CHANAKYA 2.0

For CA Foundation

One Shot | BUSINESS ECONOMICS

Chapter - 6

Determination of National Income

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TOPICS *to be covered*

1. National Income Accounting
2. The Keynesian Theory of Determination of National Income


GDP


विमल
बोलो जुबां केसरी

Gross Domestic Product

- Gross → Total
- Domestic → Boundary
- Product → goods & services

GDP :-

It refers to the value of all final goods & services produced in the country within a given Period.

GDP↑ → G&S↑ ↷

facilities

↓

welfare↑ ↷ well-being

Babu - shona

100 — 90 = 190 GDP

1800 · 100

1900

∴

Topic: GDP & Welfare

GDP excludes the following - Page no.6.27

(a) Income distributions and, therefore, GDP per capita is a completely inadequate measure of welfare. Countries may have significantly different income distributions and, consequently, different levels of overall well-being for the same level of per capita income.

(b) Quality improvements in systems and processes due to technological as well as managerial innovations which reflect true growth in output from year to year.

(c) Productions hidden from government authorities, either because those engaged in it are evading taxes or because it is illegal (drugs, gambling etc.).

(d) Non-market production (with a few exceptions) and Non-economic contributors to well-being for example: health of a country's citizens, education levels, political participation, or other social and political factors that may significantly affect well-being levels.

(e) The disutility of loss of leisure time. आराम

(f) Economic 'bads' for example: crime, pollution, traffic congestion etc which make us worse off.

(g) The volunteer work and services rendered without remuneration undertaken in the economy, even though such work can contribute to social well-being as much as paid work.

(h) Many things that contribute to our economic welfare such as, fairness, gender equality, security of community feeling etc.,

(i) Both positive and negative externalities which are external effects that do not form part of market transactions

(j) The distinction between production that makes us better off and production that only prevents us from becoming worse off, for e.g. defence expenditures such as on police protection. Increased expenditure on police due to increase in crimes may increase GDP but these expenses only prevent us from becoming worse off.

As another example, automobile accidents result in production of repairs, output of medical services, insurance, and legal services all of which are production included in GDP just as any other production.

Qty. = 100 kg.

Price = ₹2/kg.

$$2 \times 100 = 200$$

$$P \times Q = GDP$$

year	P	Q	Nominal GDP	Real GDP
2016	10	10	100	100
2017	15	10	150	100
2018	20	10	200	100

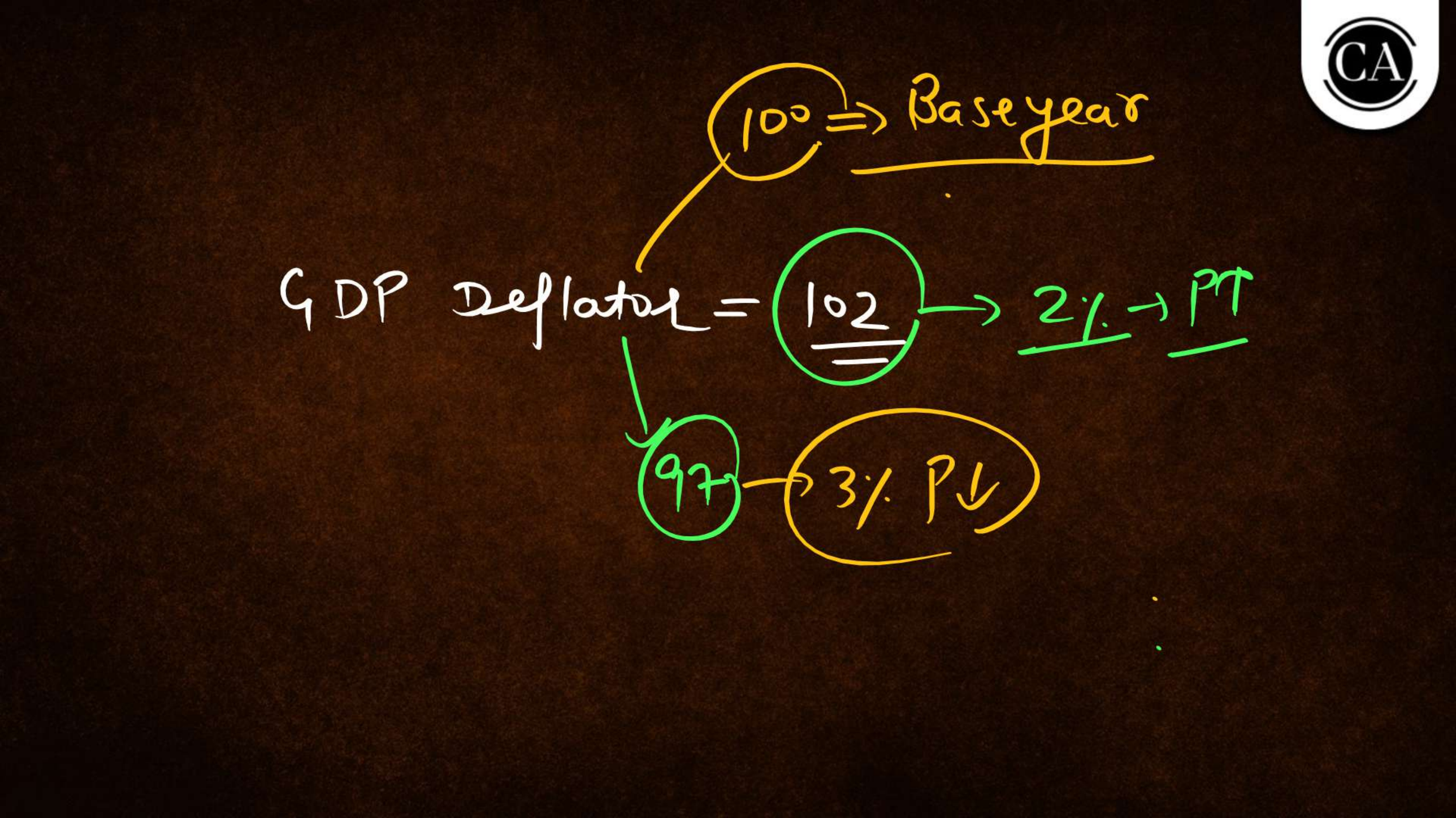
→ Current year

→ Reference | Base year

year	P	Q	Nominal GDP	Real GDP
2016	10	10	100	100
2017	15	10	150	100
2018	20	10	200	100
2019	20	12	240	120

Real GDP → GDP at Constant Price

$$\text{Price index} = \text{GDP Deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}} \times 100$$


100 ⇒ Base year
GDP Deflator = 102 → 2% → PT
97 → 3% PL

year	P	Q	Nominal GDP	Real GDP	GDP Deflator
2016	10	10	100	100	$\frac{100}{100} \times 100 = 100$ (1)
2017	15	10	150	100	$\frac{150}{100} \times 100 = 150$ (2)

PI → 50%

$$\frac{N.}{R} \times 100$$

$$\text{Inflation rate in year 2} = \frac{\text{GDP deflator in year 2} - \text{GDP deflator in year 1}}{\text{GDP Deflator in year 1}} \times 100$$

$$2017 = \frac{P.I._{2017} - P.I._{2016}}{P.I._{2016}} \times 100$$

QUESTION

GDP

#Q. The output at current year price is called :

A Nominal GDP (A)

