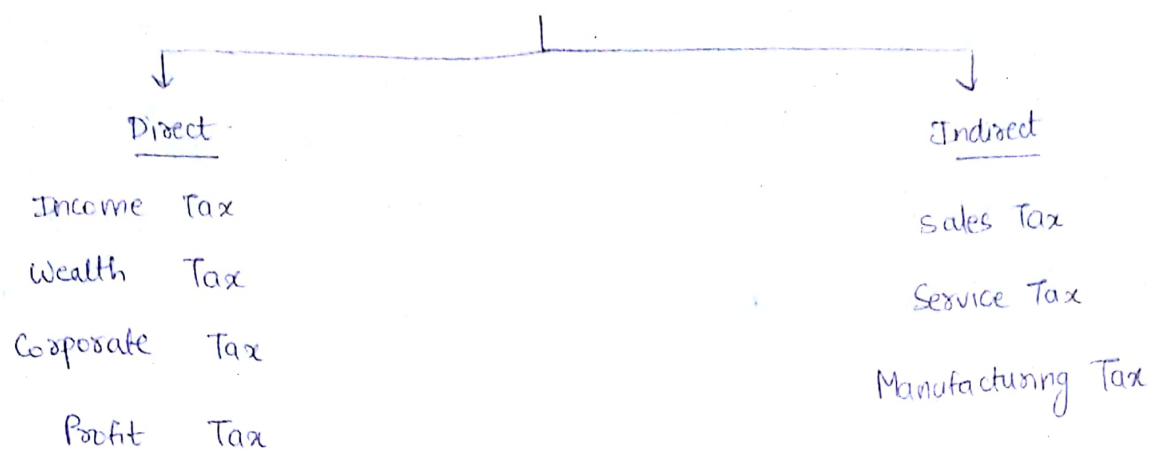


17/7/17

(BKS) Indian Economy
TAX



→ Incidence of Tax : where tax is levied.

→ Burden of Tax : By which tax is paid.

→ Direct : Incidence & Burden is same.

→ Indirect : Incidence & Burden is different.

⇒ # Cascading effect of tax.

Eg.

Value of cement = 100 = V.

$$P_1 = V + 10\%V \quad (\text{sales})$$
$$= 110.$$

$$P_2 = V + 10\%V (\text{sales}) + 10\% (\text{manufacturing})$$
$$= 120$$

$$P_2 = V + 10\%P_1 \quad (\text{manufacturer})$$
$$= 121.$$

→ All the indirect taxes are dubbed into SGST and CGST.

National Income Accounting

GDP → Gross Domestic Product

def: Market Value / Monetary value of final goods and services produced within the political boundary of a country within a specific time period.

Market value → i) - Self services - services by family members are not a part of

GDP because they have no market value.

Market value excludes self services.

- farmess production for themselves is a part of GDP which is an exception to indian market.

ii) - Black market / under ground market / Illegal market is also not a part of GDP because of difficulty in measuring. Hence we donot include these in market value.

iii) - Diversified products →

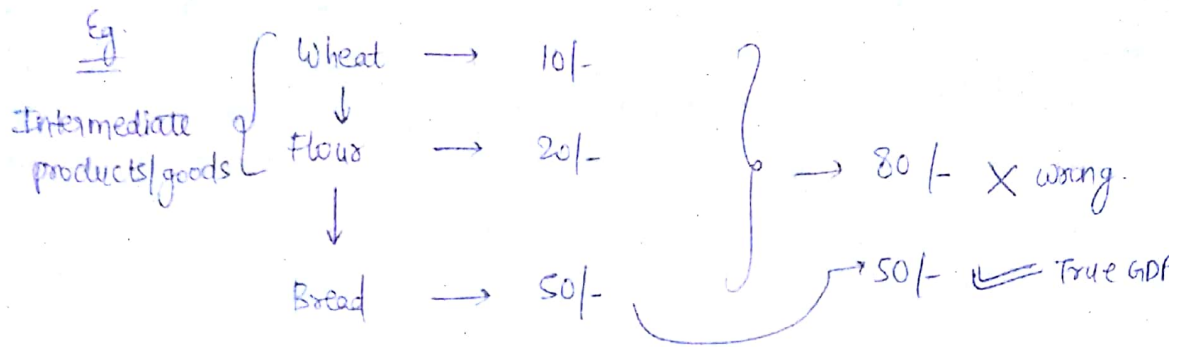
Rice	→	kg
Veg.	→	kg
Comp.	→	no.
Cars	→	no.
cloth	→	Meters
Milk	→	L.

