



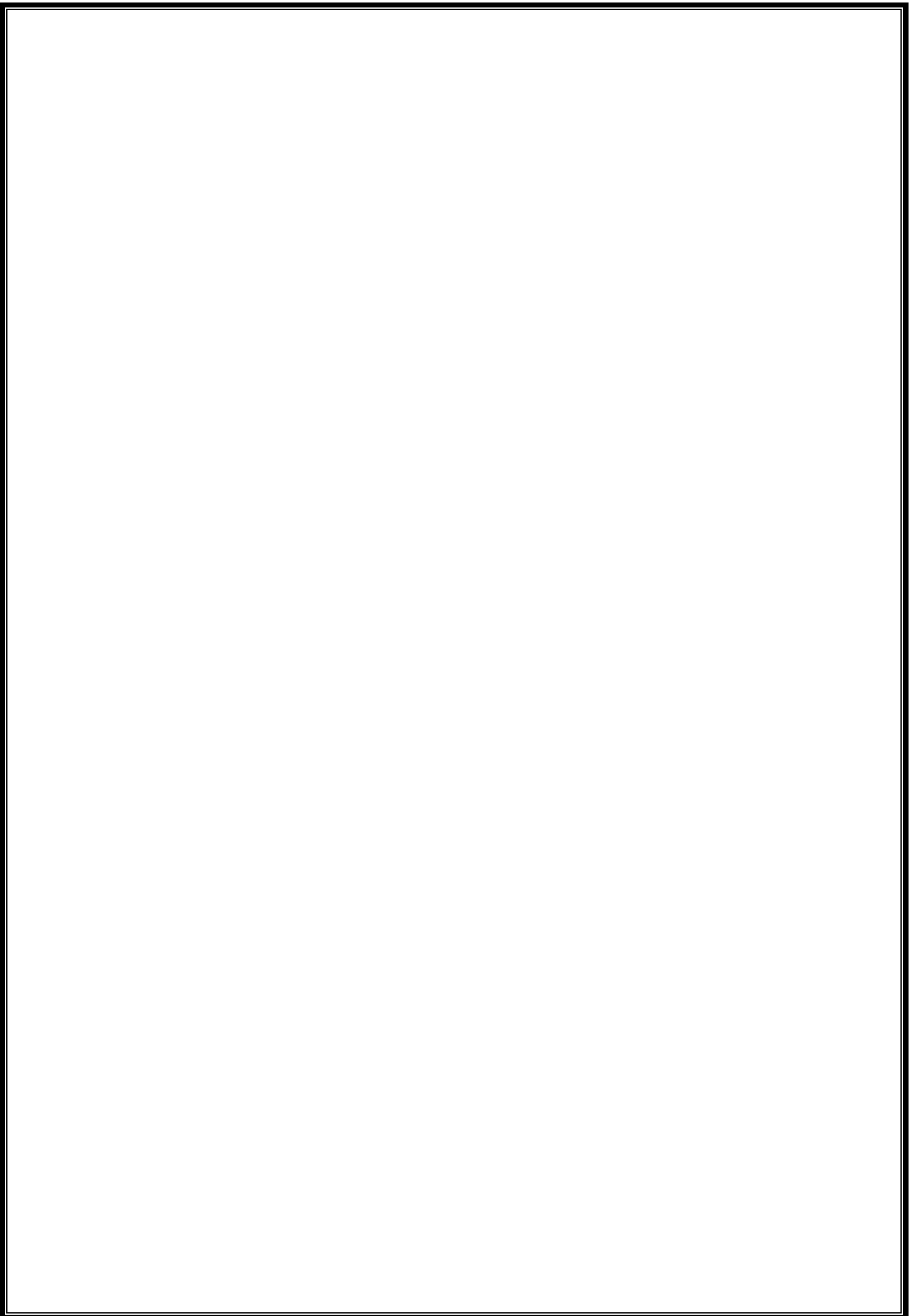
**ECONOMICS
FOR
FINANCE**





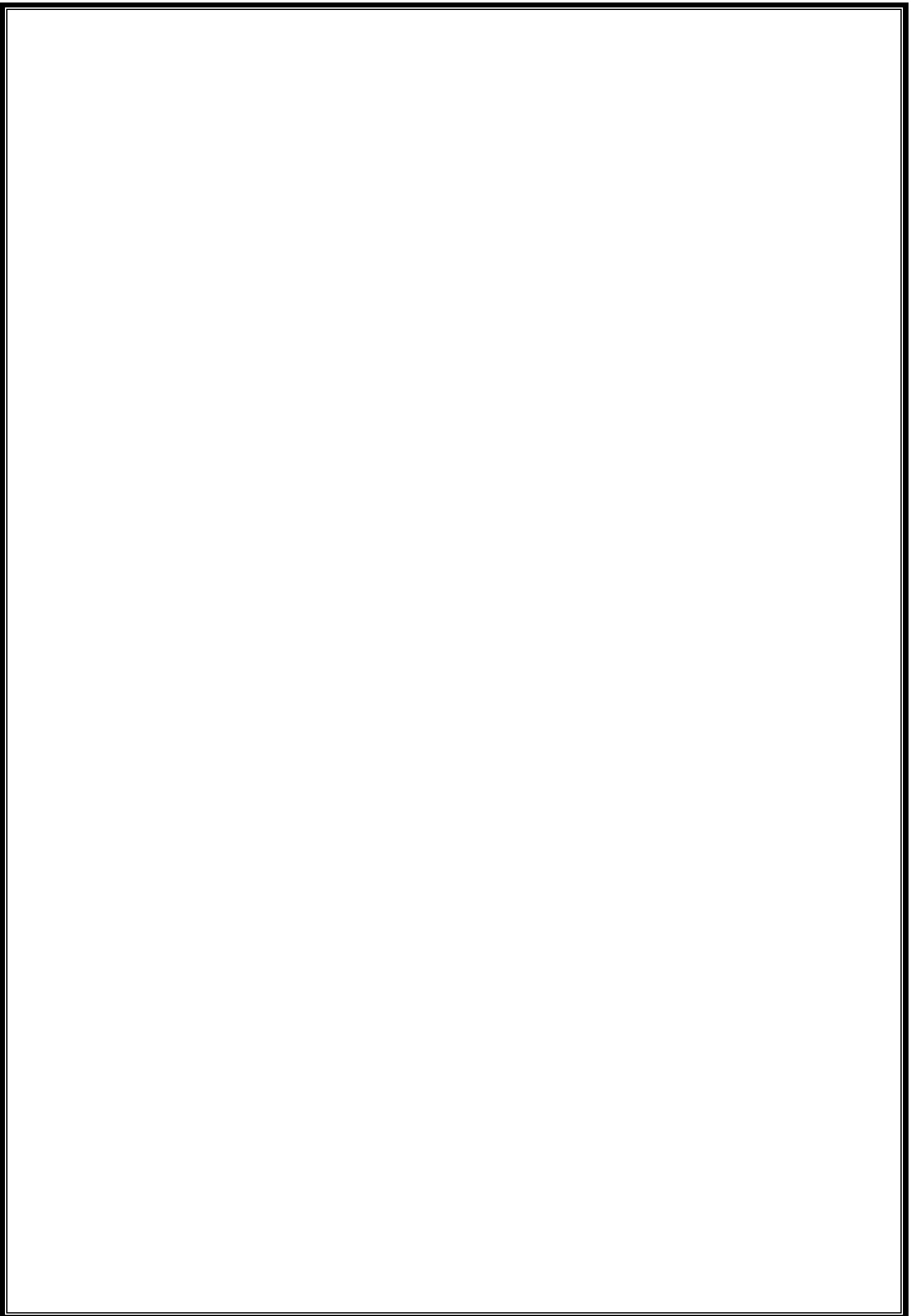
This piece of work is a result of constant urge for development and providing the best means to all willing students who look upon us for their bright future. This book is dedicated to my family because without their support this would have been impossible. I thank CA CS Avinash Sancheti, who works day and night together to make things easier and better for you all. I wish you all a bright future ahead. Happy learning!!

