

Regulation of monopoly.

- ① price regulation: govt. fix price for products of monopoly
- ② tax reforms:

lumpsome tax: fixed tax imposed on monopoly irrespective of o/p by govt.

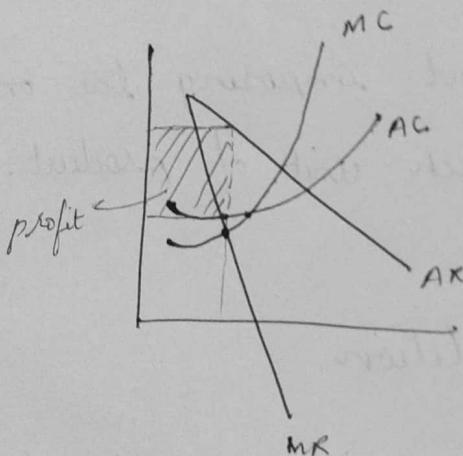
per unit tax: govt. imposing tax on each unit of product.

Monopolistic competition

large # buyers and sellers with products varying in colour, smell, design etc..

- each firm have less market share
- Aim to max. profit in short run.
- In long run, firm aims to max. sells

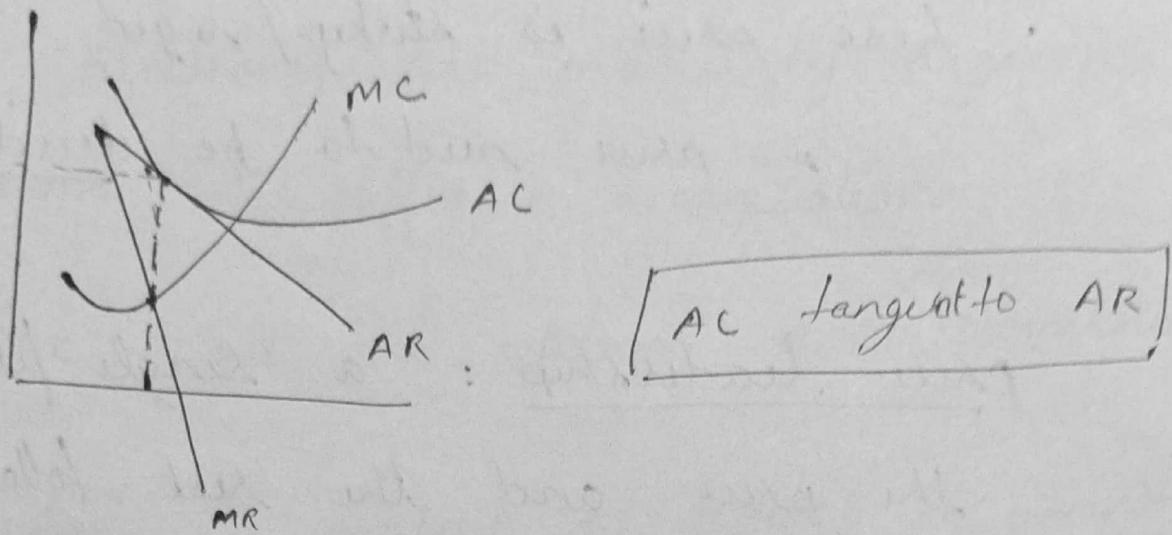
- each firm is price taker
(less monopolistic power)
- product differentiation
- non-prui competition : additional cost
for promotion of products
- freedom of entry & exit
- No uniformity in price among firms



for monopolistic comp.
AR is flatter than
that of monopoly
(less monopoly power)

At $\text{eqm } \text{MC} = \text{MR}$

In short run, due to super normal profit
many firms enter into market and in
long run, profit ≈ 0



Oligopoly

→ few sellers

2 types pure oligopoly : few sellers & all have homogeneous product

differentiated oligopoly : few sellers but all produce diff products

→ action of one firm affects others.

→ eg: if a firm ↑ price, others does the same to remain in market

But when one ↑ price, other won't

follow & eventually the firm that ↑ the price

- here price is sticky/rigid
- price need to be decided collectively

price leadership: a single firm determines the price and the rest follow it.