} Aggregation not possible.

↓ converting into their respective market values
aggregation possible.

→ Because of these three reasons, the market value is very important

final → Avoiding Double Counting.



hence, we do not include intermediate goods.

Political Boundary defines the geographical boundary irrespective of who the producer is. Eg Chinese sellers in India contribute to India's GDP. The revenue generated by Indians abroad does not contribute to India's GDP but contributes to India's GNP (which has no political boundaries). (whereas location matters in case of GDP).

$$GNP = GDP + \text{Net factor income from abroad.}$$

Specific Time period - To prevent double counting due to selling of old products.

continuing

1/8/17

100 cars by Maruti Suzuki in 2016

80 sold in 2016

20 remaining → Business Inventory (BI₂₀₁₆)

20 cars of BI + 80 produced

25 sold

5 remaining (BI₂₀₁₇)

$$2016 \text{ GDP} = C_{80} + BI_{20} = \underline{100 \text{ cars}}$$

$$2017 \text{ GDP} = C_{20} + C_{25} + BI_5 - BI_{20} = \underline{30 \text{ cars}}$$

(this is the idea of Business inventory)

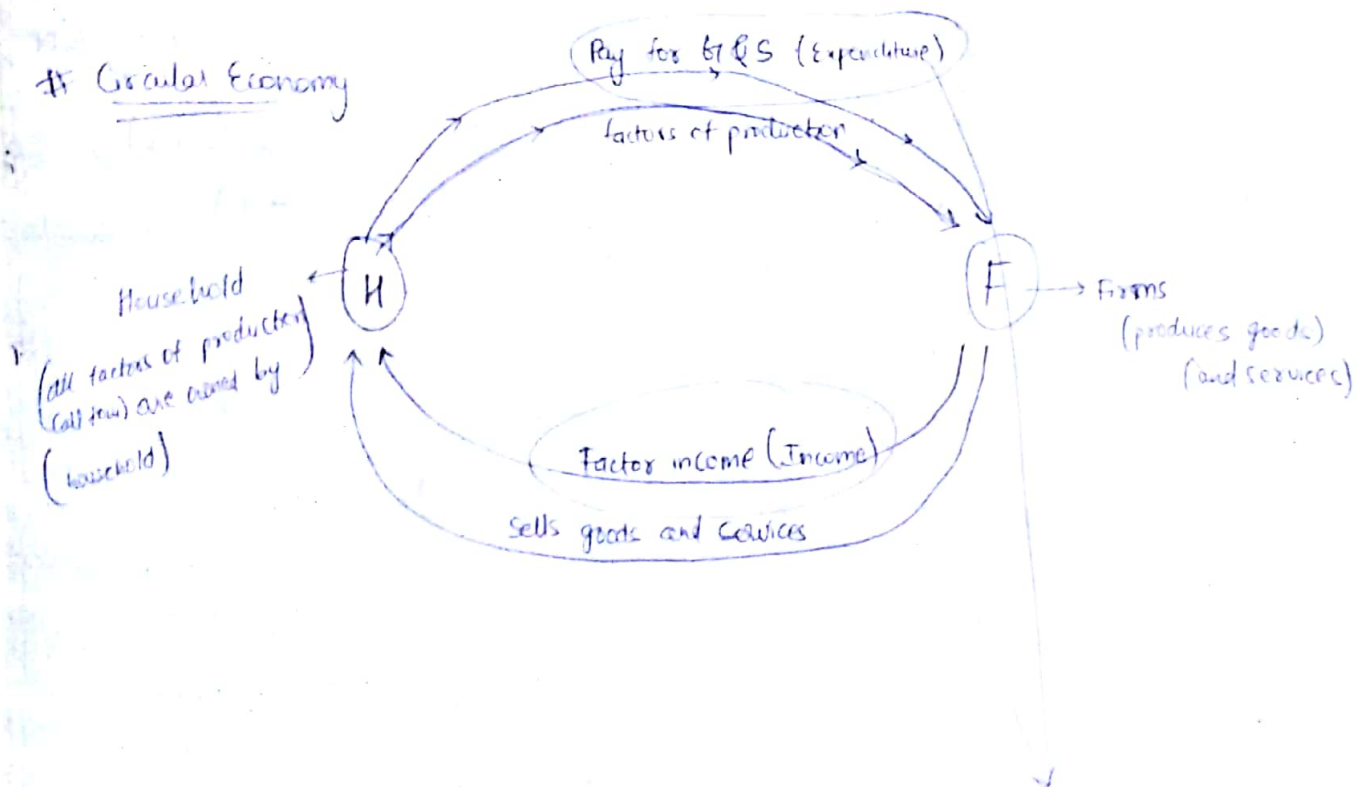
(why are we not including change in price of cars in 2017?)