CA Navneet Mundhra
(8 papers of actuaries)



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INTRODUCTION TO MACRO ECONOMICS

a) *Aggregate Demand & Aggregate Supply :*

b) *Business Cycle :*

3) *Globalization :*

NATIONAL INCOME

UNIT - 1 : National Income Accounting

a) *Circular Flow of Income :*

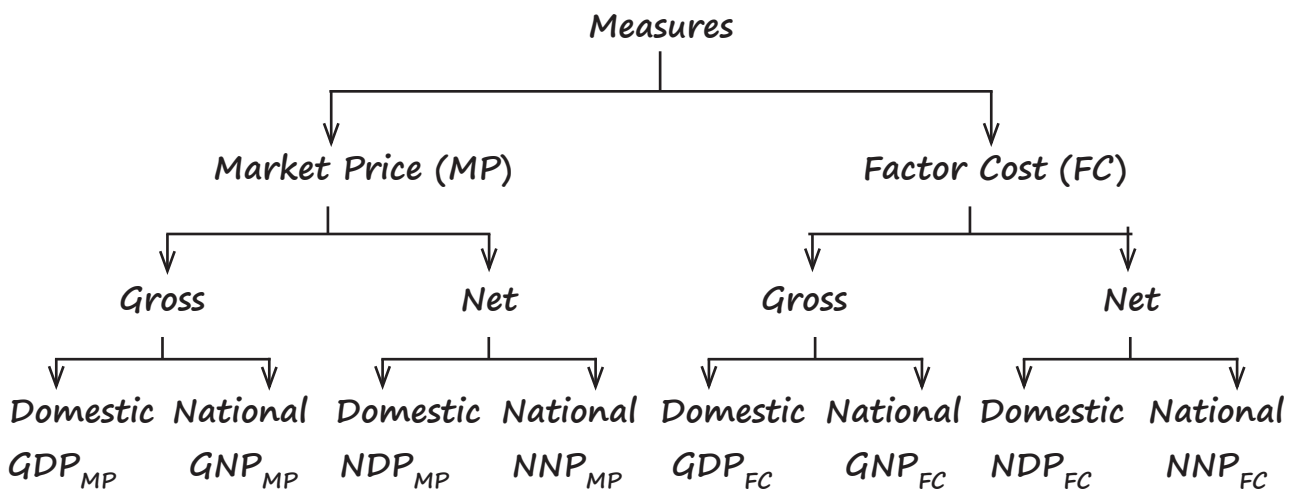
I) *At production stage :*

II) *At distribution stage :*

III) *At disposition stage :*

The above 3 methods are the measurement of National Income.

b) Measures of National Income :



c) Important Relations : -

1) $\text{Market Price (MP)} = \text{Factor Cost} + \text{NIT}$

Where, Net Indirect tax i.e., (Indirect tax - Subsidy)

ON PRODUCTION CYCLE

Licensee fees, etc

ON PRODUCTION UNITS

GST, Custom Duty

2) $\text{Gross Value} - \text{Depreciation (capital allowance)} = \text{Net Value}$

3) $\text{Domestic Income} + \text{NFIA} = \text{National Income}$

NFIA = Net compensation of employees + Net income from property and entrepreneurship + Net retained earnings

d) Practical Sums : -

E.g.1 - FC of Income = ₹ 500 Cr.

Net Indirect tax = ₹ 26 Cr

Subsidy = ₹ 15 Cr

Calc. MP

E.g.2 - Factor Cost of Income = ₹ 475 Cr

Subsidy = ₹ 50 cr Indirect tax = ₹ 30 cr.

Calc. MP

E.g.3 - $NDP_{FC} = 500$ cr.

Depreciation = 12 cr.

Factor Income paid Abroad = ₹ 20 cr.

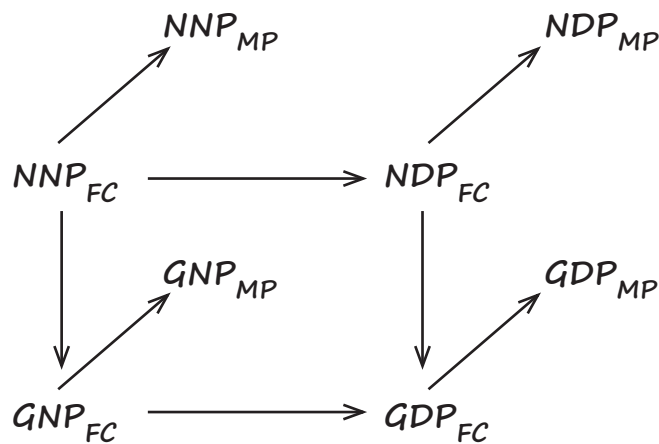
Factor Income carried Abroad = ₹ 15 cr.

Subsidy = ₹ 10 cr.

Indirect tax = ₹ 22 cr

Calculate all the rest measures of National Income.