3 types:

[dominant price leadership: The dominant firm (more market share) determines price

[low cost price leadership: The firm with lowest cost of production decides price

[barometric price leadership: the firm with best knowledge about demand & supply decides price

→ There will be a group behaviour →

some decisions are made by a group of firms, & different organisation.

e.g. OPEC - oil and petroleum export cooperation

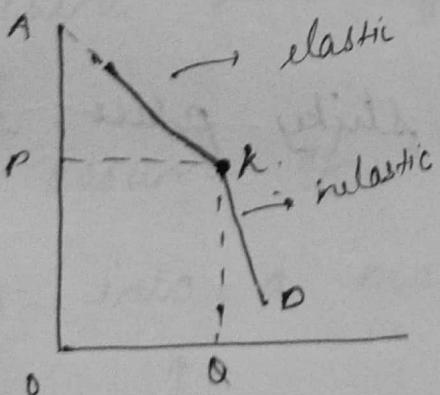
→ collusion^{five}: implicit or explicit agreement b/w firms of an oligopoly

non-collusive oligopoly: no agreement b/w firms

E.g. in oligopoly

kinked demand-curve analysis (Panzica & Sweezy)
(American)

→ explains price rigidity under oligopoly



kink @ k

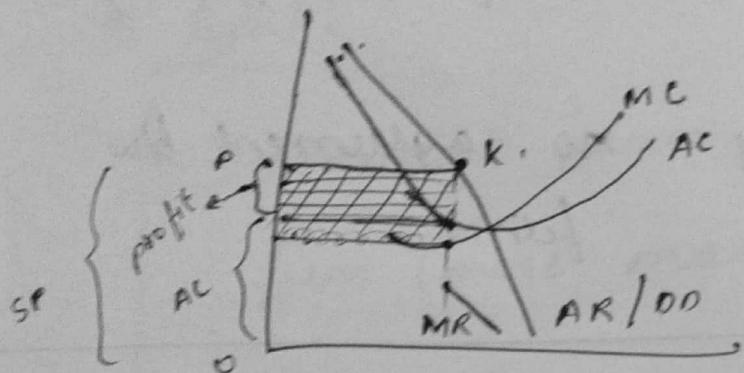
: market will always
be in OP

↑ above OP

At AP, when a firm changes its price, some others won't follow so, it's dd↓ & exit from

market. \therefore price above OP is not seen
 \Rightarrow When firm 1 price ($< OP$)
 to "imitate" part, other firm also
 follow the same. \therefore do not do that much
 \therefore inelastic \therefore no benefit for
 firm

\Rightarrow Now, Since AR is kinked, MR will be
 discontinuous



As a result,
 price is fixed

At eq. $MC = MR$

\rightarrow It explains price fixity based on product diff
 of a firm in oligopoly market

\rightarrow Till OP , AR will be sticky price, beyond OP
 no firm follow AR.

\rightarrow The distance b/w of discontinuity large
 will be high if there is a large cliff

b/w elastic & inelastic part

Correct model of Oligopoly (1838 - Augustin Cournot)

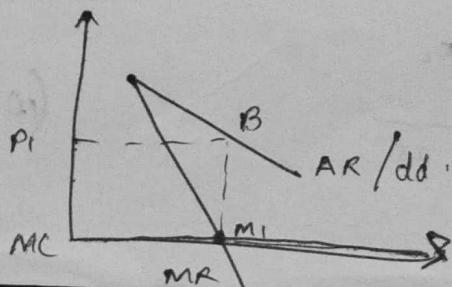
→ Model of duopoly

Assumption

- ① Only 2 sellers.
- ② homogeneous products
- ③ cost of production = 0 (assume they produce mineral water)
- ④ Each firm take its o/p independently
i.e., no collusion
- ⑤ A firm think that rival will continue their present level of o/p

Stage-I

Now, assume of a situation when a firm enters into a market as a monopoly.



here cost ≈ 0

$\therefore MC = 0$

max. profit @ $MC = MR$

When $MR = 0$, $ed = 1$ $\phi / Q.D = \frac{\text{total dd}}{2}$

$MR > 0$, $ed > 1$

$MR < 0$, $ed < 1$

\therefore at M_r , $dd = \text{half of total}$

assume total demand of a product
 $= 100$

\therefore At M_r , $dd = 50$.