* Because car manufacturer had to take care of cars for one year

This approach is called Real GDP.

There are total 3 approaches

Circular Economy



these two should be equal given that there are no other influences in the model (in this particular problem)

(following any one amongst the two gives GDP)

3 Approaches to measure GDP

- i) Expenditure Approach
- ii) Income Approach
- iii) Value Added Approach

Expenditure Approach

$$\uparrow \text{Consumers} \Rightarrow \underbrace{C_d}_{\text{domestic consumption}} + \underbrace{C_m}_{\text{international consumption}} = C \text{ (consumption)}$$

* We spend on foreign goods and services = Import (M)
foreigners spending on our GDS = Export (X)

$$\uparrow \text{Producers} = \underbrace{I_d}_{\text{domestic investment}} + \underbrace{I_m}_{\text{international investment}} = I \text{ (investment)}$$

$$\uparrow \text{Government} = G_d + G_m = G \text{ (govt. expenditure)}$$

* Foreigners expenditure = X

$$M = G_m + I_m + C_m$$

$$\text{GDP} \Rightarrow \text{GDP} = C + I + G + X - \underbrace{M}_{(C_m + I_m + G_m)}$$

$$\boxed{\text{GDP} = C + I + G + \underbrace{(X - M)}_{\text{net Exports}}}$$

(this is GDP through expenditure mtd.)

net Exports

2) Income Approach

Reward for factors of production \rightarrow Income

Land Labour Capital Entrepreneurship

Period: Rent + Wage + Interest + Profit = GDP

Houses, buildings, etc. \rightarrow comes under Capital (because it is limited)
(sector)

Land, other natural resources that are limited in nature

\rightarrow Land (sector)

3) Value added Approach

\rightarrow Value added to raw material at each stage of production \rightarrow Σ of all the values added \rightarrow GDP

Value added
exclusive of factors of production

<u>Eg.</u>	<u>Seeds</u>	<u>Wheat</u>	<u>Value added</u>
<u>Farmer</u>	10/-	30/-	20/-
		\downarrow	
<u>Mill</u>	<u>wheat</u>	<u>Flour</u>	30/-
	30/-	60/-	
		\downarrow	
<u>Bakery</u>	<u>flour</u>	<u>Bread</u>	40/-
	60/-	100/-	
		\downarrow	

90/- \rightarrow GDP

Eg

TPC \rightarrow Tomato producing corporation

KPC \rightarrow Ketchup " "