B Real GDP

C National GDP

D None of the above

QUESTION

#Q. **Real GDP shows:**

A. Change in price only ×

B. Change in output only ✓ (B)

C. Change in both price and output

D. None of the above

QUESTION

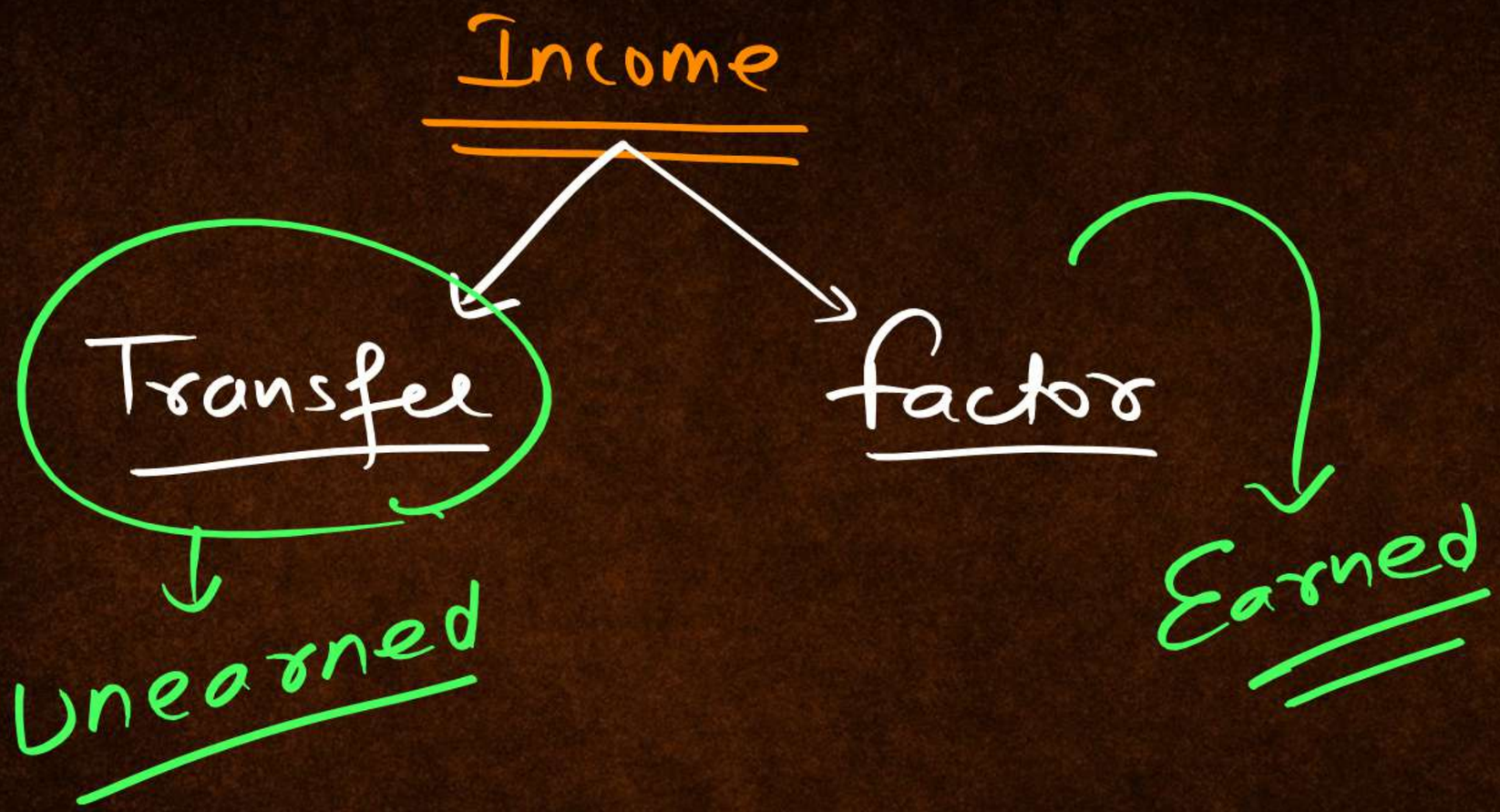
#Q. **Nominal GDP shows:**

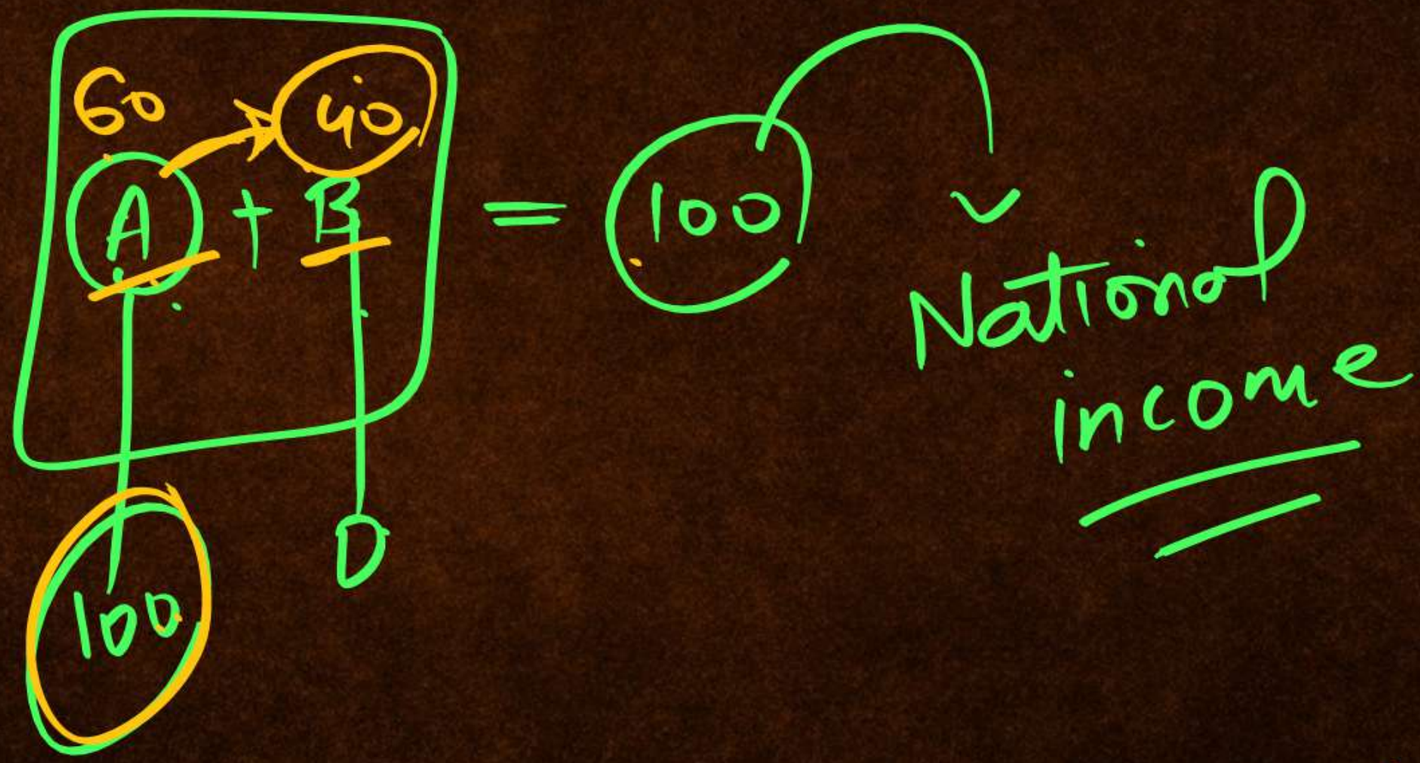
A Change in price only

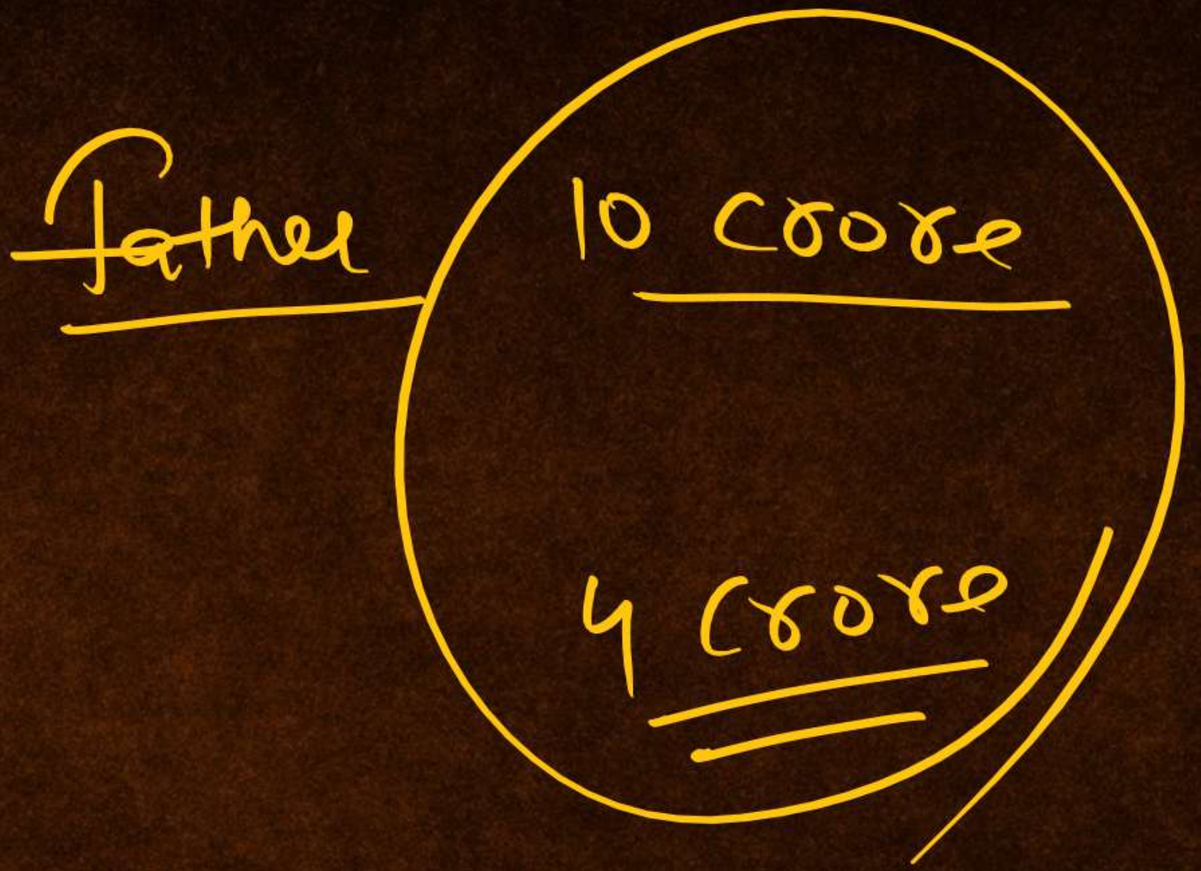
B Change in output only

C Change in both price and output C

D None of the above


Income
Transfer
factor
Unearned
Earned


60
40
A
+
B
100
D
100
National income


Father
10 crore
4 crore

Transfer Income	Factor Income
It is the income obtained without providing any factor input.	It is the income earned by providing factor input.
It is a one-sided income i.e. unilateral concept.	It is two-sided income i.e. bilateral concept.
It is an unearned income.	It is earned income.
It is not included in the calculation of national income.	It is included in the calculation of national income.
Examples:- Gifts, Pocket Money etc.	Examples:- Rent, Interest etc.

QUESTION

#Q. Which of the following is an example of transfer ~~payment~~ income?

A. Old age pensions and family pensions

B. Scholarships given to deserving diligent students

C. Compensation given for loss of property due to floods

D. All the above

D

QUESTION

#Q. Which of the following is an example of transfer payment?

A Old age pensions and family pensions

B Scholarships given to deserving diligent students

C Compensation given for loss of property due to floods

D All the above

D

Samose = 1

Land
Labour
Capital
Entrepreneur

⇒ 11 ⇒ factor Cost fc

Govt

FC = 11
+ IT = 5
- Subsidies = 2

14 ← mp

Market Price (14) = FC (11) + (IT (5) − Sub. (2))

↓

NIT

MP = FC + NIT

FC = MP − NIT

NIT = IT − Sub.