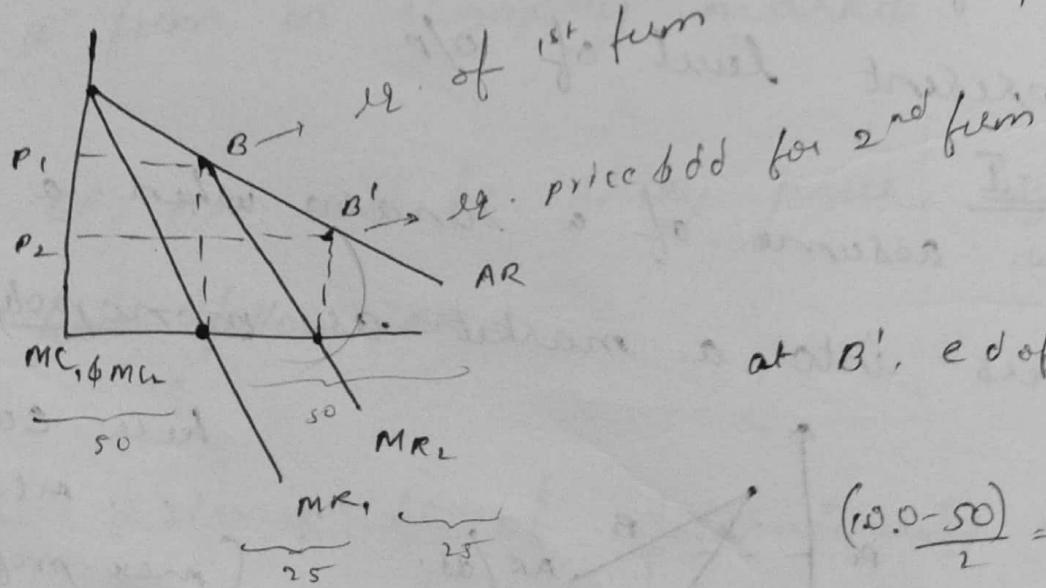
Stage-II

here we have super normal profit.

Now a new firm enters into market.

They assume that continues to make 50.

\therefore they try to contribute to the rest
 i.e. 50 (existing demand) at their own
 point.



at B' , ed of 2nd firm
 $= 1$

$$\frac{(100 - 50)}{2} = 25$$

Strategy	A	B	unproductive
L ₁	Half of 100 = 50	assume A produce so ∴ Half of (100-50) = 25	25
L ₂	assume B produce at dd 25 ∴ A produce $\frac{1}{2}(100-25)$ at eq. = 37.5	assumes A produce at 37.5 ∴ B produce $\frac{1}{2}$ existing dd = $\frac{1}{2}(100-37.5)$ = 31.25	30.25
L ₃	$\frac{1}{2}(100-37.5)$ = 31.25	$\frac{1}{2}(100-31.25)$ = 34.375	33.0625

continue till all
firm achieve some
Now as this goes on A & B produce

$\frac{1}{3}$ of total dd each & rest $\frac{1}{3}$ will be
unproductive. This stage is called

congestion

Module - 3

Macroeconomics

great dep
(1930)

Flish

- study economy as a whole
 - (price level, total output, & employment)

- ① Father of modern economics

= John Maynard Keynes

April 1 → marks
for year (1936)

- General theory of employment, interest & money

Distinguish b/w micro & macro economics

- area of study
 - micro - individual units
 - macro - aggregate

- type of partial eqm.
 - micro - partial eqm
max utility by consumer
 - macro - general eqm
eqm of economy