Wages ₹ 15k/-

Wages = 20k/-

Sold to 40k/-

Sold = 60/-

HHs (Households) 15k/-

KPC 25k/-

I) Expenditure mtd

$$GDP = C + I + G$$

$\downarrow \quad \downarrow$
0 0

$$+ 15k + 60k = 75k/-$$

II) Income mtd.

$$\begin{array}{ccccccc} \text{Wages} & + & \text{Rent} & + & \text{profit} & + & \text{Interest} \\ \downarrow & & \downarrow & & \downarrow & & \downarrow \\ (15k + 20k) & + & (40k - 15k) & + & (60k - 20k - 25k) & & \\ & & & & = 75k/- & & \end{array}$$

III) Value added.

$$40k + (60 - 25)k = 75k/-$$

All the three approaches calculate the same GDP in a closed economy.

F3

$$GDP \rightarrow NNP$$

$$GDP \rightarrow NDP$$

$$NNP = GNP - \text{Depreciation}$$

$$NDP = GDP - \text{Depreciation}$$

Depreciation : Depreciation is the loss of value of fixed capital. Fixed capital is mostly physical capital.

Hence, the deterioration, or wear & tear of physical equipments is depreciation. Thus it is very difficult to measure.

Eg. Sewing machine has life time of 5 yrs

It will wear and tear year after a year.

The expenditure on its repairing is depreciation

Types of GDP

Economy

(A) (population same) (100 units) (B)

2016
produces wheat

100 units

100 units

price

₹ 1/-

1/-

Each unit gets 10 units of wheat of people

GDP

100/-

100/-

2017

wheat

150

150

price

1/-

2/-

A
100 → 150

B
100 → 300

GDP

150/-

300/-

Each unit of population get 15 units of wheat.

Real GDP

2016 P¹⁶

A = 100

B = 100

2017 P¹⁶

A = 150

B = 150

→ the change in prices is countered ~~also~~

$$\text{Real GDP} = \frac{\text{Nominal GDP}}{\text{Price Index}}$$

(Nominal GDP + Current Price GDP)

* here this price index is ^{price} ~~pasche's~~ ^{or intermediate} ~~index~~ ^{goods} ~~as services not included~~ (Real GDP + constant price GDP)
 ~~index~~ ^{Base year price GDP}
 ~~Pasche's CPI index~~
 = $\frac{\text{Nominal GDP}}{\text{Real GDP}}$

Per Capita GDP

$$\frac{\text{GDP}}{\text{Population}}$$

Per Capita - State Domestic Product should be used to check the progress of one ^{with} state than another because population is also a resource & hence it tells us how well the resources are being used.

SDP

Per Capita SDP

UP > HP
(Wikipedia) (International)

HP > UP

KA > HP

HP > KA

} lower population

→ using lesser resources to produce relatively more

Purchasing Power Parity (PPP)

→ To compare the GDP of two different countries by overcoming the differences in currency issue.

9/8/17

GDP at market price (GDP^M)

GDP at factor cost (GDP^F)

$$GDP^M = \sum_{i=1}^n P_i q_i$$

$$GDP^F = GDP^M - \underbrace{\text{Indirect taxes} + \text{subsidies}}_{\substack{\text{net indirect tax} \\ \text{difference b/w direct tax \& subsidies}}}$$

Expenditure approach

$$C + I + G + (X - M)$$

→ gives GDP^M .

Value added approach

→ gives NDP^F

Income approach

→ gives some notion of GDP^F i.e. (NNP^F).

NNP^F = National income

$GDP \neq$ National income
↳ it gives some notion of (not exact).

If inflation - a continuous increase in General price level.

price \rightarrow per unit exchange value

Q. Water diamond paradox

use value of water $>$ diamond

In case of life-death cases

$$(vv)_D < (vv)_W.$$

Types of prices \rightarrow tariff, fees, fine
bounded no bounds

Rice	P_i	$w_i \rightarrow \text{weight? wgt}$	
	30/kg	0.1	
Cloth	1000/meters	0.2	$w_i \geq 0$
Comp.	5000/pc.	0.7	and
			$\sum w_i = 1$

$$P = \sum_{i=1}^n \omega_i p_i$$

$P_t =$ price level at t .