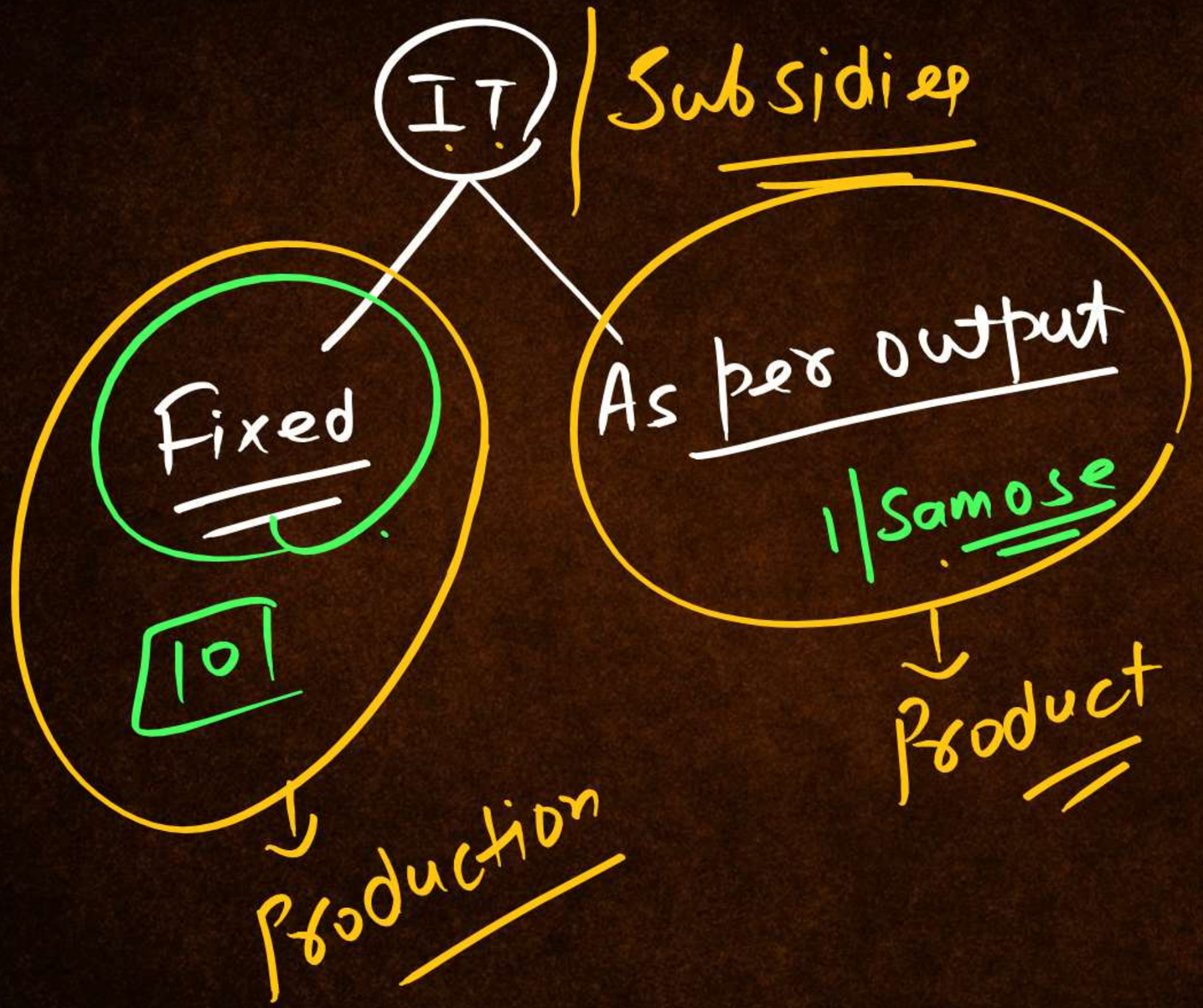
GDP at FC = GDP_{FC}

GDP_{FC} + NIT = GDP_{MP}

100 + 15 = 115

$GDP_{FC} + NIT = GDP_{MP}$

$GDP_{MP} - NIT = GDP_{FC}$


IT
Subsidies
Fixed
As per output
Samose
101
Production
Product

Production Tax = 5

Product Tax = 2

IT = ₹7

Production Subsidies = 6

Product Subsidies = 4

Subsidies = 10

IT = 7

Sub. = 10

NIT = 7 − 10

= −3

$GDP_{fc} + NIT = GDP_{mp}$

100 + (−3) = 97

Topic: Indirect Taxes and Subsidies

Independent of the volume of actual production :

Production Taxes & Production Subsidies :

- Examples of production taxes are land revenues, stamps and registration fees and tax on profession, factory license fee, taxes to be paid to the local authorities, pollution tax etc.
- Examples of production subsidies are subsidies to railways, subsidies to village and small industries.

Paid or received on per unit of product :

Product Taxes & Product Subsidies :

- Examples of product taxes are excise duties, sales tax, service tax and import export duties.
- Examples of product subsidies are food, petroleum and fertilizer subsidies.

Depreciation

OR

Consumption of fixed capital

OR

Current Replacement cost

Mobile = 100000 → Gross value

40000 → Net value

60000 → Depreciation

Gross − Net = Dep.

100000 − 40000 = 60000

Gross = Net + Dep.

100000 = 40000 + 60000

G = 100000

Dep. = 60000

Net = 40000

Gross DP = 100000

Dep. = 60000

Net DP / NDP = 40000

GDP − Dep = NDP

GDP = NDP + Dep

$GDP_{fc} + NIT - Dep. = NDP_{mp}$

Q $GDP_{mp} = 100$

$Dep = 40$

$NIT = 10$

$NDP_{fc} = GDP_{mp} - NIT - Dep.$

$= 100 - 10 - 40$

$= 50$

Factor Income from Abroad = FIFA

↓

Rest of world

Factor Income paid to Abroad

↓

FITA

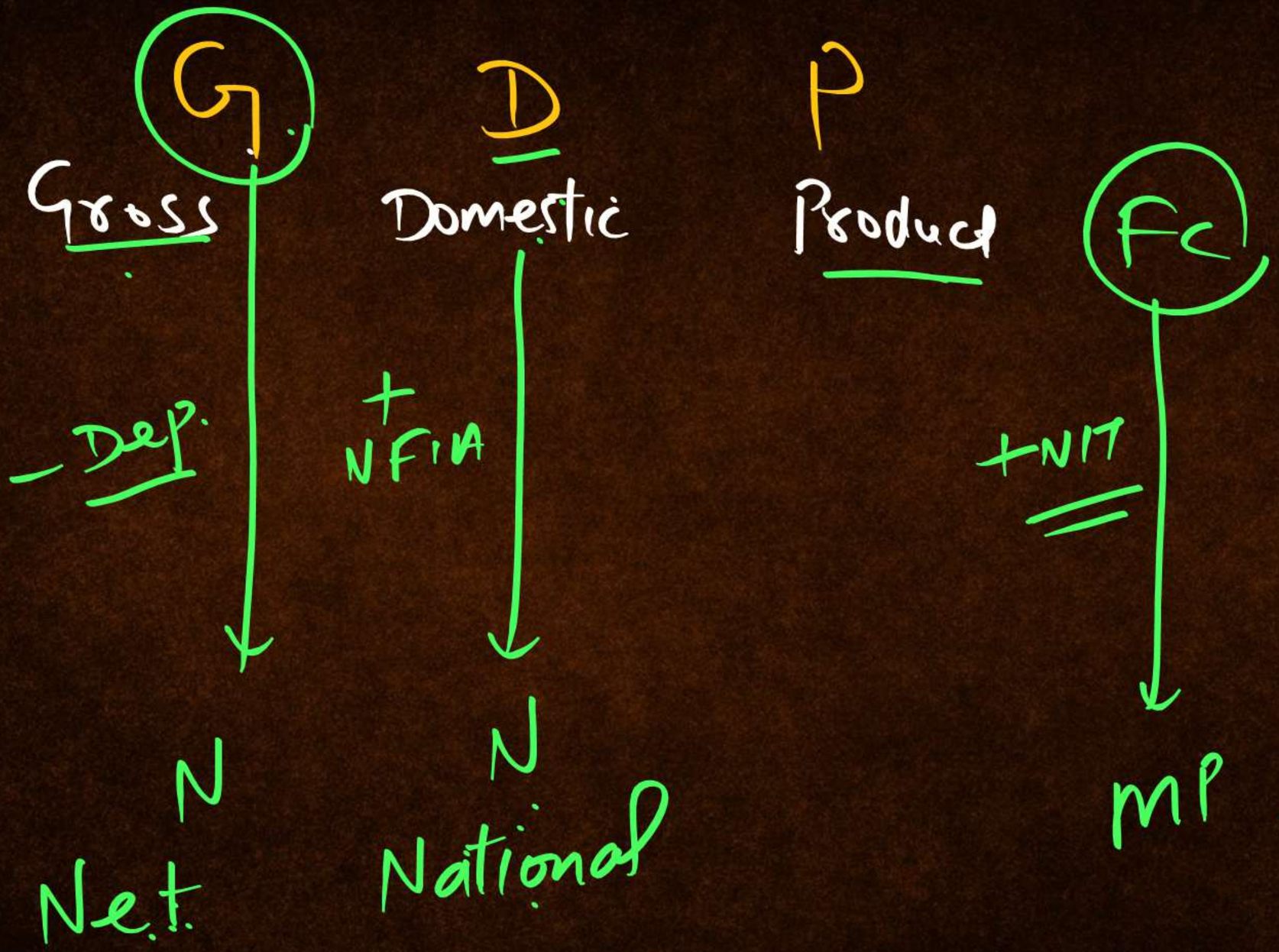
−10

NFIA = FIFA − FITA

60 = 100 − 40

Domestic + NFIA = National

Domestic = National − NFIA


G
Gross
D
Domestic
P
Product
Fc
- Dep.
+ NFIA
+ NIT
N
Net
N
National
mp

(1) Gross Depreciation = Net

(2) Factor Cost + (Indirect Taxes – Subsidies) = Market Price

OR

Factor Cost + (Net Indirect Taxes) = Market Price

(3) Domestic + Net Factor Income from Abroad (NFIA) = National

QUESTION

$NNP_{FC} + NIT - NFIA + Dep. = GDP_{MP}$

#Q. Fill in the blank: NNP at FC _____ = GDP_{MP}

A. + Depreciation - Net factor income from abroad - Net Indirect taxes

B. + Depreciation + Net factor income from abroad + Net Indirect taxes

C. + Depreciation - Net factor income from abroad + Net Indirect taxes

D. + Depreciation + Net factor income from abroad - Net Indirect taxes

C

QUESTION

#Q. From the following information, compute GNPMP. GDPFC = ₹ 3,000; Net factor income to abroad = ₹ 200. Indirect Taxes = ₹ 420, Subsidies = ₹ 240.

1.

A 3,380

B 2,980

C 3,020

D 2,620

$GNP_{mp} = GDP_{fc} + NIT + NFIA$ -200

$NIT = 420 - 240$

$= \square$

QUESTION

#Q. Gross National Product at market prices is

$$GNP_{MP} = GDP_{MP} + NFIA$$

A. GDP_{MP} + Net Factor Income from Abroad (A)

B. GDP_{MP} - Net Factor Income from Abroad

C. GDP_{MP} - Depreciation

D. GDP_{MP} + Net Indirect Taxes

Who calculates national income in India ?

Ministry of Statistics & Programme Implementation (MoSPI)

↓

Central Statistics Office (CSO)

↓

National Accounts Statistics (NAS)

Usefulness And Significance Of National Income Estimates

1) It provides a framework for analyzing the short-run performance.
2) The distribution pattern of national income helps businesses to forecast future demand.
3) Economic welfare depends on magnitude & distribution of national income
4) NI shows composition and structure of NI of different sectors & variations in them. Helps to make comparisons of trend and speed of development
5) Provides quantitative basis for assessing, choosing & evaluating economic policies
6) Shows income distribution and possible inequality in its distribution. Make comparisons of statistics, such as ratios of investment, taxes, to GDP
7) Provides guide to make policies for growth and inflation

QUESTION

#Q. From the following data, calculate the GDP, GNP, NDP and NNP at both factor cost and market prices.