Suppose we start from NNP_{FC} :



e) **Some Important Definitions :** -

Our Institute defines NI as :

- 1) Net value of all economic goods & Services produced within the domestic territory/ frontier of a country in an accounting year plus Net Factor Income from Abroad.

$$NI = NNP_{FC}$$

- 2) GDP_{MP} = It is a measure of market value of all final economic goods & services produced within the domestic territory/ frontier, gross of Depreciation in a given time period.

- 3) GDP_{FC} :

- 4) GNP_{FC} :

- 5) GNP_{MP} :

- 6) NNP_{MP} :

- 7) NDP_{MP} :

8) NDP_{FC} :

f) Personal Income & Disposable Personal Income : -

While national income is income earned by factors of production, Personal Income is the income received by the household sector including Non-Profit Institutions Serving Households. Thus, national income is a measure of income earned and personal income is a measure of actual current income receipts of persons from all sources which may or may not be earned from productive activities during a given period of time. In other words, it is the income 'actually paid out' to the household sector, but not necessarily earned.

$PI = NI + \text{income received but not earned} - \text{income earned but not received.}$

$PI = NI - \text{Undistributed profits} - \text{Net interest payments made by households} - \text{Corporate Tax} + \text{Transfer Payments to the households from firms and government.}$

Disposable personal income is a measure of amount of money in the hands of the individuals that is available for their consumption or savings. Disposable personal income is derived from personal income by subtracting the direct taxes paid by individuals and other compulsory payments made to the government.

$DI = PI - \text{Personal Income Taxes} - \text{Non tax payments}$

Apart from the above aggregates, a few other aggregates are reported in India. These reflect the amount of goods and services the domestic economy has at its disposal. Two more concepts need to be understood, namely:

1. Net National Disposable Income

Net National Disposable Income (NNDI) = Net National Income + other net current transfers from the rest of the world (Receipts less payments)

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

2. Gross National Disposable Income

Gross National Disposable Income (GNDI) = NNDI + CFC = GNI + other net current transfers from the rest of the world (Receipts less payments)
(Other Current Transfers refer to current transfers other than the primary incomes)

Domestic Income may be categorized into:

1. Income from domestic product accruing to the public sector which includes income from property and entrepreneurship accruing to government administrative departments and savings of non-departmental enterprises.
2. Income from domestic product accruing to private sector = NDPFC - Income from property and entrepreneurship accruing to government administrative departments - Savings of non-departmental enterprises

E.g.1) $NNP_{FC} = 1900$ Cr. $DPI = ₹ 1200$ cr. Personal Income tax = ₹ 600 cr.
Value of Retained earnings = ₹ 200 cr. What is PI & transfer payment amount?

E.g.2) Calculate PI & PDI :

$NDP_{FC} = 8000$ cr, $NFIA = 200$ cr. Undistributed profits = 1000 cr, corporate tax = 500 cr. Interest received by household = 1500 cr. Interest paid by household = 1500 cr. Transfer Income = 300 cr. Personal tax = 500 cr.

E.g.3) From the following data, estimate National Income and Personal Income.

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

E.g.4) Calculate the aggregate value of depreciation when the GDP at market price of a country in a particular year was Rs 1,100 Crores. Net Factor Income from Abroad was Rs. 100 Crores. The value of Indirect taxes – Subsidies was Rs 150 Crores and National Income was Rs850 Crores.

E.g.5) On basis of following information, calculate NNP at market price and Disposable personal income

<i>Items</i>	<i>Rs. in Crores</i>
NDP at factor cost	14900
Income from domestic product accruing to government	150
Interest on National debt	170
Transfer payment by government	60
Net private donation from abroad	30
Net factor income from abroad	80
Indirect taxes	335
Direct taxes	100
Subsidies	262
Taxes on corporate profits	222
Undistributed profits of corporations	105

g) Private Income : -

Private income is a measure of the income (both factor income and transfer income) which accrues to private sector from all sources within and outside the country.

Private Income = Factor income from net domestic product accruing to the private sector + Net factor income from abroad + National debt interest + Current transfers from government + Other net transfers from the rest of the world

h) Measurements of National Income : -

- 1) **Expenditure Method** : $C + I + G + (X - M)$
- 2) **Income Method** : $W + R + I + P + MI = W + OS + MI$
- 3) **Production Method** : ΣVA

i) Expenditure Method : -

- 1) Expenditure Method is always at MP
- 2) Economic activities v/s Non-economic activities :

There must be a creation of goods & services with a Market Values:

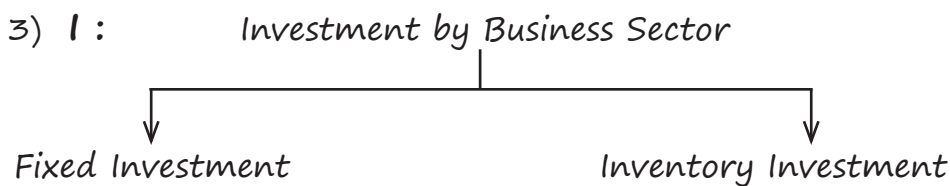
Economic activities

Either it is not exchanged or it has no Market Value : Non-economic activities

All Non-Economic activities are excluded from NI except :

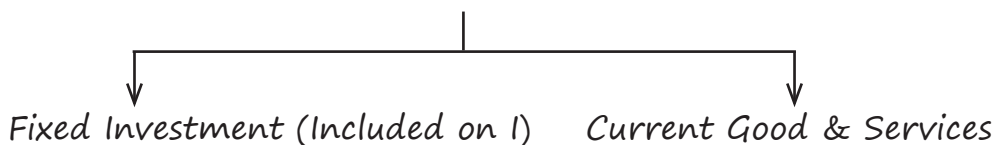
- (a) production for self consumption (e.g: agriculture)
- (b) own account production of fixed asset
- (c) imputed rent of owner occupied houses
- (d) government expenditure on current goods and services like defence, education, health care, etc.

NOTE : However govt. transfer payments like oldage pension and family pension, scholarship given to deserving delight student, compensation given for loss of property due to floods, etc is not a part of National Income. It is a part of personal income.



