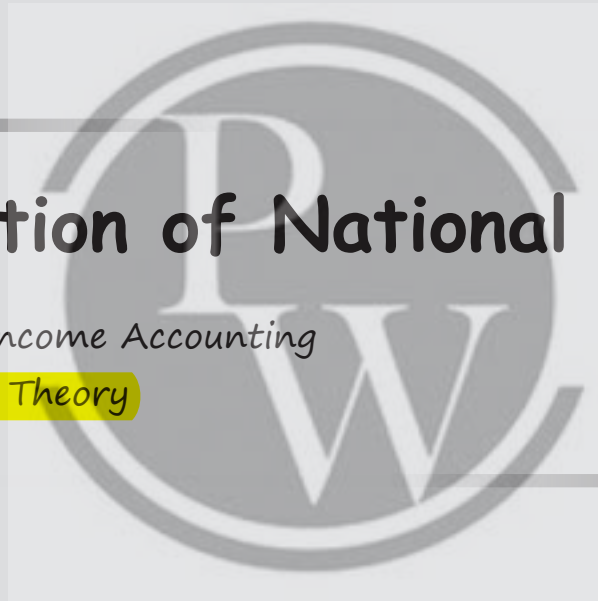


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# Determination of National Income

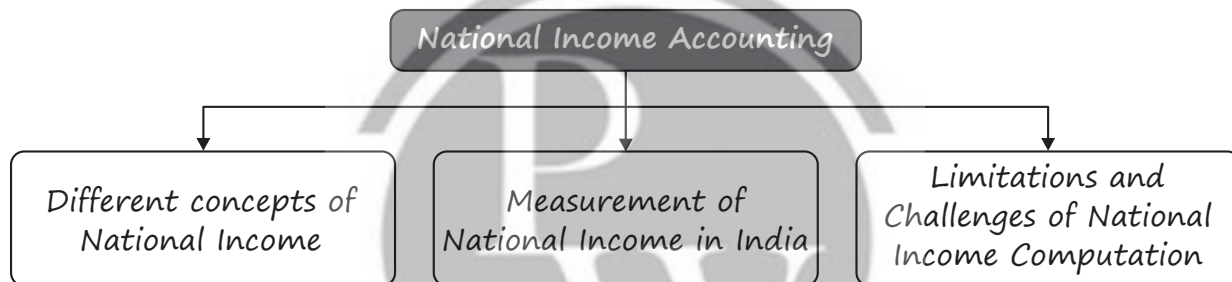
- ❖ *Unit 1: National Income Accounting*
- ❖ *Unit 2: Keynesian Theory*



# National Income Accounting

## MEANING OF NATIONAL INCOME

- ❑ National Income is defined as the net value of all economic goods & services produced within the domestic territory of a country in an accounting year plus the net factor income from abroad.
- ❑ According to the Central Statistical Organisation (CSO) 'National income is the sum total of factor incomes generated by the normal residents of a country in the form of wages, rent, interest & profit in an accounting year'



## NATIONAL INCOME ACCOUNTING

National Income Accounting, pioneered by the Nobel prize-winning economists Simon Kuznets and Richard Stone, is the system of macro-economic accounts from the stage of production of goods and services to the stage of their final disposal. Like any other accounting system, the national income accounts first define concepts and then construct measures corresponding to these concepts.

The Central Statistical Organisation (CSO) in the Ministry of Statistics and Programme Implementation (MoSP & I) is responsible for the compilation of National accounts statistics. At the State level, State Directorates of Economics and Statistics (DESS) have the responsibility of compiling their State Domestic Product and other aggregates.

### USEFULNESS OF NATIONAL INCOME ESTIMATES

1. National income accounts are fundamental aggregate statistics in macro economic analysis and it is more useful for emerging and transition economy.
2. National income estimates helps business to forecast the future demand for their products.
3. 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.

4. Using national income estimates, the government can fix various sector-specific development targets for different sectors of the economy and formulate suitable development plans & policies to increase growth rates.
5. National Income statistics also provide a quantitative basis for macroeconomic modeling and analysis, for assessing and choosing economic policies and for objective statement as well as evaluation of governments economic policies.
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.

### **GROSS DOMESTIC PRODUCT (GDP)**

GDP refers to the money value of all goods & services produced within the domestic boundary of a country during a period of time. It includes value of the goods produced like mobile phone, T.V, furniture etc. and value of services like banking, insurance etc.

Real GDP	Nominal GDP
1. It refers to the GDP calculated at the base year price level.	1. It refers to the GDP calculated at a current year price level.
2. It is also known as GDP at constant prices.	2. It is also known as GDP at current prices.
3. Real GDP = Qty. of output × Base year Price level	3. Nominal GDP = Qty. of Output × current year price level
4. It is better and more reliable index of the welfare of an economy.	4. Comparatively, it is not a good index of the welfare of an economy.

Real GDP is better index of the growth and welfare of an economy because real GDP changes due to change in only physical quantity and output. Hence, real GDP truly reflects the level of growth.

### **GDP AND WELFARE**

**Can the GDP of a country be taken as an index of the welfare of people in that country?**  
 There are many reasons to dispute the validity of GDP as a perfect measure of well-being. In fact, GDP measures our ability to obtain many requirements to make our life better; yet leave out many important aspects which ensure good quality of life for all. GDP measures exclude the following which are critical for the overall wellbeing of citizens.

1. 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.
2. Quality improvements in systems and processes due to technological as well as managerial innovations which reflect true growth in output from year to year.
3. Productions hidden from government authorities, either because those engaged in it are evading taxes or because it is illegal (drugs, gambling etc.).
4. Nonmarket 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.
5. The disutility 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.
6. Economic 'bads' for example: crime, pollution, traffic congestion etc which make us worse off.
7. The volunteer work and services rendered without remuneration undertaken in the economy, even though such work contribute to social well-being as much as paid work.
8. Many things that contribute to our economic welfare such as, leisure time, fairness, gender equality, security of community feeling etc.,
9. Both positive and negative externalities which are external effects that do not form part of market transactions
10. 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.

## **GDP DEFLATOR**

GDP deflator refers to the ratio of Nominal GDP and Real GDP multiplied by 100. It is also known as the Price index.

### **Formula**

$$\text{GDP deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}} \times 100$$

1. GDP deflator indicates change in general price level.
2. It is a price index used to convert nominal GDP to real GDP.
3. Since nominal GDP and real GDP must be the same in the base year, the deflator for the base year is always 100.

## Determination of Nominal GDP and Real GDP

Nominal GDP and real GDP can be determined in the following manner:

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

$$\text{Or, Nominal GDP} = \frac{\text{Real GDP} \times \text{Price Index}}{100}$$

For example, if nominal GDP is ₹ 15,000 crores and real GDP is ₹ 12,000 crores, then

$$\text{GDP Deflator} = \frac{15,000}{12,000} \times 100 = ₹ 125$$

In the above example, we can also convert nominal GDP into real GDP with the help of GDP deflator:

$$\text{Real GDP} = \frac{\text{Nominal GDP}}{\text{GDP Deflator}} \times 100 = \frac{15,000}{125} \times 100 = ₹ 12,000$$

**Example.** If real GDP = 600 and nominal GDP = 660, find GDP deflator (price index).

$$\text{Sol. GDP Deflator (Price Index)} = \frac{\text{Nominal GDP}}{\text{Real GDP}} \times 100 = \frac{660}{600} \times 100 = 110$$

It shows increase in the general price level by 10%.

If the real GDP is ₹ 520 and Nominal GDP is ₹ 650, calculate the price index

$$\text{Price Index} = \frac{\text{Nominal GDP}}{\text{Real GDP}} \times 100 = \frac{650}{520} \times 100 = 125$$

Price Index = 125.

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

$$\text{Real GDP} = (\text{Nominal GDP} / \text{GDP Deflator}) \times 100$$

$$\text{Real GDP} = (1200 / 110) \times 100 \text{ i.e. } 1090.9$$

The deflator 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 compute using the following procedure:

$$\text{Inflation rate in year 2} = \frac{\text{GDP deflator in year2} - \text{GDP deflator in year1}}{\text{GDP deflator in year1}} \times 100$$

## TRY YOUR UNDERSTANDING 6.1.1

1. Gross Domestic Product (GDP) of any nation
  - (a) excludes capital consumption and intermediate consumption
  - (b) is inclusive of capital consumption or depreciation
  - (c) is inclusive of indirect taxes but excludes subsidies
  - (d) None of the above

### Answer Key

1. (b)

## FACTOR INCOME AND TRANSFER INCOME

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.
<b>Examples:</b> Gifts, Pocket Money etc.	<b>Examples:</b> Rent, Interest etc.

## TRY YOUR UNDERSTANDING 6.1.2

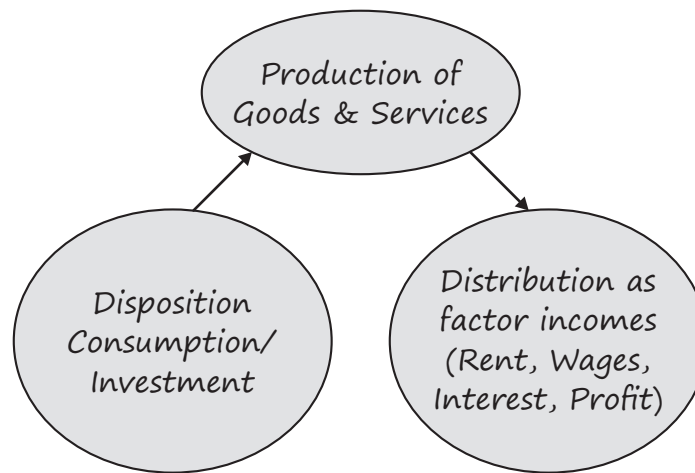
1. Which of the following is an example of transfer payment?
  - (a) Old age pensions and family pensions
  - (b) Scholarships given to deserving diligent students.
  - (c) Compensation given for loss of property due to floods
  - (d) All the above

### Answer Key

1. (d)

## CIRCULAR FLOW OF INCOME

- ❑ Circular flow of income refers to the continuous circulation of production, income generation and expenditure involving different sectors of the economy.
- ❑ There are 3 different interlinked phases in a circular flow of income, namely: production, distribution & disposition as can be seen from the following figure.
- ❑ In the production phase, firms produce goods & services with the help of factor services.
- ❑ In the income or distribution phase, the flow of factor incomes in the form of rent, wages, interest and profits from firms to the households occurs.



- In the expenditure or disposition phase, the income received by different factors of production is spent on consumption goods & services and investment goods. This expenditure leads to further production of goods & services & sustains the circular flow.

Particulars	Method 1	Method 2	Method 3
Phase of Measurement	Production / Output	Income Generation	Income Disposition
Names of Method	<ul style="list-style-type: none"> <li>□ Production Method, or</li> <li>□ Product Method, or</li> <li>□ Value added method, or</li> <li>□ Industrial origin Method, or Net output method</li> </ul>	<ul style="list-style-type: none"> <li>□ Income Method, or</li> <li>□ Factor Income Method, or</li> <li>□ Factor Payment Method, or</li> <li>□ Distributed Shares method</li> </ul>	<ul style="list-style-type: none"> <li>□ Expenditure Method, or</li> <li>□ Disposable Method, or</li> <li>□ Income Disposable Method</li> </ul>
National Income is a	Flow of Production	Flow of Production	Flow of Production
Broad Concept	Approaches National income from the output side	Approaches National income from the Distribution side	Approaches National income from the Expenditure side
National Income =	Sum of value added by Producers	Sum of Factor Incomes	Sum of all expenditures

## INTERMEDIATE GOODS

- Intermediate goods refer to those goods which are used either for resale or for further production in the same year. They do not end up in final consumption, and are not capital goods either.
- They have derived demand. Intermediate goods are used up in the same year; if they remain for more than one year, then they are treated as final goods.

- ❑ Intermediate consumption consists of the value of the goods and services consumed as inputs by a process of production, excluding fixed assets whose consumption is recorded as consumption of fixed capital.
- ❑ Intermediate goods used to produce other goods rather than being sold to final purchasers are not counted as it would involve double counting. The intermediate goods or services may be either transformed or used up by the production process.
- ❑ For example, the value of flour used in making bread would not be counted as it will be included while bread is counted. This is because flour is an intermediate good in bread making process. Similarly, if we include the value of an automobile in GDP, we should not be including the value of the tyres separately.

## FINAL GOODS

- ❑ Final goods refer to those goods which are used either for consumption or for investment. They are neither resold nor undergo further transformation in the process of production.
- ❑ The distinction between intermediate goods and final goods is made on the basis of end use: if the good is for consumption or investment, then it is a final good  
By 'value added' we mean the difference between value of output and purchase of intermediate goods. Value added represents the contribution of labour and capital to the production process

### THERE ARE 2 TYPES OF FINAL GOODS & SERVICES

1. **Consumer Goods:** Where the goods and services are used for final consumption by the consumer, it is called as Consumer Goods and services. E.g. Sugar used in making tea @ home, Television installed @ home, car used for personal use etc.
2. **Producer Goods:** Where the final goods and services are used in production of other goods and services are termed as Producers goods. E.g. Sugar used in making tea @ Restaurant, Television installed @ Restaurant, car used for passenger transportation etc.