? Utility: satisfaction of a consumer in his total sale

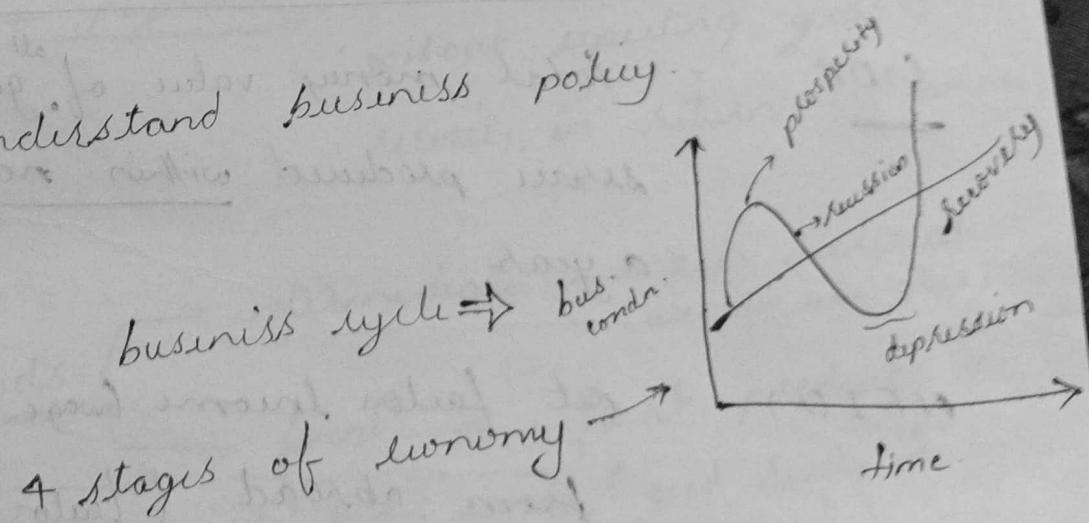
- ~~ceteris paribus~~ assumption that while considering relation b/w 2 factors, others remains constant

- ~~ceteris paribus~~
 - micro - f such assumption
 - macro - no such assumption

→ view [micro - worms view
 macro - worlds view]

importance:

- helps to understand economy's functioning
- understand general price level
- helps to formulate economic policies
 - e.g.: tax policy, monetary policy
- policies taken by govt to control price instability - fiscal policy
- policies taken by monetary authority (RBI) to control price - monetary policy
- understand business policy



→ Understand national income i.e., total money value a nation produce in a year within its

① money variable — value of variable (nominal variable) measured at current price

② real variable — value measured in terms of base year price

variable	M.V.	R.V.
wage	w	W/P
y	y	Y/P
interest	I	I/P
cons.	c	C/P

money variable
base year price
(2011-12 in India)

GDP = total money value of ^{all final} goods & services produced within nation in a year

NFI(A) = net factor income (wage, price of rent etc.) from abroad (factor income received - factor income paid)

$$GDP + NFIA = \underline{\text{GNP}} \quad (\text{gross national product})$$

national income $\underline{\underline{\text{NNP}}}$

$$\Rightarrow \boxed{GDP - \underbrace{\text{depreciation}}_{\substack{\text{loss due to} \\ \text{wear & tear}}} = \underline{\underline{\text{NDP}}} \quad (\text{net dom. prod})}$$

$$\Rightarrow \boxed{GNP - \underbrace{\text{depreciation}}_{\text{depreciation}} = \underline{\underline{\text{NNP}}} \quad (\text{net nat. prod})}$$

$$\Rightarrow \frac{\text{per-capita income}}{\text{shows dev. of nation}} = \frac{\text{national income}}{\text{population}}$$

① economy $\begin{cases} \text{open} \rightarrow \text{trade relation b/w nation economy} \\ \text{closed} \rightarrow \text{no trade relation b/w economy.} \end{cases}$
 (totally Autarchy) $\begin{cases} \text{no import & export} \\ \text{no movement of factors of production} \end{cases}$

② transfer factor payment - expenditure of govt without expecting goods & services in return (e.g.: pension)

③ goods $\begin{cases} \text{intermediate} \rightarrow \text{raw material used for other goods} \\ \text{final} \rightarrow \text{final product} \end{cases}$

[depreciation: fixed capital losses some value due to wear & tear] $\quad (\text{good ready for final use})$

→ Actual GNP - actual value of GNP

→ potential GNP - max income that a country can produce in an year

→ GNP gap - Actual - pot. GNP

→ Personal income - Income earned by a household from all sources

disposable income - Income that can be disposed by a nation

Personal income -
direct tax

tax based on income

(indirect tax - sales tax, service tax.)