$P_{t-1} = \dots$ at $t-1$

inflation = $P =$

$$\frac{P_t}{P_{t-1}} \times 100 = \underline{\underline{P\%}}$$

3 price indexes used to measure inflation.

- Laspeyres price index
- Paasche's " "
- Fisher " "

$$P_L = \frac{\sum q_{i0} P_{it}}{\sum q_{i0} P_{i0}}$$

(Laspeyres)

$$= \frac{P_t}{P_0}$$

q_{i0} = Quantity of i th commodity
at base year

P_{it} = Price of i th commodity
at t years

P_{i0} = " "
at base year.

$$P_P = \frac{\sum q_{it} P_{it}}{\sum q_{it} P_{i0}}$$

(Paasche's)

	<u>Class office</u>		<u>Teg</u>	
	P	Q	P	Q
<u>2014</u>	(5)	(10)	(5)	(10)
	↓	↓	↓	↓
<u>2017</u>	10	8	6	12

in P_L & P_P

F3 F5

Inflation = $\left\{ \begin{array}{l} PI(P) \\ PI(L) \\ PI(F) \end{array} \right\}$

$\rightarrow \frac{\sum q_{it} P_{it}}{\sum q_{i0} P_{i0}} \left(\begin{array}{l} \text{current year} \\ \text{quantity} \end{array} \right) \rightarrow \text{over estimating substitution effect}$
 $\rightarrow \frac{\sum q_{i0} P_{it}}{\sum q_{i0} P_{i0}} \left(\begin{array}{l} \text{base year} \\ \text{quantity} \end{array} \right) \rightarrow \text{under estimating substitution effect}$
 $\rightarrow \sqrt{PI(P) \times PI(L)}$

Reasons to calculate

- ① Link with monetary ~~policy~~ policies.
- ② Standard of living

WPI \rightarrow ① = wholesale price index

CPI \rightarrow ② = consumer price index
(standard of living " ")

RBI is linked with the monetary policies.

- ① Repo rate \rightarrow when Scheduled Commercial Banks (SCBs) borrow from RBI
- ② Bank rate \rightarrow long term loan. (> 90 days). the lending rates is known as Repo rate
- ③ Reverse Repo rate \rightarrow RBI borrow from SCBs for short-term. This is for Short-term & lending (90 days)

if inflation \downarrow repo rate \downarrow
(decreased recently in India)

WPI

CPI

① Price and quantity from whole sale market
(Bulk quantity purchases hence prices low)

Price and quantity from the retail market.

(Less quantity purchases hence prices high)

② Includes intermediate goods

Does not include intermediate goods.

③ Imported goods included

Imported not included

④ Services (NOT)

Services included.

- Crude oil \uparrow should not lead to CPI \uparrow as imported goods are not counted.

But it still does. Because Crude oil $\uparrow \rightarrow$ Petrol $\uparrow \rightarrow$ Services $\uparrow \rightarrow$ CPI \uparrow

hence factors of WPI indirectly affect CPI.

CPI

CPI - ~~flow~~ Items

" - Non flow Items

" - Rural

" - Urban

" - Industrial work

" - Agr. work

Effective income =

CPI $\uparrow =$ Purchasing power \downarrow , hence CPI \rightarrow Standard of living price index.

Eg. $P_0 = 50$ $Y = 100$

$P_t = 100$ (inflation)

\Rightarrow 2 Note Books

Purchasing
power declined.

\Rightarrow 1 Note Book

Q) Why do we have different CPIs?

Due to Common Goods and Services

Eg A room to stay is a kind of service

ie. Difference in rent in a village room / city room / metro room.

all these vary vastly

hence different CPIs are needed

$$\text{GDP Deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}}$$

= Pascher's CPI price index.

Structural Transformation.