Goods & Services	
Free Goods	Economic Goods
<ul style="list-style-type: none"> <li>❑ Some goods which are free or having zero prices Le we need not make any payment for them. Example: air, sunlight etc.</li> </ul>	<ul style="list-style-type: none"> <li>❑ Economic goods are scarce in relation to their demand and have an opportunity cost.</li> </ul>
<ul style="list-style-type: none"> <li>❑ Free goods being abundant in supply do not have scarcity and need no cost to obtain them.</li> </ul>	<ul style="list-style-type: none"> <li>❑ Unlike free goods, they are exchangeable in the market and command a price.</li> </ul>
<ul style="list-style-type: none"> <li>❑ Value of free goods is not considered in GDP.</li> </ul>	<ul style="list-style-type: none"> <li>❑ Value of economic goods is considered in GDP.</li> </ul>

Type of Activities	
Economic Activity	Non-Economic Activity
<ul style="list-style-type: none"> <li>❑ All human activities which create goods and services that are exchanged in a market and valued at market price</li> </ul>	<ul style="list-style-type: none"> <li>❑ These activities produce goods and services, but since these are not exchanged in a market transaction they do not command any market value;</li> </ul>
<ul style="list-style-type: none"> <li>❑ The motive or the intent behind economic activity is to earn a living. (livelihood motive)</li> </ul>	<ul style="list-style-type: none"> <li>❑ For eg hobbies, housekeeping and services of family members that are done out of love and affection.</li> </ul>

### TRY YOUR UNDERSTANDING 6.1.3

1. Non-economic activities are
  - (a) those activities whose value is excluded from national income calculation as it will involve double counting
  - (b) those which produce goods and services, but since these are not exchanged in a market transaction they do not command any market value
  - (c) those which do not involve production of goods and services as they are meant to provide hobbies and leisure time activities
  - (d) those which result in production for self consumption and therefore not included in national income calculation

#### Answer Key

1. (b)

### NORMAL RESIDENT

- ❑ Normal resident of a country refers to an individual or an institution who ordinarily resides in the country and whose center of economic interest also lies in that country.
- ❑ Normal residents include both, individuals and Institutions.

'Centre of Economic Interest' implies two things:

1. The resident lives or is located within the Domestic Territory; and
2. The resident carries out basic economic activities of earnings, spending and accumulation from that location.

Following are not included under the category of Normal residents:

1. Foreign tourists and visitors who visit a country for recreation, holidays, medical treatment, study, sports, conferences, etc.
2. Foreign staff of Embassies, officials, diplomats and members of the armed forces of a foreign country, located in the given country.
3. International organisations like UNO, WHO, etc. are not considered as normal residents of the country in which they operate. They are treated as the normal residents of international area.

4. Employees of international organisations are considered as residents of the countries to which they belong and not of the international area. For example, an American working in UNO office located in India will be treated as normal resident of America.

However, if the employees are working for more than one year in such International Institutions, then they become the normal resident a country in which such institutions are located. It means, in the given example, if the American is working in UNO office in India for more than one year, then he will be treated as normal resident of India.

5. Crew members of foreign vessels, commercial travellers and seasonal workers, provided their stay is less than one year.
6. Border workers who live near the international border and cross the border on a regular basis to work in the other country. They are treated as normal residents of the country where they live, and not where they work.

### TRY YOUR UNDERSTANDING 6.1.4

1. The concept of 'resident unit' involved in the definition of GDP denotes
- (a) A business enterprise which belongs to a citizen of India with production units solely situated in India.
  - (b) The unit having predominant economic interest in the economic territory of the country for one year or more irrespective of the nationality or legal status.
  - (c) A citizen household which had been living in India during the accounting year and one whose economic interests are solely in India.
  - (d) Households and business enterprises composed of citizens of India alone living in India during the accounting year.
2. Identify the following as Normal Residents of India:
- (a) Indian officials working in the Indian Embassy in USA.
  - (b) A Japanese tourist who stays in India for 2 months.
  - (c) Indians going to Pakistan for watching the cricket match.
  - (d) Indians working in the UNO office, located in America for less than 1 year.
  - (e) Indian employees working in WHO, located in India.
  - (f) Foreign tourists visiting India for a month to see the Taj Mahal.
  - (h) Indian Muslims going for the Haj pilgrimage.

#### Answer Key

1. (b)    2. (a), (c), (d), (e), (g)

### DOMESTIC TERRITORY

- ❑ Domestic territory refers to geographical or political boundary of country.
- ❑ It excludes - international institutional (United nations, WHO, WTO) and foreign embassies located within geographical territory but includes embassies of this country located outside its geographical territory
- ❑ Indian Ship and Indian aircrafts performing operations outside country is also included in domestic territory.

## TRY YOUR UNDERSTANDING 6.1.5

1. Which of the following are covered under the domestic territory of India?
  - (a) An Indian Company in London.
  - (b) Microsoft Office in India.
  - (c) Company in India owned by a Japanese.
  - (d) Office of Reliance Industries in New York.
  - (e) Branch of Foreign Bank in India.
  - (f) Indian Embassy in Japan.
  - (g) Branch of State Bank of India in China.
  - (h) Russian Embassy in India.
  - (i) Tata rented its building to Google in America.

### Answer Key

1. (b), (c), (e), (h)

## NATIONAL INCOME DOES NOT INCLUDE

- ❑ Purchase and sale of second hand goods as their money value has already been included in the national income of the year in which they were originally produced.
- ❑ Purchase and sale of securities, as it is just a transfer of ownership title.  
[However services provided by agent in regards to purchase and sale of second hand goods and securities for commission is included in national income as it amounts to provision of new service.]
- ❑ Transfer payments, as it is just shifting of purchasing power and no economic activity is involved. Eg. Pocket money provided by parents to their children, pension to senior citizen by government etc.

It can be received either within the domestic territory of a country or from abroad.

**Examples:** Old age pension, scholarship, unemployment allowance, pocket money, etc.

Taxes received by the government are the transfer incomes of the government as they are received without providing any productive service in return. Similarly, subsidies paid by the government are transfer payments of the government.

## CURRENT TRANSFER vs CAPITAL TRANSFERS

Transfer receipts are of two types:

- ❑ Current Transfer;
  - ❑ Capital Transfer.
1. Current transfers are made out of income, whereas, capital transfers are made out of the wealth of the payer.
  2. Current transfers are generally regular in nature, whereas, capital transfers are irregular.

3. Current transfers are meant for consumption purposes, whereas, capital transfers are meant for capital formation.
4. **Examples of Current transfers:** Old age pension, gifts, unemployment allowance, etc.  
**Examples of Capital transfers:** Investment grant, capital gains tax, war damages, etc.

## GROSS INVESTMENT, NET INVESTMENT AND DEPRECIATION

Investment or capital formation refers to addition to the capital stock of an economy. For example, construction of building, purchase of machinery, addition to inventories of goods, etc. Investment can be looked up in two forms:

- Gross Investment
- Net Investment
- Depreciation (Consumption of Fixed Capital)

1. **Gross Investment:** Gross Investment is addition to the stock of capital before making allowance for depreciation. Capital stock consists of fixed assets and unsold stock. So, gross investment is the expenditure on purchase of fixed assets and unsold stock during the accounting year.

However, gross investment does not indicate the actual change in economy's stock of productive assets for a given year. During the production process, some amount of fixed capital is used up. This loss of fixed capital is known as depreciation. By subtracting depreciation from gross investment, we get Net Investment.

2. **Net Investment:** The actual addition made to the capital stock of economy in a given period is termed as Net Investment.

$$\text{Net Investment} = \text{Gross Investment} - \text{Depreciation}$$

3. **Depreciation (Consumption of Fixed Capital):** Depreciation refers to a fall in the value of fixed assets due to normal wear and tear, passage of time or expected obsolescence (change in technology). The concept of depreciation is very important to differentiate between Gross value and the Net value. 'Gross' is inclusive of depreciation, whereas, 'net' excludes it.

$$[\text{Gross Value} = \text{Net Value} + \text{Depreciation}]$$

## NET INDIRECT TAX (NIT)

Net indirect tax refers to the difference between indirect taxes and subsidies.

### Indirect Taxes

- Indirect taxes refers to those taxes which are imposed by the government on production and sale of goods and services. For example, Goods and Services Tax (GST).
- Indirect tax increases the price of the product in the market. For example, if cost of producing one set of Chairs is ₹ 500 and Government levies GST of 12%, then price of chairs will increase to ₹ 560 due to indirect taxes.

## Subsidies

- ❑ Subsidies are the 'economic assistance' given by the government to the firms and households, with a motive of general welfare. In India, LPG cylinder is sold at subsidized rates.
- ❑ They are often granted to promote exports or to encourage firms for setting up the industries in the backward areas.
- ❑ Subsidies are opposite to indirect taxes as they reduce the market price of the commodity. In the example of chairs, if the Government grants a subsidy of ₹ 10, then price of chairs will fall to ₹ 540 due to subsidies.
- ❑ Subsidies may also be referred as 'Economic Assistance' or 'Financial Assistance'.

## NET FACTOR INCOME FROM ABROAD (NFIA)

It refers to the difference between factor income received from the rest of the world and factor income paid to the rest of the world.

$$\text{NFIA} = \text{Factor income earned from abroad} - \text{Factor income paid abroad}$$

1. 'Factor income from abroad' is the income earned by the normal residents of a country from the rest of the world (ROW) in the form of wages and salaries, rent, interest, dividend and retained earnings.
2. 'Factor income to abroad' is the factor income paid to the normal residents of other countries (i.e. non-residents) for their factor services within the economic territory.

NFIA is significant to differentiate between 'Domestic Income' and 'National Income'. In practical estimates, domestic income is estimated first and then, National Income is derived from Domestic Income in the following manner:

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

## FACTOR COST vs MARKET PRICE

### FACTOR COST vs BASIC PRICE vs MARKET PRICE

At this stage, we need to clearly understand the difference between the concepts: 'market price' and 'factor cost and Basic Price'

GDP at Basic Price excludes any taxes on products the producer receives from the purchaser and passes on to the government (Eg: GST or Sales Tax or Services Tax) but includes any subsidies the producer receives from the government and uses to lower the prices charged to purchasers. In simple terms, the basic price is the subsidised price without tax.

$$\text{Basic price} = \text{factor cost} + \text{Production taxes} - \text{Production subsidy}$$

Relationship between Factor Cost and Basic Price:

$$\text{Factor cost} + \text{production tax} - \text{production subsidies} = \text{Basic prices.}$$

Relationship between Basic Price and Market Price:

$$\text{Basic Price} + \text{Product tax} - \text{Product Subsidy} = \text{Market Price.}$$

**Note:** Thus, market price includes both product tax as well as production tax while excluding both product and production subsidies.

## TRY YOUR UNDERSTANDING 6.1.6

1. The basis of distinction between market price and factor cost is
  - (a) net factor income from abroad
  - (b) net indirect taxes (i.e., Indirect taxes - Subsidies)
  - (c) net indirect taxes (i.e., Indirect taxes + Subsidies)
  - (d) depreciation (consumption of fixed capital)
2. If net factor income from abroad is positive, then
  - (a) national income will be greater than domestic factor incomes.
  - (b) national income will be less than domestic factor incomes.
  - (c) net exports will be negative
  - (d) domestic factor incomes will be greater than national income

### Answer Key

1. (b)    2. (a)

## NATIONAL INCOME AGGREGATES

1. **Gross Domestic Product at Market Price  $GDP_{MP}$** : GDP at Market price is the gross market value of all final goods and services produced within the domestic territory of a country by residents and non residents during a year.
2. **Gross National Product at Market Price  $GNP_{MP}$** : GNP at Market price is defined as gross market value of all final goods and services produced by normal residents during a year.

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

3. **Net Domestic Product at Market Price  $NDP_{MP}$** : NDP at Market price is the net market value of all final goods and services produced within the domestic territory of a country by residents and non residents during a year.

$$[NDP_{MP} = GDP_{MP} - \text{Depreciation}]$$

4. **Net National Product at Market Price  $NNP_{MP}$** : NNP at Market price is defined as Net market value of all final goods and services produced by normal residents during a year.

$$[NNP_{MP} = GDP_{MP} + NFIA - \text{Depreciation}]$$

5. **Gross Domestic product at Factor cost  $GDP_{FC}$** : It refers to gross money value of all the final goods and services produced within the domestic territory of a country by residents and non residents during a period of one year.

$$[GDP_{FC} = GDP_{MP} - \text{Net Indirect Taxes}^*]$$

\*Net Indirect Taxes = Indirect Taxes - Subsidies

6. **Gross National product at Factor cost  $GNP_{FC}$** : It refers to gross money value of all the final goods and services produced by the normal residents of a country during a period of one year.

$$[GNP_{FC} = GDP_{MP} - \text{Net Indirect Taxes} + NFIA]$$

### 7. Net Domestic product at Factor cost NDP<sub>FC</sub>

It refers to net money value of all the final goods and services produced within the domestic territory of a country by residents and non residents during a period of one year.

$$[NDP_{FC} = GDP_{MP} - \text{Net Indirect Taxes} - \text{Depreciation}]$$

### 8. Net National product at Factor cost NNP<sub>FC</sub> (National Income)

Net It refers to net money value of all the final goods and services produced by the normal residents of a country during a period of one year.

$$[NNP_{FC} = GDP_{MP} - \text{Depreciation} + \text{NFIA} - \text{Net Indirect Taxes}]$$

#### Why NNP at Factor Cost is better than NNP at Market Price

- NNP at Market price includes the impact of Net indirect taxes.
- If there is change in tax rate and subsidy then NNP at market price figure will change accordingly without actual increase in Factor cost.
- Also, different countries have different tax rate and thus for international comparison of relative income level.