→ tax given to goods & services

National income (NI) calculation

① income tax method

NI = total income divided among
diff factors of production

$$\therefore NI = R + W + I + P$$

rent + wage + int + profit

② Expenditure method : - NI through the expenditure of a nation

$$NI = \text{Total Income} = \text{total expenditure};$$

consumption expenditure +

Investment exp. +
(spending money for future for gains)
govt exp. +

$$\frac{\text{export} - \text{import}}{\text{net export}}$$

③ Value added method : NI = Total income generated in diff sectors of economy.

$$NI = Y_{\text{prim}} + Y_{2^{\circ} \text{ sect}} + Y_{3^{\circ} \text{ sect}}$$

→ Also called product method.

⇒ NI does not have :

→ rent of self occupied house

- sale & purchase of 2nd hand prod
- service of housewives
- value of intermediate good
- self consumption of a producer
- income from smuggling, hawala (illegal mom)
- lottery prize, prize money (windfall gain)
- transfer payment

Circular flow of income

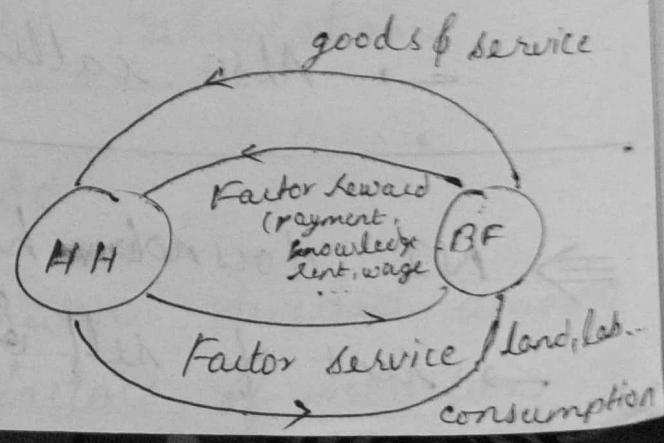
- continuous process of production

- shows relation b/w sectors

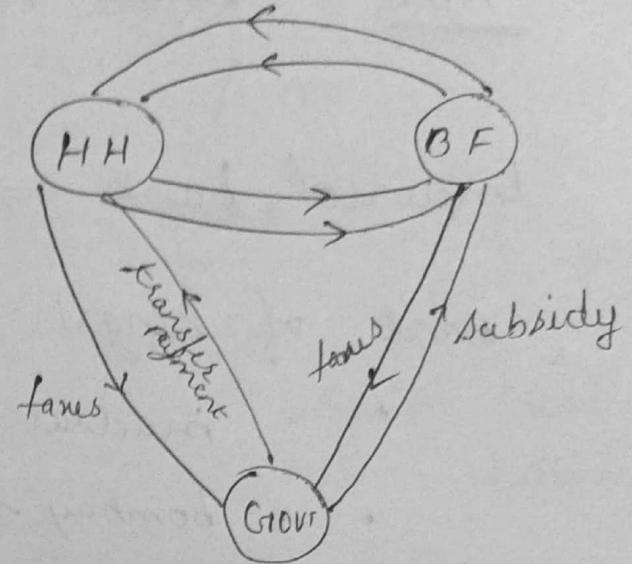
major sectors in economy:

- households (HH)
- firms (BF)
- govt (G)
- external sectors (ES)

