta P_{\text{mobo}}} \left(Q_{d\ \text{desktop}}\right) \times \frac{P_{\text{mobo}}}{Q_{d\ \text{desktop}}}$

$= -0.5 \times \frac{10,000}{50,000}$

$= -0.1$

∴ mobo and Desktop are Compliments.

N.B. = If $\eta_{\substack{\text{Desktop,} \\ \text{mobo}}} = (-1)$

↳ mobo and Desktop are perfect Compliments.

③ Income Elasticity (η_y)

$\eta_y = \frac{\Delta}{\Delta Y} \left(Q_{d\ \text{desktop}}\right) \times \frac{Y}{Q_{d\ \text{desktop}}}$

$= 0.0001 \times \frac{1,00,000}{50,000}$

$= 0.0002$

∴ Desktop is a normal good.

N.B = যদি $\eta_y = (-1)$

→ Income বাড়লে, Desktop কেনা কমবে

→ সুতরাং- Inferiore

∴ Desktop is an inferiore good.

25 May 2017

Lec-3 (Contd.)

Elasticity of a straight line dd curve using Point Elasticity formula:

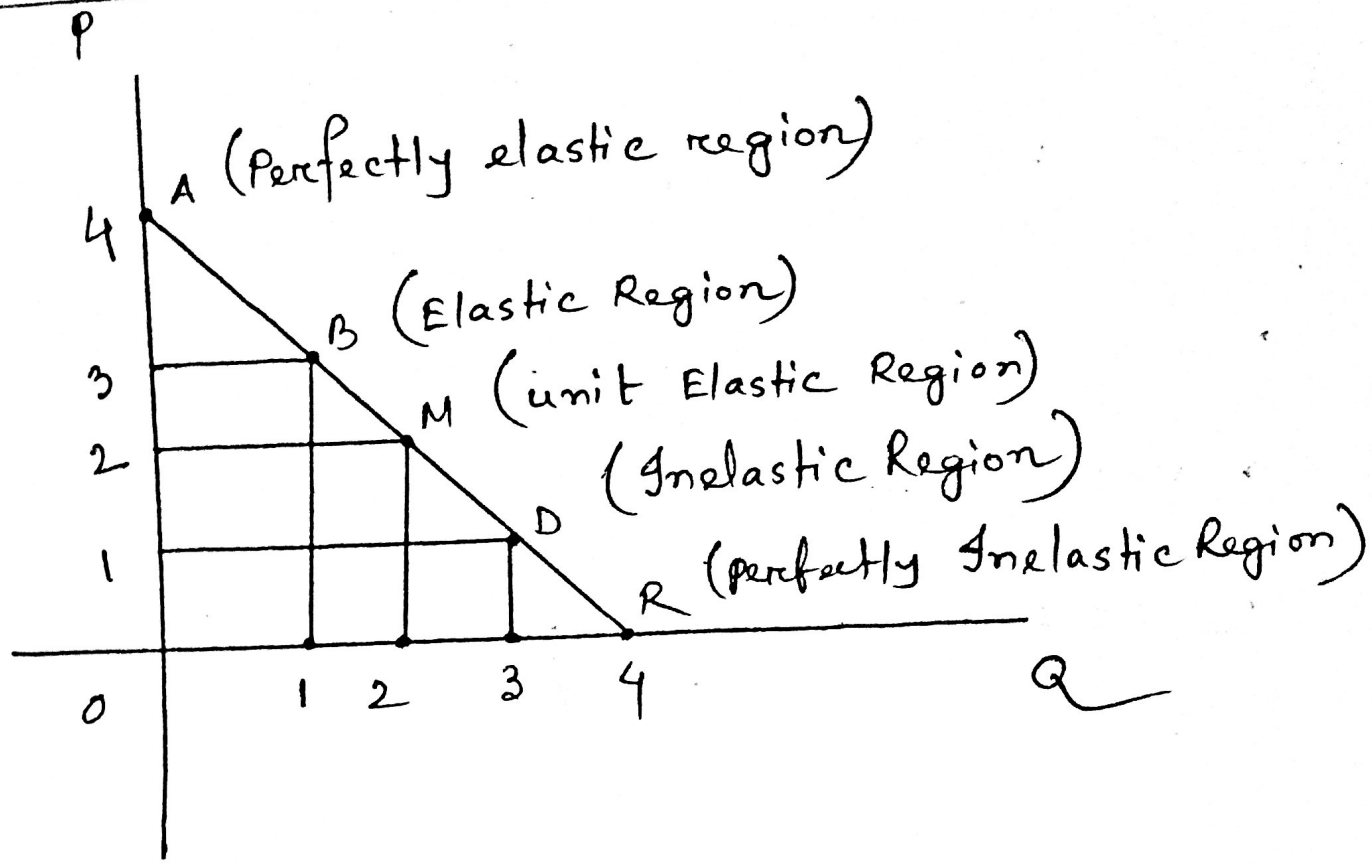
$$e_{point} = \frac{\text{lowere segment}}{\text{Uppere segment}}$$

$$e_M = \frac{2}{2} = 1 = e = 1$$

$$e_B = \frac{3}{1} = 3 = e > 1$$

$$e_D = \frac{1}{3} = 0.33 = e < 1$$

$$e_A = \frac{4}{0} = \infty = e = \infty$$

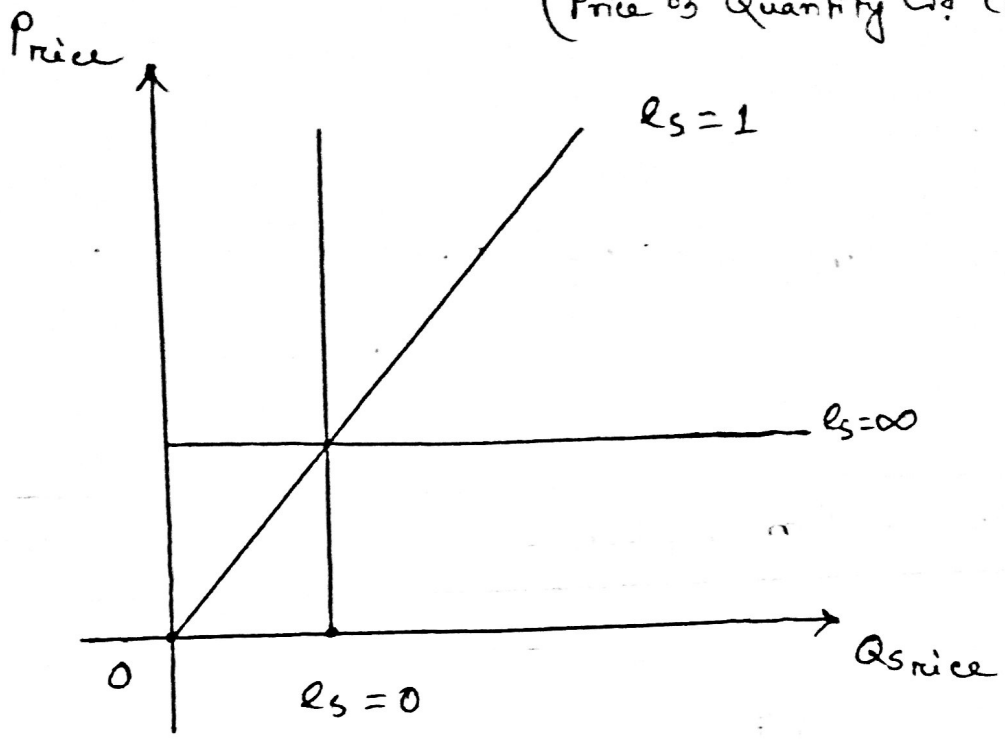


Elasticity of supply ($\eta_{Q_{sx}}$)

$$\eta_{Q_{sx}} = \frac{\Delta}{\Delta P_x}\left(Q_{s_x}\right) \cdot \times \frac{Q_{s_x}}{P_x}$$

$$= (+)ve$$

(Price & Quantity का Change नहीं)



Lec-4

Theory of Utility → उपयोगिता

Utility measurement is the primary step for demand creation.

- Measurement of Utility
  - Cardinal
    - ⇓
    - money
    - Tools ⇓
      - 1. Total Utility
      - 2. Marginal Utility
  - Ordinal

Table :

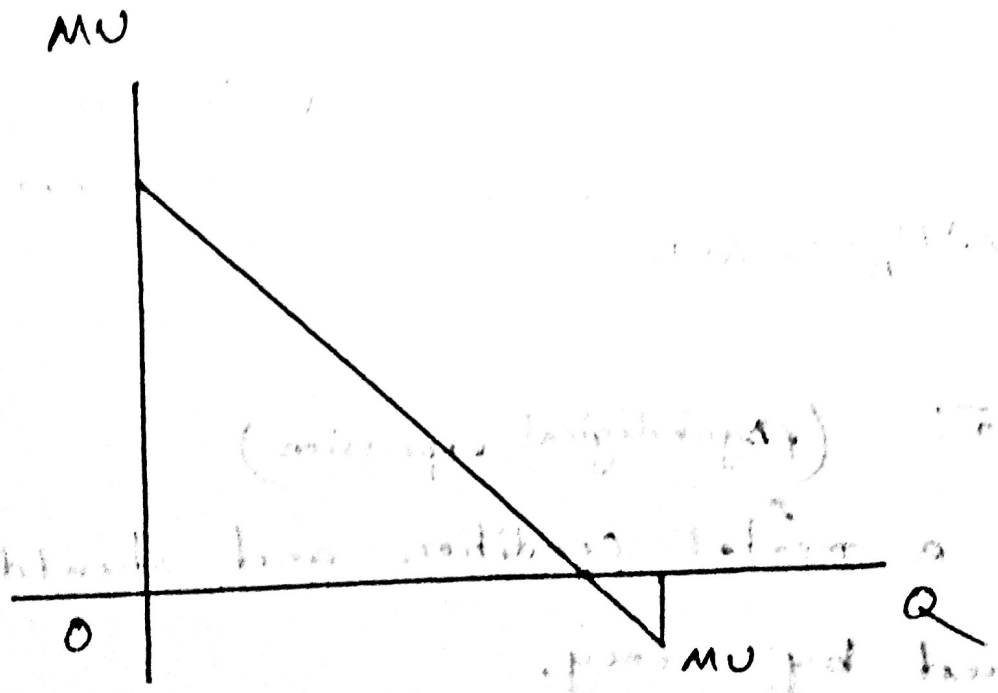
An Example of TU & MU (relation with Unit of Consumption) :-

Unit of Consumption	TU	MU (Extra उपयोगिता)
0	0	0
1st	4	4
2nd	7	3
3rd	9	2
4th	10	1
5th	10	0
6th	8	-2

Law of Diminishing MU (Marginal Utility)

* Increasing at a decreasing rate (যত বৃদ্ধি কমছে
(কমছে, কিন্তু বৃদ্ধি পাচ্ছে না)
→ Extra আনন্দ কমে যাচ্ছে।

→ Based on Human Behavior



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Lec-4 (contd.)

Consumer Equilibrium under Cardinal Approach

Equal MU for every good $= \frac{MU_X}{P_X} = \frac{MU_Y}{P_Y} = \frac{MU_Z}{P_Z} = \ldots = \lambda$

λ = Constant utility of money

$MU_B > MU_C$

Hicks মতে: (psychological expression)
Utility is a mental condition and shouldn't be measured by money.

Ordinally,
Utility is measured by ranking preferences.
This is called Ordinal Measurement of Utility.

Consumer Surplus (CS)

Given,

$$P_d = (Q-1)^2 \quad \text{where } P_0 = 4 \;\&\; Q_0 = 6$$

Find. CS ?

$$CS = \int_0^{Q_0} f_1(Q_1)\, dQ - P_0 Q_0$$

$$= \int_0^{Q_0} (Q-1)^2 dQ - P_0 Q_0$$

$$= \int_0^{Q_0} (Q^2 - 2Q + 1)\, dQ - P_0 Q_0$$

$$= \int_0^{Q_0} Q^2 dQ - 2\int_0^{Q_0} Q + \int_0^{Q_0} dQ - P_0 \int_0^{Q_0} Q_0$$

$$= \left[\frac{Q^3}{3}\right]_0^{Q_0} - 2\left[\frac{Q^2}{2}\right]_0^{Q_0} + \left[\frac{Q}{1}\right]_0^{Q_0} - P_0 Q_0$$

$$= \frac{6^3}{3} - 6^2 + 6 - 4 \times 6$$

$$= 18$$

$$CS = \int_0^{Q_0} (Q-1)^3 dQ - P_0 Q_0$$

$$= \int_0^{Q_0} (Q^3 - 3Q^2 + 3Q - 1)\, dQ - P_0 Q_0$$

$$= \frac{Q_0^4}{4} - 3.\frac{Q_0^3}{3} + 3\frac{Q_0^2}{2} - Q_0 - P_0 Q_0$$

$$= \frac{6^4}{4} - 6^3 + 3\left[\frac{6^2}{2}\right] - 6 - 4 \times 6$$

$$= 132$$

31 May 2017

Assignment - 2

1. Derive the dd function for laptop. when :-

(a) It is a luxury good $(\eta_p > 1)$

(b) It has one perfect substitute $(\eta_{p_{x,y}} = +1)$

(c) It has one perfect compliment $(\eta_{p_{x,y}} = -1)$

(d) It is a normal good $(\eta_y = (+)ve)$

(2) Deduce a schedule for law of Diminishing MU.

↳ main যেভাবে class এ করিয়েছেন, সেভাবে xm এ / quiz এ করা যাবে না। Different way তে schedule করে then main rule apply করতে হবে।

(1)

⇒ Given,

$$Q_{d_{laptop}} = 20 - 2.5P_{laptop} + P_{desktop}$$

(a) $$\frac{1}{1.2} \times \frac{50,000}{60,000} = 1$$

$$= \eta_p \geq 1$$

So, It is luxury product.

(b) $$\frac{1}{1.2} \times \frac{50,000}{60,000}$$

$$= 1$$

So, $\eta_{p_{x,y}} = +1$

∴ It has one perfect substitute.

12 June 2017

Lec - 5

Theory of Production

* production is the primary step of supply - creation.

Four Compulsory Inputs :-

* Land হচ্ছে natural, Capital হচ্ছে man-made!

1. Land = L

i) Land is a free gift of nature

ii) Land is parmanent

iii) Land is immobile

iv) Land decreases fertility with time.