## TRY YOUR UNDERSTANDING 6.1.7

1. Gross National Product at market prices GNP<sub>MP</sub> is
  - (a)  $GDP_{MP} + \text{Net Factor Income from Abroad}$
  - (b)  $GDP_{MP} + \text{Net Factor Income from Abroad}$
  - (c)  $GDP_{MP} + \text{Depreciation}$
  - (d)  $GDP_{MP} + \text{Net Indirect Taxes}$
2. Choose the correct statement
  - (a) GNP includes earnings of Indian corporations overseas and Indian residents working overseas; but GDP does not include these
  - (b)  $NNP_{FC} = \text{National Income} = \text{FID (factor income earned in domestic territory)} - \text{NFIA}$ .
  - (c) Capital goods and inventory investment are excluded from computation of GDP
  - (d)  $NDP_{MP} = GDP_{MP} + \text{Depreciation}$
3. Market price refers to the \_\_\_\_\_ of all final goods and services.
  - (a) Market value
  - (b) Intermediate value
  - (c) Final value
  - (d) None of the above
4.  $NDP_{FC}$  represents \_\_\_\_\_
  - (a) Domestic income
  - (b) Normal income
  - (c) Both (a) and (b)
  - (d) International income
5. GNP exceeds NNP by
  - (a) Subsidy
  - (b) Depreciation
  - (c) Both (a) and (b)
  - (d) None of the above

6. NDP exceeds NNP by \_\_\_\_\_.

(a) NFIA

(b) FIFA

(c) FITA

(d) None of the above

#### Answer Key

1. (a) 2. (a) 3. (a) 4. (a) 5. (b) 6. (a)

### MEASUREMENT OF NATIONAL INCOME

National income is considered as the most comprehensive measure of the performance of an economy. However, its measurement is an extremely complicated task.

- When the process of production takes place, then the factor incomes are paid to factors of production for their factor services. It means, there is an 'Income Flow' corresponding to the 'Output Flow'.
- Factors of production spend their income on purchase of goods and services by making consumption 'Expenditure'.

Thus, production gives rise to income, income results in expenditure, which in turn, generates income again. Similarly, National Income of a country can be measured by 3 different methods:

1. Value Added Method.
2. Income Method.
3. Expenditure Method.

It must be noted that all the three methods give the same value of national income because they are used to measure the same physical output at three different phases

#### VALUE ADDED METHOD

Value added refers to the addition of value to the raw material (intermediate goods) by a firm, by virtue of its productive activities. It is the contribution of an enterprise to the current flow of goods and services. It is calculated as the difference between value of output and value of intermediate consumption.

$$\text{Value Added} = \text{Value of Output} - \text{Intermediate Consumption}$$

Value of output refers to market value of all goods and services produced during a period of one year.

$$\text{Value of Output} = \text{Sales} + \text{Change in Stock}$$

- Every individual enterprise adds certain value to the products, which it purchases from some other firm as intermediate goods.
- When value added by each and every individual firm is summed up, we get Gross Domestic Product @ Market Price ( $GDP_{mp}$ ).

Value added Method is also known as:

- (a) Product Method
- (b) Inventory Method;
- (c) Net Output Method;
- (d) Industrial Origin Method; and
- (d) Commodity Service Method.

All the production units of the economic territory are grouped into three broad groups:

- 1. Primary Sector:** It includes production units exploiting natural resources like land, water, subsoil assets, etc. For example, farming, fishing, mining, animal husbandry, forestry, etc. It is primary as it is the source of basic raw materials for the secondary sector.
- 2. Secondary Sector:** It includes production units which are engaged in transforming one good into another good. Such an activity is called manufacturing activity. These units convert raw materials into finished goods. For example, firms engaged in converting sugarcane into sugar, construction companies, power generation, etc. It is called secondary because it depends on primary sector for raw materials.
- 3. Tertiary Sector:** It includes production units engaged in producing services. For example, transport, education, finance, government administration, etc. This sector finds third place because its growth is primarily dependent on primary and secondary sectors.

<i>Computation of National Income</i>	
Gross Value Added By Primary Sector	-
+ Gross Value Added By Secondary Sector	-
+ Gross Value Added By Tertiary Sector	-
<b>Gross Domestic Product @ Market Price (<math>GDP_{mp}</math>)</b>	-
(-) Depreciation	(-)
(-) Net Indirect Tax	(-)
+ Net Factor Income From Abroad	-
<b>National Income</b>	-

#### Remember

- 1. Imports are not Separately Included:** If value of intermediate consumption is given, then imports are not included separately as imports are already included in the value of intermediate consumption. However, if domestic purchases are specifically mentioned, then imports will also be included.
- 2. Exports are not Separately Included:** Like imports, exports are also not separately included in value of output if 'Sales' are given (and domestic sales are not specifically mentioned). In case of an open economy, sales include both domestic sales and exports.

The various precautions to be taken in Value Added Method are:

- 1. Intermediate Goods are not to be included in the national income:** since such goods are already included in the value of final goods. If they are included again, it will lead to double counting.
- 2. Sale and Purchase of second-hand goods is not included:** as they were included in the year in which they were produced and do not add to current flow of goods and services. However, any commission or brokerage on sale or purchase of such goods will be included in the national income as it is a productive service.

3. *Production of Services for self-consumption (Domestic Services) are not included: Domestic services like services of a housewife, kitchen gardening, etc. are not included in the national income since it is difficult to measure their market value. These services are produced and consumed at home and never enter the market place and are termed as non-market transactions. It must be noted that paid services, like services of maids, drivers, private tutors, etc. should be included in the national income.*
4. *Production of Goods for self-consumption will be included: in the national income as they contribute to the current output. Their value is to be estimated or imputed as they are not sold in the market.*
5. *Imputed value of owner-occupied houses should be included: People, who live in their own houses, do not pay any rent. But, they enjoy housing services similar to those people who stay in rented houses. Therefore, value of such housing services is estimated according to market rent of similar accommodation. Such an estimated rent is known as imputed rent.*
6. *Change in stock of Goods (inventory) will be included: Net increase in the stock of inventories will be included in the national income as it is a part of capital formation.*

### **PRODUCTION FOR SELF CONSUMPTION**

1. *Goods Produced for self-consumption are included in National Income: All the final goods produced within the country are not necessarily sold in the market. A part of them is kept by the producer for his own use and consumption. For example, farmers keep a major part of their produce for self-consumption. Imputed value of such goods is included in national income.*
2. *Services Produced for self-consumption are not included in National Income: Services like housewife working in her own house, doctor treating his own child or teacher teaching his own child will not be included in national income as it is difficult to ascertain their market value and such services are not rendered for the purpose of earning income.*

**Example 1.** Calculate National Income by Value Added Method with the help of following data (Figures 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.

**Sol.**  $NVA(FC) = GDP (MP) - Depreciation + NFIA - Net Indirect Tax$

Where  $GVA(MP) = \text{Value of output} - \text{intermediate consumption}$

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

**Example 2.** Calculate national income by value added method (Figures 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.

**Sol.**  $GDP_{MP} = (\text{Value of output in primary sector} - \text{intermediate consumption of primary sector}) + (\text{value of output in secondary sector} - \text{intermediate consumption of secondary sector}) + (\text{value of output in tertiary sector} - \text{intermediate consumption of tertiary sector})$

$$= (2,000 - 200) + (2,800 - 800) + (1,600 - 600) = 4,800$$

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

$$NNP_{FC} = 4,800 + (-)30 - 300 - 470 \text{ i.e. } 4000 \text{ Crores}$$

**Example 3.** Calculate Net Value Added by Factor Cost from the following data (Figures in Crores)

Purchase of materials 85; Sales 450; Depreciation 30; Opening stock 40; Closing stock 30; Excise tax 45; Intermediate consumption 200; Subsidies 15.

**Sol.**  $GVA_{MP} = (\text{Sales} - \text{Intermediate consumption}) + \text{change in stock}$   $GVA_{MP}$

$$= (450 - 200) + (30 - 40) = 240 \text{ Crores}$$

$$NVA_{MP} = GVA_{MP} - \text{Depreciation}$$
  $NVA_{MP} = 240 - 30 = 210 \text{ Crores}$

$$NVA_{FC} = NVA_{MP} - (\text{indirect tax} - \text{subsidies})$$
  $NVA_{FC} = 210 - (45 - 15) = 180 \text{ Crores}$

## INCOME METHOD

Income Method measures national income from the perspective of factor incomes. Under this method, incomes received by all the residents of a country for their productive services during a year are added up to obtain the national income. According to this method, all the incomes that accrue to the factors of production by way of wages, profits, rent, interest, etc. are summed up to obtain the national income.

Income method is also known as 'Distributive Share Method' or 'Factor Payment Method'.

### Components of Factor Income

The sum total of all the factor incomes earned within the domestic territory of a country is known as "Domestic Income ( $NDP_{FC}$ )". System of National Accounts (SNA) 1993 (joint publication of United Nations and World Bank) has elaborated the following components of Income Method:

- 1. Compensation of Employees (COE):** COE refers to amount paid to employees by employer for rendering productive services. It includes all the payments and benefits, which the employees receive, directly or indirectly, from the employer.

Compensation of Employees consists of 3 elements:

- (a) Wages and salaries in cash:** It includes all monetary benefits, like wages, salaries, bonus, dearness allowances, commission, etc. Any reimbursement of business expenses incurred by the employees will be excluded from COE as such expenses are part of intermediate consumption of business enterprises.
- (b) Wages and salaries in kind:** It includes all non-monetary benefits, like rent free home, free car, free medical and educational facilities, etc. An imputed value of these benefits should be included in national income.

However, it does not include any facility which is necessary for work and in which employees do not have any discretion. For example, uniforms to be worn during work only or vehicles to be used for work only. Such payments are intermediate consumption of business enterprises.

- (c) **Employers' contribution to social security schemes:** It includes contributions made by employer for the social security of employees. For example, contribution to provident fund, gratuity, labour welfare funds, etc. The aim of such contributions is to ensure safety and security of life of the employees.

Any contribution by third party (say, an insurance company) to an employee is not the part of COE as the insurance company is not the employer of injured worker. Any contribution by employees is also not included as such payments are made by the employees from COE only.

2. **Operating surplus is another term used in factor payments:** It refers to sum total of income from property (rent + royalty + interest) and income from entrepreneurship (profit).

#### **Income From Property:**

- (a) **Rent and Royalty:** Rent is that part of national income which arises from ownership of land and building. Rental income includes both actual rent (rent of let out land) as well as imputed rent (rent of self-occupied properties). Imputed rent of owner occupied houses is calculated on the basis of market rental value of the house.

Royalty refers to income received for granting leasing rights of sub-soil assets. For example, owners of mineral deposits like coal, iron ore, natural gas, etc. can earn income by giving rights of mining to the contractors.

- (b) **Interest:** Interest refers to amount received for lending funds to a production unit. It includes both actual interest as well as imputed interest of funds provided by the entrepreneur.

'Interest income' includes interest on loans taken for productive services only. Interest income does not include:

- (i) Interest paid by government on public debt and interest paid by consumers as such interest is paid on loans taken for consumption purposes.
- (ii) Interest paid by one firm to another firm.

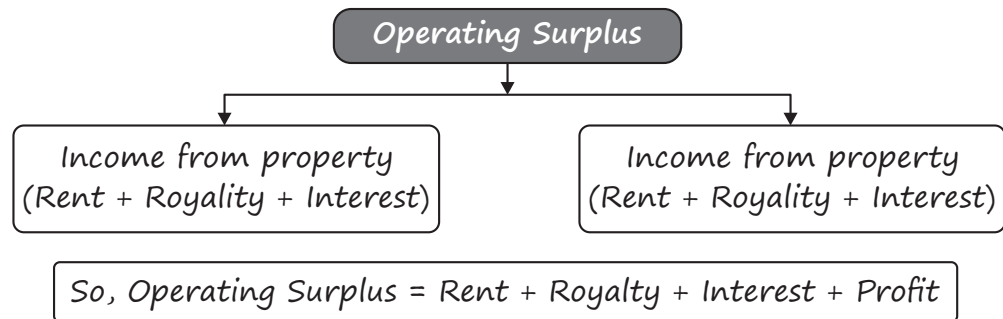
**Income From Entrepreneurship:** Profit Profit is the reward to the entrepreneur for his contribution to the production of goods and services. It is the residual income, which an entrepreneur earns after paying all the other factors of production.

The profit earned by an enterprise is used for 3 purposes:

- (a) **Corporate Tax:** It is the direct tax paid by an enterprise to the government on the total profit earned by it. It is also known as Profit tax or Business tax.
- (b) **Dividend:** It refers to that part of profit, which is paid to the shareholders in the ratio of their shareholding. It is also known as distributed profits.
- (c) **Retained Earnings:** It refers to that part of profit, which is kept as reserve to meet unexpected contingencies or for business expansion. It is also known as Undistributed Profits or Savings of Private Sector or Reserves and Surplus.