National Income is Gross or Net of value depends upon Investment

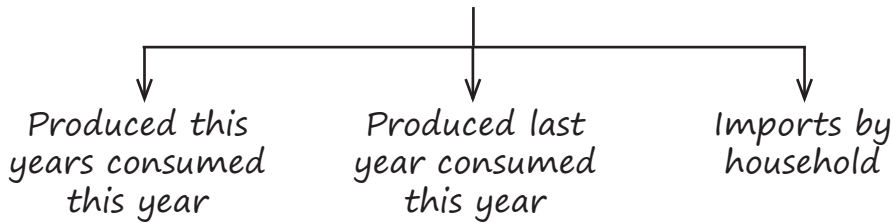
4) **G** : Spendings by Government sectors on current goods and services



5) $(X-M)$: Export - Import (Net Exports)

If it includes Factor income than we will get national value, if not then we will get Domestic value.

6) C : Consumption by Household



7) Other Points :

i) Transfer Payments : E.g., old age benefits, pension, unemployment allowances, interest on National Debt, Relief Payment, etc. All these are not included in NI but included in personal income

ii) Financial Transactions (Trading in Stock & Commodity Market) : These are just exchanges, no new creations of goods or services is involved hence excluded from NI

iii) Exchange of previously produced goods is E.g., Second Hand Car. But the value of services that occur during the sale of above pts (ii) and (iii) are included in NI

iv) Intermediate consumptions (Input consumption) value are covered in final consumptions so excluded from NI

v) Illegal activities are excluded from NI
E.g., Betting, Gambling.

j) **Income Method** : -

1) It is always at FC

2) W = Wages or compensation to employees

R = Rent or Royalty

I = Interest

P = Profit

OS = Operating surplus = $R + I + P$

- 3) Generally R, I, P, W does not includes NFIA therefore from Income Method we get NDP at FC , if it does then we get NNP at FC
- 4) In income method, we also include mixed income of self employed. When we cannot segregate the capital and labour part then it is called Mixed Income (MI)
E.g., C A, Doctors, Teachers.

k) Production Method OR Value Added Method : -

- 1) Product Method or Value Added Method is also called Industrial Origin Method or Net Output Method.
- 2) National income by value added method is the sum total of net value added at factor cost across all producing units of the economy.
- 3) The value added method measures the contribution of each producing enterprise in the domestic territory of the country in an accounting year and entails consolidation of production of each industry less intermediate purchases from all other industries.
- 4) This method of measurement shows the unduplicated contribution by each industry to the total output.
- 5) This method involves the following steps:

Step 1: Identifying the producing enterprises and classifying them into different sectors according to the nature of their activities

All the producing enterprises are broadly classified into three main sectors namely:

- (i) Primary sector,
- (ii) Secondary sector, and
- (iii) Tertiary sector or service sector

These sectors are further divided into sub-sectors and each sub-sector is further divided into commodity group or service-group.

Step 2: Estimating the gross value added (GVA at MP) by each producing enterprise. This is the same as GDP at MP

$$\begin{aligned} \text{Gross value added (GVA MP)} &= \text{Value of output} - \text{Intermediate consumption} \\ &= (\text{Sales} + \text{change in stock}) - \text{Intermediate consumption} \end{aligned}$$

Note that imports are included in the value of intermediate consumption if total purchases are given. If domestic purchases are specifically mentioned, then imports will also be added. Also, sales include exports, if domestic sales are

separately mentioned, exports need to be added

E.g.1) From the following data, calculate NNP_{FC} , NNP_{MP} , GNP_{MP} and GDP_{MP}

Items	Rs in Crores
Operating surplus	2000
Mixed income of self-employed	1100
Rent	550
Profit	800
Net indirect tax	450
Consumption of fixed capital	400
Net factor income from abroad	-50
Compensation of employees	1000

E.g.2) Calculate National Income by Value Added Method with the help of following data

<i>Particulars</i>	<i>Rs in Crores</i>
Sales	700
Opening stock	500
Intermediate Consumption	350
Closing Stock	400
Net Factor Income from Abroad	30
Depreciation	150
Excise Tax	110
Subsidies	50

E.g.3) Calculate the Operating Surplus with the help of following data

<i>Particulars</i>	<i>Rs in Crores</i>
Sales	4000
Compensation of employees	800
Intermediate consumption	600
Rent	400
Interest	300
Net indirect tax	500
Consumption of Fixed Capital	200
Mixed Income	400

E.g.4) Calculate national income by value added method.

<i>Particulars</i>	<i>Rs in crores</i>
<i>Value of output in primary sector</i>	<i>2000</i>
<i>Intermediate consumption of primary sector</i>	<i>200</i>
<i>Value of output of secondary sector</i>	<i>2800</i>
<i>Intermediate consumption of secondary sector</i>	<i>800</i>
<i>Value of output of tertiary sector</i>	<i>1600</i>
<i>Intermediate consumption of tertiary sector</i>	<i>600</i>
<i>Net factor income from abroad</i>	<i>-30</i>
<i>Net indirect taxes</i>	<i>300</i>
<i>Depreciation</i>	<i>47</i>

E.g.5) Calculate Net Value Added by Factor Cost from the following data

<i>Items</i>	<i>Rs in Crores</i>
Purchase of materials	85
Sales	450
Depreciation	30
Opening stock	40
Closing stock	30
Excise tax	45
Intermediate consumption	200
Subsidies	15

E.g.6) Calculate NI with the help of Expenditure method and income method with the help of following data:

<i>Items</i>	<i>Rs in Crores</i>
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

<i>Net export</i>	<i>30</i>
<i>Govt. final consumption expenditure</i>	<i>1100</i>
<i>Operating surplus</i>	<i>1820</i>
<i>Employer's contribution to social security scheme</i>	<i>300</i>

E.g.7) From the following data calculate (a) Gross Domestic Product at Factor Cost, and (b) Gross Domestic Product at Market price

<i>Items</i>	<i>Rs in Crores</i>
<i>Gross national product at factor cost</i>	<i>61,500</i>
<i>Net exports</i>	<i>(-) 50</i>
<i>Compensation of employees</i>	<i>3000</i>
<i>Rent</i>	<i>800</i>
<i>Interest</i>	<i>900</i>
<i>Profit</i>	<i>1,300</i>
<i>Net indirect taxes</i>	<i>300</i>
<i>Net domestic capital formation</i>	<i>800</i>
<i>Gross domestic capital formation</i>	<i>900</i>
<i>Factor income to abroad</i>	<i>80</i>

E.g.8) Calculate NNP at FC by expenditure method with the help of following information

Items	Rs in Crores
Private final consumption expenditure	10
Net Import	20
Public final consumption expenditure	05
Gross domestic fixed capital formation	350
Depreciation	30
Subsidy	100
Income paid to abroad	20
Change in stock	30
Net acquisition of valuables	10

1) Nominal GDP v/s Real GDP : -

When GDP is estimated on the basis of current year's market prices, it is called 'nominal GDP' or 'GDP at current prices'. For example, GDP of year 2020-21 may be measured using prices of 2020-21. Nominal GDP changes from year to year for two reasons. First, the amount of goods and services produced changes, and second, market prices change. Changes in GDP due to changes in prices fail to correctly explain the performance of the economy in producing goods and services.