2. Labor = A

i) Labor এর কাজ করার ক্ষমতা transfer করা যায় না।

ii) Bargaining power with higher wages

iii) সময়ের সাথে ক্ষমতা হ্রাস পায়।

∴ Why land is not capital ?

3. Capital = K : (Land capital নয়, natural)

i) capital man-made

ii) Capital এর return সবসময় uniform

iii) Capital is something mobile (এই টাকা ব্যবসায় খাটবে)

* Land এর return uniform নয়।

4. Organization = 0

* বিশ্ববাজারে চালের আমদানি → চাষ না → প্রথম আলোয় 11.6.17 (Ques)

$$Q = f(L, A, K, O)$$

production function

Q can be anything & everything !

no specified time Association

→ Short run = $Q = f(\bar{L}, A, \bar{K}, \bar{O})$ (constant)

(Input এর সমস্যা, output বাড়ে না)

(Minimum 1টি, max 3টি তে problem হতে পারে)

→ Long Run = $Q = f(L, A, K, O)$

(Input এর সমস্যা নেই, output বাড়বে)

Producers' Surplus (P.S.):

Given,

$P_S = (Q+1)^2$, where $P_0 = 120$, $Q_0 = 6$

↓

supply

Find $PS = P_0Q_0 - \int_0^{Q_0} \underbrace{f_2(Q_2)}_{\text{producer surplus}} dQ$

$$= P_0Q_0 - \int_0^{Q_0} (Q+1)^2 dQ$$

$$= P_0Q_0 - \int_0^{Q_0} (Q^2+2Q+1) dQ$$

$$= 120 \times 6 - \left[\frac{Q^3}{3} + Q^2 + Q\right]_0^6$$

$$= 720 - \left[\frac{6^3}{3} + 36 + 6\right]$$

$$= 606 \quad \text{(Ans)}$$

Again,

$$PS = P_0Q_0 - \int_0^{Q_0} (Q+1)^3 dQ$$

$$= P_0Q_0 - \int_0^{Q_0} (Q^3+3Q^2+3Q+1) dQ$$

$$= 120 \times 6 - \left[\frac{Q^4}{4} + Q^3 + \frac{3Q^2}{2} + Q\right]_0^6$$

$$= 120 \quad \text{(Ans)}$$

05 July 2017

Lec-5

Law of Diminishing MP

$$Q = f(\bar{L}, A, \bar{K}, \bar{O})$$ only Labor vary করবে!

Here, L, K, O are constant!

Types of Production

1. Total Product = TP
2. Average Product = AP = $\frac{TP}{L/A/K/O}$
3. Marginal Product = MP = $\frac{\Delta}{\Delta(L/A/K/O)}(TP)$

→ Total Countable unit ↝ যা produce হয়!

→ Total product কে L দিয়ে ভাগ দিলে average product of Land পাবো!

→ Production ↝ 1 unit বাড়লে যতটুকু বাড়বে!

Unit of Labor	TP_A	AP_A	MP_A
0	0	0	0
1st	2000	2000	2000
2nd	3000	1500	1000
3rd	3500	1167	500
4th	3800	960	300
5th	3900	780	100

* increasing at a decreasing rate (always 1 input will vary)
* জমির দরুন 5 জন Labor লাগবে (কমপক্ষে)!

Produce a schedule to show that — (Let) the producer needs at least 5 labours.

Unit of Labor	TP_A	AP_A	MP_A
0	0	0	0
1st	2000	2000	2000
2nd	5000	2500	3000
3rd	9000	3000	4000.
4th	14000	3500	5000
5th	20000	4000	6000
6th	25000	4167	5000

06 July 2017

Lec-5 (Contd.)

Short run = Law of Diminishing MP $\Rightarrow Q = f(\bar{L}, A, \bar{K}, \bar{O})$

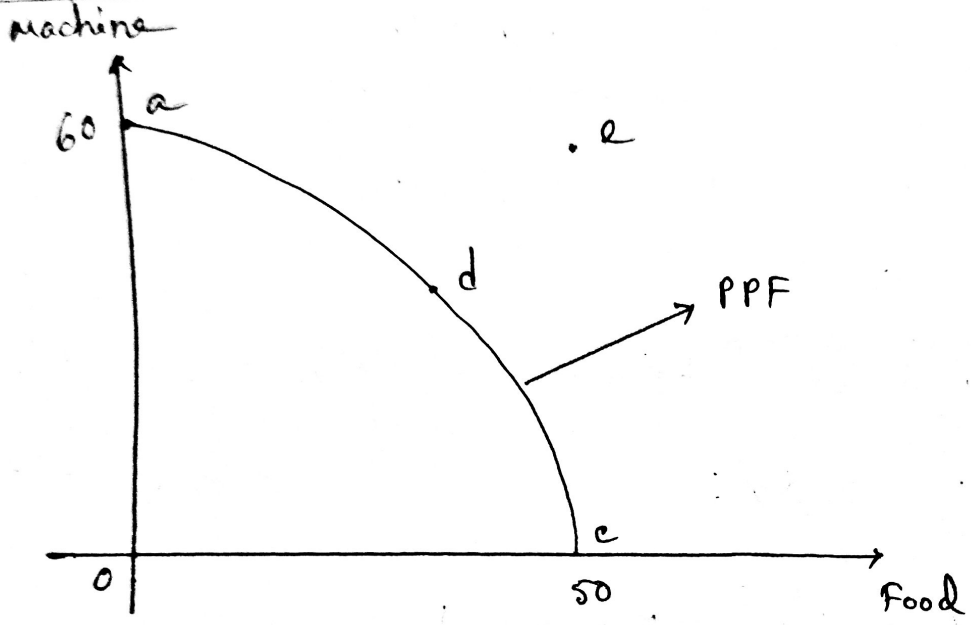
Long run = R/S $\Rightarrow Q = f(L, A, K, O)$

1. $2(L, A, K, O) = 2Q = 1$
2. $2(L, A, K, O) = 5Q = IRS$ (Increasing Return to Scale)
3. $2(L, A, K, O) = 1Q = DRS$ (Decreasing Return to Scale)

Production Possibility Frontier (PPF)

Possibilities	Food	Machine
A	50	0
B	40	15
C	28	20
⋮		
Z	0	60

* PPF बाहर नहीं All resources are exhausted.



Therefore, economy should always be on the PPF, not at the too extremes (a, c) below (b) or above (e).

Lec – 6 (a)

Theory of Cost

1. Land = L = rent = r
2. Labor = A = wage = ω
3. Capital = K = interest = i
4. Organization = O = Profit = π

Cost of Producing Q = r + ω + i + π

* Profit is the prize of risk bearing
* Loss is the

Types of Cost

1. Total Cost = Total fixed cost (establishment cost) + Total Variable Cost

$\therefore TC = TFC + TVC$

2. Average Cost = $AC = \frac{TC}{Q} = \frac{TFC + TVC}{Q}$

$AC = AFC + AVC$

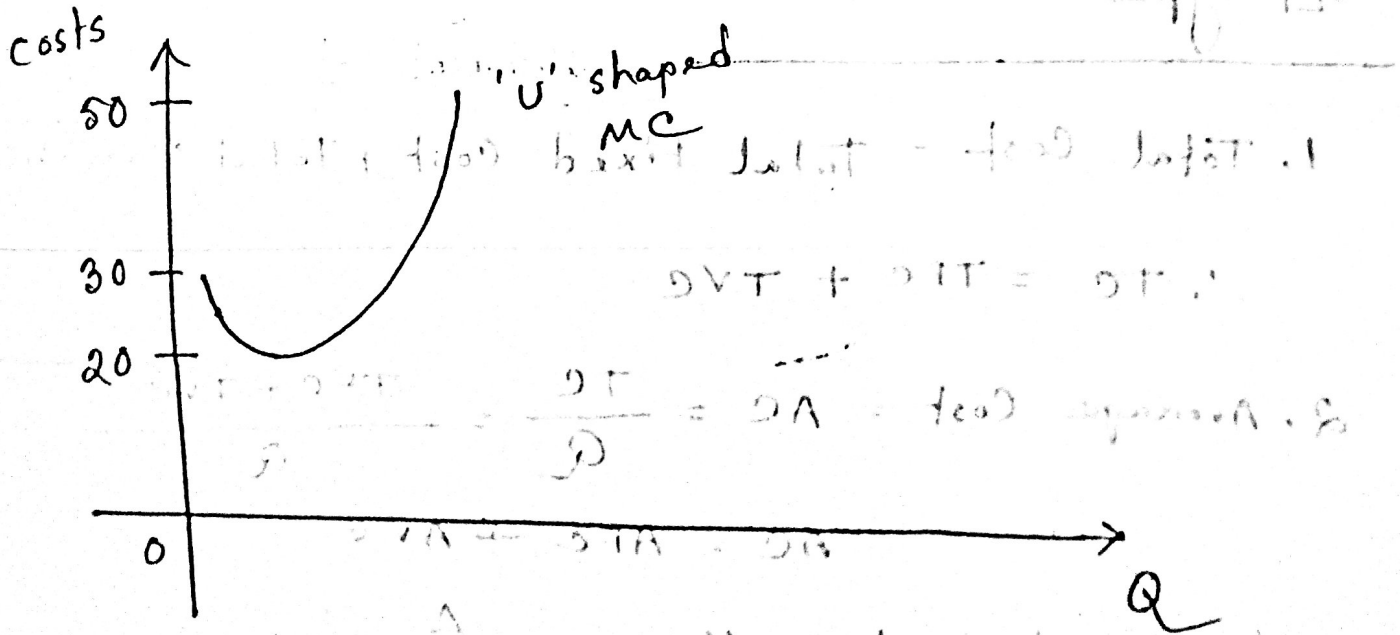
3. Marginal cost = $MC = \frac{\Delta}{\Delta Q}(TC)$

10 July 2017

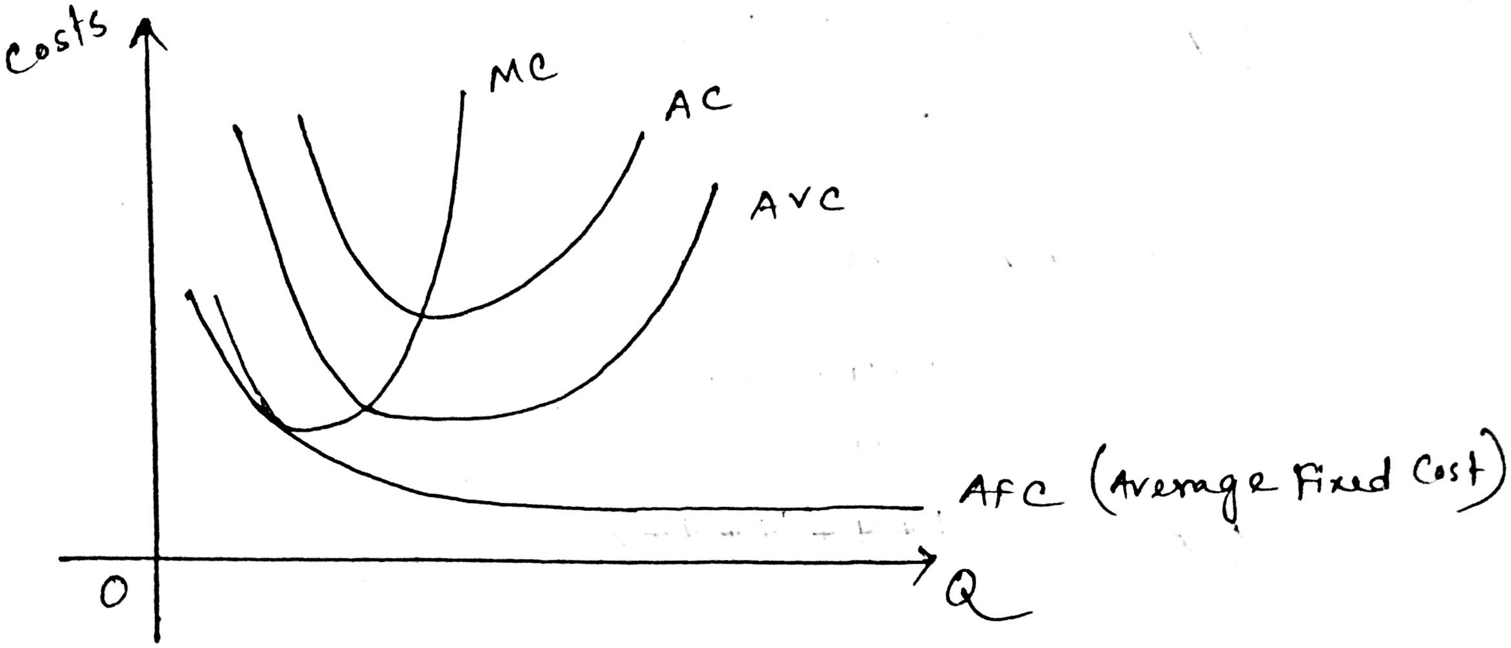
Lec – 6(a)

* fixed cost সবসময়ই থাকবে।

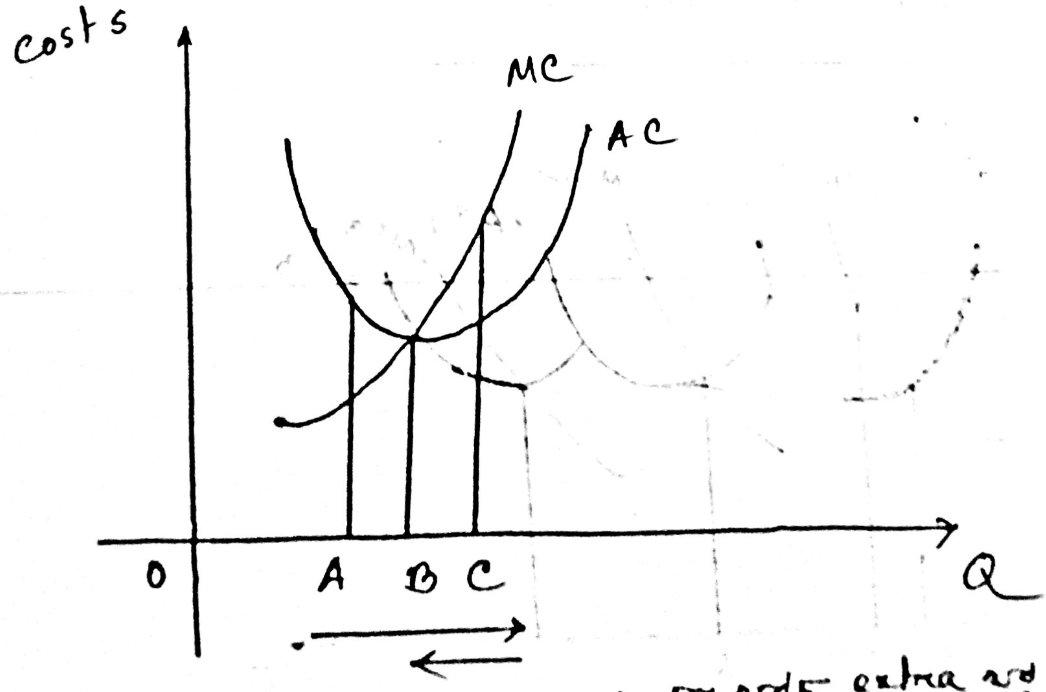
Units of Production	TC	MC
0	55	
		30
1st	85	
		25
2nd	110	
		20
3rd	130	
		30
4th	160	
		50
5th	210	