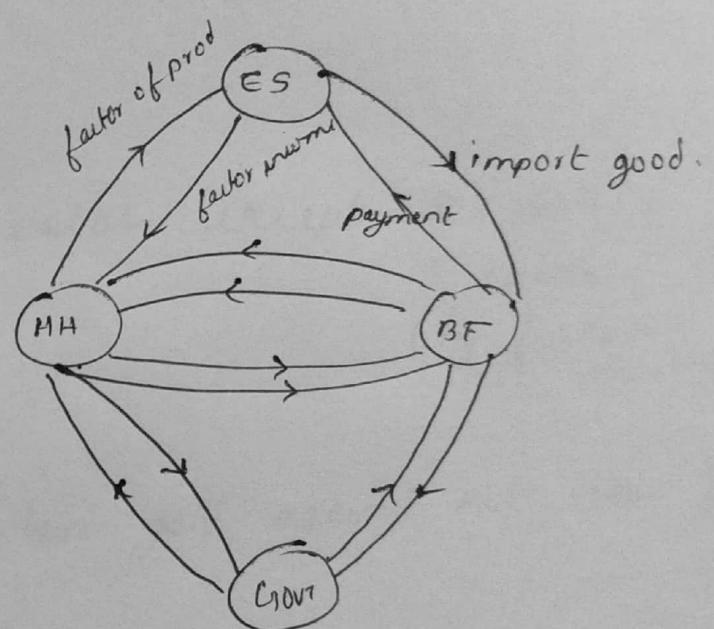
2 sector model.



3 sector model



4 sector model



RBI (Since 1935 - April 1st)
Kolkata

Imperial bank → SB 1 ← RBI

Bank of Bengal.

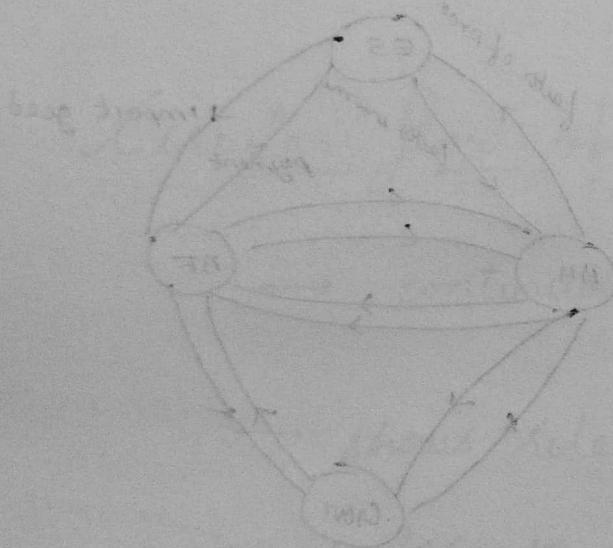
" " Madras

" " bombay

imperial govt bank

banker to govt &
other banks

where not metally



Nationalisation : Govt taking a private firm

RBI nationalised in 1949

Privatization : private firm taking Govt institution

RBI - governor : Sankti Kant Das

It controls:

- monopoly on note issue except ₹1 notes & coins
- money supply. (by finance ministry)

Issue. Maintain gold against note issue

Depts { banking dept.

- Currency principle - central bank must preserve 100% gold against note issue
→ in India
- Banking principle - reserves system
reserve ₹200 more worth as gold

Function of RBI

- As banker → banker to central & state
→ custodian of money
→ makes payment through SBI
→ make arrangement for foreign currency
→ manage public debt
 (debt of govt)
 external source - nations, world bank
→ grants given to state

- As Advisor : → advises to state govt on international finance
→ advises about 5-year plan (planning committee
(no planning commission
= neeti Ayog))
 1st - agri & water exige
 2nd - heavy industry
 (iron, cement)
2012-17 - last plan

— now power is given to
state govt.
nathi ayog.

Financial agent — Agent of IMF &
world bank
→ lender of last resort

① CRR — cash reserve ratio :

every scheduled bank (bank under RBI)
should maintain a part of cash reserve
with RBI

② SLR — statutory liquidity ratio : should
keep a portion of ^{cash} debit with them.
The ratio is called as above.