Therefore, for making comparisons of GDP at different points of time, we need to compute real GDP. Real GDP is calculated in such a way that the goods and services produced in a particular year are evaluated at some constant set of prices or constant prices. In other words, it is calculated using the prices of a selected 'base year'. For example, if 2011-12 is selected as the base year, then real GDP for 2020-21 will be calculated by taking the quantities of all goods and services produced in 2020-21 and multiplying them by their 2011-12 prices. Thus, real GDP or GDP at constant prices refers to the total money value of the final goods and services produced within the domestic territory of a country during an accounting year, estimated using base year prices. Real GDP is an inflation-adjusted measure and is not affected by changes in prices; it changes only when there is change in the amount of output produced in the economy. Real GDP is a better measure of economic well being as it shows the true picture of the change in production of an economy.

$$\text{GDP Index OR NI Index OR NI deflator} = \left[\frac{\text{Nominal GDP}}{\text{Real GDP}} \times 100 \right] \%$$

The deflator measures the change in prices that has occurred between the base year and the current year. In other words, it measures the current level of prices relative to the level of prices in the base year. Since nominal GDP and real GDP must be the same in the base year, the deflator for the base year is always 100.

As you know, inflation is a closely monitored aspect of macroeconomic performance and a significant variable guiding macroeconomic policy. Using the GDP deflator, the inflation rate between two consecutive years can be computed using the following procedure:

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

To measure the standard of living of the people of a country we calculate
Per Capita Income = Real GDP / Total Population

E.g. 1) The nominal and real GDP respectively of a country in a particular year are Rs 3000 Crores and Rs 4700 Crores respectively. Calculate GDP deflator and comment on the level of prices of the year in comparison with the base year.

E.g. 2) Find nominal GDP if real GDP = 450 and price index = 120

E.g. 3) Suppose nominal GDP of a country in year 2010 is given at Rs 600 Crores and price index is given as base year 2010 is 100. Now let the nominal GDP increases to Rs 1200 Crores in year 2018 and price index rises to 110, find out real GDP?

m) Usefulness of National Income : -

National income accounts are fundamental aggregate statistics in macro-economic analysis and are extremely useful, especially for the emerging and transition economies.

1. National income accounts provide a comprehensive, conceptual and accounting framework for analyzing and evaluating the short-run performance of an economy. The level of national income indicates the level of economic activity and economic development as well as aggregate demand for goods and services of a country.
2. The distribution pattern of national income determines the pattern of demand for goods and services and enables businesses to forecast the future demand for their products.
3. Economic welfare depends to a considerable degree on the magnitude and distribution of national income, size of per capita income and the growth of these over time.
4. The estimates of national income show the composition and structure of national income in terms of different sectors of the economy, the periodical variations in them and the broad sectoral shifts in an economy over time. It is also possible to make temporal and spatial comparisons of the trend and speed of economic progress and development. Using these information, the governments can fix various sector-specific development targets for different sectors of the economy and formulate suitable development plans and policies to increase growth rates.
5. National income statistics also provide a quantitative basis for macro-economic modeling and analysis, for assessing and choosing economic policies and for objective statement as well as evaluation of governments' economic policies. These figures often influence popular and political judgments about the relative success of economic programmes.
6. National income estimates throw light on income distribution and the possible inequality in the distribution among different categories of income earners. It is also possible make comparisons of structural statistics, such as ratios of investment, taxes, or government expenditures to GDP.
7. International comparisons in respect of incomes and living standards assist in determining eligibility for loans, and or other funds or conditions on which such loans, and/ or funds are made available. The national income data are also useful to determine the share of nation's contributions to various international bodies.
8. Combined with financial and monetary data, national income data provide a guide to make policies for growth and inflation.
9. National income or a relevant component of it is an indispensable variable considered in economic forecasting and to make projections about the future development trends of the economy.

n) Measurement of NI in India : -

National Accounts Statistics (NAS) in India are compiled by National Accounts Division in the Central Statistics Office, Ministry of Statistics and Programme Implementation. Annual as well as quarterly estimates are published. This publication is the key source-material for all macro economic data of the country. As per the mandate of the Fiscal Responsibility and Budget Management Act 2003, the Ministry of Finance uses the GDP numbers (at current prices) to determine the fiscal targets.

The Ministry of Statistics and Programme Implementation has released the new series of national accounts, revising the base year from 2004-05 to 2011-12. In the revision of National Accounts statistics done by Central Statistical Organization (CSO) in January 2015, it was decided that sector-wise estimates of Gross Value Added (GVA) will now be given at basic prices instead of at factor cost. In simple terms, for any commodity the 'basic price' is the amount receivable by the producer from the purchaser for a unit of a product minus any tax on the product plus any subsidy on the product.

o) System of Regional Accounts in India : -

Regional accounts provide an integrated database on the innumerable transactions taking place in the regional economy and help decision making at the regional level. At present, practically all the states and union territories of India compute state income estimates and district level estimates. State Income or Net State Domestic Product (NSDP) is a measure in monetary terms of the volume of all goods and services produced in the state within a given period of time (generally a year) accounted without duplication. Per Capita State Income is obtained by dividing the NSDP (State Income) by the midyear projected population of the state.