Short run cost curves :



Minimum AC (AC = MC)



A → AC > MC

* গড় খরচ extra খরচের চেয়ে বেশি

$$AC = \frac{4+4+4+4}{4} = 4$$

$$\downarrow AC = \frac{4+4+4+4+3}{5} = 3.80$$

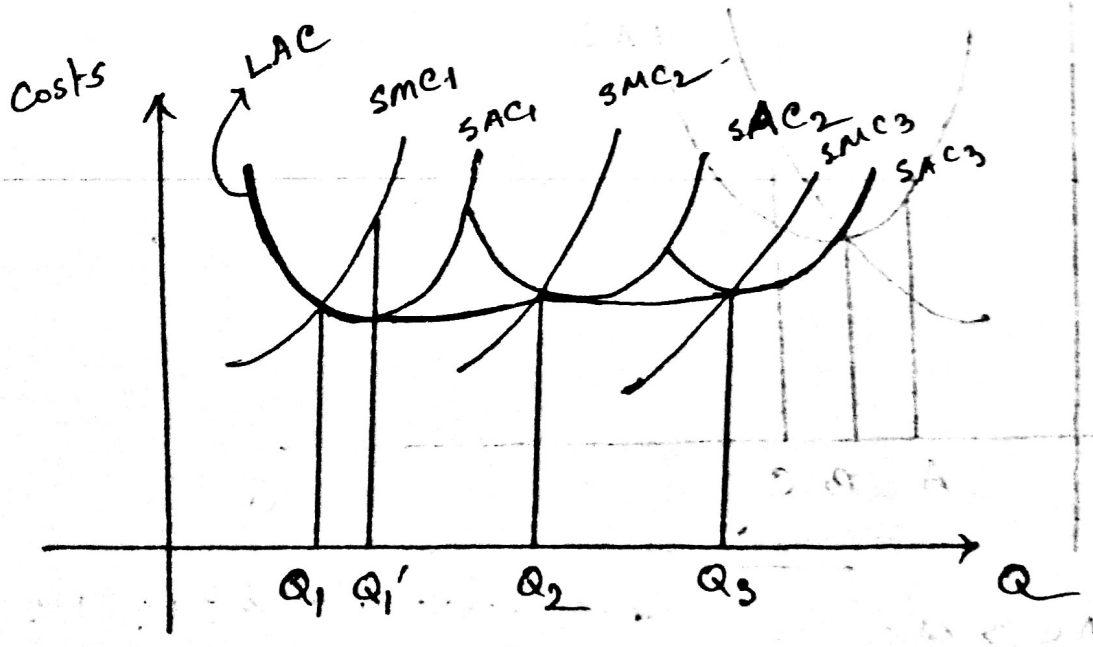
C → AC < MC

$$AC = \frac{4+4+4+4}{4} = 4$$

$$\uparrow AC = \frac{4+4+4+4+5}{5} = 4.20$$

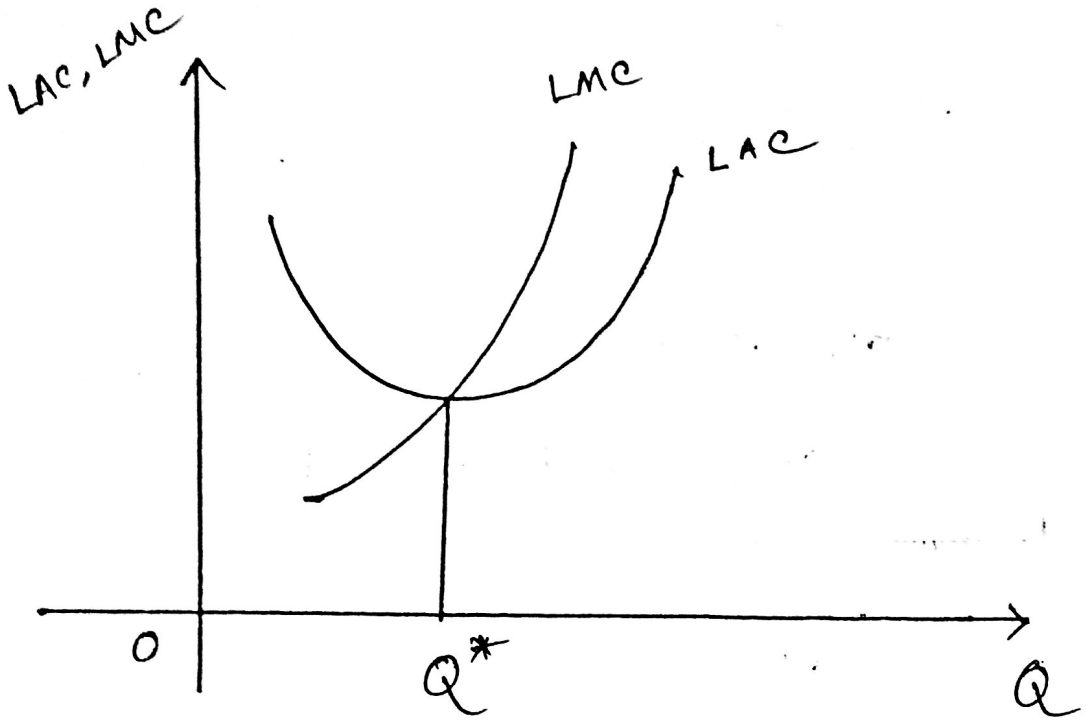
* xm ও "real-life-example" দিতে হবে পারে।

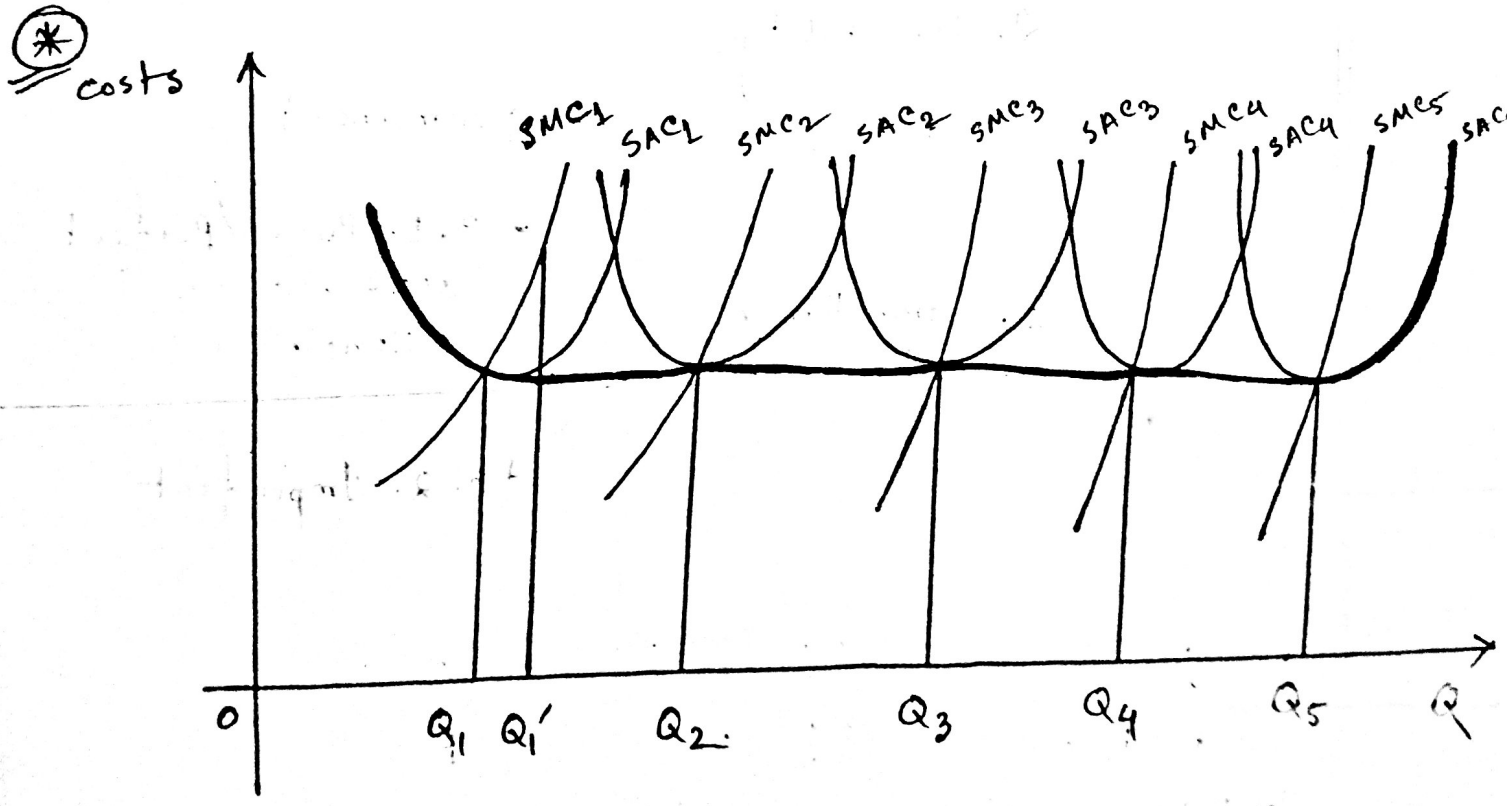
Long Run Minimum AC



SAC = SMC

LAC = Longrun Envelope Curve



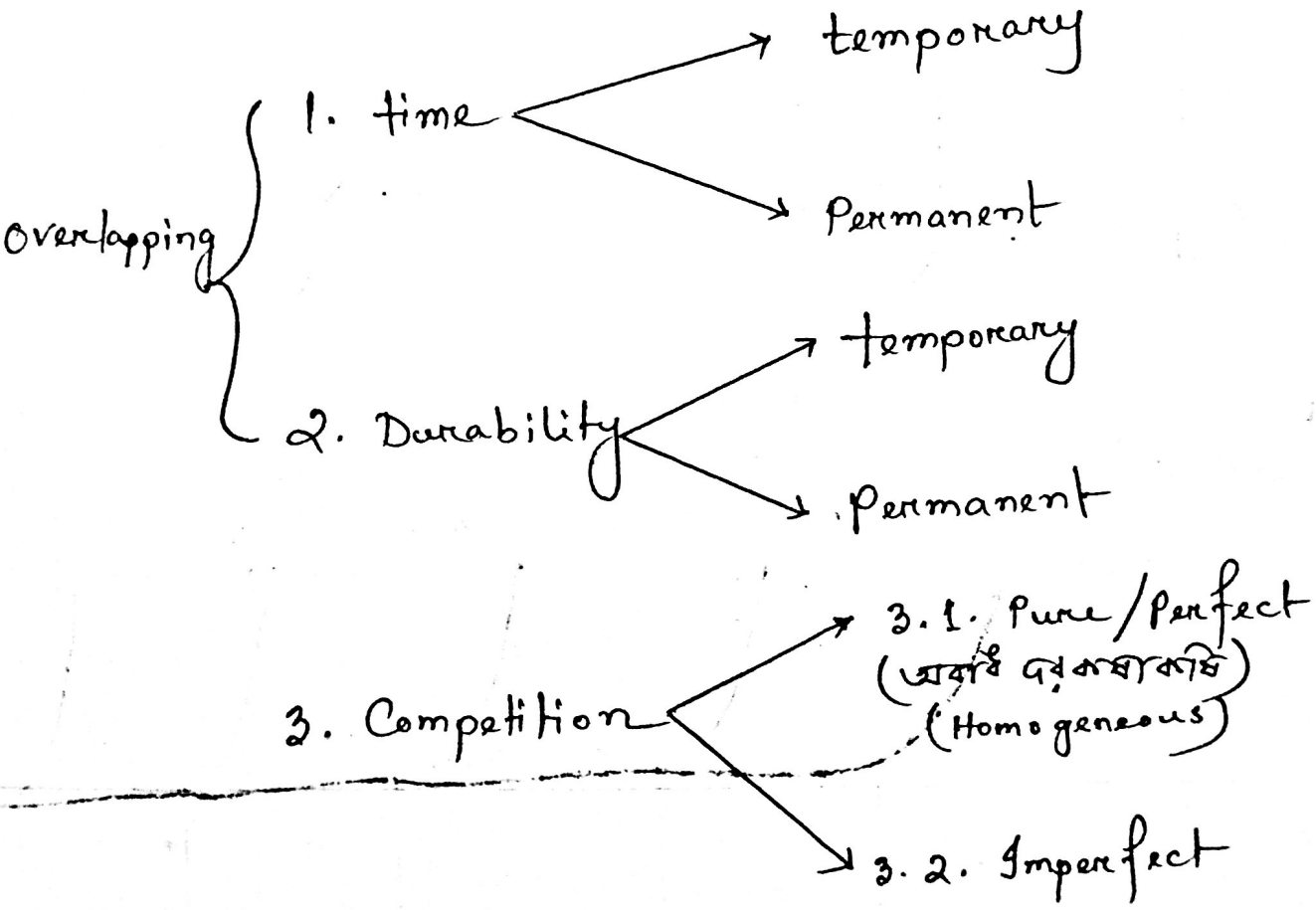


12 July 2017

Lec - 7

Market Structure

Classification



* Consumer এর আয় ⇒ income
* Producer এর আয় ⇒ Revenue

⊞ Difference between Industry and firm :