	(₹ Lakhs)
Gross investment (I)	120
Net exports (Nx)	15
Net indirect taxes	5
Depreciation	20
Net factor income from abroad	10
Personal consumption expenditure (C)	450
Government purchases of goods and services (G)	150

SOLUTION

		₹ (lakhs)
(a)	GDP_{MP}	
	Personal consumption expenditure	450
	Add: Gross investment	120
	Add: Government purchases of goods and services	150
	Add: Net exports	15
		735
(b)	GNP_{MP}	
	GDP_{MP}	735
	Add: Net factor income from abroad	10
		745
(C)	NDP_{MP}	
	GDP_{MP}	735
	Less: Depreciation	(20)
		715

QUESTION

#Q. Calculate NFIA

	(₹ Lakhs)
GDP_{FC}	4,000
Depreciation	100
Net indirect taxes	300
NNP_{MP}	4,500

$$GDP_{FC} = NNP_{MP} + Dep. + NFIA + NIT$$

SOLUTION

$NDP_{FC} = GDP_{FC}$ Depreciation
= 4,000 – 100
= 3,900

$NDP_{MP} = NDP_{FC}$ + Net Indrect Taxes
= 3,900+300
= 4,200

$NFIA = NNP_{MP} - NDP_{MP}$
= 4500 – 4200
= ₹ 300 Lakhs

Domestic income = NDP_{FC}

National income = NNP_{FC}

$$NNP_{FC} = NDP_{FC} + NFIA$$

$$NDP_{fc} + (FIFA - FITA)$$

$$\downarrow$$

$$NNP_{fc} = NDP_{fc} + NFIA$$

Income method

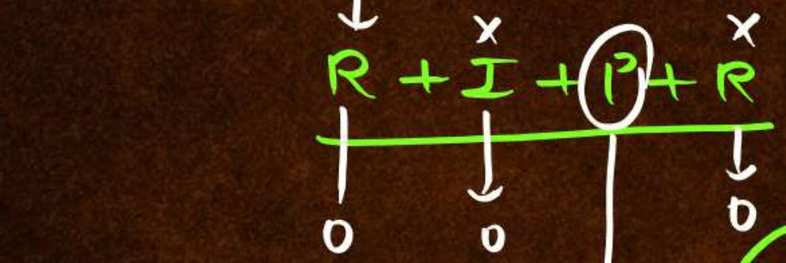
Rent + interest + Profit + Royalty

1. NDP_{FC} = CoE + operating Surplus + MISE

2. $NNP_{FC} = NDP_{FC} + NFIA$

Property + Entrepreneurship

OSX



100

Profit = Corporate tax + Dividend + Undistributed Profit

25 | 25 | 50

Undistributed Profit → Corporate Savings

① GDP_{mp}

Ans $NDP_{FC} = Coe + os + mise$

$GDP_{mp} = NDP_{FC} + Dep. + NIT$

Expⁿ method

↓

Income Disposable method

↓

① GDP_{mp} = Aggregate Expⁿ

② $NNP_{FC} = GDP_{mp} - Dep. + NFIA - NIT$

$$GDP_{mp} = C + I + G + N_x$$

C → Pvt. final Consumption Expn
- ① Household Expn
- \+
- ② Non-profit Expn

NPISH

G → Govt. final Consumption Expn → goods purchase

N_x → Net Export = X − M

Net import = 20	−20
N_x = −20	20

$GDP_{mp} = C + I + G + N_x$

GDCf

① NDCf + Dep = I

② GECF + Δ stock = I

③ GFCF + Δ stock + Net Acquisition of valuable = I

④ NFCF + Dep + 0 ⇒ I

Δ stock

↓

Inventory

Investment

= Closing - opening

Value Added method

$\sum GVA_{mp} = GDP_{mp}$

(5)

Value Added = 15 − 10

$GDP_{mp} = GVA_{mp}$ = Value of output − Intermidiate cost

= Sales + Δstock − Raw material (12)

Raw material → Domestic Purchase = 10, import = 2

Sales + Δstock → P × Q

Sales + Δstock → Domestic sales + Export. → Prod^{n} Self Consump^{n}

QUESTION

#Q. Calculate National Income by Value Added Method with the help of following data

Particulars	₹ (In Crores)
Sales	700
Opening stock	500
Intermediate Consumption	350
Closing Stock	400
Net Factor Income from Abroad	30
Depreciation	150
Excise Tax	110
Subsidies	50

$GVA_{mp} = VOO - IC$

$= 700 + (400) - 350$

$= 750$

$NIT = IT - S$

$= 110 - 50$

$= 60$

$NNP_{FC} = GDP_{mp} - D + NFIA - NIT$

$= 250 - 150 + 30 - 60$

$= 70$

SOLUTION

$NVA_{(FC)}$ = $GDP_{(MP)}$ – Depreciation + NFIA – Net Indirect Tax

Where $GVA_{(MP)}$ = Value of output- intermediate consumption

Value of Output = Sales + change in stock

= 700 + (400 – 500) = 600

$GVA_{(MP)}$ = 600 – 350 = 250

Therefore NI = 250 – 150 + 30 – (110 – 50)

= 70 Crores

QUESTION

VA ÷ Comment

#Q. Calculate national income by value added method.

Particulars	₹ (In Crores)
Value of output in primary sector	2000
Intermediate consumption of primary sector	200
Value of output of secondary sector	2800
Intermediate consumption of secondary sector	800
Value of output of tertiary sector	1600
Intermediate consumption of tertiary sector	600
Net factor income from abroad	–30
Net indirect taxes	300
Depreciation	470

	P	S	T
VOO	2000	2800	1600
IC	200	800	600
	1800	2000	1000

4800 = GDP_{MP}

NNP_{FC} =

SOLUTION

GDP_{MP} = (Value of output in primary sector - intermediate consumption of primary sector) + (value of output in secondary sector - intermediate consumption of secondary sector) + (value of output in tertiary sector – intermediate consumption of tertiary sector)

Value of output in primary sector	=	2000
- Intermediate consumption of primary sector	=	200
+ Value of output in secondary sector	=	2800
- Intermediate consumption in secondary sector	=	800
+ Value of output in tertiary sector	=	1600
- Intermediate consumption of tertiary sector	=	600
GDP_{MP}		**₹ 4800 Crores**

$NNP_{FC} = GDP_{MP} + NFIA – NIT - Depreciation$

NNP_{FC} = National income = 4800 + (-30) – 300 - 470 = **4000 Crores**

QUESTION

#Q. Calculate NI with the help of Expenditure method and income method with the help of following data:

Items	₹ in Crores
Compensation of employees	1,200
Net factor income from Abroad	20
Net indirect taxes	120
Profit	800
Private final consumption expenditure	2,000
Net domestic capital formation	770
Consumption of fixed capital	130
Rent	400
Interest	620
Mixed income of self-employed	700
Net export	30
Govt. final consumption expenditure	1100
Operating surplus	1820
Employer's contribution to social security scheme	300

$NDP_{FC} = COE + OS + MISE$

$= 1200 + 1820 + 700$

$= 3720$

$NNP_{FC} = 3720 + 20$

$= ₹ 3740$ Cr.

QUESTION

#Q. Calculate NI with the help of Expenditure method and income method with the help of following data:

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Compensation of employees	1,200
Net factor income from Abroad	20
Net indirect taxes	120
Profit	800
Private final consumption expenditure	2,000
Net domestic capital formation + Dep =	770 + 130
Consumption of fixed capital → Dep.	130
Rent	400
Interest	620
Mixed income of self-employed	700
Net export	30
Govt. final consumption expenditure	1100
Operating surplus	1820
Employer's contribution to social security scheme	300

GDP_{mp} = C = 2000
+ I = 900
+ G = 1100
+ N_x = 30
= 4030

$NNP_{FC} = GDP_{mp} - D + N - NIT$
$= 4030 - 130 + 20 - 120$
$=$

SOLUTION

By Expenditure method

GDP_{MP} = Private final consumption expenditure + Government final consumption expenditure + Gross domestic capital formation (Net domestic capital formation+ depreciation) + Net export

= 2000 + 1100 + (770 + 130) + 30 = 4030Crores

NNP_{FC} or NI = GDP_{MP} – depreciation + NFIA – NIT

= 4030 – 130 + 20 – 120 = 3800 Crores

By Income method

NNP_{FC} or NI = compensation of employees + operating surplus + Mixed income of self – employed + NFIA

= 1200 + 1820 + 700 + 20 = 3740Crores

QUESTION

#Q. The GDP per capita is

A a measure of a country's economic output per person

B actual current income receipts of persons

C national income divided by population

D (A)and (C) above

QUESTION

#Q. Mixed income of the self -employed means

Labour income = CoE

Capital income = OS

A net profits received by self -employed people

B outside wages received by self- employed people

C combined factor payments which are not distinguishable

D wages due to non- economic activities

NNP_{FC} (100)

(50) accruing to govt.

1. Property & Entrepreneurship (25)
2. Non-Departmental Savings (25)

(50) accuruing to Pvt. Sector

Pvt. income

SOLUTION

NNP_{FC}	–
Less: Income from Property and Entrepreneurship accruing to Government Administrative Departments (Railways, Post Office etc.)	–
Less: Savings of Non-departmental Enterprises.	–
Income From ~~Domestic~~ National Product Accruing To Private Sector	–
Add: National Debt Interest | Public Debt interest	–
Add: Current Transfers from Government	–
Add: Net Current Transfers from rest of the world	–
Private Income	–

SOLUTION

Private Income = HH + Firm.	-
Less: Undistributed Profits	(-)
Less: Corporate Tax	(-)
Personal Income	-

DPI | PDI

Personal Income	–
Less: Personal Taxation	(–)
Less: Non tax payments i.e., fees, penalty, fines to government	(–)
Disposable Personal Income	–

$100 - 2 = 98$

$100 - 2 - 5 = 93$

$$\begin{array}{r} 100 \\ -\ 2 \\ +\ 2 \\ \hline 100 \end{array}$$

Topic: Personal Income

=	**National Income**
–	Income from property and entrepreneurship accruing to government administrative departments
–	Saving of non-departmental enterprises
–	Saving of private corporate sector
–	Corporate profit tax
+	National debt interest
+	Current transfers from government
+	Current transfers from rest of the world

QUESTION

$NNP_{fc} = NNP_{mp} - NIT$

$= 1891 - 145 = 1746$

#Q. **From the following data, estimate National Income and Personal Income.**

Items	₹ in Crores
Net national product at market price	1,891
Income from property &entrepreneurship accruing to government administrative departments	45
Indirect taxes	175
Subsidies	30
Saving of non-departmental enterprises	10
Interest on National debt	15
Current transfers from government	35
Current transfers from rest of the world	20
Saving of private corporate sector	25
Corporate profit tax	25

1891
145
1746

55

1691
70

Pvt. Income

PI

1761
−50
1711

SOLUTION

National Income = Net national product at market price – Indirect taxes + Subsidies