Sectors of GDP

- Primary / Agricultural
- Secondary / Industry
- Tertiary / Services

In the process of economic development, a country passes through three phases of development and this is called structural transformation

The three phases are:-

~~Phase I~~

Agriculture

Industry

Services

Phase II

=

Highest
(70%)

2nd
(20%)

3rd
(10%)

(agriculture?
society)

II

↓ (15%)

1st
(50%)

↑ (35%)

III

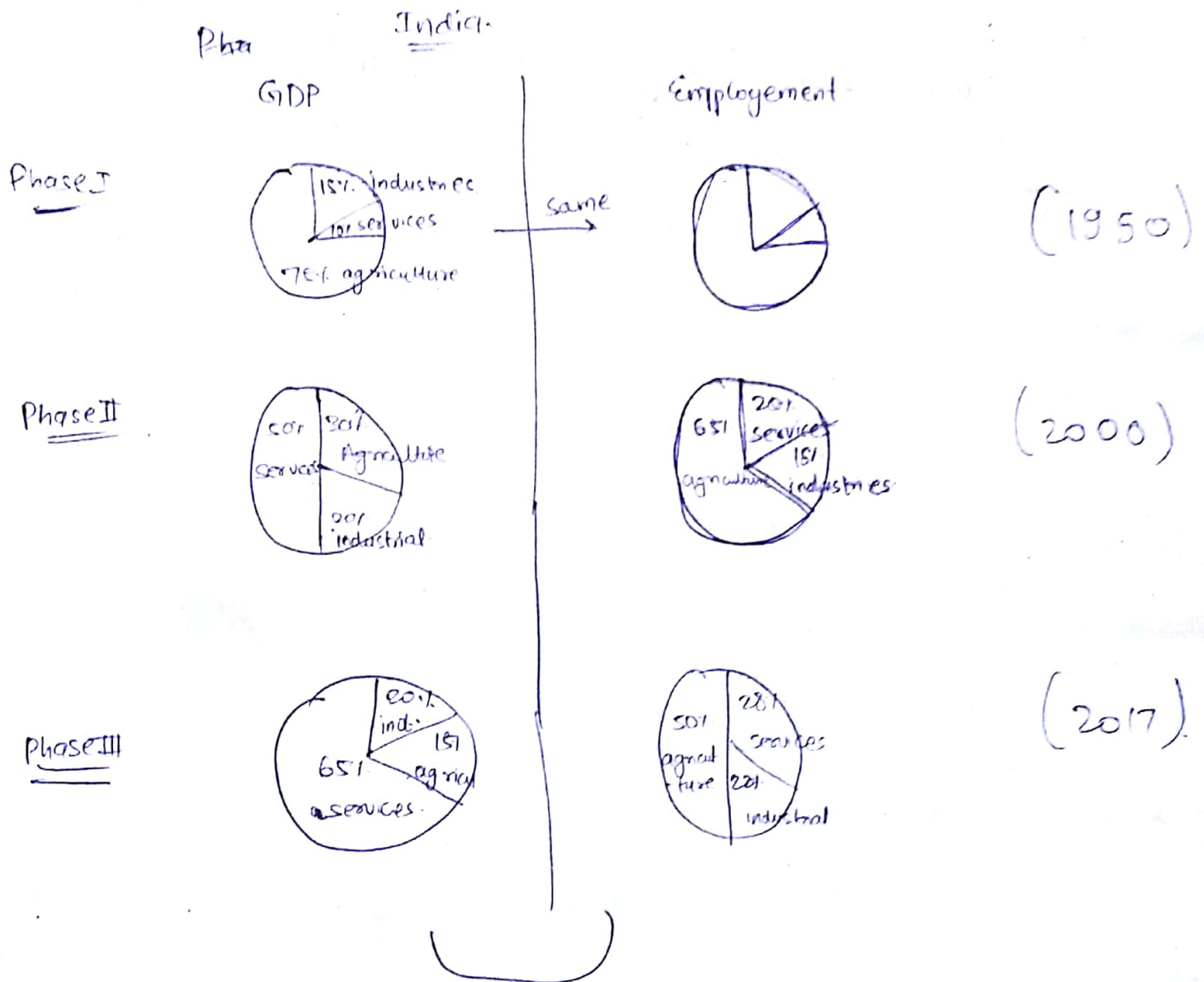
↓ (5%)