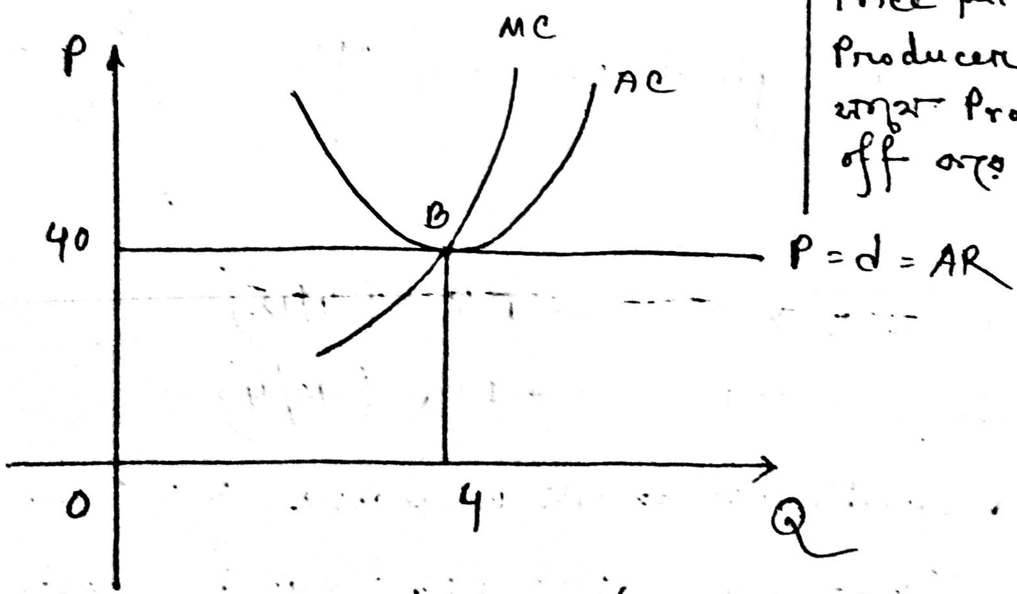
1) Firm single unit

* short run এ থাকাতে Firm perfectly elastic demand curve

3.1. Pure / Perfect Assumptions :

1. large number of buyers and sellers.
2. Homogeneous products sold.
3. Perfect knowledge about the market.
4. No bar for entry and exit.

3.1. a) Breakeven point (zero profit) / price-output determination for a firm in short run ($P = MC$)



Price fall করলে Producer সাময় সাময় Production off করে না।

B →

$\pi = TR - TC$

$TR = P \times Q = 40 \times 4 = 160$

$TC = AC \times Q = 40 \times 4 = 160$; $[AC = \frac{TC}{Q}]$

$\therefore \pi = 0$ (Normal Profit)

↓

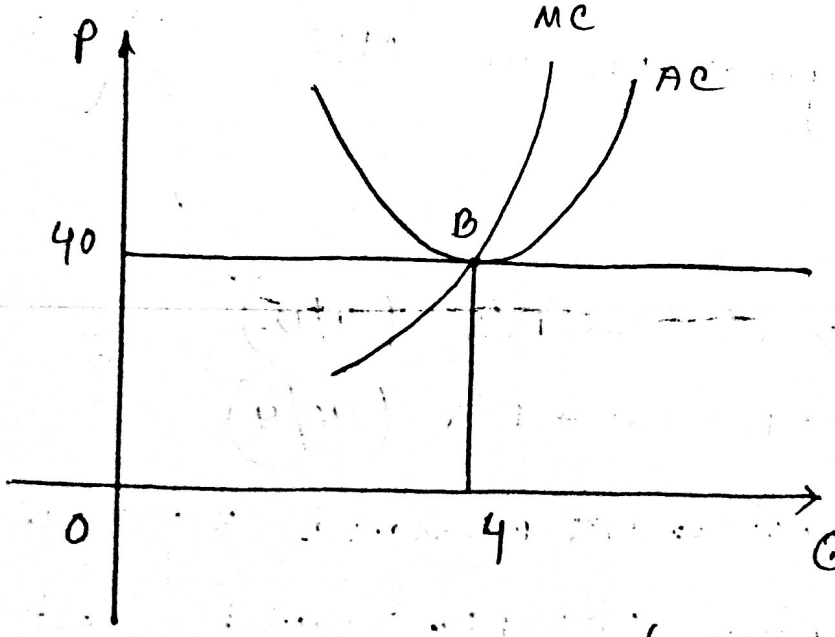
because Profit sounds positive

3.1. Pure / Perfect Assumptions :

1. large number of buyers and sellers.
2. Homogeneous products sold.
3. Perfect knowledge about the market,
4. No bar for entry and exit.

→ (zero profit)

3.1.a) Breakeven point / price – output determination for a firm in short run (P = MC)



Price fall करने से Producer उत्पादन Production off करते हैं।

B →

$\pi = TR - TC$

$TR = P \times Q = 40 \times 4 = 160$

$TC = AC \times Q = 40 \times 4 = 160$; $\left[AC = \frac{TC}{Q}\right]$

$\therefore \pi = 0$ (Normal Profit)

↓

because Profit sounds positive

Lec – 6(b)

Revenue (R)

10 → 100
11 → 150
MR = 50

1. Total Revenue = TR = Revenue = R = P × Q
= 5 × 10
= 50

2. Average Revenue = AR = $\frac{TR}{Q} = \frac{P \times Q}{Q} = P$

$AR = \frac{50}{10} = 5 = P$

3. Marginal Revenue = MR = $\frac{\Delta}{\Delta Q}$ (TR)

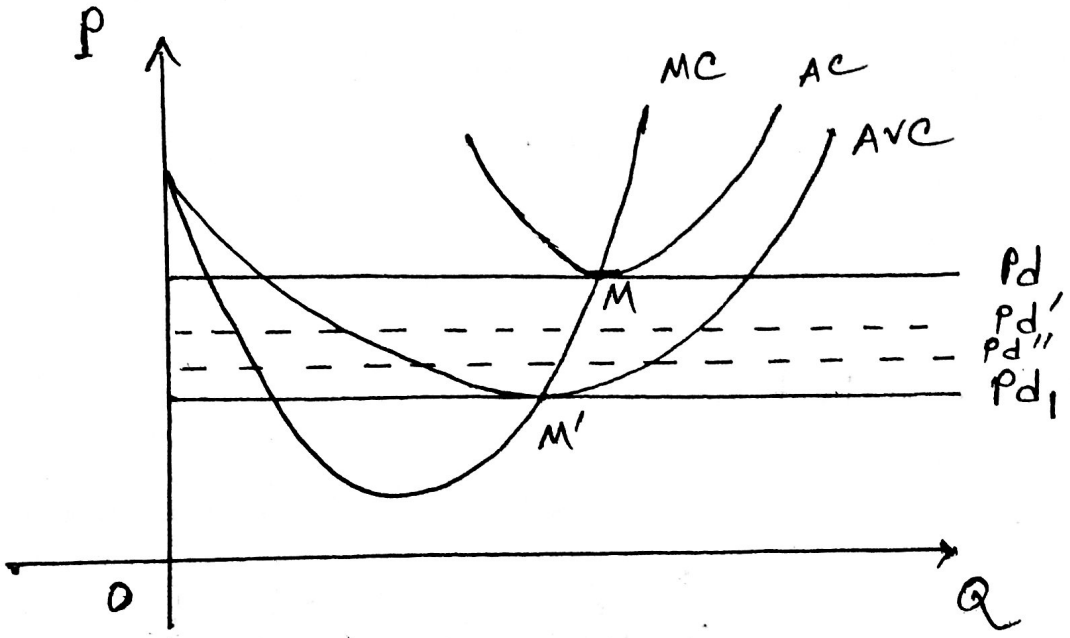
Lec – 2 ⇒ d = s → P/Q (4/12)
Lec – 7 ⇒ P = MC → P/Q (40/4)

* variable cost ⇒ যদি Breakeven (যেখান fall করে fixed cost change হয় কিন্তু variable cost চলমান থাকে।

3.1.b) Shutdown Point for a firm in Short-run (P = AVC)

M = breakdown Point ⇒ P = MC

M' = Shutdown Point ⇒ P = AVC



* যখন যদি Breakeven Point থেকে fall করে তখন Producer সবসময় সবসময় Production shutdown করে না,

17 July 2017

Lec-7

Market Structure

3. Competition

- 3.1 Pure/Perfect
- 3.2 Imperfect
  - 3.2 (a) Monopoly
    - Single seller → unique
    - Natural (world → (ই))
    - Regulated (Every Monopoly is regulated by stoke)
  - 3.2 (b) Oligopoly

3.2.a) Monopoly & Price-Output determination under Natural Monopoly (MC = MR)

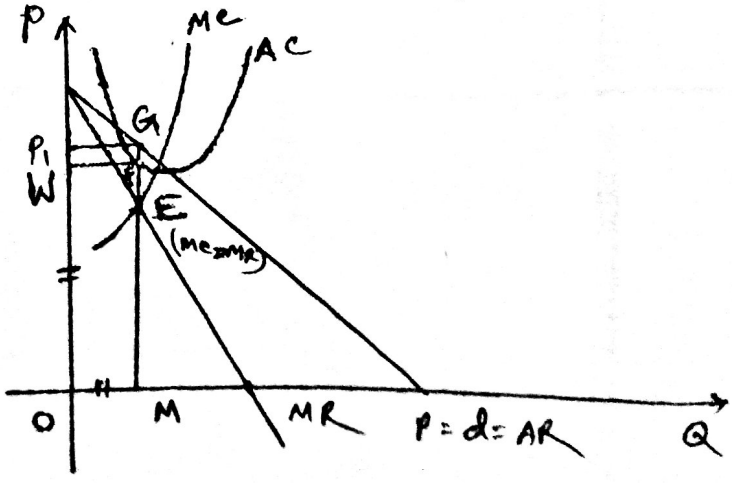
unit 1 —— 8 tk

Unit 2 —— 6 tk

(less Marginal Revenue)

The monopoly faces downward demand curve.

"The stipper the curve, the higher the slope."



$$\downarrow MR = \frac{\Delta}{\Delta Q}(TR) = \frac{\Delta}{\Delta Q}(\downarrow P \times Q)$$

যদি P↓ 2 tk ⟶ MR ↓ 4 tk

* price 'a' কমলে, MR '2a' কমবে!

Profit $\pi = TR - TC = P_1GFW > 0$ [positive profit]

$TR = P \times Q$

$= OP_1 \times OM$

$=$ area OP_1GM

[Super Normal profit]

$TC = AC \times Q$

$= OW \times OM$

$=$ area $OWFM$

[যদি Natural Product বাজারের থাকলে Super Normal profit পাওয়া যেত]

* ab = away
normal = স্বাভাবিক

Monopoly Market : যে বাজারে একটি বিক্রেতা unique পণ্য (যেটার কাছাকাছি কোনো পণ্য নেই) বিক্রয় করে, তাকে Monopoly Market বলে।

যা ইচ্ছা price charge করতে & supply control করবে।

* Firm & Industry are different from each other.

* BTCL, WASA, DESA ⟶ Giant Monopoly of Bangladesh!

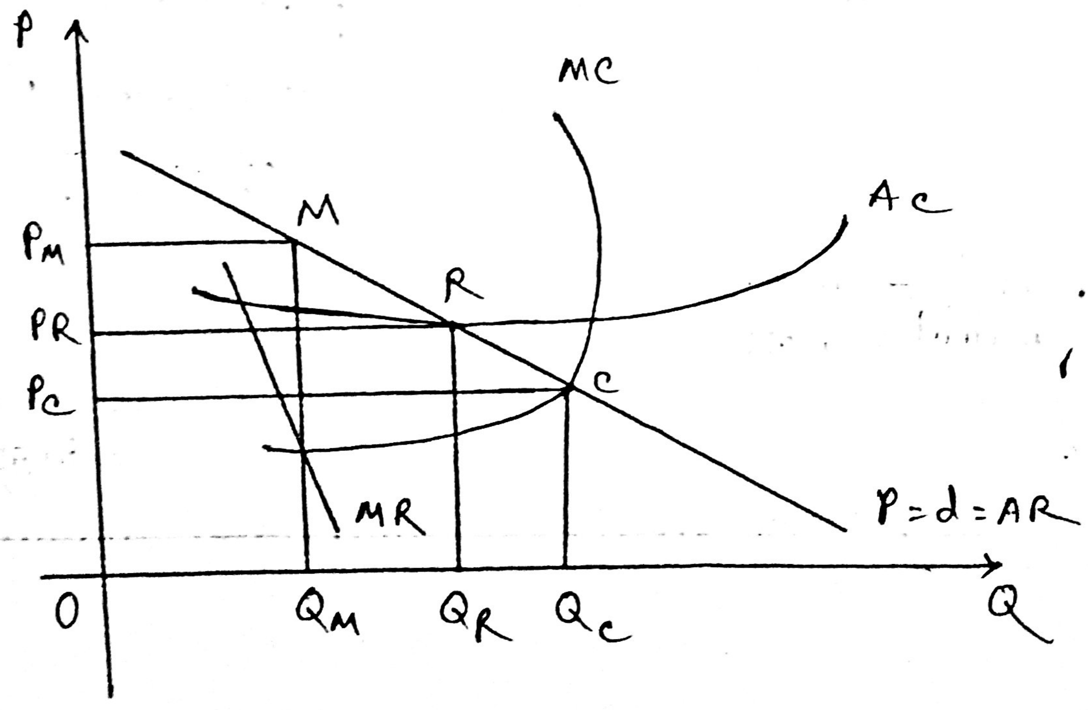
19 July 2017

Public Utility Regulation of a Natural Monopoly

1) Natural Monopoly P & $Q = P_M$ & $Q_M \Rightarrow MC = MR$

2) Regulated Monopoly P & $Q = P_R$ & $Q_R \Rightarrow P = AC$

3) Competitive Monopoly P & $Q = P_c$ & $Q_c \Rightarrow P = MC$



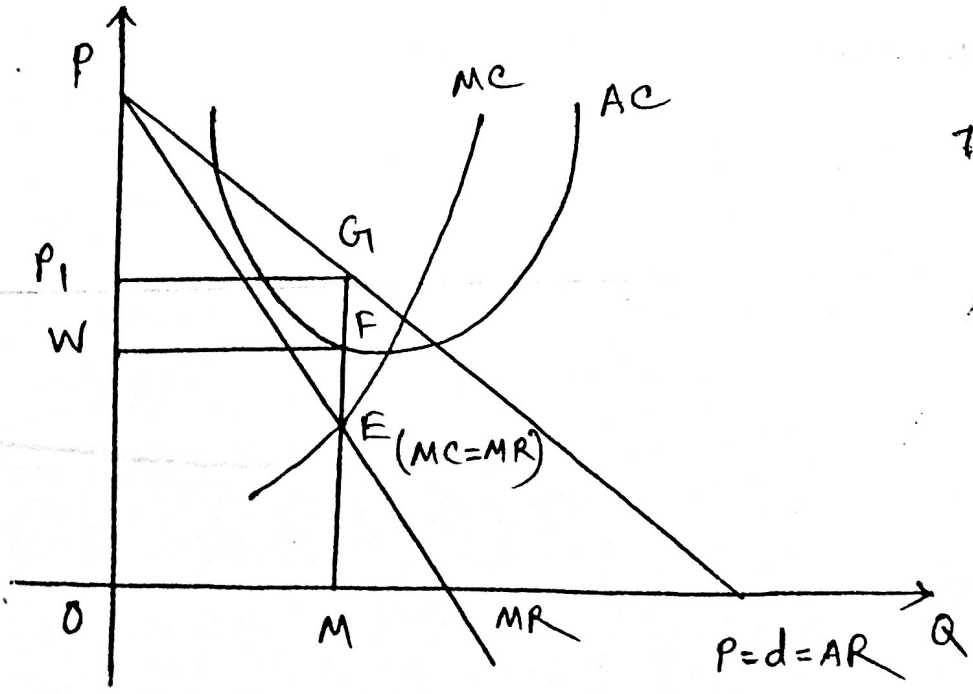
* AC সবসময়ের আঁকার যেন lower point এ অনেক-দূর থেকে নিয়ে যায়।