= 1,891 – 175 + 30 = 1746crores

Personal Income = National income – Income from property and entrepreneurship accruing to government administrative departments – Saving of non departmental enterprises + National debt interest + Current transfers from government + Current transfers from rest of the world – Saving of private corporate sector – Corporate profit tax = 1746 – 45 –10+ 15 + 35 + 20 – 25 – 25 = 1711 Crores

$$NDP_{FC} + NFIA = NNP_{FC}$$

$$\therefore$$

	Net National Disposable Income (NNDI)
=	Net National Income (NNI)
+	Other net current transfers from the rest of the world (Receipts Less Payments)

OR

	Net National Disposable Income (NNDI)
=	Net National Income
+	Net taxes on income and wealth receivable from abroad
+	Net social contributions and benefits receivable from abroad

	Gross National Disposable Income (GNDI)
=	NNDI + CFC

OR

	Gross National Disposable Income (GNDI)
=	GNI = NNP$_{FC}$ + Dep.
+	Other Net current transfers from the rest the world (Receipts less payments)

Other Current Transfers refer to current transfers other than the primary incomes

TOPICS *to be covered*

1. National Income Accounting
2. The Keynesian Theory of Determination of National Income

Numericals

1. Equilibrium Income
2. Consumpⁿ Expⁿ
3. Saving
4. MPC, MPS, APC, APS
5. Multiplier

6. Trade Balance = X - M

AD

Closed Ecor

- 2 Sector Eco^y $\Rightarrow$ AD = C + I
- 3 Sector Eco^y $\Rightarrow$ AD = C + I + G

Open Eco^y

- 4 sector Eco^y $\Rightarrow$ AD = C + I + G + Nx

$AS = Y$

Equilibrium $\Rightarrow$ $AD = AS$

$AD = Y$

$\frac{C}{Y} = APC$ | $\frac{S}{Y} = APS$

$\frac{\Delta C}{\Delta Y} = MPC$ | $\frac{\Delta S}{\Delta Y} = MPS$

$APC + APS = 1$

$MPC + MPS = 1 \Rightarrow MPC = 1 - MPS$

$AD = C + I$

$C = a + b.y$

mpc

autonomous consumpn

$C = 100 + 0.8y$

$mps + mpc = 1$

0.2

Saving

$C = a + b \cdot Y$ (mpc)

$S = -a + (1-b)\,Y$

$(1-b)$ = mps

mps

$C = 100 + 0.8Y$

$S = -100 + 0.2Y$

QUESTION

APS

#Q. What will be the value of average propensity to save when -

(i) C = 200 at Y = 1,000

(ii) S = 450 at Y = 1,200

$\frac{C}{Y} = APC = \frac{200}{1000} = 0.2$

$\frac{S}{Y} = APS$

$\frac{450}{1200} = ?$

$APS + APC = 1$

$APS = 1 - 0.2 = 0.8$

SOLUTION

(i) APS = $S\frac{S}{Y}$; S = Y – C = 1,000 – 200 = 800. Therefore, APS = $\frac{S}{Y} = \frac{800}{1000}$ = 0.8

(ii) When S = 450 and Y = 1,200; APS = $\frac{S}{Y}$ = 450/1200 = 0.375

Eg b.

$Y = AD$

$100 = 80 + 20$

$Y = C + S$

$S = Y - C$

Q $C = 100 + 0.8Y$ (900, 1000)

$I = 100$

Eg b. Y:

Ans $Y = AD$

$Y = C + I$

$Y = 100 + 0.8Y + 100$

$Y - 0.8Y = 200$

$0.2Y = 200$

$Y = \frac{200}{0.2} = 1000$

QUESTION

mpc, mps = 1-mpc

#Q. Calculate marginal propensity to consume and marginal propensity to save from the following data about an economy which is in equilibrium: National income = 2500, Autonomous consumption expenditure = 300, Investment expenditure = 100

a

$Y = 2500$

$a = 300$

$I = 100$

$Y = C + I$

$2500 = a + b.Y + I$

$2500 = 300 + b.(2500) + 100$

SOLUTION

$Y = C + I$

By putting the value we get, $2500 = C + 100$

$C = 2500 - 100 = 2400$

$C = \bar{C} + bY$

$2400 = 300 + 2500\ b$

$2400 - 300 = 2500b$

$b = 0.84$; $MPS = 1 - MPC = 1 - 0.84 = 0.16$

QUESTION

#Q. An economy is in equilibrium. Calculate national income from the following Autonomous consumption = 100; Marginal propensity to save = 0.2; Investment expenditure = 200

(a)

$mpc = 1 - 0.2 = 0.8$

$Y = C + I$

$Y = a + b.y + I$

$Y = 100 + 0.8y + 200$

SOLUTION

$Y = \bar{C} + I$

$Y = \bar{C} + MPC\ (Y) + I$ where MPC = 1-MPS

$Y = 100 + 0.8Y + 200 = 300 + 0.8Y$

$Y - 0.8Y = 300$

$0.2Y = 300,$

$Y = 1500$

QUESTION

#Q. Suppose the consumption of an economy is given by $C = 20 + 0.6\,Y$ and investment $I = 10 + 0.2\,Y$. What will be the equilibrium level of National Income?

(Y)

$$Y = C + I$$

$$Y = 20 + 0.6Y + 10 + 0.2Y$$

$$\boxed{Y = 30 + 0.8Y}$$

$$Y - 0.8Y = 30$$

$$0.2Y = 30$$

SOLUTION

$$Y = C + I = 20 + 0.6\,Y + 10 + 0.2Y$$

$$Y = 30 + 0.8Y$$

$$Y - 0.8\,Y = 30$$

$$Y = 150$$

QUESTION

#Q. If the consumption function is expressed as $C = a + bY$ then b represents

A autonomous consumer expenditure when income is zero

B the marginal propensity to consume

C the expenditure multiplier when consumption is increased

D part of disposable income

QUESTION

#Q. If the consumption function is expressed as $C = a + bY$ then a represents

A autonomous consumer expenditure

B the marginal propensity to consume

C the consumption income relationship

D Non- linear consumption function

$C = a + b \cdot y$

$C = a + b(Y_d)$

Disposable Income

$Y = 100$

$T = .0$

$Y_d = 100$

Investment multiplier (k)

$$k = \frac{\Delta Y}{\Delta I}$$

$$k = \frac{1}{mps}$$

$$k = \frac{1}{1 - mpc}$$

mpc

$C = 100 + 0.8Y$

$$k = \frac{1}{1 - 0.8} = 5$$

QUESTION

#Q. If the consumption function is $C = 20 + 0.5Y_d$, then an increase in disposable income by ₹ 100 will result in an increase in consumer expenditure by ₹ _____

A 25

B 70

C 50

D 100

$\Delta Y_d = 100$, $\Delta C = ?$

$\frac{\Delta C}{\Delta Y} = \frac{MPC}{1}$

ΔY , 0.5

QUESTION

#Q. If the autonomous consumption equals ₹ 2,000 and the marginal propensity to consume equals 0.8. If disposable income equals ₹ 10,000, then total consumption will be ₹ _____

A 8,000

B 6,000

C 10,000

D None of the above

a

b

C = a + b · Y

= 2000 + 0.8 (10000)

=

QUESTION

#Q. An increase in investment by 400 Crores leads to increase in national income by 1,600 Crores. Calculate marginal propensity to consume.

ΔI

ΔY

MPC = ?

$$K = \frac{1600}{400} = 4$$

$$K = \frac{1}{1-MPC}$$

SOLUTION

Increase in investment (ΔI) = 400 Crores

Increase in national income (Δ Y) = 1,600 Crores

Multiplier (K) = ΔY/ΔI = K= 1,600/ 400 = 4

We know, K= 1 /1 –MPC

4= 1 /1 -MPC

⇨ MPC= 0.75

Three Sector Eco^y → (H), (F), (G)

Eq^b. ⇒ $Y = C + I + G$

$C = a + Y_d$

$= a + (Y - T)$

QUESTION

#Q. Suppose we have the following data about a simple economy: $C = 10 + 0.75Y_d$, $I = 50$, $G = T = 20$ where C is consumption, I is investment, Y_d is disposable income, G is government expenditure and T is tax.

(a) Find out the equilibrium level of national income.

(b) What is the size of the multiplier?

$$Y = C + I + G$$

$$Y = 10 + 0.75(Y - 20) + 20$$

$$= 10 + 0.75Y - 15 + 20$$

Solution

(a) $Y = C + I + G$

$Y = a + bY_d + I + G$

$Y = 10 + 0.75\,(Y - 20) + 50 + 20$

$Y = 10 + 0.75\,Y - 15 + 50 + 20$

or, $Y - 0.75\,Y = 65$

or, $Y\,(1 - 0.75) = 65$

or, $0.25\,Y = 65$

or, $Y = 65 / .25 = 260$

The equilibrium value of $Y = 260$

QUESTION

#Q. Value of multiplier -

$$\frac{1}{1-0.75} = 4$$

A 1

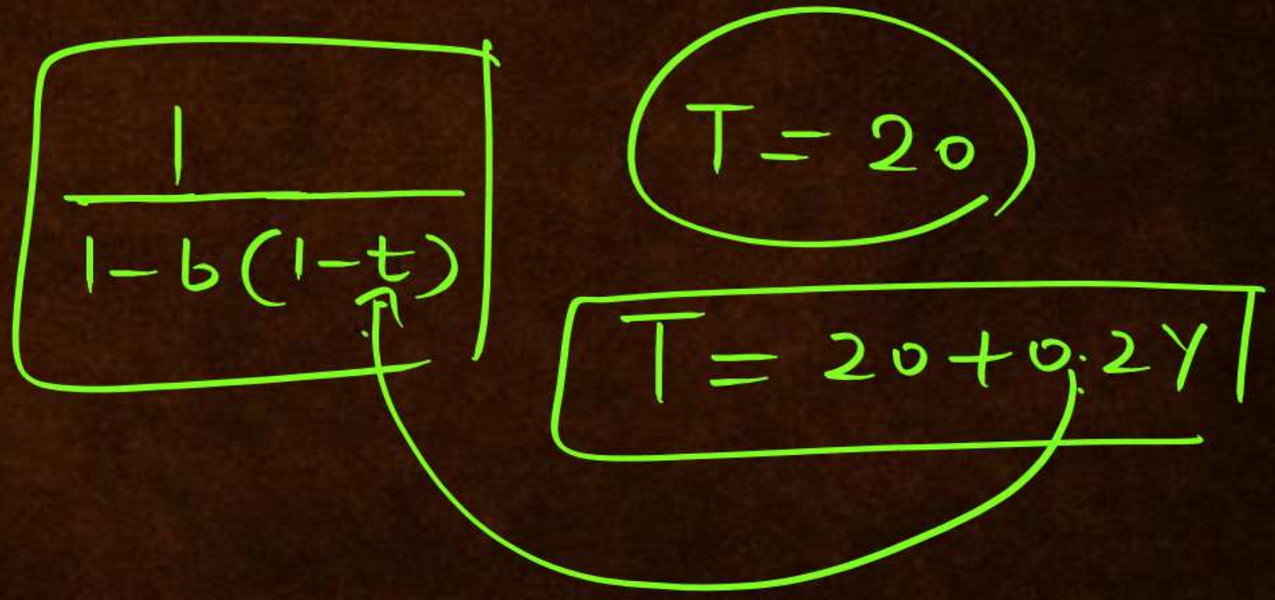
B 2

C 3

D 4 ✓

Solution

(b) The value of the multiplier is = 1/ (1 – MPC) = 1/ (1 – b) = 1/ (1 – 0.75) = 1/0.25 = 4