In short, Profit = Corporate Tax + Dividend + Retained Earnings

### Operating Surplus



Operating surplus arises in both private and government enterprises. However, it does not arise in the general government sector as it works with the motive of social welfare. Its basic aim is to operate for the benefit of public. So, incomes like rent, interest and profit are nil in general government sector.

3. **Mixed Income:** It is the income generated by own-account workers (like farmers, barbers, etc.) and unincorporated enterprises (like retail traders, small shopkeepers, etc.). It is the term used for any income that has elements of more than one type of factor income. Mixed income arises from productive service of self-employed persons, whose income includes wages, rent, interest and profit and these elements cannot be separated from each other. For example, income of a doctor running a clinic at his residence.

#### Reason for Concept of Mixed Income

In certain situations, accounts of most production units are not available to the estimators of National Income. Moreover, due to different accounting practices, it is not possible for the estimators to clearly identify the components of different factor incomes.

So, when total factor payments can be estimated, but cannot be segregated into separate heads (COE, Rent and Royalty, interest and Profits), then an additional factor payment, known as 'Mixed Income' is added.

This factor payment is also known as 'Mixed Income of Self-Employed' as this problem arises mainly in case of self-employed people like doctors, chartered accountants, consultants, etc.

#### Calculation of National Income by Income Method

Particulars	Amount
Compensation Of Employee	-
+ Operating Surplus	-
+ Mixed Income	-
	$NDP_{FC}$
+ NFIA	-
	National Income ( $NNP_{FC}$ )

### Precautions of Income Method

Following precautions are to be considered while estimating national income by Income Method:

- (a) Transfer Incomes (like scholarships, donations, charity, old age pensions, etc.) are not included in the National income because such receipts are not connected with any productive activity and there is no value addition.
- (b) Income from sale of second-hand goods will not be included in national income as their original sale has already been counted. If they are included again, it would lead to double counting. However, any brokerage or commission received by brokers or commission agents on sale of such goods, will be included as it is an income received for rendering productive service.
- (c) Income from sale of shares, bonds and debentures will not be included as such transactions do not contribute to current flow of goods and services. These financial assets are mere paper claims and involves a change of title only.  
However, any commission or brokerage on such financial assets is included as it is a productive service.  
Capital gains refer to income from sale of second-hand goods (say, old car) and financial assets (bonds, debentures, etc.). Any income arising from such transactions is not a factor income as these transactions are not productive transactions and do not add to the current flow of goods and services in the economy.
- (d) Windfall gains (like income from lotteries, horse race, etc.) are not included as there is no productive activity connected with them.
- (e) Imputed value of services provided by owners of production units will be included: Imputed value of owner-occupied houses, interest on own capital, production for self-consumption, etc. will be included as these are productive activities and add to the flow of goods and services.
- (f) Payments out of past savings (like death duties, gift tax, interest tax, etc.) are not included in the National income because they are paid out of wealth or past savings and do not add to current flow of goods and services.

**Example 4.** Calculate NI with the help of income method with the help of following data (Figures In Crores).

- (i) Compensation of employees = 1,200
- (ii) Net factor income from Abroad = 20
- (iii) Net indirect taxes = 120
- (iv) Profit = 800
- (v) Private final consumption expenditure = 2,000
- (vi) Net domestic capital formation = 770
- (vii) Consumption of fixed capital = 130
- (viii) Rent = 400
- (ix) Interest = 620
- (x) Mixed income of self-employed = 700
- (xi) Net export = 30

(xii) Govt. final consumption expenditure = 1100

(xiii) Operating surplus = 1820

(xiv) Employer's contribution to social security scheme = 300

Sol.  $NNP_{FC} = COE + \text{Operating Surplus} + \text{Mixed Income} + NFI$

$$NNP_{FC} = 1200 + 1820 + 700 + 20$$

$$NNP_{FC} = 3740 \text{ Crores}$$

## EXPENDITURE METHOD

Factor income earned by factors of production is spent in the form of expenditure on purchase of goods and services produced by firms.

- This method measures national income as sum total of final expenditures incurred by households, business firms, government and foreigners.
- This total final expenditure is equal to gross domestic product at market price.
- This method is also known as 'Income Disposal Method'.

## Components of Final Expenditure

Expenditure is undertaken by all the sectors of an economy: Households, Government, Firms and the Foreign Sector. The various components of final expenditure are:

1. **Private Final Consumption Expenditure (PFCE):** It refers to expenditure incurred by households and private non-profit institutions serving households on all types of consumer goods, i.e. durable (except houses), semi-durable, non-durable goods and services.
  - $PFCE = \text{Household Final Consumption Expenditure} + \text{Private Non-Profit Institutions Serving Households Final Consumption Expenditure}$
  - PFCE includes expenditures incurred by normal residents, whether in the domestic territory or abroad. So, any expenditure incurred by residents during their foreign tour/travel will be added in PFCE. However, any expenditure incurred by non-residents and foreign visitors in the domestic market will be deducted from PFCE.

**Note:** The expenditure incurred on purchase or construction of owner-occupied houses is treated as capital formation (included under Gross Residential Construction Investment) and not as durable consumption. Other costly consumer durables, like cars, air conditioners, washing machines, etc. are included under PFCE.

2. **Government Final Consumption Expenditure (GFCE):** It refers to the expenditure incurred by general government on various administrative services like defence, law and order, education etc. Government produces goods and services with the aim of social welfare without any intention of earning profits.

GFCE is equal to cost of goods and services produced by government for collective use by the public. These services are valued at their cost to the government as they are not normally sold to the public. It means, GFCE is calculated as:

Government Final Consumption Expenditure = Intermediate Consumption of government + COE paid by government + Direct purchases from abroad for embassies and consulates located abroad - Sale of goods and services produced by general government.

3. **Gross Domestic Capital Formation (GDCF) or Gross Investment:** It refers to the addition to capital stock of the economy. It represents the expenditure incurred on acquiring goods for investment by the production units located within the domestic territory. There are two components of GDCF:

(a) **Gross Fixed Capital Formation:** It refers to the expenditure incurred on purchase of fixed assets. This expenditure is generally divided into three sub-categories:

(i) **Gross Business Fixed Investment:** It includes expenditure on the purchase of new plants, machinery, equipments, etc.

(ii) **Gross Residential Construction Investment:** It includes expenditure on purchase or construction of new houses by the households.

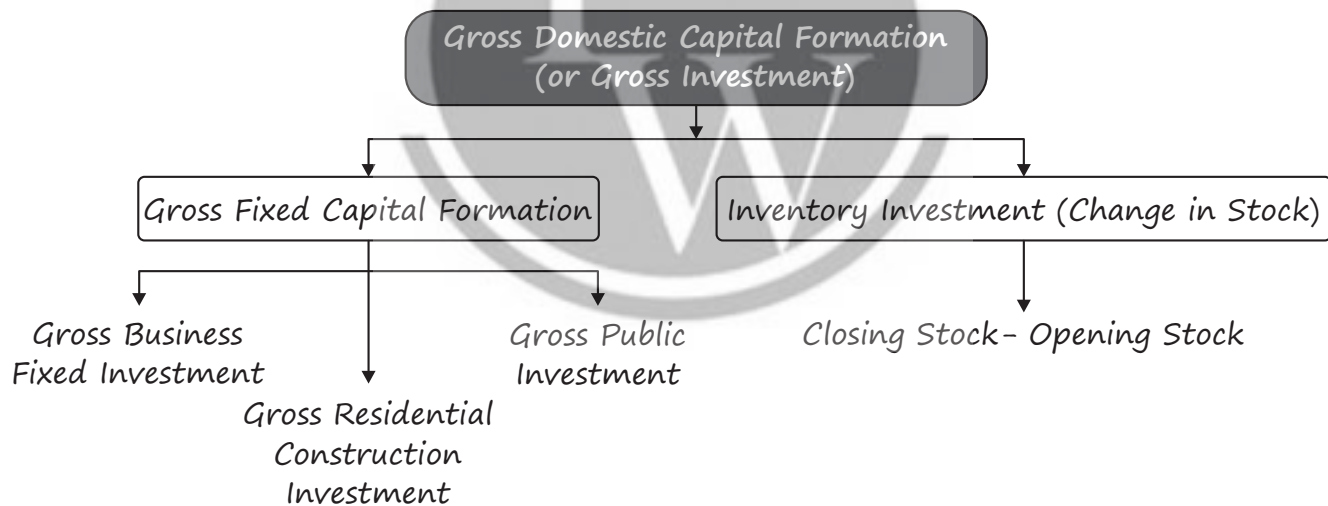
(iii) **Gross Public Investment:** It includes expenditure on construction of flyovers, roads, bridges etc. by the government.

(b) **Inventory Investment (Change in Stock):** It refers to the physical change in the stock of raw material, semi-finished goods and finished goods lying with the producers. It is included as an investment item because it represents the goods produced but not used for current consumption. It is calculated as the difference between the closing stock and the opening stock of the year.

It means,

$GDCF = \text{Gross Fixed Capital Formation} + \text{Inventory Investment};$  or

$GDCF = \text{Gross Business Fixed Investment} + \text{Gross Residential Construction Investment} + \text{Gross Public Investment} + \text{Inventory Investment}.$

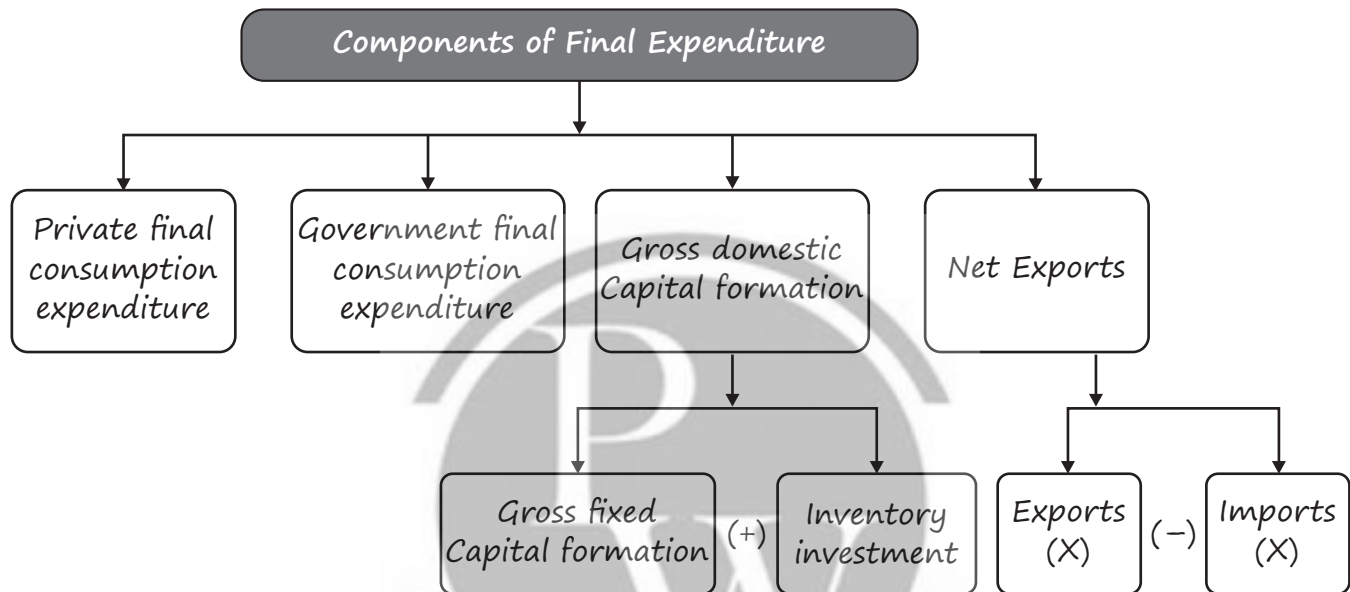


#### Some Important Points About GDCF

- ❑ Any Increase in stock of consumer goods with households is excluded from inventory investment as it is assumed that such goods are consumed, the moment they are purchased.
- ❑ Purchase of shares and debentures (either old or new) is not included in GDCF as it is simply a transfer of purchasing power and there is no addition to flow of goods and services.
- ❑ Purchase of second hand goods (like old house or old machinery) is also not included in GDCF as such goods have been already included in the year of original purchase.

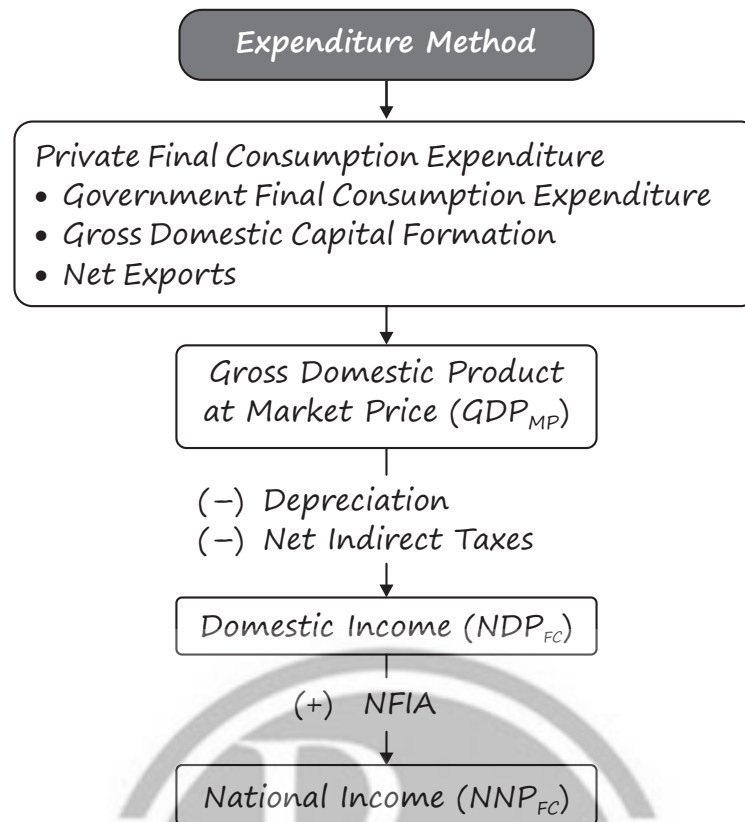
4. **Net Exports (X - M)** It refers to the difference between exports and imports of a country during a period of one year.