The state level estimates are prepared by the State Income Units of the respective State Directorates of Economics and Statistics (DESS). The Central Statistical Organisation assists the States in the preparation of these estimates by rendering advice on conceptual and methodological problems. In the preparation of state income estimates, certain activities such as are railways, communications, banking and insurance and central government administration, that cut across state boundaries, and thus their economic contribution cannot be assigned to any one state directly are known as the 'Supra-regional sectors' of the economy. The estimates for these supra regional activities are compiled for the economy as a whole and allocated to the states on the basis of relevant indicators.

p) GDP limitations : -

There are innumerable limitations and challenges in the computation of national income. The task is more complex in underdeveloped and developing countries. Following are the general dilemmas in measurement of

national income. GDP measures ignore the following:

- (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 dis-utility of loss of leisure time. We know that, other things remaining the same, a country's GDP rises if the total hours of work increase.
- (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, leisure time, fairness, gender equality, security of community feeling etc.,
- (i) 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. However, no reflection is made in national income of the negative impacts of higher crime rates. 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.

q) Limitations & Challenges OF NI Computation: -

There are many conceptual difficulties related to measurement which are difficult to resolve, such as:

- (a) lack of an agreed definition of national income,
- (b) accurate distinction between final goods and intermediate goods.
- (c) issue of transfer payments,
- (d) services of durable goods,
- (e) difficulty of incorporating distribution of income,

(f) valuation of a new good at constant prices, and

(g) valuation of government services

Other challenges relate to:

(a) Inadequacy of data and lack of reliability of available data,

(b) presence of non-monetised sector,

(c) production for self-consumption,

(d) absence of recording of incomes due to illiteracy and ignorance,

(e) lack of proper occupational classification, and

(f) accurate estimation of consumption of fixed capital

Application Oriented Questions :

1. Compute National income

Consumption	750
Investment	250
Government Purchases	100
Exports	100
Imports	200

2. Calculate Gross Domestic Product at market Prices (GDPMP) and derive national income from the following data (in Crores of Rupees)

Inventory Investment	100
Exports	200
Indirect taxes	100
Net factor income from abroad	- 50
Personal consumption expenditure	3500
Gross residential construction investment	300
Depreciation	50
Imports	100
Government purchases of goods and services	1000
Gross public investment	200
Gross business fixed investment	300

3. Find GDP at MP and GNP at MP from the following data (in Crores of Rs) using income method. Show that it is the same as that obtained by expenditure method.

Personal Consumption	7,314
Depreciation	800
Wages	6,508
Indirect Business Taxes	1,000
Interest	1,060
Domestic Investment	1,442
Government Expenditures	2,196
Rental Income	34
Corporate Profits	682
Exports	1,346
Net Factor Income from Abroad	40
Mixed Income	806
Imports	1,408

4. From, the following data calculate the Gross National Product at Market Price using Value Added method

	<i>Rs in Crores</i>
Value of output in primary sector	500
Net factor income from abroad	-20
Value of output in tertiary sector	700
Intermediate consumption in secondary sector	400
Value of output in secondary sector	900
Government Transfer Payments	600
Intermediate consumption in tertiary sector	300
Intermediate consumption in primary sector	250

5. Calculate 'Sales' from the following data :

<i>Particulars</i>	<i>Rs in Lakhs</i>
Subsidies	200
Opening stock	100
Closing stock	600
Intermediate consumption	3,000
Consumption of fixed capital	700
Profit	750
Net value added at factor cost	2,000

6. Given the following data, determine the National Income of a country using expenditure method and income method:

<i>Particulars</i>	<i>Rs in Crores</i>
<i>Private Final Consumption Expenditure</i>	<i>1000</i>
<i>Government Final Consumption Expenditure</i>	<i>550</i>
<i>Compensation of Employees</i>	<i>600</i>
<i>Net Exports</i>	<i>-15</i>
<i>Net Indirect Taxes</i>	<i>60</i>
<i>Net Domestic Fixed Investment</i>	<i>385</i>
<i>Consumption of Fixed Capital Formation</i>	<i>65</i>
<i>Net Factor Income from Abroad</i>	<i>-10</i>
<i>Interest</i>	<i>310</i>
<i>Rent</i>	<i>200</i>
<i>Mixed Income of Self-Employed</i>	<i>350</i>
<i>Profit</i>	<i>400</i>

UNIT - II : Keynesian Theory**a) Introduction: - (John Maynard Keynes)**

Keynes' theory of determination of equilibrium real GDP, employment and prices focuses on the relationship between aggregate income and aggregate expenditure. There is a difference between equilibrium income (the level toward which the economy gravitates in the short run) and potential income (the level of income that the economy is technically capable of producing, without generating accelerating inflation). Keynes argued that markets would not automatically lead to full-employment equilibrium and the resulting natural level of real GDP. The economy could settle in equilibrium at any level of unemployment. Keynesians believe that prices and wages are not so flexible; they are sticky, especially downward. The stickiness of prices and wages in the downward direction prevents the economy's resources from being fully employed and thereby prevents the economy from returning to the natural level of real GDP. Therefore, output will remain at less than the full employment level as long as there is insufficient spending in the economy. This was precisely what was happening during the great depression.

The Keynesian theory of income determination is presented in three models:

- (i) The two-sector model consisting of the household and the business sectors,
- (ii) The three-sector model consisting of household, business and government sectors, and
- (iii) The four-sector model consisting of household, business, government and foreign sectors

Before we attempt to explain the determination of income in each of the above models, it is pertinent that we understand the concept of circular flow in an economy which explains the functioning of an economy.

We will be at equilibrium if actual output (Y) = Planned Aggregate Demand (AD)
Consumption by household depends upon disposable income. For simplicity we assume Disposable Income is NI .

$$C = f(Y_d)$$

If $Y \uparrow$ then of course $C \uparrow$

b) *Two Sector Economy :*

1) *Two Sector Economy without savings & Investment :*

we will be at equilibrium if total production = Total Consumption.

2) *Two Sector Economy with savings & Investment :*

Savings → Households; Investment → Firms

i) *Households : This leads to leakage or withdrawal*



Decrease in flow of Income

ii) *Firms : This leads to injection*



Increase in flow of Income

At equilibrium point

$$S = I.$$

$$C+S = C+I$$

If $S > I = \text{leakage} > \text{injection} \therefore \text{NI decreases}$

If $S < I = \text{leakage} < \text{injection} \therefore \text{NI increases}$

Of the two components, consumption expenditure (C) accounts for the highest proportion of the GDP. In a simple economy, the variable I is assumed to be determined exogenously and constant in the short run. Therefore, the short-run aggregate demand function can be written as:

$$AD = C + \bar{I}$$

iii) The rate of change of C with respect of Y is known as Marginal propensity to consume = $\Delta C / \Delta Y$

If $MPC = .8$. Explain.

iv) There is a minimum level of consumption known as autonomous consumption which exists even if $Y = 0$.