↓ (20%)

Highest
(75%)

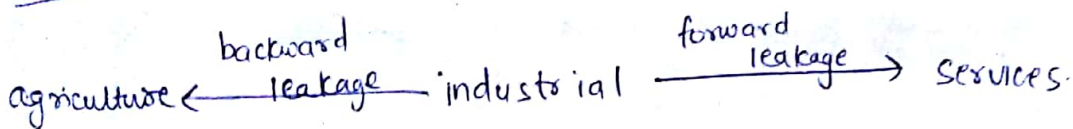
- This applies for GDP as well as employment.

- This is what most of the developed countries have passed through but not India. It has a different pattern.



This is a problem.

- China has huge industrial base



this is the ideal pattern

Due to this typical pattern, India has higher inequality in terms of income or conditions.

consider this

in 2017 figures

28% people enjoying 65% market GDP

for 50% people only 15% GDP

inequality

Human Development Index (HDI)

$C_1(P)$

$C_2(P)$

GDP₁
through
Arms and Ammunitions

=

GDP₂
through
Agriculture and Basic Industries.

In

Development should focus on people.

HDI is a measure of human development.

Q) What is human development? (Defined by UNDP in 1990)

A process of Enlarging Human Choices.

process must be continuous

This definition is borrowed from the concept of Capabilities and Functioning

Development should be targeted towards a set of dimensions which might lead to increase in human choices

Eg. of such dimensions)

- freedom of mobility
- Sanitation
- Education
- Health
- Income

Education
Health
Income } + critical dimensions.

i.e. mostly these three dimensions cover all other dimensions.

So all the economies should focus primarily on these three dimensions.

Q How to measure these dimensions?

Eg. in 1990 HDI

to measure education & factors: (i) Adult Literacy Rate.

The reason for leaving this methodology (i) had ratio (2/3) ← (ii) Gross Enrolment in primary school.
(ii) had ratio (1/3) - hence not comparable answers.

This is because (i) is "self reported literacy rate" i.e. people answer the ques. themselves. They give "socially desirable" answers. Not all are reliable.
now the factors used for measurement

New indicators: { (1) Mean years of schooling
(2) Avg. expected years of school } These are called indicators for dimension 'education'

Dimension	Indicators.
Education	MYS Avg EYS
Health	Life Expectancy at Birth
Income	PCI (PPP \$) per capita income

PTO for Health and Income

<p>GER → Gross enrolment^{ratio} in primary school $= \frac{\text{no. of students in PS}}{\text{popn of students in PS in (6-14) yrs}}$</p>			
<p>NER → net enrollment ratio in primary schools $= \frac{\text{no. of students in PS (6-14) yrs}}{\text{popn of students in PS}}$</p>			
<p>GER > NER b/c this has no numerator constraint.</p>			
MYS →	Age	% of schooling (S _i)	EYS
	70	0	20
	40	10	20
	7	1	1
	13	7	7
	90	2	20
		20	Σ
			5
<p>$MYS = \frac{1}{N} \sum_{i=1}^N S_i$ $MYS = 20/5 = 4.4$</p>			
<p>Avg. Expected yrs of schooling</p>			

Health indicators

- Life expectancy
- infant mortality rate
- under five mortality rate
- Avg. BMI

Life expectancy is a better measure than infant mortality rate.

कहा पैदा होने के लिए
क्या
how can this tell about
Conditions of a country.