- Exports (X) refer to expenditure by foreigners on purchase of domestic products. The exported goods have been produced within the country's domestic territory. So, they are included in output of an economy.
- Imports (M) is the expenditure by residents on foreign products. Imports are deducted to obtain domestic product as they are not produced within the domestic territory.
- Instead of treating exports and imports separately, the difference between the two is taken and is termed as Net Exports.



#### Calculation of National Income by Expenditure Method

Private Final Consumption Expenditure (PFCE)	-
+ Government Final Consumption Expenditure (GFCE)	-
+ Gross Domestic Capital Formation (GDCF)	-
+ Net Exports (X-M)	-
<b>Gross Domestic Product @ Market Price <math>GDP_{MP}</math></b>	-
(-) Depreciation	(-)
+ NFIA	-
(-) NIT	-
<b>National Income (<math>NNP_{FC}</math>)</b>	-



**Example 5.** Calculate NI with the help of Expenditure method with the help of following data (Figures In Crores)

- (i) Compensation of employees = 1,200
- (ii) Net factor income from Abroad = 20
- (iii) Net indirect taxes = 120
- (iv) Profit = 800
- (v) Private final consumption expenditure = 2,000
- (vi) Net domestic capital formation = 770
- (vii) Consumption of fixed capital = 130
- (viii) Rent = 400
- (ix) Interest = 620
- (x) Mixed income of self-employed = 700
- (xi) Net export = 30
- (xii) Govt. final consumption expenditure = 1100
- (xiii) Operating surplus = 1820
- (xiv) Employer's contribution to social security scheme = 300

**Sol.**  $NDP_{Mp} = PFCE + GFCE + NDCF + (X-M)$   $NDP_{Mp} = 2000 + 1100 + 770 + 30$   
 $NDP_{Mp} = 3900$   
 $NNP_{FC} = NDP_{Mp} + NFIA - NIT$   
 $NNP_{FC} = 3900 + 20 - 120$  i.e. 3800 crores

**Example 6.** Calculate NNP at FC by expenditure method with the help of following information (Figures In Crore)

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

$$\text{Sol. } GDP_{Mp} = PFCE + GFCE + GDCF + (X - M) \quad GDP_{Mp} = 10 + 5 + (350 + 30 + 10) + (-)20$$

$$GDP_{Mp} = 385 \text{ crore}$$

$$NNP_{FC} = GDP_{Mp} - Dep - NIT + NFIA \quad NNP_{FC} = 385 - 30 - (0 - 100) + (-) 20$$

$$NNP_{FC} = 435 \text{ crores}$$

## PRACTICE QUESTIONS

1. From the following data about a firm 'X' for the year 2000-01, calculate the net value added at market price during that year:

Particulars	in crores
(i) Sales	90
(ii) Closing stock	25
(iii) Opening stock	15
(iv) Indirect taxes	10
(v) Depreciation	20
(vi) Intermediate consumption	40
(vii) Purchase of raw materials	15
(viii) Rent	5

**Sol.** Net Value Added at Market Price

$$= \text{Sales} + (\text{Closing stock} - \text{Opening stock}) - \text{Intermediate consumption} - \text{Depreciation}$$

$$= 90 + (25 - 15) - 40 - 20 = \text{Rs. } 40 \text{ crores}$$

**Note:** 'Purchase of raw materials' is not included separately as it is already included in Intermediate Consumption.

2. From the following data about firm 'X' calculate gross value added at factor cost by it:

Particulars	in thousands
(i) Sales	500
(ii) Opening stock	30
(iii) Closing stock	20
(iv) Purchase of intermediate products	300
(v) Purchase of machinery	150
(vi) Subsidy	40

**Sol. Gross Value Added at Factor Cost**

$$= \text{Sales} + (\text{Closing stock} - \text{Opening stock}) - \text{Purchase of intermediate products} + \text{Subsidy}$$
$$= 500 + (20 - 30) - 300 + 40 = \text{Rs. 230 thousands}$$

**Note:** 'Purchase of machinery' is not considered as it is not a part of intermediate consumption.

3. From the following data, calculate "gross value added at factor cost:

Particulars	in crores
(i) Sales	180
(ii) Rent	5
(iii) Subsidies	10
(iv) Change in stock	15
(v) Purchase of raw materials	100
(vi) Profits	25

**Sol. Gross Value Added at Factor Cost**

$$= \text{Sales} + \text{Change in stock} - \text{Purchase of raw materials} + \text{Subsidies}$$
$$= 180 + 15 - 100 + 10 = ₹ 105 \text{ crores}$$

4. From the following data relating to a firm, calculate its net value added at factor cost

Particulars	in Lakhs
(i) Subsidy	40
(ii) Sales	800
(iii) Depreciation	30
(iv) Exports	100
(v) Closing stock	20
(vi) Opening stock	50
(vii) Intermediate purchases	500
(viii) Purchase of machinery for own use	200
(ix) Import of raw material	60

**Sol. Net Value Added at Factor Cost**

$$= (\text{ii}) + (\text{v}) - (\text{vi}) - (\text{vii}) - (\text{iii}) + (\text{i})$$
$$= 800 + 20 - 50 - 500 - 30 + 40 = \text{Rs. 280 Lakhs}$$

**Note:**

- ❑ It is assumed that exports are already included in Sales.
- ❑ Import of raw materials is not included separately as it is a part of Intermediate Purchases.
- ❑ Subsidy is added as indirect taxes are not given.

5. Calculate Gross Value Added at Factor Cost

Particulars	
(i) Units of output sold (units)	1,000
(ii) Price per unit of output	30
(iii) Depreciation	1,000
(iv) Intermediate cost	12,000
(v) Closing stock	3,000
(vi) Opening stock	2,000
(vii) Goods and Services Tax or GST	6,000

Sol. Gross Value Added at Factor Cost

$$= (i \times ii) + v - vi - iv - vii$$

$$= (1,000 \times 30) + 3,000 - 2,000 - 12,000 - 6,000 = ₹ 13,000$$

6. From the following data, calculate Net value added at factor cost.

Particulars	in Crores
(i) Total Sales	1,000
(ii) Decrease in Stock	70
(iii) Production for Self Consumption	120
(iv) Purchase of raw materials	300
(v) Exports	150
(vi) Electricity Charges	50
(vii) Income Tax	20
(viii) Goods and Services Tax (GST)	70
(ix) Subsidy	40

Sol. Net Value Added at Factor Cost

$$= \text{Total Sales} + \text{Production for Self Consumption} - \text{Decrease in Stock} - \text{Purchase of raw materials} - \text{Electricity Charges} - (\text{GST} - \text{Subsidy})$$

$$= 1,000 + 120 - 70 - 300 - 50 - (70 - 40) = ₹ 670 \text{ Crores}$$

Note:

- ❑ Exports will not be taken separately as it is a part of Total Sales.
- ❑ Income Tax is not taken in calculations as it is a direct tax.
- ❑ Production for Self Consumption will be separately included in value of output as it also adds to current flow of goods and services and is not included in total sales.
- ❑ Intermediate Consumption is calculated as sum of (iv) and (vi) item.

7. From the following data, calculate:

- (a) Value of output;
- (b) Intermediate Consumption;
- (c) Net value added at factor cost.

Particulars	in Crores
(i) Purchase of raw materials from domestic market	400
(ii) Increase in the unsold stock	60
(iii) Import of raw material	120
(iv) Domestic Sales	1,200
(v) Replacement of Fixed Capital	50
(vi) Power Charges	20
(vii) Exports	200
(viii) Import of Machinery	40
(ix) Goods and Services Tax (GST)	10
(x) Subsidy	30
(xi) Goods used for self Consumption	10

Sol. (a) Value of Output

$$\begin{aligned} &= \text{Domestic Sales} + \text{Exports} + \text{Increase in the unsold stock} + \text{Goods used for self Consumption} \\ &= 1,200 + 200 + 60 + 10 = \text{Rs. } 1,470 \text{ Crores} \end{aligned}$$

**Note:**

- Exports will be included as domestic sales are given.
- Goods used for self Consumption will also be included as it adds to current flow of goods and services.

(b) Intermediate Consumption

$$\begin{aligned} &= \text{Purchase of raw material from domestic market} + \text{Import of raw material} + \text{Power Charges} \\ &= 400 + 120 + 20 = ₹ 540 \text{ Crores} \end{aligned}$$

(c) Net value added at factor cost

$$\begin{aligned} &= \text{Value of Output} - \text{Intermediate Consumption} - (\text{Goods and Services Tax} - \text{Subsidy}) \\ &\quad - \text{Replacement of Fixed Capital} \\ &= 1,470 - 540 - (10 - 30) - 50 = ₹ 900 \text{ Crores} \end{aligned}$$

**Note:** Replacement of Fixed Capital is another name for depreciation.

8. From the following data, calculate Net Domestic Product at factor cost.

Particulars	in Crores		
	Primary Sector	Secondary Sector	Tertiary Sector
(i) Sales	1,000	1,500	700
(ii) Net Indirect Taxes	50	30	—
(iii) Opening Stock	50	40	20
(iv) Intermediate Consumption	300	750	250
(v) Consumption of Fixed Capital	10	80	60

Sol. Net Domestic Product at factor cost

$$\begin{aligned}
 &= \text{Sales of all sectors} - \text{Opening Stock of all sectors} - \text{Intermediate Consumption of all sectors} \\
 &\quad - \text{Consumption of Fixed Capital of all sectors} - \text{Net Indirect Taxes of all sectors} \\
 &= (1,000 + 1,500 + 700) - (50 + 40 + 20) - (300 + 750 + 250) - (10 + 80 + 60) \\
 &\quad - (50 + 30 + 0) \\
 &= ₹ 1,560 \text{ Crores.}
 \end{aligned}$$

9. Calculate NDP at FC.

Particulars	in Crores
(i) Rent	400
(ii) Royalty	200
(iii) Interest	500
(iv) Compensation of Employees	1,000
(v) Profit	500
(vi) Mixed Income	1,000

Sol. NDP at FC

$$\begin{aligned}
 &= \text{Rent} + \text{Royalty} + \text{Interest} + \text{Compensation of Employees} + \text{Profit} + \text{Mixed income} \\
 &= 400 + 200 + 500 + 1,000 + 500 + 1,000 = \text{Rs. } 3,600 \text{ crores}
 \end{aligned}$$

10. Calculate GNP at MP from the following data:

Particulars	in Crores
(i) Net indirect tax	900
(ii) Depreciation	400
(iii) Net Factor income from abroad	-20
(iv) Rent	1,000
(v) Dividend	500
(vi) Mixed Income	200
(vii) Saving of private corporate sector	400
(viii) Interest	200
(ix) Compensation of employees	100

**Sol GNP at MP**

= Rent + Dividend + Mixed income + Saving of private corporate sector + Interest + Compensation of employees + Net indirect tax + Depreciation + Net Factor income from abroad

= 1,000 + 500 + 200 + 400 + 200 + 100 - 900 + 400 + (-) 20 = ₹ 3,680 crores

**11. From the following data, calculate National Income.**

Particulars	in Crores
(i) Compensation of employees	800
(ii) Rent	200
(iii) Wages and salaries	750
(iv) Net exports	(-) 30
(v) Net Factor income from abroad	(-) 20
(vi) Profit	300
(vii) Interest	100
(viii) Depreciation	50

**Sol. National Income (NNPFC)**

= Compensation of Employees + Rent + Profit + Interest + Net factor Income from Abroad

= 800 + 200 + 300 + 100 + (- 20) = 1,400 - 20 = ₹ 1,380 crores

**12. Calculate the Operating Surplus.**

Particulars	in Crores
(i) Value of output	70,000
(ii) Purchase of raw material	18,000
(iii) Net indirect tax	3,000
(iv) Wages and salaries	25,000

**Sol. Operating Surplus**

= Value of output - Purchase of raw material - Net indirect tax - Wages and Salaries

= 70,000 - 18,000 - 3,000 - 25,000 = ₹ 24,000 crores

**13. Calculate GDP at MP**

Particulars	in crores
(i) Private Final Consumption Expenditure	1,200
(ii) Government Final Consumption Expenditure	200
(iii) Gross Fixed Capital formation	300
(iv) Change in stock	400
(v) Imports	500
(vi) Exports	600