3.2 Imperfect

- 3.2 (a) Monopoly
- 3.2 (b) Oligopoly — for seller slightly differentiated
- 3.2 (c) Monopolistic Competition — (Most Practical Market Structure) — (Large number of seller আছে 1ম part এর start এ) [first Banglasoft]

3.2.c) Monopolistic Competition

3.2.c.1) Short run super normal profit of a firm (MC = MR)



$\pi = TR - TC$

$= P_1GFW$

$TR = P \times Q$

$= OP_1 \times OM$

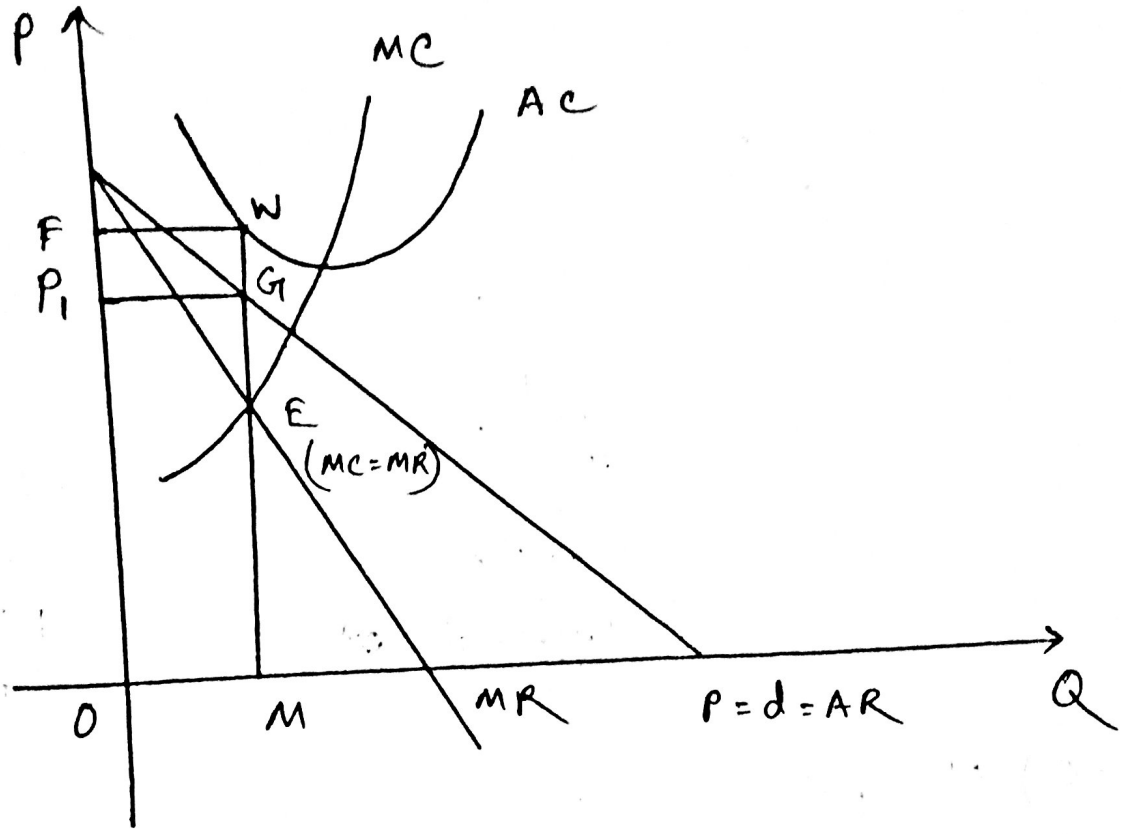
$= OP_1GM$

$TC = AC \times Q$

$= OW \times OM$

$= OWFM$

3.2.c (ii) Short run loss (MC = MR)



$\pi = TR - TC$

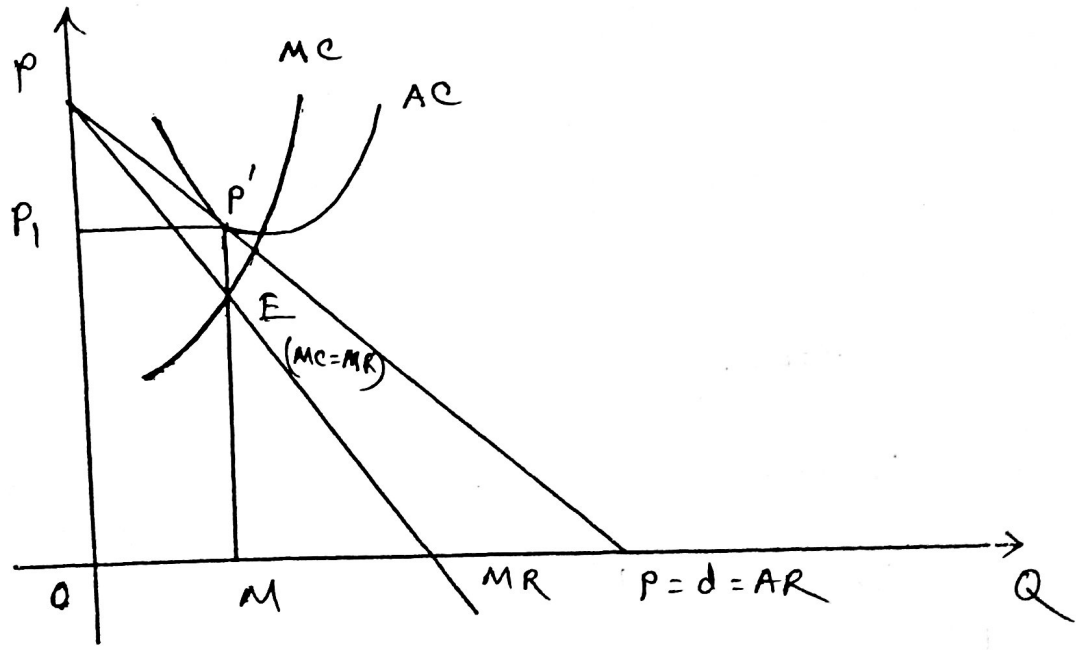
$TR = OP_1GM$

$TC = OFWM$

$Loss = FWGP_1$

3.2.c(iii) Long run Normal Profit $\begin{pmatrix} MC = MR \\ AC = AR \end{pmatrix}$ I আগের MC কোন

P
⇓
MR
⇓
MC
⇓
MC = MR = P'
⇓
P', AC



* Total 6টি Product দেয়া থাকে identify করতে হবে for xm!
(6টি figure)

* থাকলে- করতে পারাটাই আসল!

31 July 2017

MACRO

Lec-1

National Income Accounting

Steps:

1. Gross Domestic Product = GDP
2. Gross National Product = GNP
3. Net National Product = GNP – Depriciation

2007

$200 \times 10\$ + 5p \times 100$

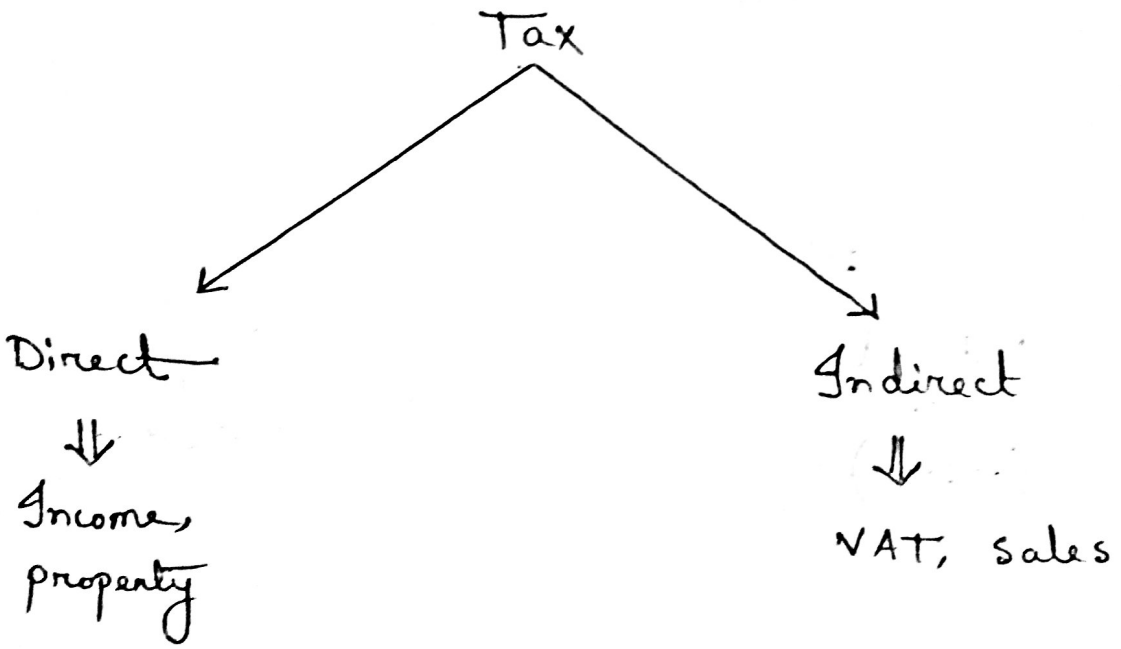
$= 2000 + 500$

$GDP_{2007} = 2500₹$

Quiz - 2 [2/8/17]

Micro → Lec-7

4. National Income = GNP - Depriciation - Indirect Taxes + subsidy



* Given,

GNP = 70,000 cr

Depriciation = 5000 cr

Sales tax + vat = 900 cr

Subsidy 40% of Indirect Tax

Find NI.

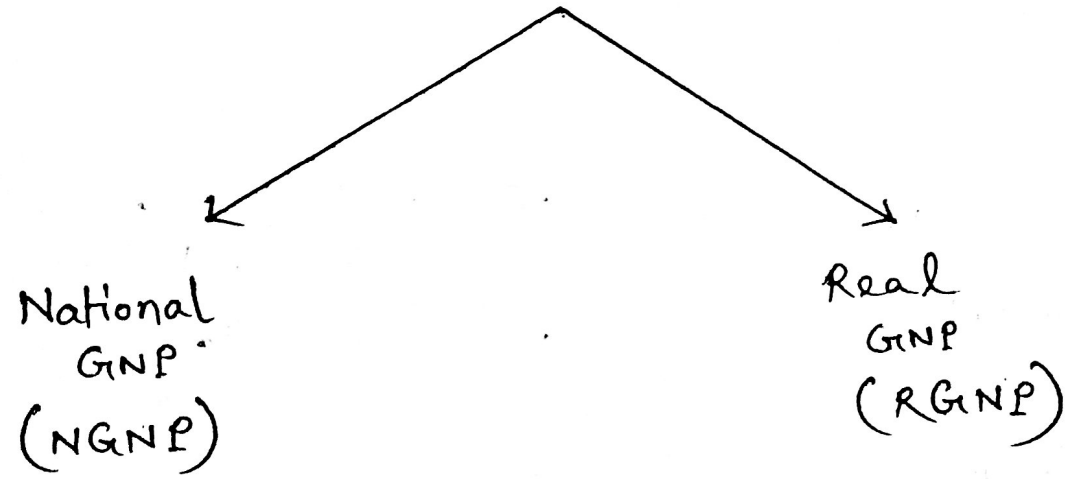
06 Aug 2017

(Extra Class)

[Sunday]

National Income Accounting

Calculation of GNP



Item	2007		2008	
	P	Q	P	Q
Oranges	$ 0.25	20	$ 30	40
Bananas	$ 0.30	30	$ 40	25

$$NGNP_{2007} = \$\left(0.25 \times 20 + 0.30 \times 30\right)$$

$$= \$\left(5 + 9\right)$$

$$= \$\ 14$$

$$NGNP_{2008} = \$\ 22$$

$$RGNP_{2008} = \$\left(0.25 \times 40 + 0.30 \times 25\right)$$

$$= \$\left(10 + 7.5\right)$$

$$= \$\ 17.5$$

GNP deflator$_{2008} = \dfrac{NGNP}{RGNP}$

⇓

Rate of inflation (মুদ্রাস্ফীতির হার) $= \dfrac{22}{17.5}\ \%$

$= 1.26\ \%$

09 Aug 2017

Lec-2

Aggregate Demand (A.D.)

&

Aggregate Supply (A.S.)