- Problem of different units of different indicators

Soln: Standardisation of units

H

we use
$$\frac{\text{Actual Value} - \text{Min}^m \text{ Value}}{\text{Max}^m \text{ Value} - \text{Min}^m \text{ Value}} = x \in (0, 1)$$

ease of Aggregation.

this mtd. can be used for standardisation of any kinds of indicators Eg literacy rate.

after standardisation, 'x' has no units.

Eg.

	<u>Min^m</u>	<u>Max^m</u>
PCT	100 \$	\$ 75000
literacy rate	0	100
GER	0	100
Life Expectancy	25	85
MYS	0	15
AEAYS	0	18

These are goal posts generated by observation of data of last 100-200 yrs.

$$4) \frac{\text{Actual Value} - \text{Min}^m \text{ Value}}{\text{Max}^m \text{ Value} - \text{Min}^m \text{ Value}}$$

$$\text{Max}^m \text{ Value} - \text{Min}^m \text{ Value}$$

This kind of standardisation is followed for all dimensions except income indicators

for income indicators

$$\text{Standardisation} = \frac{\ln(\text{Actual Value}) - \ln(\text{Min}^m \text{ Value})}{\ln(\text{Max}^m \text{ Value}) - \ln(\text{Min}^m \text{ Value})}$$

This is done because there can be very vast variations in incomes of different individuals. Therefore to dampen this effect, this kind of formula (with \ln) is used.

Second explanation: as income \uparrow , choices \uparrow but not at an increasingly lower rate. diminishing returns of transforming income to choice.

$$\frac{d \text{Choice}}{d \text{Income}} \downarrow \text{ as } \text{Income} \uparrow$$

hence to accumulate this effect.

<u>Dimension</u>	<u>Indicators</u>	<u>Indices</u>	<u>old HDI</u>	<u>new HDI</u>
Education	MYS Avg EYS	E_1 and E_2	$\frac{2}{3}E_1 + \frac{1}{3}E_2$	$\frac{E_1 + E_2}{2}$
Health	Life Expectancy at Birth	H		
Income	PCI (PPP \$)	I		

$$\text{old HDI} = \frac{E + H + I}{3}$$

$$\text{new HDI} = (E \star H \star I)^{1/3}$$

PCI = Per Capita Income.

3
in old HDI i.e. arithmetic mean mtd. we assume that there is perfect substitution in all three indicators

$$\text{i.e. } H \approx I \approx E$$

but there can be case where

$$\begin{array}{ccc} H \uparrow & I \uparrow & E \downarrow \\ \hline & & \end{array} \quad \text{having same } H \approx I \approx E$$

@ HDI as

indicators must be complementary to each other not substitutory.

By G.M HDI Calculation we indirectly imply that focus must be on the dimensions which are lagging.

hence G.M mtd. is more reliable.

MPI a multidimensional poverty index.

(has multiple indicators, more intense calculations).

Capabilities and Functionings.

Food \Rightarrow Desirable Characteristics = Health

Cycle \Rightarrow Desirable Characteristics $\xrightarrow{(C)}$ = Transportation Ease.

two individuals will not necessarily have same absorption power

one individual of the two can be physically challenged.

answer \Rightarrow Individual Functions (F).

Capability \rightarrow Freedom of Choices.

Functioning \rightarrow Achievements.

α_i : commodity vector of individual 'i' {Book}

(c) : characteristic vector of α . {knowledge(K), Reading Place (RP), Listening Place (LP), Heat (H)}

$f_i(c)$: individual function individual 'i' actually used. {RA}, {LA}, {MF}

$F_i(c)$: set of $f_i(c)$ {Reading ability (RA), (LA) (MF)}

$v_i(c)$: Valuation function of individual 'i'.

$$b_i = f_i(c(\alpha_i))$$

Reading ability
characteristics
Book

$$b_i = \{job\}$$

using Book \rightarrow knowledge characteristic \rightarrow Reading ability used

$$b_i = \{job, mobility\}.$$

\downarrow
Achieved Job.

$$\{b_i \mid b_i = f(c(\alpha_i)) \text{ for } f_i(c) \in F_i(c)\}.$$