Therefore, $C = a + bY$

Suppose Autonomous consumption = 500 & $MPC = 0.8$ then

Y	C	MPC	APC (C/Y)
0			
300			
600			
1000			
5000			
10000			

Conclusion : 1) MPC remains constant

2) APC decreases with increase in Y

v) We Know,

$$Y = C + S$$

$$\therefore S = Y - C$$

$$\text{or, } S = Y - [a + bY]$$

$$= -a + (1 - b)Y$$

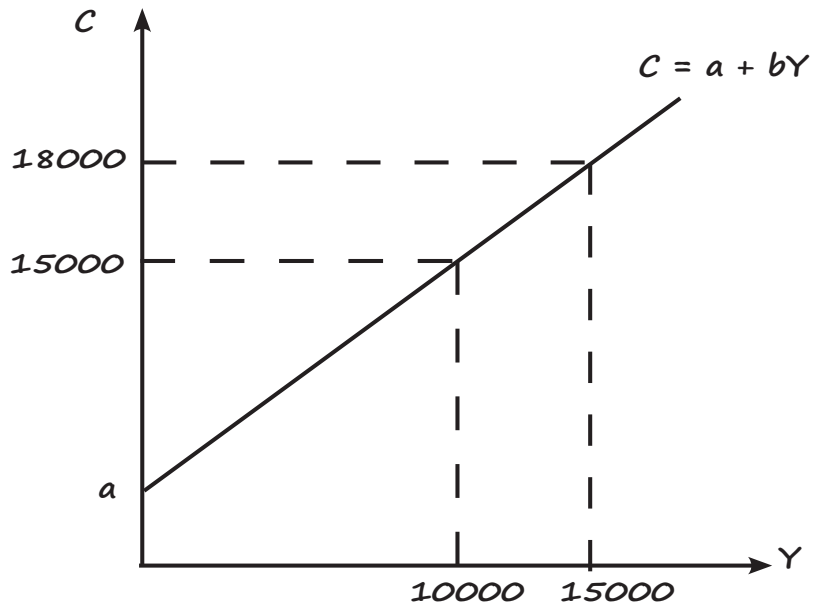
$MPS = 1 - MPC$

Without Investment

With Investment (Constant)

Practice Questions:

1) Look at the graph



Find MPS, MPC & autonomous consumption. Also define C & S function.

2) The consumption function is $c = 5000 + .6Y$. Find induced consumption when Income = 40,000

(Induced consumption means consumption other than autonomous consumption. i.e., Total consumption - Autonomous consumption.)

3) $C = 500 + 0.6Y$. Calculate Breakeven level of income..

4) $C = 100 + 0.75Y$ & $I = 1000$. Find equilibrium level of NI & C at that level of NI.

An important point to remember is that Keynesian equilibrium with equality of planned aggregate expenditures and output need not take place at full employment. If the aggregate expenditure line intersects the 45-degree line at

the level of potential GDP, then there is full employment equilibrium. There is no recession, and unemployment is at the natural rate. But there is no guarantee that the equilibrium will occur at the potential GDP level of output. The economy can settle at any equilibrium which might be higher or lower than the full employment equilibrium.

(i) Deflationary Gap

If the aggregate demand is for an amount of output less than the full employment level of output, then we say there is deficient demand. Deficient demand gives rise to a 'deflationary gap' or 'recessionary gap'. Recessionary gap also known as 'contractionary gap' arises in the Keynesian model of the macro economy when the equilibrium level of aggregate production achieved in the short-run falls short of what could be produced at full employment. Recessionary gap occurs when the economy is in a business-cycle contraction or recession.

Deflationary gap is thus a measure of the extent of deficiency of aggregate demand and it causes the economy's income, output and employment to decline, thus pushing the economy to under-employment equilibrium. The macroequilibrium occurs at a level of GDP less than potential GDP; thus, there is cyclical unemployment i.e. rate of unemployment is higher than the natural rate. (Demand deficient unemployment is the same as cyclical unemployment)

(ii) Inflationary Gap

If the aggregate demand is for an amount of output greater than the full employment level of output, then we say there is excess demand. Excess demand gives rise to 'inflationary gap' which is the amount by which actual aggregate demand exceeds the level of aggregate demand required to establish the full employment equilibrium. This is the sort of gap that tends to occur during a business-cycle expansion and sets in motion forces that will cause demand pull inflation.

In the Keynesian model, neither wages nor interest rates will decline in the face of abnormally high unemployment and excess capacity. Therefore, output will remain at less than the full employment rate as long as there is insufficient spending in the economy. Keynes argued that this was precisely what was happening during the Great Depression.

To Nullify the recessionary gap we need to introduce an injection in a two sector economy. investment is an injection.

Suppose $MPC = 0.6$

$$\text{Multiplier (Investment Multiplier)} = \frac{\Delta Y}{\Delta I} = \frac{1}{1-b}$$

$$S_{\infty} = \frac{a}{1-r}$$

If the investment increase by ₹ 1 then Y goes up by ₹ 2.5.

If MPC increases then multiplier increases i.e., Y increase.

The multiplier concept is central to Keynes's theory because it explains how shifts in investment caused by changes in business expectations set off a process that causes not only investment but also consumption to vary. The multiplier shows how shocks to one sector are transmitted throughout the economy. Increase in income due to increase in initial investment, does not go on endlessly. The process of income propagation slows down and ultimately comes to a halt. Causes responsible for the decline in income are called leakages. Income that is not spent on currently produced consumption goods and services may be regarded as having leaked out of income stream. If the increased income goes out of the cycle of consumption expenditure, there is a leakage from income stream which reduces the effect of multiplier. The more powerful these leakages are the smaller will be the value of multiplier. The leakages are caused due to:

1. progressive rates of taxation which result in no appreciable increase in consumption despite increase in income
2. high liquidity preference and idle saving or holding of cash balances and an equivalent fall in marginal propensity to consume
3. increased demand for consumer goods being met out of the existing stocks or through imports
4. additional income spent on purchasing existing wealth or purchase of government securities and shares from shareholders or bond holders
5. undistributed profits of corporations
6. part of increment in income used for payment of debts

7. case of full employment additional investment will only lead to inflation, and

8. scarcity of goods and services despite having high MPC

The MPC, on which the multiplier effect of increase in income depends, is high in under developed countries; but ironically the value of multiplier is low. Due to structural inadequacies, increase in consumption expenditure is not generally accompanied by increase in production. E.g. increased demand for industrial goods consequent on increased income does not lead to increase in their real output; rather prices tend to rise.

An important element of Keynesian models is that they relate to short-period equilibrium and contain no dynamic elements. There is nothing like Keynesian macro-economic dynamics. When a shock occurs, for example when there is a change in autonomous investment due to change in some variable, one equilibrium position can be compared with another as a matter of comparative statics. There is no link between one period and the next and no provision is made for an analysis of processes through time.