$AD = C + I + G + (X - M)$ — Net Export

- I → Investment
- G → Government Purchase
- C → Demand for Consumption (ভোগের জন্য Demand)

Y_D = Disposable Income = $C + S$

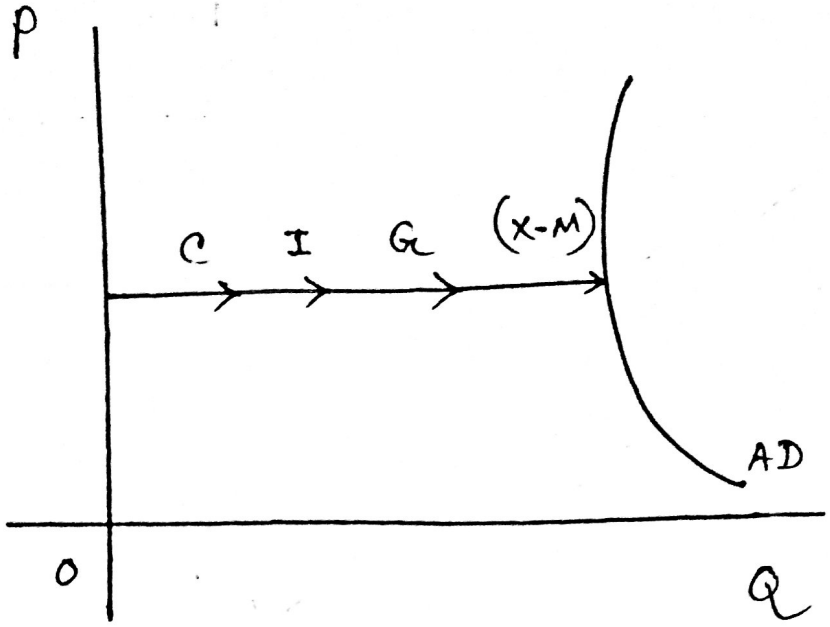
- C → Consumption
- S → Savings

= Nominal Income − Tax

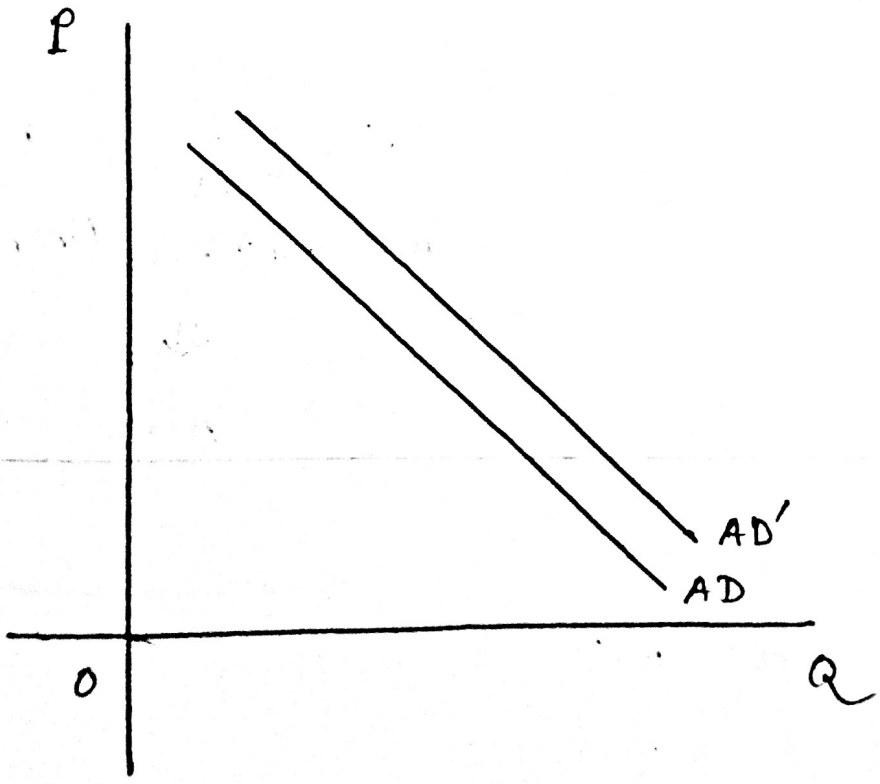
= 10000 − 100

= 9900

9000 (C) + 900 (S)



Exercise – 1



Price of Consumption ↓

AD = C↑ + I + G + (x-M)

↓

AD↑

Ex-2 :

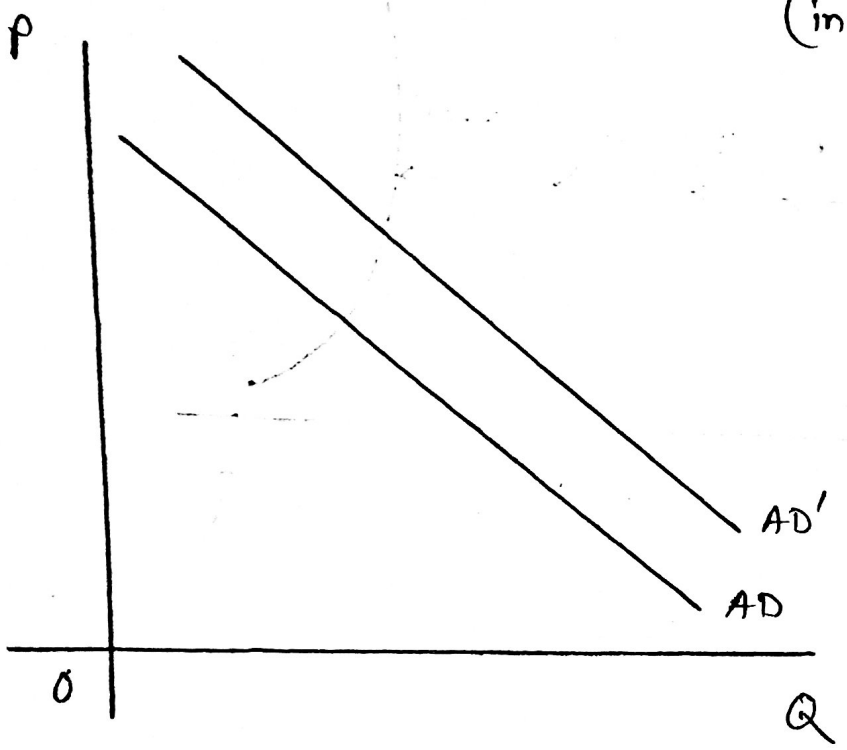
Price of Investment ↓
(interest rate = i) ↓

⇓

AD = C + I↑ + G + (X - M)

⇓

AD↑



Ex-3 :

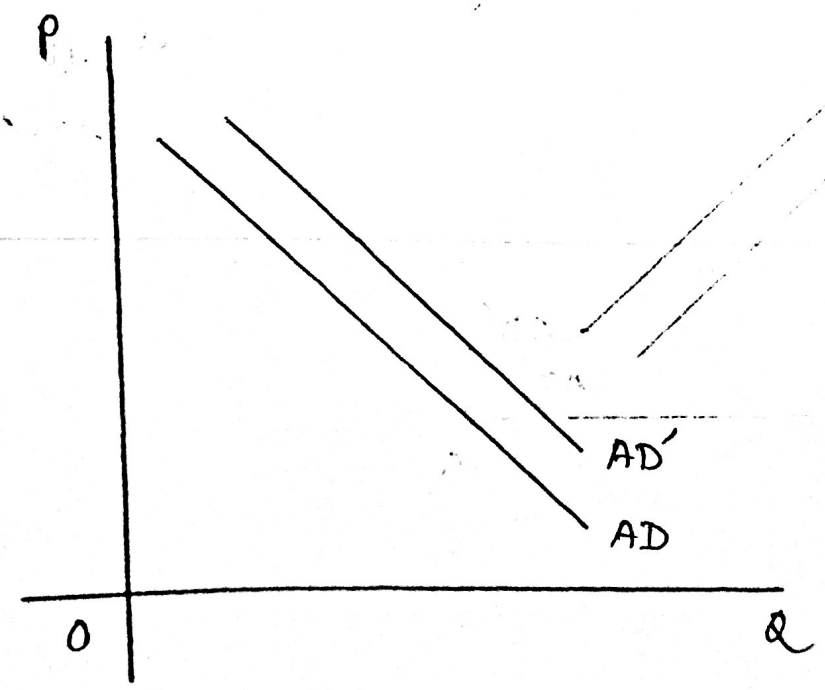
Price of frozen shrimp ↓

⇓

AD = C + I + G + (X - M)↑

⇓

AD↑



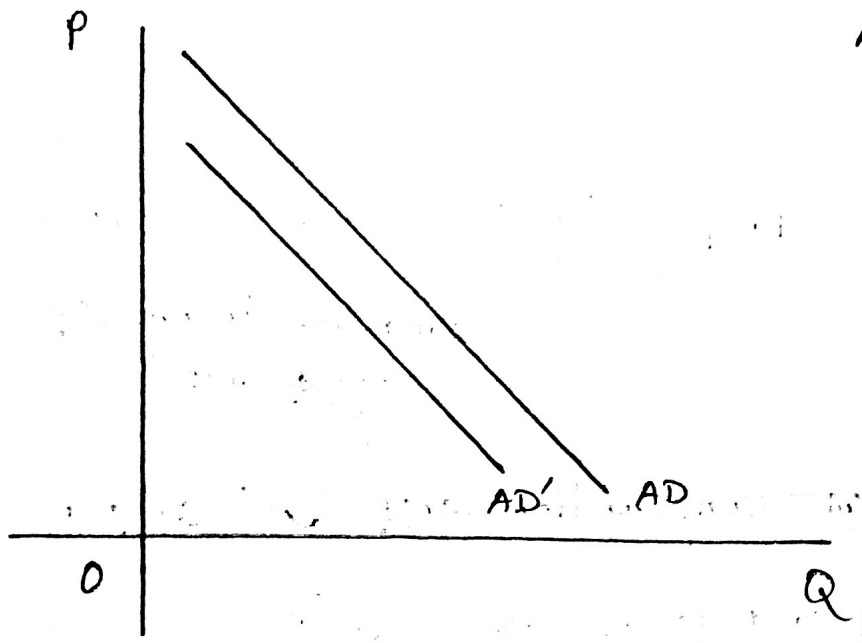
Ex-4 :

Price of Submarine ↑

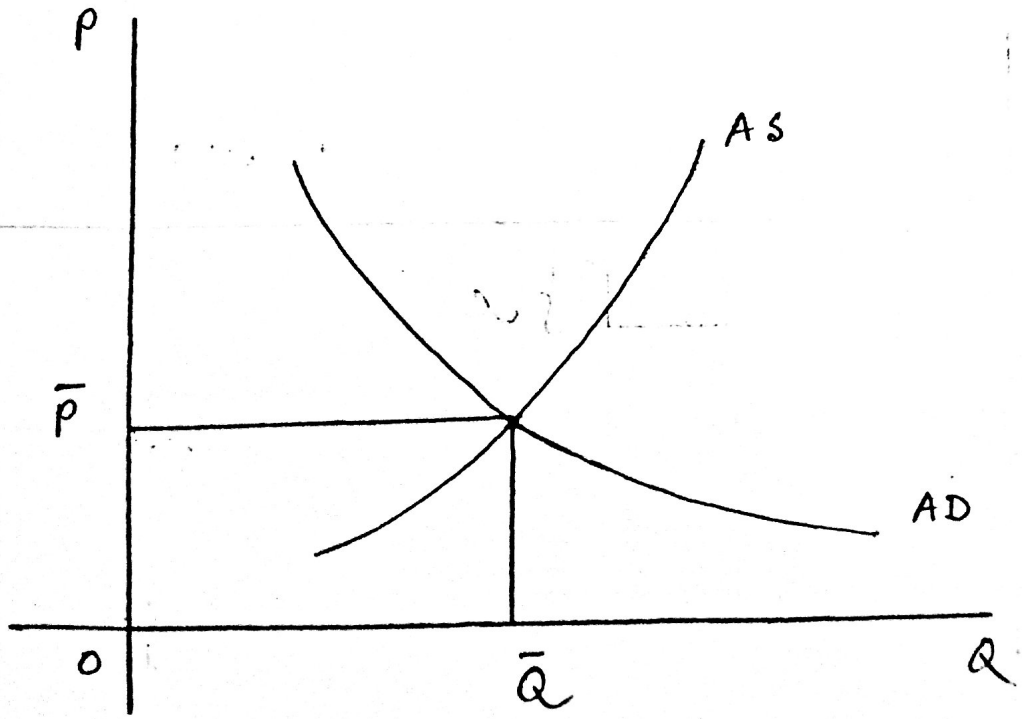
$AD = C + I\uparrow + G + (X - M)$

$\Downarrow$

$AD\downarrow$



Aggregate Supply : (AS)



Lec - 3

Consumption, Saving, Investment

$$C = cY$$

c = Marginal Propensity to consume = MPC

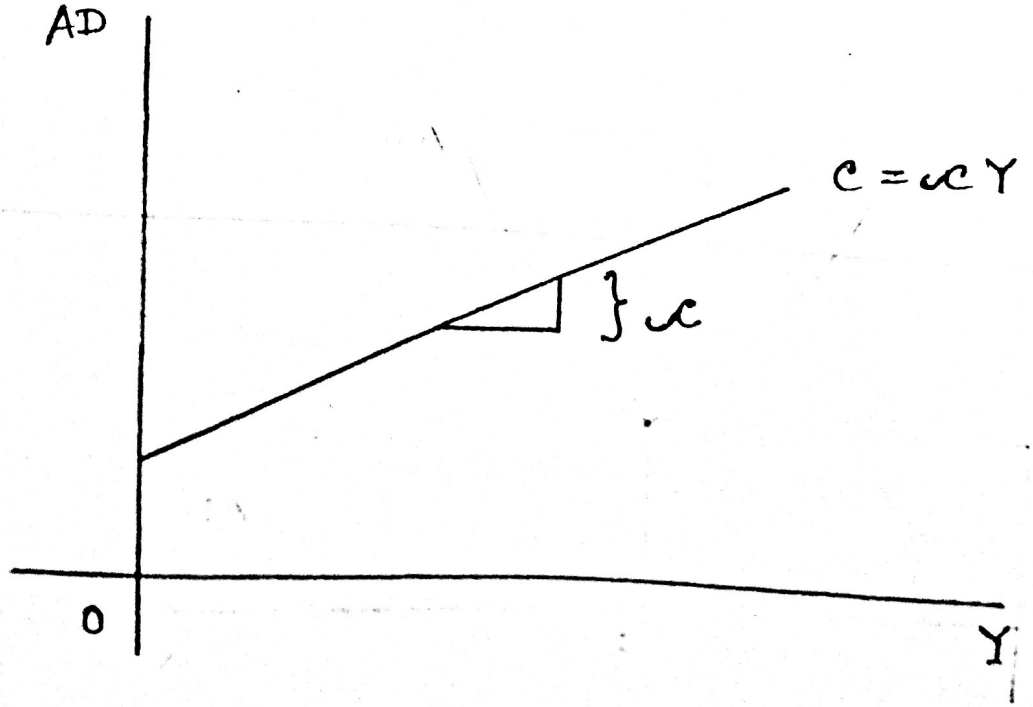
(Increase income-এর কতটুকু খরচ)

* income বাড়লে Consumption বাড়ে 'c' দ্বারা।

$c = 0.8$ and $Y \uparrow$ 100 tk $\Rightarrow C = cY$

$= 0.8 \times 100 = 80$ tk

* Consumption can never be zero or negative.