**Sol. GDP at MP**

$$= \text{Private Final Consumption Expenditure} + \text{Government Final Consumption Expenditure} \\ + \text{Gross Fixed Capital formation} + \text{Change in stock} + (\text{Exports} - \text{Imports}) \\ = 1,200 + 200 + 300 + 400 + (600 - 500) = ₹ 2,200 \text{ crores}$$

**14. Calculate GNP at FC:**

Particulars	in crores
(i) Net domestic fixed capital formation	350
(ii) Closing stock	100
(iii) Government final consumption expenditure	200
(iv) Net indirect taxes	40
(v) Opening stock	60
(vi) Consumption of fixed capital	50
(vii) Net exports	(-)10
(viii) Private final consumption expenditure	1,500
(ix) Imports	20
(x) Net factor income from abroad	(-) 30

**Sol. GNP at FC**

$$= (i) + \{(ii) - (v)\} + (iii) + (viii) + (vii) + (vi) - (iv) + (x) \\ = 350 + \{100 - 60\} + 200 + 1,500 + (-) 10 + 50 - 40 + (-) 30 = ₹ 2,060 \text{ crores}$$

**15. Calculate 'Gross Domestic Product of Factor Cost' from the following data:**

Particulars	in crores
(i) Private final consumption expenditure	800
(ii) Net domestic capital formation	150
(iii) Change in stock	30
(iv) Net factor income from abroad	(-) 20
(v) Net indirect tax	120
(vi) Government final consumption expenditure	450
(vii) Net Exports	(-) 30
(viii) Consumption of fixed capital	50

**Sol. Gross Domestic Product at Factor Cost (GDPFC)**

$$= (i) + (vi) + (ii) + (vii) + (viii) - (v) \\ = 800 + 450 + 150 + (-30) + 50 - 120 = ₹ 1,300 \text{ crores}$$

16. Calculate National Income by Income and Expenditure method.

Particulars	in crores
(i) Final Consumption Expenditure	
➤ Private Sector	350
➤ Government Sector	100
(ii) Mixed income of self employed	35
(iii) Gross domestic fixed capital formation	70
(iv) Opening stock	15
(v) Compensation of employees	250
(vi) Closing stock	25
(vii) Imports	20
(viii) Rent	75
(ix) Consumption of fixed capital	10
(x) Net indirect taxes	25
(xi) Interest	25
(xii) Net factor income from abroad	- 5
(xiii) Exports	10
(xiv) Profit	100

Sol. National Income by Income method

= Mixed income of self employed + Compensation of employees + Rent + Interest + Profit  
+ Net factor income from abroad

= 35 + 250 + 75 + 25 + 100 + (-5)

= ₹ 480 crores

National Income by Expenditure method

= Final consumption expenditure of Private sector + Final consumption expenditure of  
Government sector + Gross domestic fixed capital formation + (Closing stock — Opening  
stock) + Net Exports - Consumption of fixed capital + Net Factor Income from abroad  
- Net Indirect tax

= 350 + 100 + 70 + (25 - 15) + (10 - 20) - 10 + (- 5) - 25

= ₹ 480 crores

17. From the following data, calculate National Income by (a) Income method and (b) Expenditure method:

	In Crores
(i) Private final consumption expenditure	2,000
(ii) Net capital formation	400
(iii) Change in stock	50
(iv) Compensation of employees	1,900
(v) Rent	200
(vi) Interest	150
(vii) Operating surplus	720
(viii) Net indirect tax	400
(ix) Employers' contribution to social security schemes	100
(x) Net exports	20
(xi) Net factor income from abroad	(-) 20
(xii) Government final consumption expenditure	600
(xiii) Consumption of fixed capital	100

**Sol.** National Income (NNP at FC) by Income method

$$= (iv) + (vii) + (xi) = 1,900 + 720 + (-) 20 = ₹ 2,600 \text{ crores}$$

National Income (NNPfc) by Expenditure method

$$= (i) + (ii) + (x) + (xii) - (viii) + (xi) = 2,000 + 400 + 20 + 600 - 400 + (-)20$$

$$= ₹ 2,600 \text{ crores}$$

**18.** Calculate GNP at FC by Income and Expenditure method.

Particulars	in crores
(i) Compensation of employees	1,000
(ii) Operating surplus	500
(iii) Employers' contribution to social security schemes	120
(iv) Net exports	(-)30
(v) Net indirect taxes	40
(vi) Mixed income of the self employed	600
(vii) Net factor income to abroad	20
(viii) Consumption of fixed capital	40
(ix) Private final consumption expenditure	1,440
(x) Govt, final consumption expenditure	490
(xi) Gross fixed capital formation	250
(xii) Change in stock	30
(xiii) Interest on national debt	25

Sol. GNP at FC by Income method

$$= (i) + (ii) + (vi) - (vii) + (viii) = 1,000 + 500 + 600 - 20 + 40 = ₹ 2,120$$

Note Net factor income to abroad means that the paid amount is more than received amount.

GNP at FC by Expenditure method

$$= (ix) + (x) + (xi) + (xii) + (iv) - (v) - (vii) \\ = 1,440 + 490 + 250 + 30 + (-30) - 40 - 20 = ₹ 2,120 \text{ crores}$$

19. Calculate NDP at FC by expenditure method and GDP at MP by income method.

Particulars	in crores
(i) Gross fixed capital formation	130
(ii) Private final consumption expenditure	510
(iii) Mixed income of the self employed	280
(iv) Net factor income from ROW	(-)5
(v) Exports	50
(vi) Imports	60
(vii) Compensation of employees	240
(viii) Government final consumption expenditure	70
(ix) Consumption of fixed capital	40
(x) Indirect tax	90
(xi) Subsidies	10
(xii) Rent, interest and profit	90
(xiii) Change in stock	30
(xiv) Interest on national debt	10

Sol. NDP at FC by Expenditure method

$$= (i) + (xiii) + (ii) + \{(v) - (vi)\} + (viii) - (ix) - \{(x) - (xi)\} \\ = 130 + 30 + 510 + \{50 - 60\} + 70 - 40 - \{90 - 10\} = ₹ 610 \text{ crores}$$

GDP at MP by Income method

$$= (iii) + (vii) + (xii) + (ix) + \{(x) - (xi)\} \\ = 280 + 240 + 90 + 40 + \{90 - 10\} = ₹ 730 \text{ crores.}$$

## LIMITATIONS AND CHALLENGES OF NATIONAL INCOME COMPUTATION

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.

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

Determination of National Income

1. lack of an agreed definition of national income,
2. accurate distinction between final goods and intermediate goods,
3. issue of transfer payments,
4. services of durable goods,
5. difficulty of incorporating distribution of income,
6. valuation of a new good at constant prices, and
7. valuation of government services

Other challenges relate to:

1. Inadequacy of data and lack of reliability of available data,
2. presence of non-monetised sector,
3. production for self-consumption,
4. absence of recording of incomes due to illiteracy and ignorance,
5. lack of proper occupational classification, and
6. accurate estimation of consumption of fixed capital

## PER CAPITA INCOME

The GDP per capita is a measure of a country's economic output per person. It is obtained by dividing the country's gross domestic product, adjusted by inflation, by the total population. It serves as an indicator of the standard of living of a country.

Similarly, the per capita income is obtained by dividing the national income by the population.

## PRIVATE INCOME

Private income refers to the income which accrues to private sector from all the sources within and outside the country.

It includes both earned income (factor income) and unearned income (transfer income) received by private sector (Private enterprises + Households). It means, it consists of two kinds of incomes:

1. **Factor Income (Earned Income):** There are two sources of factor income for the Private sector:
  - (a) Income earned within the domestic territory known as Income from domestic product accruing to private sector.
  - (b) Income earned outside the domestic territory known as Net factor income from abroad.
2. **Transfer Income (Unearned Income):** The transfer income is also received from two sources:
  - (a) Income received within the domestic territory. It includes National debt interest and current transfers from government.

- (b) Income received from outside the domestic territory known as net current transfers from the rest of the world.

It must be noted that Net factor income from abroad (NFIA) accrues to both Private and Government sectors. However, due to lack of data for the Government sector, it is assumed that NFIA is attributed to the Private Sector only.

## TRANSFER INCOMES UNDER PRIVATE INCOME

1. **Interest on National Debt:** Sometimes, the government borrows funds from the public (by issuing bonds like National Saving Certificates, Saving Bonds, etc.) in order to meet its rising expenditure. Such debts are generally used by the government for consumption purposes. Hence, interest paid on such debts is treated as a transfer income for private enterprises.
2. **Current transfers from Government:** It includes all transfer receipts from government in the form of scholarships, unemployment allowances, subsidies, etc. Such transfers are always positive as they are one-sided, i.e., they flow from Government to the private sector.
3. **Net Current transfers from rest of the world:** It refers to net gifts and remittances received from abroad. It is positive when transfers received from abroad are more than transfers paid abroad. However, if transfers paid abroad are more than transfers received, then it is negative.

NNP <sub>FC</sub>	-
Less: Income from Property and Entrepreneurship accruing to Government Administrative Departments (Railways, Post Office etc)	-
Less: Savings of Non-departmental Enterprises.	-
<b>Income From Domestic Product Accruing To Private Sector</b>	-
Add: National Debt Interest	-
Add: Current Transfers from Government	-
Add: Net Current Transfers from rest of the world.	-
<b>Private Income</b>	-

## PERSONAL INCOME

- ❑ Personal income is a measure of actual current income receipts of households 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.
- ❑ Personal income excludes retained earnings, indirect business taxes, corporate income taxes and contributions towards social security.

Private Income	-
Less: Undistributed profits	(-)
Less: Corporate Tax	(-)
<b>Personal Income</b>	<b>-</b>

### DISPOSABLE PERSONAL INCOME (DI)

Disposable personal income is a measure of amount of money in the hands of the individuals that is available for their consumption or savings i.e. it shows the purchasing power of the households It is calculated as follows:

Personal Income	-
Less: Personal taxation	(-)
Less: Non tax payments i.e. fees, penalty, fines to government	(-)

### NATIONAL DISPOSABLE INCOME (NET AND GROSS)

National Disposable Income (NDY) refers to the income which is available to the whole country for disposal. It includes both factor income and transfer income. It is also known as 'Net National Disposable Income'.

NDY includes 'Net Indirect Taxes' and 'Net Current Transfers from ROW'

$NDY = NNP_{FC} + \text{Net indirect taxes} + \text{Net current transfers from the rest of the world}$

### GROSS NATIONAL DISPOSABLE INCOME

When depreciation is added to the net National Disposable Income, we get Gross National Disposable Income.

$\text{Gross National Disposable Income} = \text{Net National Disposable Income} + \text{Depreciation}$

### TRY YOUR UNDERSTANDING 6.1.8

- Which of the following is added to national income while calculating personal income?
  - Transfer payments to individuals
  - Undistributed profits of corporate
  - Transfer payments made to foreigners
  - Mixed income of self employed
- The GDP per capita is
  - a measure of a country's economic output per person
  - actual current income receipts of persons
  - national income divided by population
  - (a) and (c) above

3. Domestic income is:  
 (a)  $GDP_{MP}$  (b)  $NDP_{FC}$  (c)  $NNP_{MP}$  (d)  $GNP_{FC}$
4. National income is:  
 (a)  $GDP_{MP}$  (b)  $NDP_{MP}$  (c)  $NNP_{FC}$  (d)  $GNP_{FC}$
5. The difference between gross and net is:  
 (a) Depreciation (b) NFIA  
 (c) Net Indirect Tax (d) Subsidies
6. How is  $GDP_{MP}$  different from  $NNP_{FC}$ ?  
 (a) NFIA (b) Net Indirect Tax  
 (c) Depreciation (d) All of the above
7. Market price includes:  
 (a) NFIA (b) Depreciation  
 (c) Net Indirect Tax (d) None of the above
8. The word national in national income means:  
 (a) Goods produced by normal resident  
 (b) Goods produced in domestic territory  
 (c) Services produced by normal resident  
 (d) Both (a) and (c)
9. The word gross means:  
 (a) Inclusive of NFIA (b) Inclusive of indirect tax  
 (c) Exclusive of depreciation (d) Inclusive of depreciation
10. Which of the following is a domestic concept?  
 (a)  $NDP_{MP}$  (b)  $NDP_{FC}$  (c)  $GDP_{MP}$  (d) All of the above
11. Which of the following is not a nation concept?  
 (a)  $GDP_{FC}$  (b)  $NNP_{MP}$  (c)  $GNP_{FC}$  (d)  $NNP_{FC}$
12. Depreciation can never be:  
 (a) Zero (b) Positive (c) Negative (d) None of the above.
13. Value added method is also known as:  
 (a) Product method (b) Inventory method  
 (c) Net output method (d) All of the above
14. Which of the following is not a component of operating surplus?  
 (a) Profit (b) Intermediate consumption  
 (c) Rent and royalty (d) Interest
15. Net exports is  
 (a) Export – Import (b) Import – Export  
 (c) Export + Import (d) None of the above

16. The output at current year price is called:

- (a) Nominal GDP (b) Real GDP (c) National GDP (d) None of the above

17. Real GDP shows:

- (a) Change in price only (b) Change in output only  
(c) Change in both price and output (d) None of the above

18. Nominal GDP shows:

- (a) Change in price only (b) Change in output only  
(c) Change in both price and output (d) None of the above

19. Which of the following is included in national income?

- (a) Brokerage on sale of financial assets  
(b) Sale of financial assets  
(c) Intermediate goods  
(d) Transfer payments