→ Banker's bank

* Controller of credit : controls money
supply

(can't ↑ money supply as it cause inflation)

commercial banks are advancing loan &
accepting deposits.

deposits - liability (need to give bank)
loan - asset

⇒ every bank gives 90% of deposits as loan. As loan ↑, money supply ↑ inflation occurs.

To avoid this RBI make monetary policy

① Bank rate policy : can ask scheduled banks to ↑ interest (loans ↓, deposits ↑, money supply↓)

② open market policy : sales & purchase of govt. security through commercial bank.

During inflation, govt sells security to public & receive money with them

③ CRR & SLR - ask bank ↑ ↑ CRR & SLR causing loan capacity of bank to ↓

Budget : annual statement made of
expected income & expenditure of
govt

Balanced budget : expected income = expenditure

surplus " : income > expenditure

deficit " : income < expenditure

⇒ how govt can control money supply

fiscal policies :- Tax rate ↑, to ↓
money supply

- public expenditure
during inflation, govt

& public expenditure by
presenting surplus

budget

- public debt : during
inflation, govt won't
take loan but give
loan to other nation
to ↑ money supply

Money market : short term financial market
maturity < 1 yr.

Capital market : long term financial market
maturity period > 1 yr.
initial investment : money invested at the start of production

Game theory

Mathematical model made for decision making for oligopolistic market

3 situations

- deterministic
- probabilistic
- uncertain

Von-Neumann & Morgenstern "Theory of games" and economics "behaviour" in 1944

- how a firm make strategic decision to
- 1) To gain comp. adv. over its rival
 - 2) minimise a potential harm from strategies made by rival
- Game has
- 1] players - firms
 - 2] strategy - potential choices
 - 3] payoffs - outcome / consequences of strategy
- Payoff matrix is table of payoff against strategies
- Optimal strategy : strategy that maximise payoff
- Zero sum game: gain of one player = loss of other
- non-zero sum game: provide equal benefit to each firms (not at the expense of another)

Pure strategy: strategy in which player

e.g: advertises or not

Mixed strategy: players make random choices among possible

mixed behavior - actions based on set of choices available - chosen probability

e.g: firm can follow 3 strategies with probabilities p_1, p_2, p_3 then $p_1 + p_2 + p_3 = 1$

Dominant strategy

Advertise

		firm B	
		X	N
firm A	X	10, 5	15, 0
	N	0, 8	10, 2

* Dominant strategy of A: strategy of a that results in highest payoff

without considering of what B does regardless
also to achieve its own maximum for

ii, to achieve also its goal to achieve for B .

∴ equilibrium

$\overbrace{Y \quad N}^A$ $\overbrace{Y \quad N}^B$

		B.	
		Y	N
A.	Y	10,5	15,0
	N	6,8	20,2

What will be the strategy of A ?

It depends on strategy of B

If $B = Y$, $A = N$, $A = N$

Yield highest payoff given the strategy of another player

Prisoner's dilemma

- : 2 thief caught & sent to court.
- : no evidence, only action is to confess.
- not confess.

for thief B

		C	NC
		-3, -3	0, -9
thief A		-9, 0	-1, -1

Best course of action is not to confess.

But no communication b/w prisoners

so even though dominant strategy
is not to confess, they confess due
uncertainty of asymmetric information

(confessing you can get max 3 yrs while
not conf. can get 9 yrs) so a goes by
due to uncertainty

Product choice problem

		A		B	
		Crispy	Sweet	Crispy	Sweet
A	Crispy	5,5	10,10	10,10	5,5
	Sweet	10,10	5,5	5,5	10,10

Nash eqm: lit A decides to produce crispy and make it public
lit B can make sweet product.

Battle of sexes Mixed strategy

		girl	boy	girl	boy
		"	"	"	"
		movie	cricket	movie	cricket
		girl	boy	girl	boy
		"	"	"	"
		movie	cricket	movie	cricket

2 Nash eqm. in pure strategy

- 1) both watch movie
- 2) both watch cricket

eqm exists in mixed eqm also.