⊞ Problem of Calculating GDP & GNP:

Problem of double counting

(যই (আলু খুচিরা ⟶ intermediate good

(check)

(যই- (আলু খুচিরা ⟶ final good

সুতা, কাপড় ⟶ intermediate good

(জামা, (কাপড় ⟶ final good (যেটা আর change হবে না)

⊞ NNP Calculation:

⊛

Given,

GNP = 70,000 crore

depriciation = 5,000 crore

Sales Tax + VAT = 900 crore

Subsidy 40% of indirect Tax

Find NI.

$$NI = \left(70000 - 50000 - 900 + 900 \times \frac{40}{100}\right) \text{ crore}$$

$$= 64460 \text{ crore}$$

Savings :

$$S = Y - C = Y - cY = Y(1-c) = sY \; ; [\because s = (1-c)]$$

s = Marginal propensity to save

= MPS

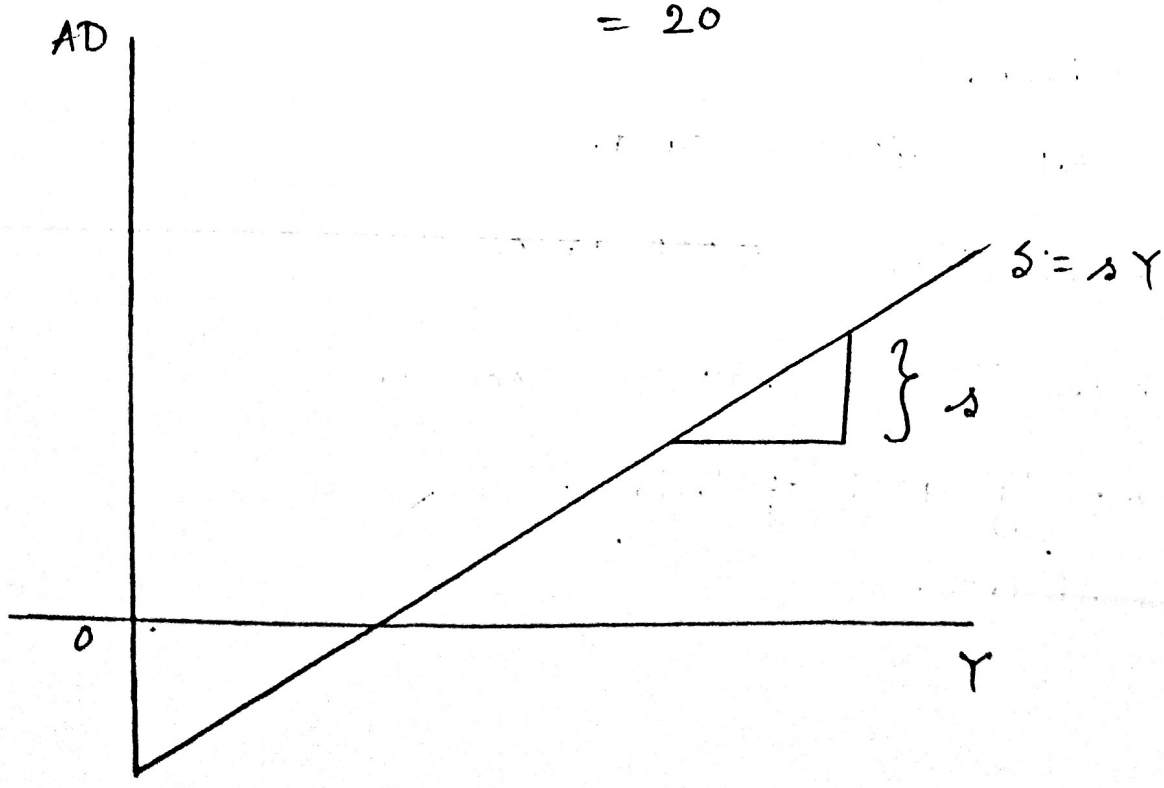
* savings can be negative or '0'.

$c = 0.8$ and $Y \uparrow$ 100 tk

$$\Rightarrow C = cY = 0.8 \times 100 = 80$$

$$S = sY = (1-c)Y = (1-0.8) \times 100$$

$$= 20$$



$c + s = 1$

$\Rightarrow c + 1 - c = 1$

$0 < c, s < 1$

যদি,

$c = 1$

$s = 0$

$AD = AS$ ——— (1)

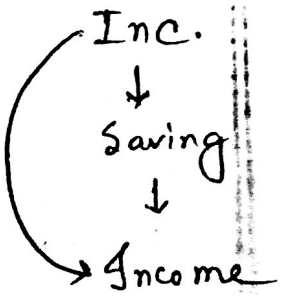
$\Rightarrow C + I + G + (X - M) = Y$ ——— (11)

Assumptions :

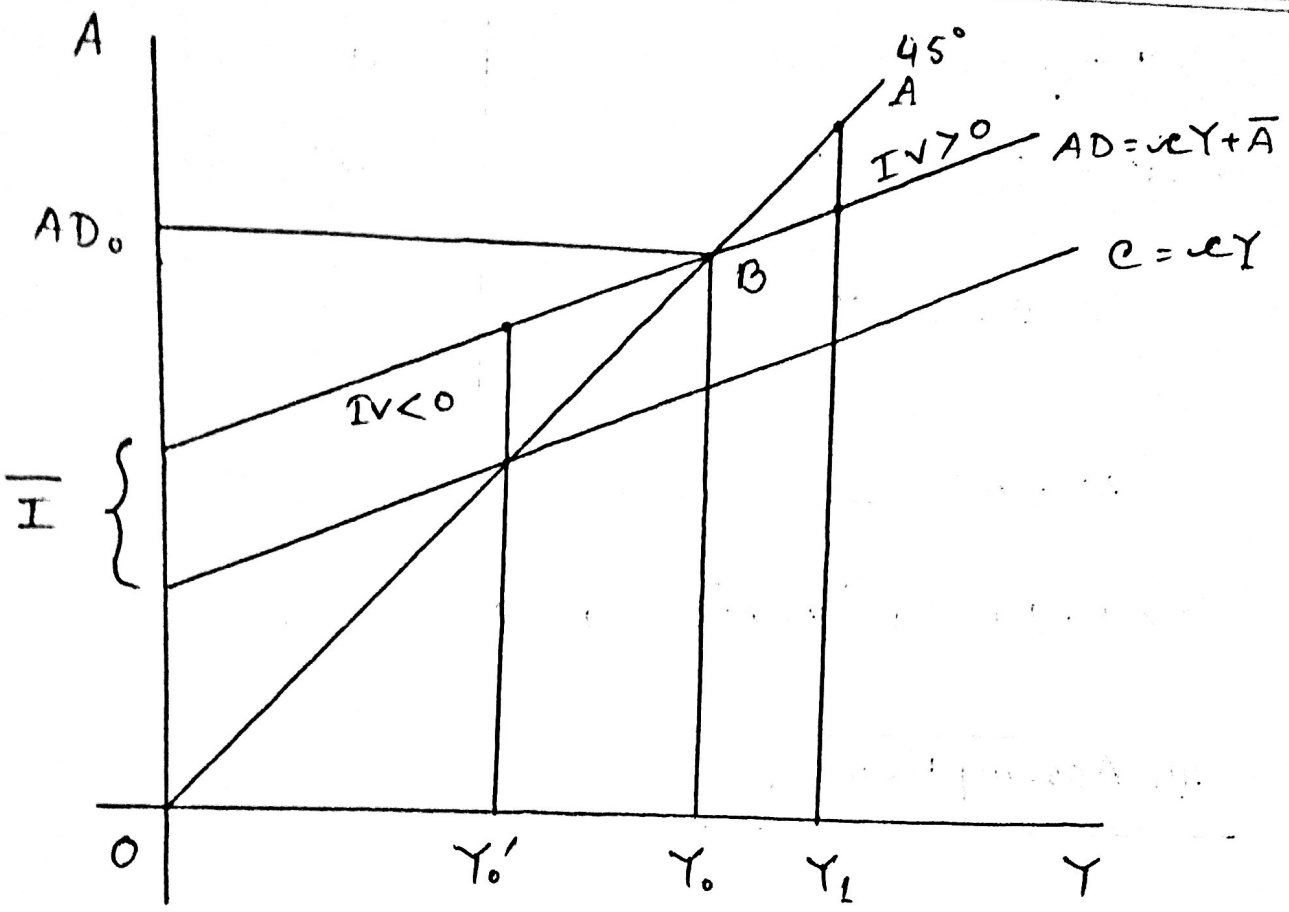
1. It is a closed economy with no government sector.
2. Investment is autonomous.

$C + \bar{I} = Y$ ——— (111)

$cY + \bar{A} = Y \quad (\bar{I} = \bar{A})$



(P.T.O.)



45° = Income Output line (Supply line)

OY_0 → Efficient level of output

B →

$AD_0 = Y_0$

$cY_0 - \bar{A}_0 = Y_0$

$\Rightarrow Y_0 - cY_0 = \bar{A}_0$

$\Rightarrow Y_0 (1-c) = \bar{A}_0$

$\Rightarrow Y_0 = \frac{1}{(1-c)} \bar{A}_0$

Theoretically, Consumption and income are proportionally related.

$$\frac{1}{\underbrace{1-c}} \Downarrow < 1$$

(*)

Given,

$C = 1200 + 0.8\, Y_D$

where, $Y_D = Y - T$ (tax)

and $T = 100$

Find MPC!

Ans.

$$C = 1200 + 0.8\, Y_D$$
$$= 1200 + 0.8\,(Y - T)$$
$$= 1200 + 0.8\,(Y - 100)$$
$$= 1200 + 0.8\,Y - 80$$
$$= 1120 + 0.8\,Y$$

$\therefore MPC = c = \frac{\Delta}{\Delta y}\,(c) = 0.8$

$\therefore MPS = (1-c) = s = (1 - 0.8) = 0.2$

Lec - 4

Inflation (মুদ্রাস্ফীতি)

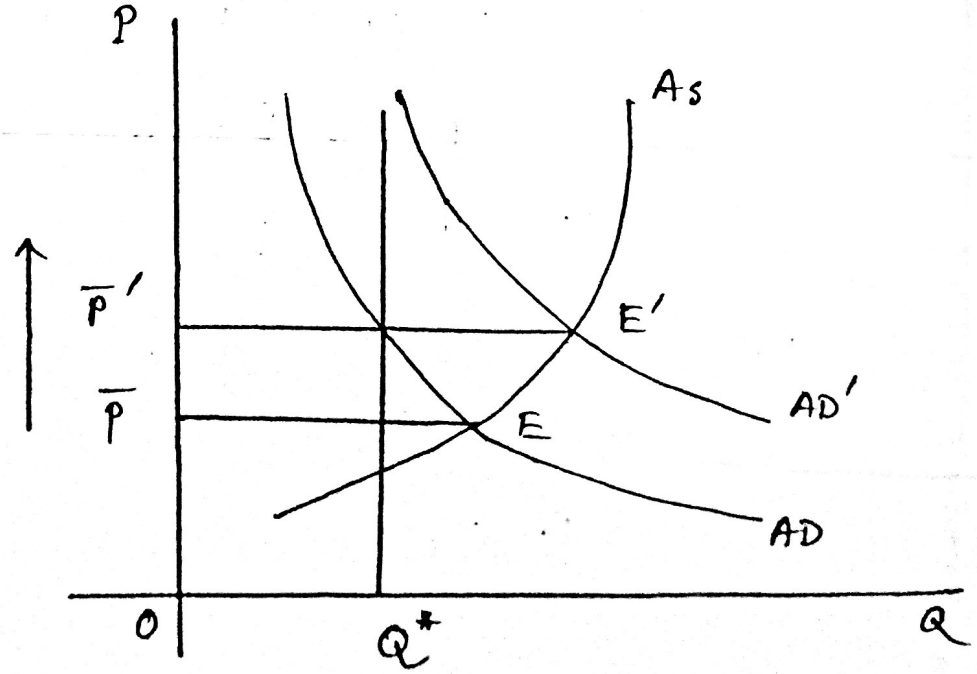
↳ (less harmful)
(Price & Output increases)

"When too much money is chasing too few goods."

- Deflation (Opposite to 'Inflation')
- Stag flation (স্থবিরতা) [দাম বাড়ে, output বাড়ে না]

Types of Inflation:

1) DD Pull



Q^* = Potential Output

*(DD Pull-2) E is equal to Potential Output or has to be greater than that.