Y_d = income ready for consumption

↓

Saving

$Y = 100$

$T = -5$

95

(TR) $= +2$

$97 \rightarrow Y_d$

$$Y_d = Y - T + TR$$

QUESTION

#Q. Suppose the structural model of an economy is given –
C = 100 + 0.75 Yd; I = 200, G = T = 100; TR = 50, find the equilibrium level of income?

$$Y = C + I + G$$

$$Y = 100 + 0.75(Y - 100 + 50) + 200 + 100$$

Solution

$$Y = C + I + G$$

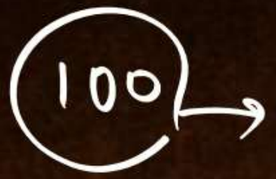
$$Y = 100 + 0.75\ Yd + 200 + 100$$

$$Y = 100 + 0.75(Y - 100 + 50) + 200 + 100$$

$$Y = 100 + 0.75Y - 75 + 37.5 + 200 + 00$$

$$Y = 1450$$

QUESTION



#Q. **Which of the following is added to national income while calculating personal income?**

A. Transfer payments to individuals

B. Undistributed profits of corporate

C. Transfer payments made to foreigners

D. Mixed income of self employed

QUESTION

#Q. For a closed economy, the following data is given –
Consumption C = 75 + 0.5 (Y-T); Investment I = 80; Total tax T = 25 + 0.1Y; Government expenditure G = 100.

(a) Find out equilibrium income?

(b) What is the value of multiplier?

$$Y = 75 + 0.5[Y - (25 + 0.1Y)] + 100$$

$$k = \frac{1}{1 - b(1-t)}$$

Solution

a) $Y = C + I + G$

$Y = 75 + 0.5(Y - 25 - 0.1Y) + 80 + 100$

$Y(1 - 0.5 + 0.05) = 75 - 12.5 + 80 + 100$

$Y = \frac{1}{1-0.5+0.05}(242.5)$

$Y = 440.91$

$\frac{1}{1-0.5(1-0.1)}$

b) Multiplier $= \frac{1}{1-b(1-t)} = 1/[1\text{-}0.5\ (1\text{-}0.1)] = 1.82$

(iv) Income Determination with Tax (as a Function of Income), Government Expenditure and Transfer Payments

Here consumption function is written as $C = a + b(Y - \bar{T} - tY + TR)$

$Y = a + b(Y - \bar{T} - tY + TR) + I + G$

$Y = \frac{1}{1-b(1-t)}(a - b\bar{T} + bTR + I + G)$

QUESTION

#Q. Suppose C = 100 + 0.80 (Y – T + TR); I = 200; T = 25 + 0.1Y; TR = 50;
G = 100 Find out equilibrium level of Income?

Solution

$$Y = C + I + G$$

$$Y = 100 + 0.80\ (Y - T + TR) + I + G$$

$$Y = 100 + 0.80(Y - 25 - 0.1Y + 50) + 200 + 100$$

$$Y - 0.80\ Y + 0.08\ Y = 420$$

$$Y(1 - 0.8 + 0.08) = 420$$

$$Y = 1500$$

4 Sector Ecor

$$Y = C + I + G + (X - m)$$

$$M = 10 + 0.8Y$$

m

QUESTION

#Q. The consumption function is $C = 40 + 0.8Y_d$, $T = 0.1Y$, $I = 60$ Crores $G = 40$ Crores, $X = 58$ and $M = 0.05\ Y$. Find out equilibrium level of income, Net Export, net export if export were to increase by 6.25.

t

$$Y = 40 + 0.8(Y - 0.1Y) + 60 + 40 + (58 - 0.05Y)$$

Solution

$C = 40 + 0.8Y_d$

$C = 40 + 0.8\ (Y - 0.1Y)$

$Y = C + I + G + (X - M)Y = 40 + 0.8(Y - 0.1Y) + 60 + 40 + (58 - 0.05Y)$

$Y = 40 + 0.8(0.9Y) + 60 + 40 + 58 - 0.05Y$

$Y - 0.72Y + 0.05Y = 198$

$Y(1 - 0.72 + 0.05) = 198$

$Y(0.33) = 198$

$Y = 198/0.33 = 600$ Crores

Net Export = $X - M = 58 - 0.05Y$

$58 - 0.05\ (600) = 58 - 30 = 28$

If exports increase by 6.25, then exports = 64.25

Then, $Y = 40 + 0.8\ (Y - 0.1Y) + 60 + 40 + (64.25 - 0.05Y)$

Solution

$Y(1 - 0.72 + 0.05) = 204.5$

$Y(0.33) = 204.5$

$Y = 204.5/0.33 = 619.697$

Then import $= .05 \times 619.697 = 30.98$

Net Export $= 64.25 - 30.98 = 33.27$ Crores

Thus, there is surplus in balance of trade as Net Exports are positive.

QUESTION

#Q. An economy is characterized by the following equation

Consumption	$C = 60 + 0.9Y_d$
Investment	$I = 10$
Government expenditure	$G = 10$
Tax	$T = 0$
Exports	$X = 20$
Imports	$M = 10 + 0.05Y$

What is the equilibrium income?

Calculate trade balance and foreign trade multiplier.

$Y = 60 + 0.9(Y) + 10 + 10$

$20 - 10 - 0.05Y$

$X - m$

$\frac{1}{1 - b + m}$

Solution

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

$$= 60 + 0.9(Y - 0) + 10 + 10 + (20 - 10 - 0.05Y)$$

$$= 60 + 0.9Y + 30 - 0.05Y$$

$$Y = 600$$

Trade Balance $= X - M = 20 - 10 - 0.05(600) = -20$

Thus, trade balance in deficit.

Foreign trade multiplier $= \frac{1}{1 - b + m} = \frac{1}{\&1 - 0.9 + 0.05} = 6.66$

Q $C = 10 + 0.8Y$

$I = ?$

Eqb. $Y = 100$

Ans $Y = C + I$

$$Y = 10 + 0.8Y + I$$

100 100

$100 = 10 + 80 + I$

(A) 10 (A)

(B) 50

(C) 100

(D) None

Ex-ante → Planned

Expected | & Intended

Future

Ex-ante AP, C, I, S,

Ex-post

↓

actuap

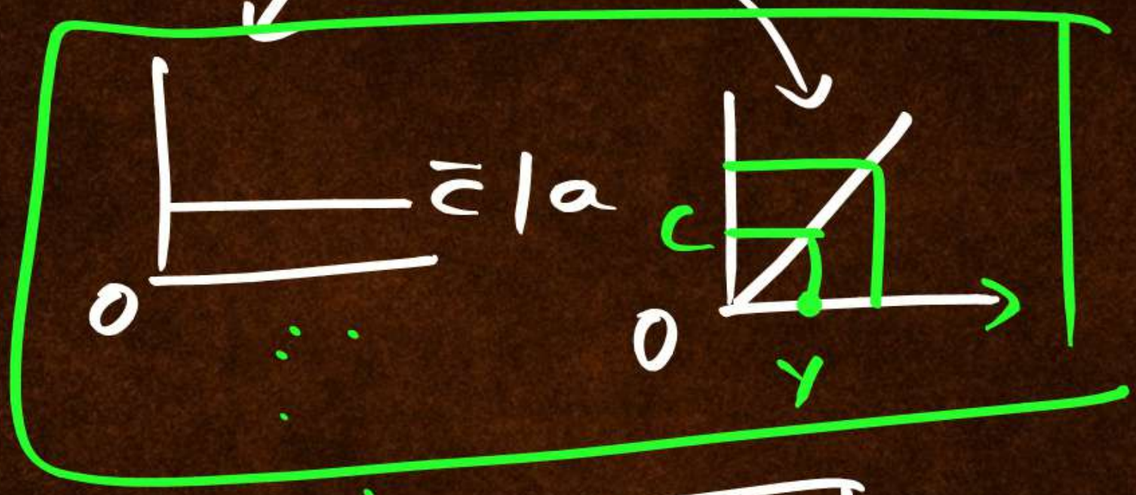
Unplanned

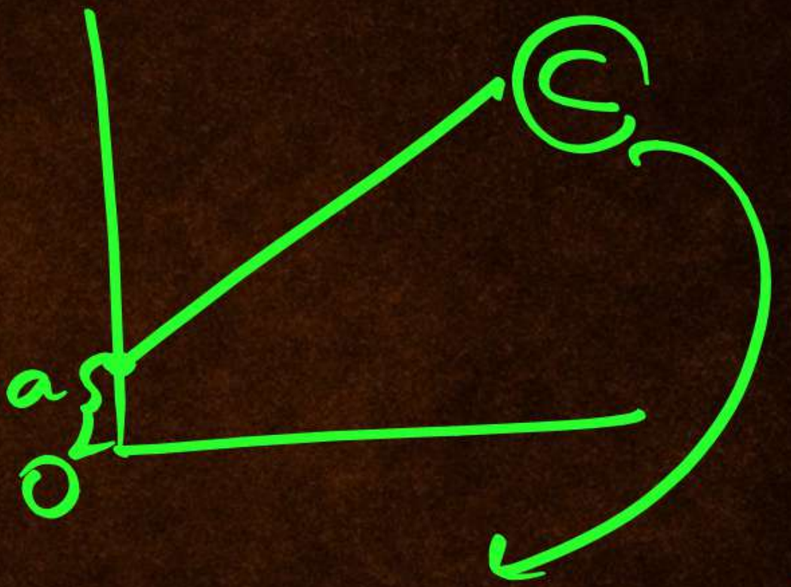
Poesent

Expost A D, C, I

$C = 100 + 0.8Y$

$C = a + b \cdot Y$





$0 \leq MPC \leq 1$

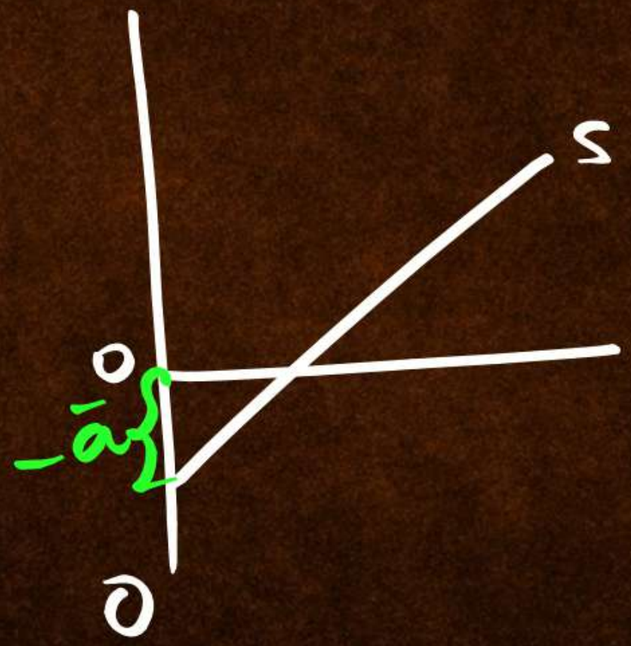
$\text{Slope} = MPC = \frac{\Delta C}{\Delta Y}$