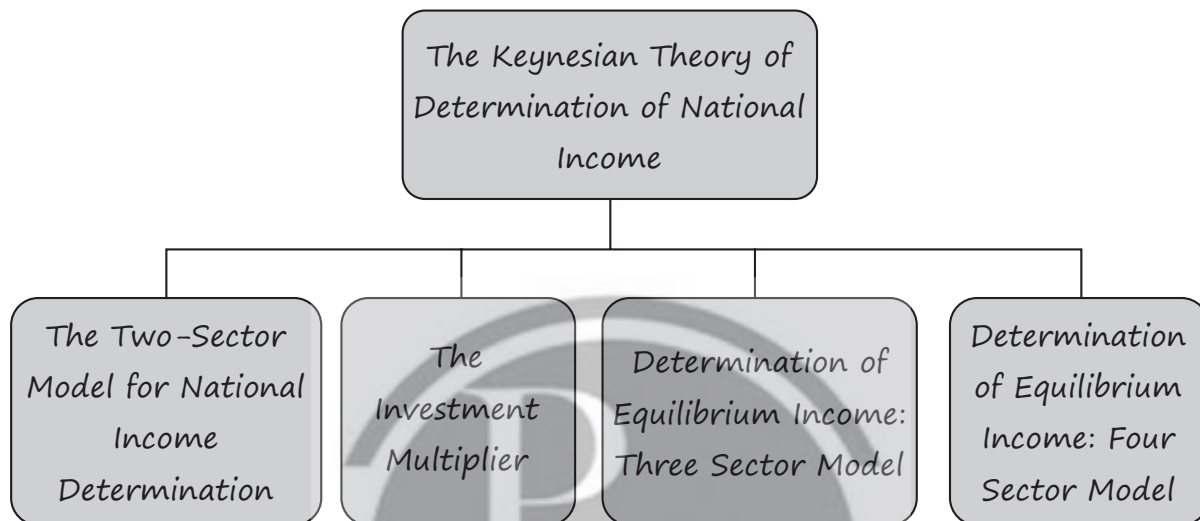
20. Which of the following is not included in national income?

- (a) Windfall gains (b) National debt interest  
(c) Purchase of second hand goods (d) All of the above

**Answer Key**

1. (a) 2. (d) 3. (b) 4. (c) 5. (a) 6. (?) 7. (?) 8. (d) 9. (d) 10. (d)  
11. (a) 12. (c) 13. (d) 14. (b) 15. (a) 16. (a) 17. (b) 18. (?) 19. (a) 20. (d)





A comprehensive theory to explain income determination was first put forward by the British economist John Maynard Keynes in his masterpiece 'The General Theory of Employment Interest and Money' published in 1936. The Keynesian theory of income determination is presented in two sector model, three sector model and four sector model:

### MEANING OF CIRCULAR FLOW OF INCOME

Circular flow of income refers to the movement of money and goods, in the economy, across the various sectors, i.e. household, firm, government and foreign sector, in a circular flow.

### CIRCULAR FLOW IN A SIMPLE ECONOMY (TWO-SECTOR ECONOMY)

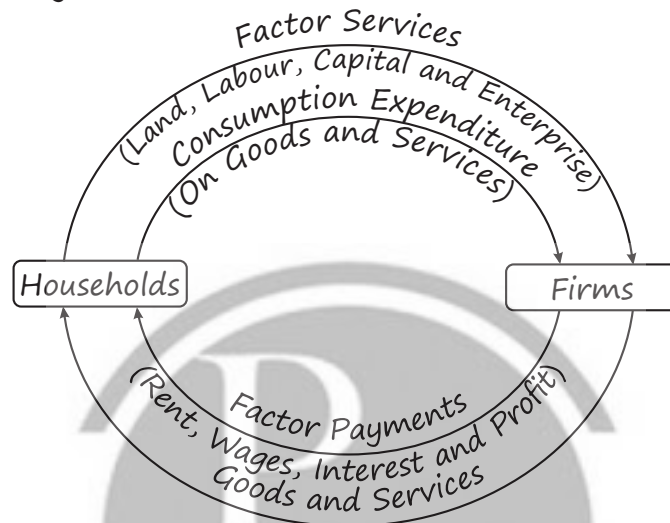
A simple economy assumes the existence of only two sectors, i.e. household sector and firm sector.

- ❑ Households are the owners of factors of production and consumers of goods and services.
- ❑ Firms produce goods and services and sell them to the households. It is the simplest form of closed economy, in which there is no government sector and foreign trade.

Closed Economy is an economy which has no economic relations with rest of the world.  
Open Economy is an economy which has economic relations with rest of the world.

In order to make our analysis simple, we take some assumptions:

1. Household sector supplies factor services only to firms and the firms hire factor services only from households.
2. Firms produce goods and services and sell their entire output to the households.
3. Households receive factor income for their services and spend the entire amount on consumption of goods and services.
4. There are no savings in the economy, i.e. neither the households save from their incomes, nor the firms save from their profits.
5. There are only 2 sectors in the economy: Households and Firms. It means, there is no government and foreign sector.



- The outer loop of diagram shows the real flow, i.e. flow of factor services from households to firms and corresponding flow of goods and services from firms to households.
- The inner loop shows the money flow, i.e. flow of factor payments from firms to households and the corresponding flow of consumption expenditure from households to firms.
- It must be noted that entire amount of money, which is paid by firms as factor payments is paid back by the factor owners to the firms. So, there is a circular and continuous flow of money income.
- In the circular flow of income, production generates factor income, which is converted into expenditure. This flow of income continues as production is a continuous activity due to never-ending human wants. It makes the flow of income circular.

## CONCLUSIONS OF CIRCULAR FLOW IN A SIMPLE ECONOMY

Factor Payment = Household Income = Household Expenditure = Total Receipts Of Firm  
= Value Of Output

### BASIC CONCEPTS AND FUNCTION

#### Aggregate Demand

Aggregate demand (AD) refers to the total value of final goods and services which all the sectors of an economy are planning to buy at a given level of income during a period of one

accounting year. In other words, AD is the aggregate expenditure that different sectors of the economy are willing to incur during a given period.

## Components of Aggregate Demand

The various components of Aggregate demand are:

1. **Private (Household) Consumption Expenditure (C):** It refers to the total expenditure incurred by households on purchase of goods and services during an accounting year. Generally, consumption expenditure is directly influenced by the level of 'Disposable Income', i.e. higher the disposable income, more is the consumption expenditure and vice-versa. Disposable Income refers to the income from all sources, which is available to households for spending on consumption and saving.

It must be kept in mind that the consumption expenditure we are discussing, is ex-ante, i.e. planned consumption expenditure.

2. **Investment Expenditure (I):** It refers to the total expenditure incurred by all private firms on capital goods. It includes addition to the stock of physical capital assets such as machinery, equipment, buildings, etc. and change in inventory. For simplicity, it is assumed in our study that 'Investment Expenditure' is autonomous, i.e. investments are not influenced by level of income.

3. **Government Expenditure (G):** It refers to the total expenditure incurred by government on consumer goods and capital goods to satisfy the common needs of the economy. It means, government incurs consumption expenditure as well as investment expenditure.

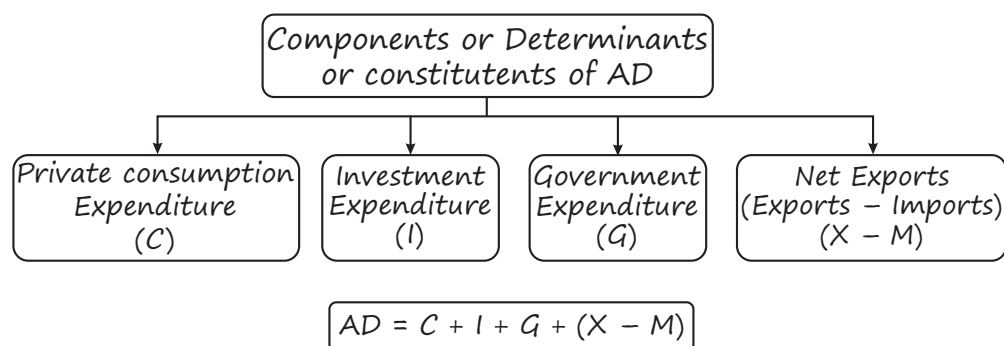
- Consumption expenditure is incurred to meet public needs like law and order, education, health, transport, defence, etc.

- Investment expenditure involves construction of highways, roads, power plants, etc.

Level of Government Expenditure is determined by the policy of government, which is generally guided by social welfare.

4. **Net Exports (X - M):** Exports indicate demand for goods produced within the domestic territory of a country by the rest of the world. Imports refer to demands of the residents of a country for the goods that have been produced abroad. The difference between export and imports is termed as net exports.

The magnitude of net exports generally depends on rate of exchange, relative prices of goods, exchange duties, trade policy, etc.



## AD IN 2 SECTOR MODEL ECONOMY

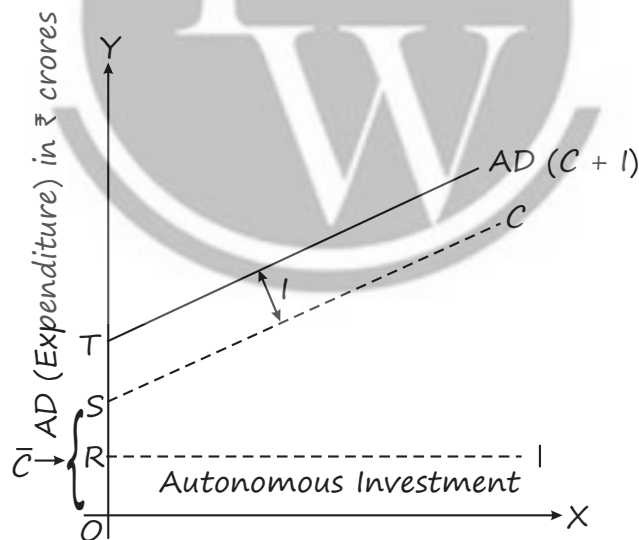
It consist of only 2 components, Namely:

1. Private (Household) Consumption Expenditure (C)
2. Investment Expenditure (I)

AD depends upon the level of income in the economy. Generally, there exists a positive relationship between income and the level of aggregate expenditure in the economy, i.e., as the level of income rises, AD also rises and vice-versa.

Aggregate Demand Schedule

Income (Y)	Consumption (C)	Investment (I)	AD (C + I)
0	40	20	60
100	120	20	140
200	200	20	220
300	280	20	300
400	360	20	380
500	440	20	460
600	520	20	540



### IMPORTANT POINTS ABOUT AD

1.  $AD = C + I$ : As stated before, AD is assumed to be a function of only consumption demand and investment demand.
2. Positive consumption, even when income level is zero: There is always some minimum level of consumption, even when the income is zero. It happens because people need certain basic goods and services to sustain themselves, even if income is zero.

In Schedule, consumption of Rs. 40 crores (when  $Y = 0$ ), is termed as autonomous consumption (c--).

In Figure, consumption curve starts from point S and not from origin. The positive consumption at zero level of income (i.e. OS) indicates the level of autonomous consumption (c).

Autonomous Consumption denoted by '(c--)' refers to minimum level of consumption, which is needed for survival, i.e. consumption at zero level of national income. Such consumption is met either from past savings or through sale of assets or borrowings.

3. Slope of Consumption Curve: The first component of AD, i.e. Consumption curve, slope upwards because consumption increases with increase in income. However, proportionate increase in consumption is less than that of income. It happens because after reaching a particular level, people start saving a part of their income.
4. Slope of Autonomous Investment Curve: The second component, investment expenditure (I), is a straight line parallel to the X-axis as it is assumed to be independent of the level of income. As seen in schedule, investment remains constant at Rs. 20 crores. In Fig., OR indicates the level of autonomous investment
5. Starting point of AD curve or C+ I curve: AD curve starts from point T, as at zero level of national income, AD = Autonomous Consumption (OS) + Autonomous Investment (OR). In schedule, AD is Rs. 60 crores at zero level of income.
6. Slope of AD curve: AD curve has a positive slope which indicates that as income increases, AD or aggregate expenditure also increases.

### TRY YOUR UNDERSTANDING 6.2.1

1. "The aggregate demand in an economy is falling". What can be the possible reasons for this?
  - (a) Fall in government expenditure
  - (b) Fall in imports
  - (c) Fall in consumption expenditure
  - (d) All of the above

#### Answer Key

1. (a)

### Aggregate Supply

Aggregate supply (AS) refers to money value of final goods and services that all the producers are willing to supply in an economy in a given time period.

Aggregate Supply = National Income

- ❑ When AS is expressed in physical terms, it refers to total output of goods and services in an economy.
- ❑ Value of total output is distributed to factors of production in the form of rent, wages, interest and profit.
- ❑ The sum total of these factor incomes (i.e. rent + wages + interest + profit) at domestic and national level is termed as National Income.
- ❑ So, we can say that aggregate supply (AS) and national income (Y), are one and the same thing.