Price of Investment (i) ↓

⇓

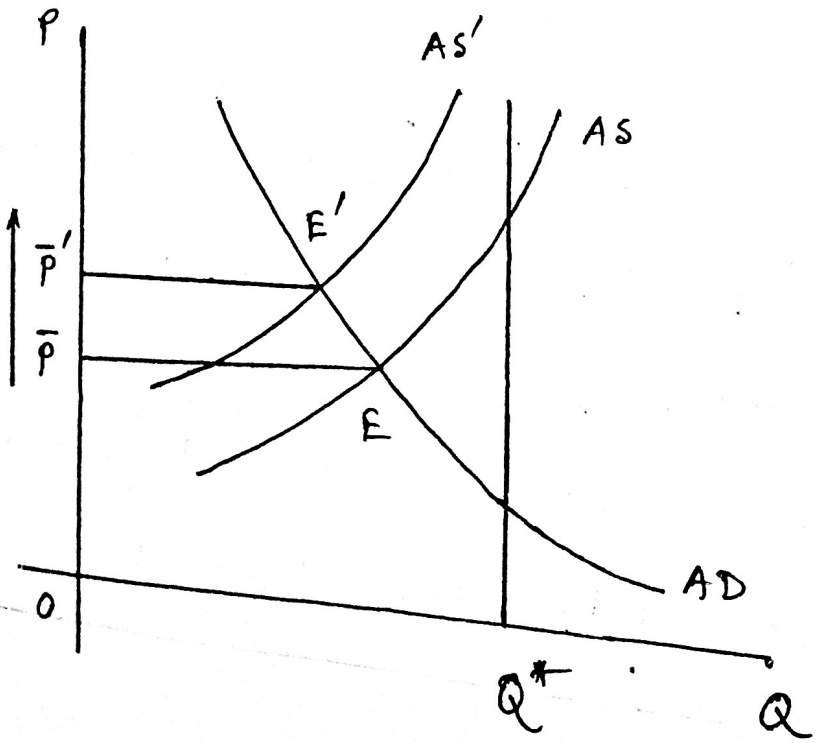
AD = C + I ↑ + Ge + (X − M)

⇓

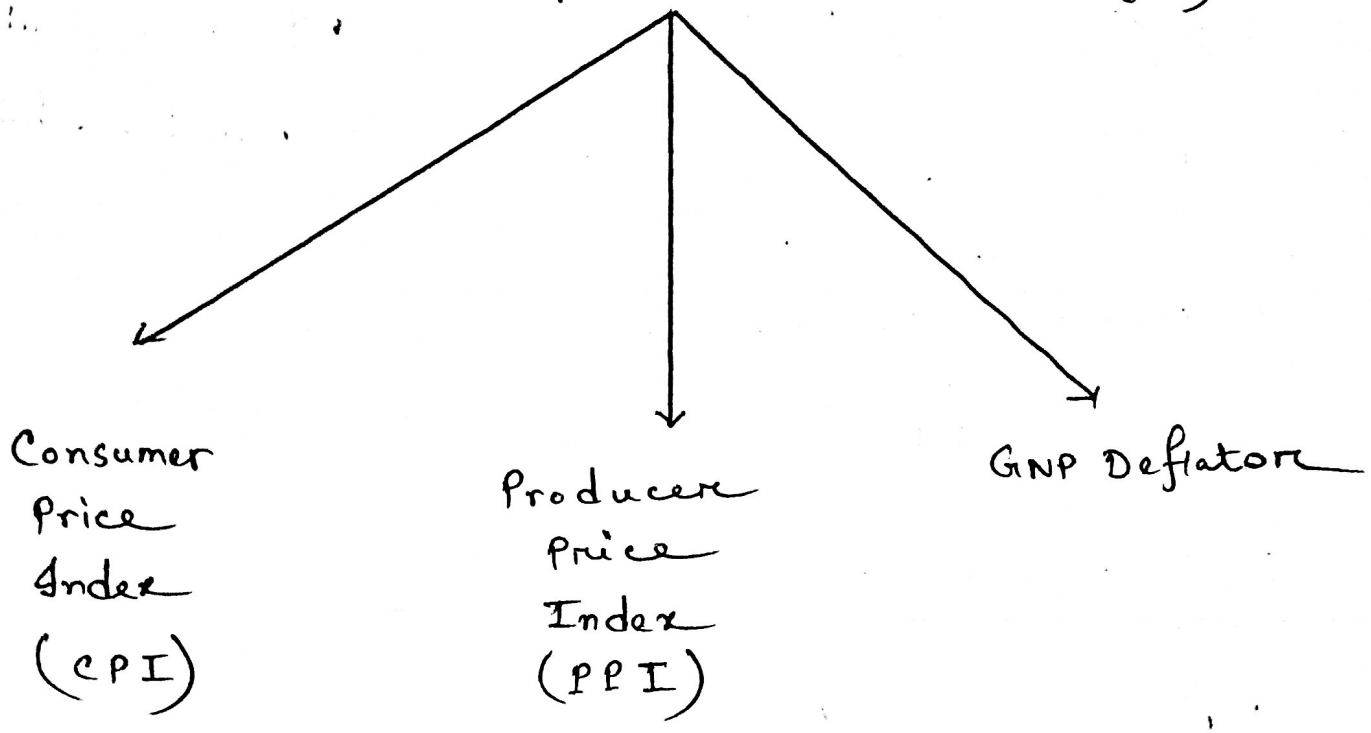
AD ↑

* Potential Output is achievable, but not possible

2. Cost Push :



Calculation of Rate of Inflation (ROI)



(*) Suppose, the CPI in 2009 is 90. Consumers spend 50% of their income on food, 30% on shelter and 20% on education. Now in 2010, price of food rise by 10% and education price fall by 5%. Calculate CPI and ROT for 2010.

⇒

CPI $\xrightarrow{\text{implies}}$ General Price Level (सामान्य मूल्य स्तर)

* CPI is the summation of all the weighted average!

$$CPI_{2009} = (90 \times 0.5 + 90 \times 0.3 + 90 \times 0.2)$$

$$= 90$$

2010

P of food ↑ by 10% $= \frac{90 \times 10}{100}$

$= 9 \quad = 90 + 9 = 99$

P of shelter $= 90$

P of education ↓ 5% $= \frac{90 \times 5}{100}$

$= 4.5 \quad = 90 - 4.5 = 85.5$

$$CPI_{2010} = (99 \times 0.5 + 90 \times 0.3 + 85.5 \times 0.2)$$

$$= 93.6$$

$$ROI_t = \frac{CPI_t - CPI_{t-1}}{CPI_{t-1}} \times 100$$

$$ROI_{2010} = \frac{93.6 - 90}{90} \times 100$$

$$= 4\%$$

Price level has increased in the year 2010 compared to the year 2009 by 4%.

(*) N.B.: if $ROI_{2010} = -4\%$ [Price level has decreased in the -----]

Assignment

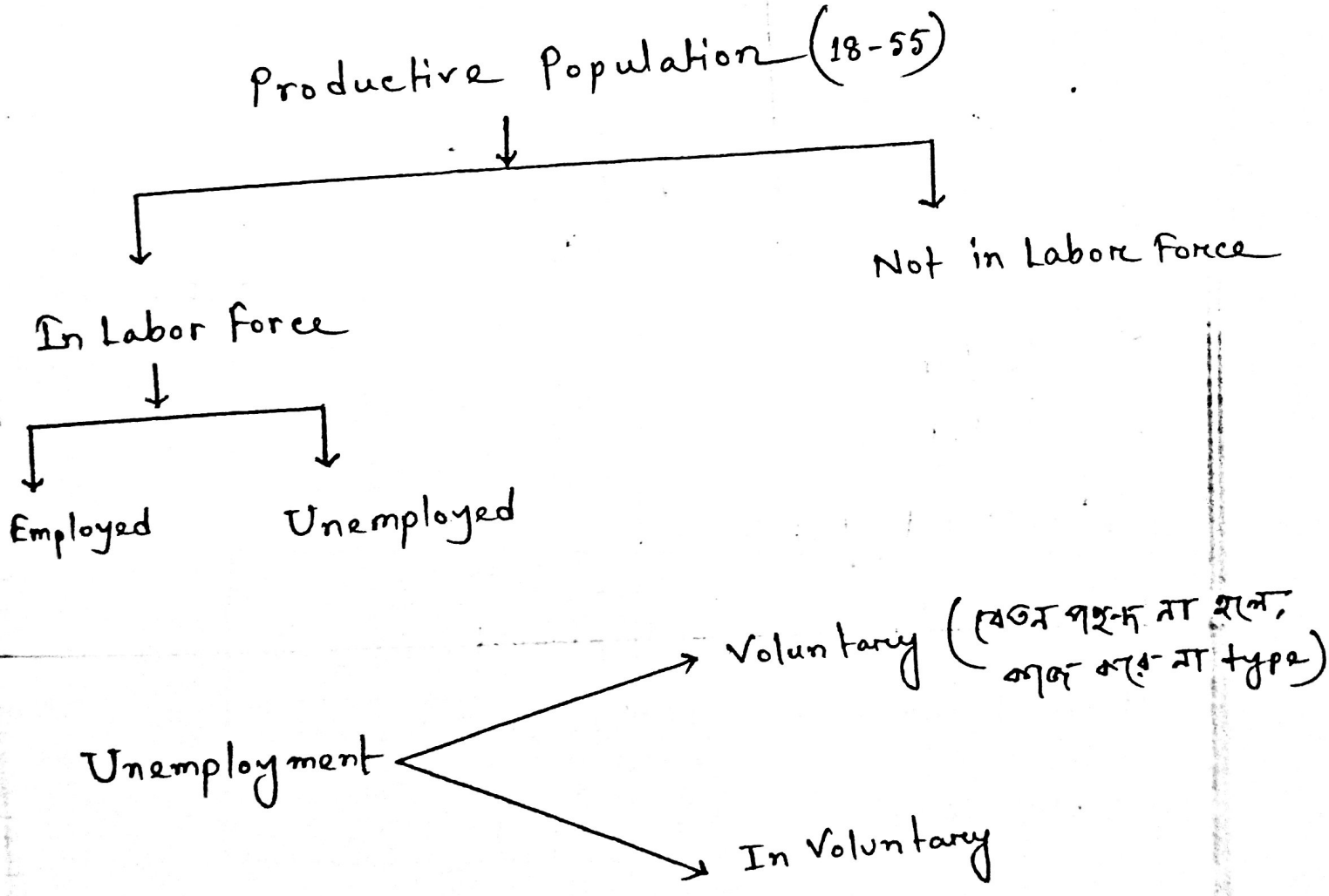
Name of the Product	Nature of the Product	Types of Competition	Name of the Market	Example		Profit
				Domestic	International	
1. Graduate CS Engineer	Homogeneous	Perfect	Perfect	Graduat CS Engineer in Bangladesh	Graduate CS Engineer in U.K.	Short Run Normal Profit ($P = MC$)
2. CS Engineer	Homogeneous and Slightly Differentiated	Imperfect	Monopolistic	CS Engineer in Bangladesh	CS Engineer in U.K.	i) ii) 3 Cases iii)

Lec-5

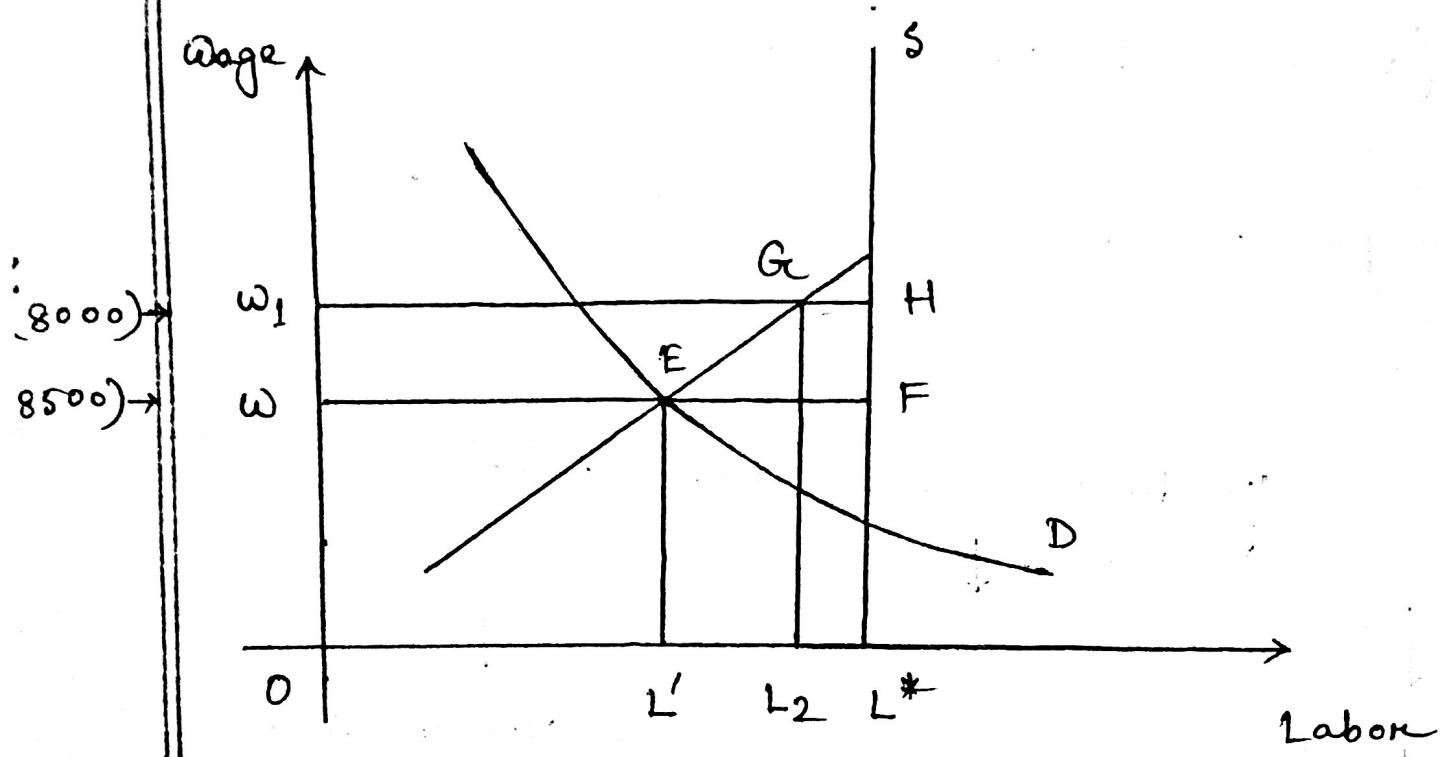
Unemployment

(Factors of Production এর Unemployment)

Employment Dynamics :



⊞ Creation of Unemployment :



D = Labor DD

S = Labor SS

OL^* = Total Labor force

Labor supply curve is Upward.

Then becomes Perfectly In-elastic.

(wo wage flexible wage)

Flexible Wage (OW) → Voluntary Unemployment (EF)

Inflexible Wage (OW_1) → Involuntary Unemployment (GH)