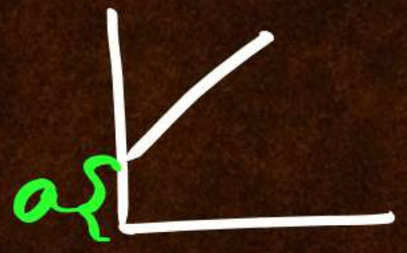
$\downarrow$

b

$S = -100 + 0.2Y$

$MPS = \frac{\Delta S}{\Delta Y}$ → Slope

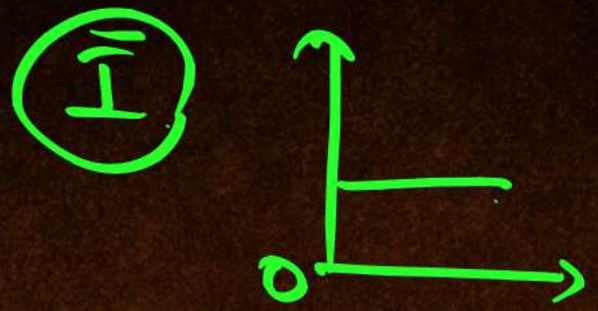




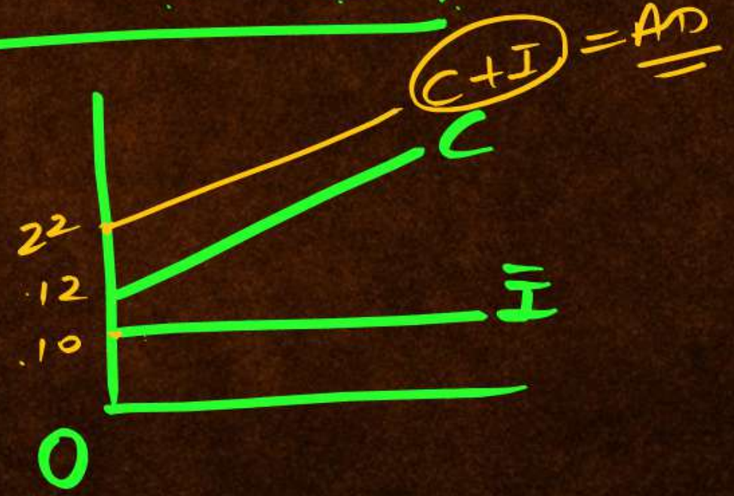
$C = 10 + 0.6Y$

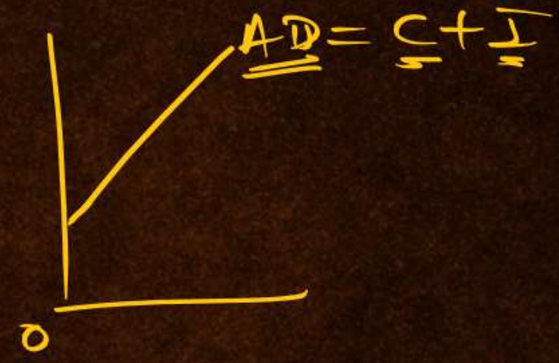
$S = -10 + 0.4Y$

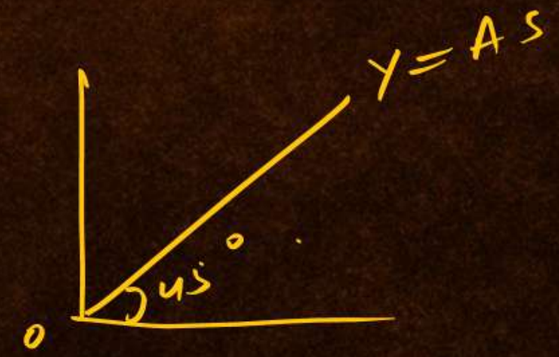
1



$$AD = \overset{12}{C} + \overset{10}{\bar{I}}$$

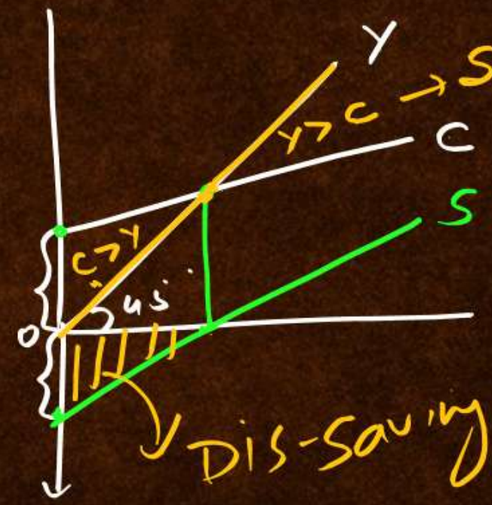






$Y = C + S$

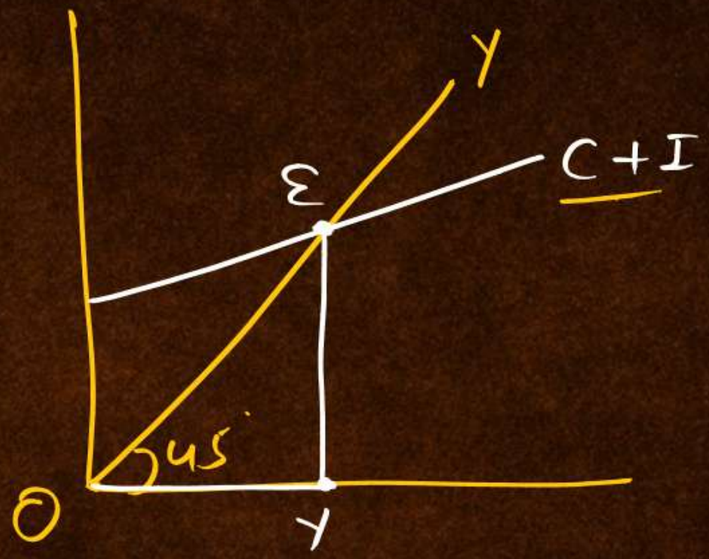
$Y = 100$
$C = 100$ ⟹ Break even Point
$S = 0$