Rock paper scissors

	R	P	S
R	0,0	-1,1	1,-1
P	1,-1	0,0	-1,1
S	-1,1	1,-1	0,0

example of zero sum game

	R	P	S
R	0,0	-1,1	1,-1
P	1,-1	0,0	-1,1
S	-1,1	1,-1	0,0

A chose A₂
B chose B₂
B chose A₂
A chose A₂
0.3 is saddle point
if A adopts A₁, strategy B adopts B₁

		Payoff of A			
		B ₁	B ₂	B ₃	B ₄
A ₁		0.1	0.2	0.15	0.3
A ₂		0.4	0.3	0.5	0.3
A ₃		0.35	0.25	0.5	0.55

strategy so that A gets min payoff.

Maximin strategy: maximize the minimum guaranteed gain to A.

Payoff of B

		B_1	B_2	B_3	B_4	
		A ₁	0.9	0.8	0.85	0.4
		A ₂	0.6	0.7	0.5	0.45
		A ₃	0.65	0.75	0.8	0.6

When A choose
when A choose
when A choose
when A choose

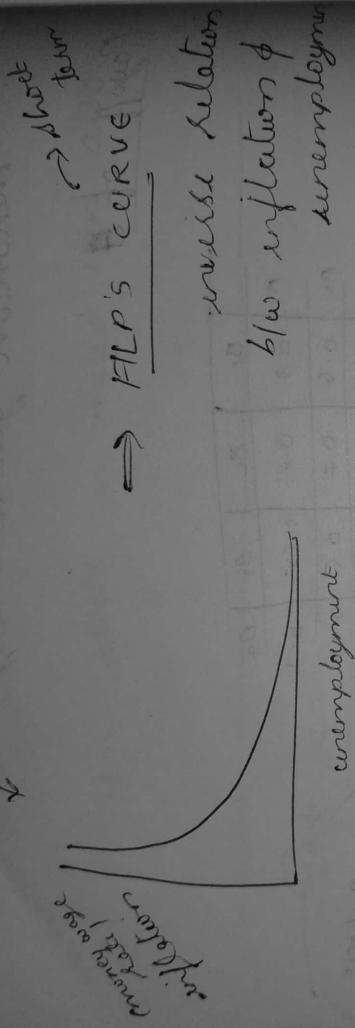
B_1 , B chose
 B_2 , B chose
 B_3 , B chose
 B_4 , B chose

When B choose B_1 strategy, A chooses
A₂ to max profit to A.

Minimax:

Saddle point: low point that both
firm agree on

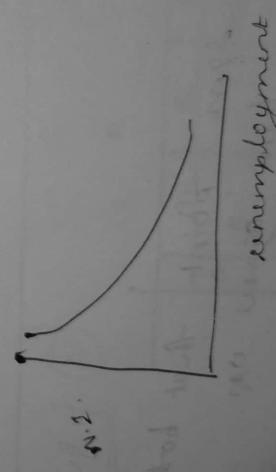
When price ↑, producers ↑ more,
↓ of labour ↑, rate of unemployment



inverse relation
b/w inflation &
unemployment

Okun's law

inverse relation b/w N.I & ~~unemployment~~
unemployment



Financial instruments

payment

→ bill of exchange market

exchange of international money
Debt instr. for int'l of international
Treasury bill market: short

term fund raise from public

loan

→ call money: short term money
given to capital marketing

dealers (1-14 days)

→ commercial paper: private
companies issue this to
raise public fund

capital market
1^o market → prime
securities
2^o market - security
for already
got security
also formation

dividend: portion of profit given to
shareholders

equity share: no agreement on profit
share b/w share holders
→ more risky but profit
differential share: shareholders get a fair
portion of company's
dividend

overvalued stock → less risky & less
profit
abundance of → less risky & less
profit

→ inflation → less risk long term
fund from public for
working capital
→ stagflation → high inflation with high
rate of inflation & unemployment
stagnation → high inflation & low
national output

hyperinflation / galloping inflation
→ price of money more
than cent percent ↑

demand pull & inflation
cost push

- is if total demand & supply fail
price level & inflation
- price level due to ↑ in cost of
production → cost push
- monetary reasons: central bank
supply more & more
money

bit

total

red

grant