Practice Questions:

- 1) In an economy investment expenditure is increased by Rs. 400 Crores and marginal propensity to consume is 0.8. Calculate the total increase in income and saving.

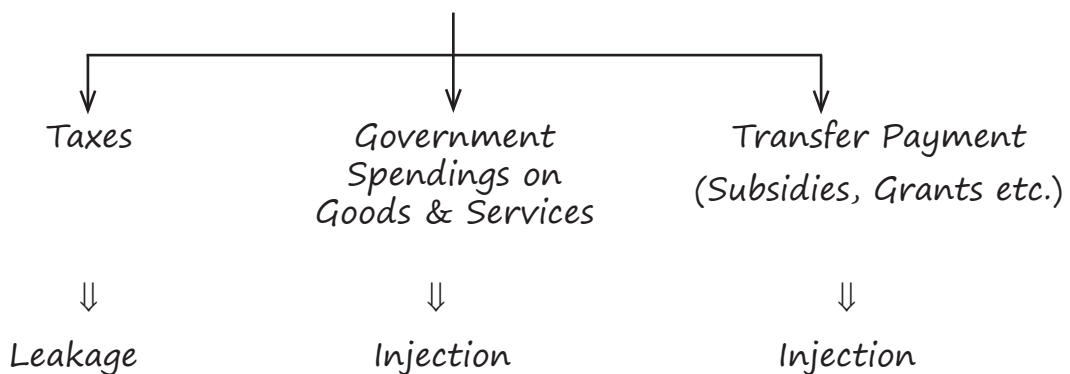
- 2) An increase in investment by 400 Crores leads to increase in national income by 1,600 Crores. Calculate marginal propensity to consume.

3) In an economy, investment is increased by Rs 600 Crores. If the marginal propensity to consume is 0.6, calculate the total increase in income and consumption expenditure

4) Suppose in a country investment increases by Rs 100 Crores and consumption is given by $C = 10 + 0.6Y$ (where C = consumption and Y = income). How much increases will there take place in income?

c) 3 Sector Economy :

Now, Government comes into scenerio with the following elements -



At Equilibrium,

$$S+T = I+G$$

$$C+S+T = C+I+G$$

If $S+T > I+G$, then \Rightarrow leakage $>$ injection \therefore NI decreases

If $S+T < I+G$, then \Rightarrow leakage $<$ injection \therefore NI increases

Government spendings multiplier when tax is constant = $1/(1-b)$

Government spendings or tax multiplier when tax is variable = $1/\{1-b(1-t)\}$

Practical Questions :

- 1) $C = 500 + 0.8Y$, $I = 1500$, $G = 2000$. Find Equilibrium Income.

- 2) If in the above sums, full level of employment output 25,000. Calculate the recessionary gap and find by how much G should Increase to reach the full employment output.

- 3) If $MPC = 0.4$ & equilibrium income by kenyes = ₹ 60000. If G increase by 1000. Find the new level of equilibrium income.

- 4) In an economy equilibrium Income = 40000. Full employment output level = 32000. $MPC = 0.8$. Find GDP deflator. What should be done to government spendings to achieve full employment output.

- 5) 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?

6) Suppose the structural model of an economy is given –

$C = 100 + 0.75 Y_d$; $I = 200$, $G = T = 100$; $TR = 50$, find the equilibrium level of income?

7) 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?

8) Suppose $C = 100 + 0.80(Y - T + TR)$; $I = 200$; $T = 25 + 0.1Y$; $TR = 50$; $G = 100$
Find out equilibrium level of Income?

d) 4 Sector Economy :

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

$X = \text{injection}$ and $M = \text{leakage}$

$$\therefore C + S + T + M = C + I + G + X$$

$$C + S + T = C + I + G + (X - M)$$

X is exogeneous i.e. depends on world's income

M is indogeneous i.e. depends on India's income

$\therefore Y$ will depend upon M & not upon X

$$M = f(Y^-)$$

$V = \text{Marginal Propensity to import.}$

If V increase Y will decrease.

$$\text{Multiplier (Keynes Multiplier)} = 1 / \{1 - b(1 - t) + v\}$$

Practical Questions :

1) $C = 500 + 0.8Y$, $I = 1500$, $G = 2000$, $X = 1000$, $M = 0.1Y$. Find equilibrium Income level & multiplier.

2) 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 if export were to increase by 6.25

- 3) An economy is characterised 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

Application Oriented Question :

1. In a two sector economy, the business sector produces 7000 units at an average price of ₹ 5.
 - (a) What is the money value of output?
 - (b) What is the money income of households?
 - (c) If households spend 80 percent of their income, what is the total consumer expenditure?
 - (d) What is the total money revenues received by the business sector?
 - (e) What should happen to the level of output?

2. Assume that an economy's consumption function is specified by the equation $C = 500 + 0.80Y$.
- (a) What will be the consumption when disposable income (Y) is ₹ 4,000, ₹ 5,000, and ₹ 6,000?
 - (b) Find saving when disposable income is ₹ 4,000, ₹ 5,000, and ₹ 6,000.
 - (c) What amount of consumption for consumption function C is autonomous?
 - (d) What amount is induced when disposable income is ₹ 4,000? ₹ 5,000? ₹ 6,000?

3. Find the value of the multiplier when
- MPC is 0.2
 - MPC is 0.5
 - MPC is 0.8
4. For the linear consumption function is $C = 700 + 0.8Y$; I is ₹ 1200 and Net exports $X - M = 100$. Find equilibrium output?
5. Suppose in an economy
- $$C = 100 + b(Y - 50 - tY); I = 50; G = 50; X = 10; M = 5 + 0.1Y; \text{MPC } (b) = 0.8; \text{Proportional income tax rate } (t) = 0.25$$
- Find the equilibrium national income, foreign trade multiplier, equilibrium value of imports.
 - If equilibrium national income falls short of full employment income by 50, how much government should increase its expenditure to attain full employment?

6. Suppose the consumption function is $C=50+0.8Y_d$, $I=180$ crores, $G=190$ crores, $T=0.20Y$
- Find the equilibrium level of income.
 - Find the revenue from taxes at equilibrium. Is the government budget balanced?
 - Find the equilibrium level of income when investment increases by 120 crores.

7. Given the following equations:

$$C=50+0.6Y_d, I=160, T=30, G=28, X-M=20-0.05Y$$

- Find the equilibrium level of income.
- Find the net exports at equilibrium.
- Find the income and net exports when investment increases to 195.