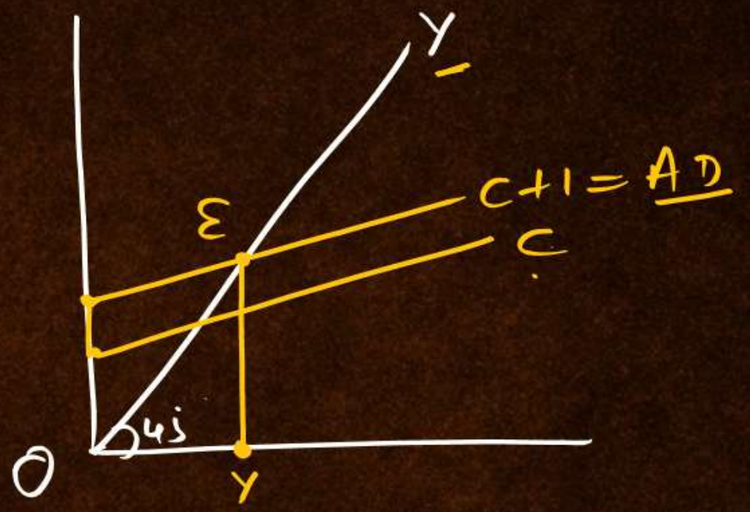


$Y > C \Rightarrow S$
100 90

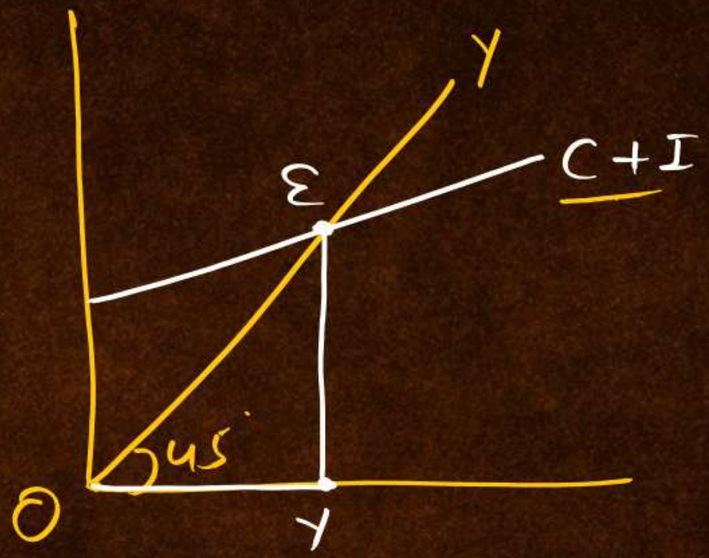
$Y < C \Rightarrow -2$
10 12

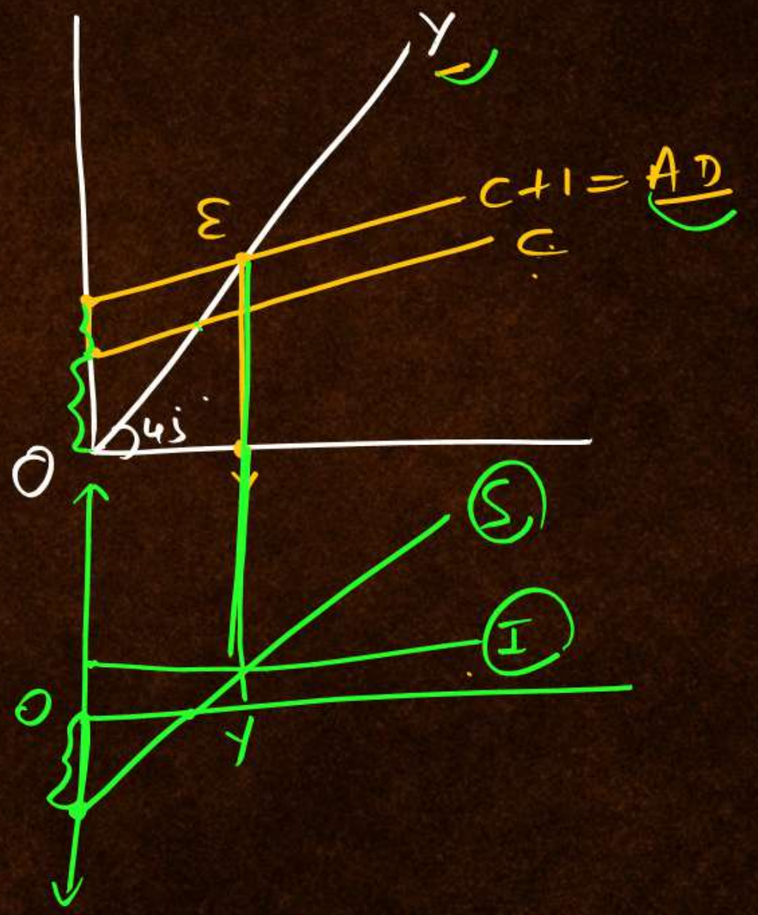
AD = AS





AD = AS



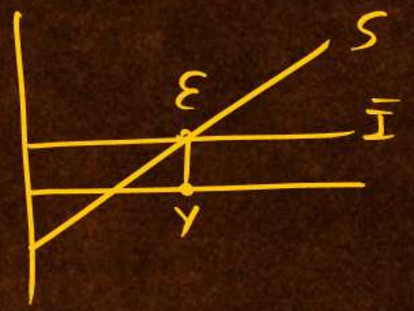


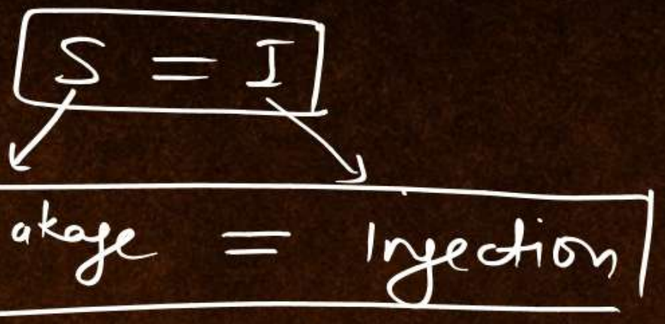
$$\underline{AD} = \underline{AS}$$

$$\downarrow$$

$$C + I = C + S$$

$$\boxed{I = S}$$

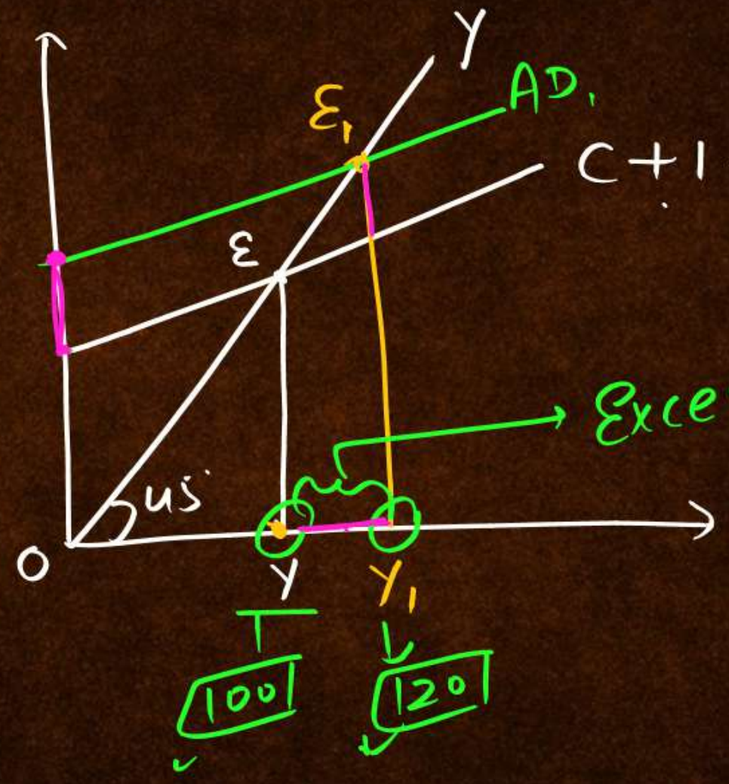




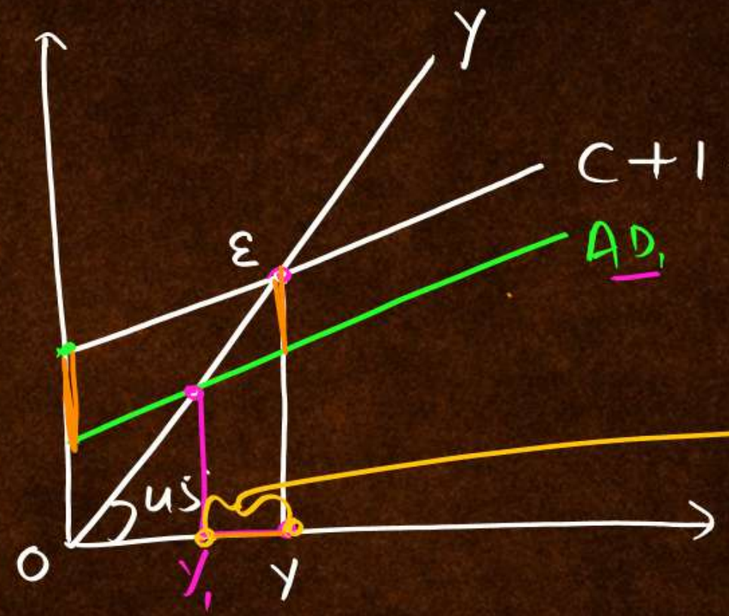
Injections → I, Export, Expⁿ

Leakage → Saving, Import, Tax

full Emp.


Y
AD1
E1
C+I = AD0
Ex-ante
E
Excess Demand / Inflationary Gap
45°
O
Y
Y1
100
120

full Emp.

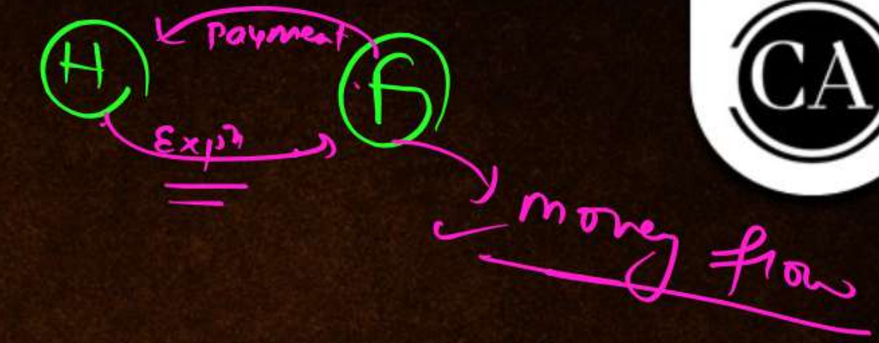


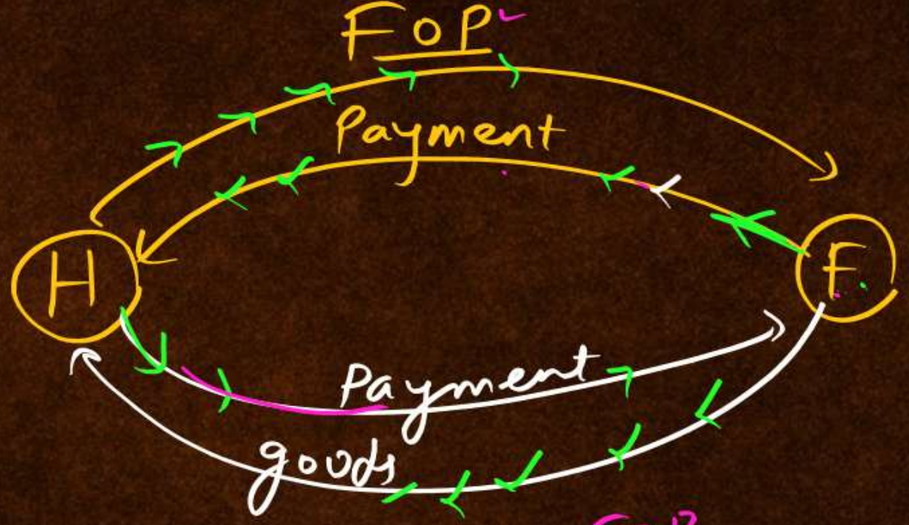
Investment multiplier

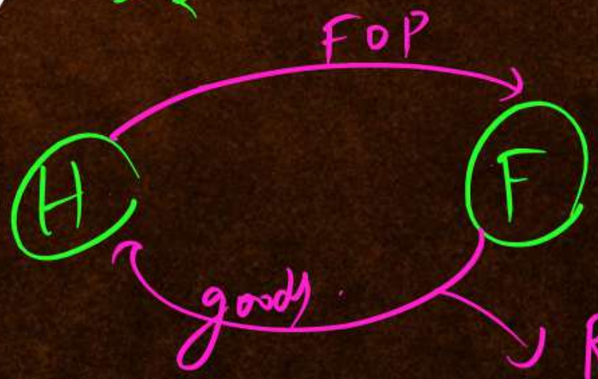
$\Delta I \rightarrow \Delta Y$

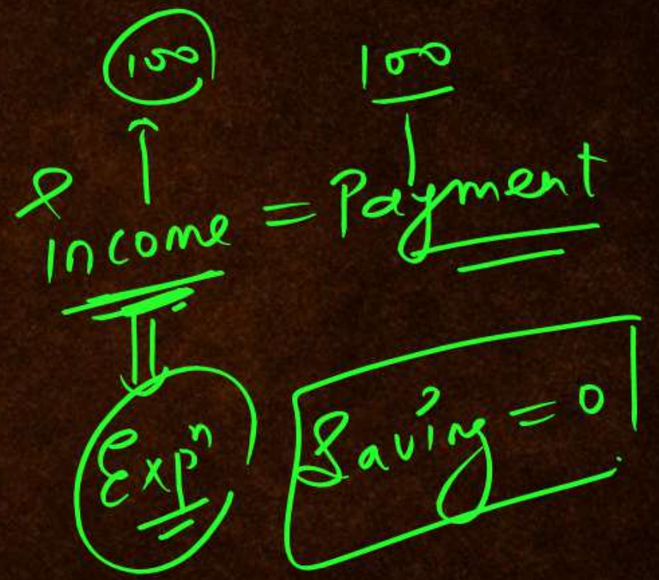
$$\frac{\Delta Y}{\Delta I}$$

Circular flow









Chapter done

Process Unit-2 → Numerical

Theory

THANK YOU