## Components of Aggregate Supply (AS) or National Income (Y)

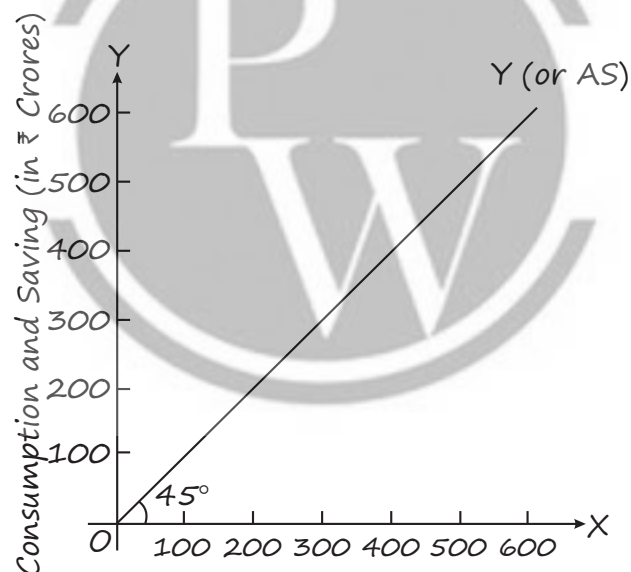
The major portion of national income is spent on consumption of goods and services and the balance is saved. It means, Income (Y) is either consumed or saved.

So, National Income (Y) = Consumption (C) + Saving (S) Or,  $Y = AS = C + S$

The nature of National Income curve or AS curve can be made clear with the help of Schedule and Fig.:

Aggregate Supply Schedule

Income	Consumption	Savings	AS = C + S
0	40	-40	0
100	120	-20	100
200	200	0	200
300	280	20	300
400	360	40	400
500	440	60	500
600	520	80	600



## Consumption Function (Propensity to Consume)

Consumption function expresses the functional relationship between aggregate consumption expenditure and aggregate disposable income, expressed as:

$$C = f(Y)$$

Where, C = Consumption; Y = National Income; f - Functional relationship

- ❑ Consumption function represents the willingness of households to purchase goods and services at a given level of income during a given time period.
- ❑ It also shows the consumption level at different levels of income in an economy.

- It is a psychological concept as it is influenced by subjective factors, like consumers' preferences, habits, etc.

$$\text{Consumption Function} = c + bY$$

$c$  = autonomous Consumption

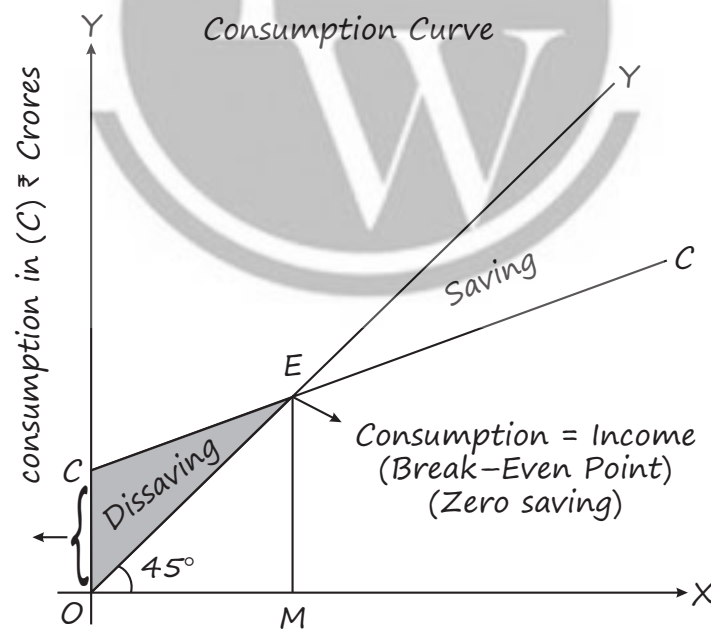
$b$  = Marginal Propensity To Consume

$Y$  = National Income

## RELATIONSHIP BETWEEN CONSUMPTION AND INCOME

Hypothetical Schedule of Income & Consumption

Income (Y) (in Crores)	Consumption (C) (in Crores)
0	40
100	120
200	200
300	280
400	360
500	440
600	520



### Observations

- Consumption curve (CC) starts from point C on the Y-axis. This implies that there is autonomous consumption ( $c$ ) of OC even when the national income is zero.
- Slope of Consumption Curve: CC has a positive slope, which indicates that as income increases, consumption also rises. However, proportionate rise in consumption is less than proportionate rise in income as part of income is saved.

Determination of National Income

3. **Income is less than Consumption:** When income is less than consumption (i.e., at income levels less than  $OM$  in Fig. and less than Rs. 200 crores in Table), the gap is covered by dissaving (i.e., by utilising previous saving) A COE represents dissaving.
4. **Break-even point ( $C = Y$ ):** At  $OM$  level of income (as represented by point  $E$ ), consumption becomes equal to income and saving is zero. The point  $E$  is known as the 'Break-even point'. In Table, break-even point occurs corresponding to income of Rs. 200 crores.  
Break-Even Point refers to the point at which consumption is equal to national income. At this point, saving is zero.
5. **Income is more than Consumption:** At points to the right of point  $E$ , income is more than consumption. Excess of income leads to saving. The gap between the  $45^\circ$  line and  $CC$  line after point  $E$  represents positive saving.  $45^\circ$  line is significant as it indicates whether consumption spending is equal to, greater than, or less than the level of income.

## TYPES OF PROPENSITIES TO CONSUME

There are two technical aspects of Propensity to consume:

1. Average Propensity to Consume (APC)
2. Marginal Propensity to Consume (MPC)

### AVERAGE PROPENSITY TO CONSUME (APC)

Average propensity to consume refers to the ratio of consumption expenditure to the corresponding level of income.

$$APC = \text{Consumption} / \text{Income}$$

If consumption expenditure is Rs. 70 crores at national income of Rs. 100 crores, then:  $C = 70$   
 $APC = C/Y = 70/100 = 0.70$ , i.e. 70% of the income is spent on consumption.

Average Propensity to Consume

Income (Y)	Consumption (C)	APC = C/Y
0	40	—
100	120	1.20 (=120/100)
200	200	1 (=200/200)
300	280	0.933 (=280/300)
400	360	0.90 (=360/400)

### IMPORTANT POINTS ABOUT APC

- (i) **APC is more than 1:** As long as consumption is more than national income.
- (ii) **APC = 1:** At the Break-even point, consumption is equal to national income.
- (iii) **APC is less than 1:** Beyond the break-even point, consumption is less than national income. As a result,  $APC < 1$ .
- (iv) **APC falls with increase in income:** APC falls continuously with increase in income because the proportion of income spent on consumption keeps on decreasing.

- (v) APC can never be zero: APC can be zero only when consumption becomes zero. However, consumption is never zero at any level of income. Even at zero level of national income, there is autonomous consumption ( $c^-$ ).

### TRY YOUR UNDERSTANDING 6.2.2

1. If the income is ₹ 400 crores and consumption is ₹ 250 crores, what will be the APC?  
 (a) 0.67                      (b) 0.63                      (c) 0.60                      (d) 0.58

#### Answer Key

1. (b)

### MARGINAL PROPENSITY TO CONSUME (MPC)

Marginal propensity to consume refers to the ratio of change in consumption expenditure to change in total income. MPC explains what proportion of change in income is spent on consumption.

$\frac{\text{Change in Consumption } (\Delta C)}{\text{Change in Income } (\Delta Y)}$

If consumption expenditure increases from Rs.70 crores to Rs. 110 crores with an increase in income from Rs.100 crores to Rs.200 crores, then:

$$MPC = \Delta C / \Delta Y$$

$$MPC = (110 - 70) / (200 - 100)$$

$$MPC = 40 / 100 = 0.40,$$

i.e 40% of incremental income is spent on consumption.

Hypothetical Schedule

(Y)	(C)	Consumption ( $\Delta C$ )	Income ( $\Delta Y$ )	MPC = $\Delta C / \Delta Y$
0	40	—	—	—
100	120	80	100	0.80 (= 80/100)
200	200	80	100	0.80 (= 80/100)
300	280	80	100	0.80 (= 80/100)
400	360	80	100	0.80 (= 80/100)

### IMPORTANT POINTS ABOUT MPC

- Value of MPC varies between 0 and 1: We know, incremental income is either spent on consumption or saved for future use.
- If the entire additional income is consumed, i.e.  $\Delta S = 0$ , then  $MPC = 1$ . However, if entire additional income is saved, i.e.  $\Delta C = 0$ , then  $MPC = 0$ . In normal situations, value of MPC varies between 0 and 1.

MPC of poor is more than that of rich: It happens because poor people spend a greater percentage of their increased income on consumption as most of their basic needs remain unsatisfied.

On the other hand, rich people spend a smaller proportion as they already enjoy a high standard of living. Similarly, MPC of developing countries like India, Bangladesh, etc. is more than MPC of developed countries like America or England.

3. MPC falls with successive increase in income: It happens because as an economy becomes richer, it has the tendency to consume smaller percentage of each increment to its income.

Slope of Consumption Curve: It is measured as the ratio between  $\Delta C$  (additional consumption)

**Example 1.** Suppose in a hypothetical economy, the income rises from ₹ 5,000 crores to ₹ 6,000 crores. As a result, the consumption expenditure rises from ₹ 4,000 crores to ₹ 4,600 crores. Marginal propensity to consume in such a case would be

- (a) 0.8                      (b) 0.4                      (c) 0.2                      (d) 0.6

Sol. (d) 0.6

and  $\Delta Y$  (additional income) and this is known as MPC. In above table, MPC is constant at 0.80. Due to constant MPC, consumption curve is a straight line, i.e. Consumption Function is linear.

### Saving Function (Propensity to Save)

Saving is the excess of income over consumption expenditure. Saving function refers to the functional relationship between saving and national income.

$$S = f(Y)$$

Where,  $S$  = Saving;

$Y$  = National Income;

$f$  = Functional relationship 'Saving Function' or 'Propensity to Save'

Propensity to save shows the different levels of saving at different levels of income in an economy.

$$\text{Saving Function} = -c + (1 - b)Y$$

Where,

$-c$  = Dissaving due to autonomous Consumption

$(1 - b)$  = Marginal Propensity To Save

$Y$  = National Income

Saving Schedule

Income (Y)	Consumption (C)	Saving (S = Y - C)
0	40	-40
100	120	-20
200	200	0
300	280	20
400	360	40
500	440	60
600	520	80

## Important Observations from Saving Schedule and Saving Curve

1. **Starting Point of Saving Curve:** The saving curve will have a negative intercept on Y-axis of the same magnitude as the consumption curve has positive intercept on the Y-axis. It happens because if consumption is positive at zero level of income, then there would be dissavings of the same magnitude.
2. **Slope of Saving Curve:** It has a positive slope, which indicates the positive relationship between saving and income.
3. **Break-even point ( $S = 0$ ):** Saving curve crosses the X-axis, which is known as break-even point as at this point, saving is zero (or consumption is equal to income). According to Table, break-even point occurs corresponding to income of Rs. 200 crores.
4. **Positive Saving:** After the break-even point, saving is positive.

## TYPES OF PROPENSITIES TO SAVE

Propensities to save are of two types:

1. Average Propensity to Save (APS)
2. Marginal Propensity to Save (MPS)

### AVERAGE PROPENSITY TO SAVE (APS)

Average propensity to save refers to the ratio of saving to the corresponding level of income.

$$\frac{\text{Saving (S)}}{\text{Income (Y)}}$$

If saving is ₹30 crores at national income of Rs. 100 crores, then:

APS =  $30/100 = 0.30$ , i.e. 30% of the of the income is saved.

Income (Y)	Saving (S)	APS
0	-40	-
100	-20	$-20/100 = (-)0.20$
200	0	0
300	20	$20/300 = 0.066$
400	40	$40/400 = 0.10$

### Important Points about APS

1. APS can never be 1 or more than 1: As saving can never be equal to or more than national income.
2. APS can be 0: As saving are zero at the income level of ₹ 200 crores. This point is known as Break-even point.
3. APS can be negative or less than 1: At income levels which are lower than the break-even point, APS can be negative as there will be dissavings in the economy.
4. APS rises with increase in income: APS rises with increase in income because the proportion of income saved keeps on increasing.

## MARGINAL PROPENSITY TO SAVE (MPS)

Marginal propensity to save refers to the ratio of change in saving to change in total income.

$$MPS = \text{Change in Saving } (\Delta S) / \text{Change in Income } (\Delta Y)$$

If saving increases from ₹ 30 crores to ₹ 90 crores with an increase in income from ₹ 100 crores to ₹ 200 crores, then:

$$MPS = \Delta S / \Delta Y$$

$$MPS = (90-30) / (200-100)$$

$MPS = 60/100 = 0.60$ , i.e. 60% of the incremental income is saved for future.

Income (Y)	Saving (S)	$\Delta S$	$\Delta Y$	$MPS = \Delta S / \Delta Y$
0	-40	—	-	—
100	-20	20	100	$0.20 (= 20/100)$
200	0	20	100	$0.20 (= 20/100)$
300	20	20	100	$0.20 (= 20/100)$
400	40	20	100	$0.20 (= 20/100)$

### TRY YOUR UNDERSTANDING 6.2.3

- What will be the value of APS when APC is 0 (Choose the correct alternative)  
 (a) 0                      (b) 1                      (c) 2                      (d)  $\infty$
- APC is equal to (choose the correct alternative)  
 (a)  $Y/C$                       (b)  $\Delta Y/\Delta Y$                       (c)  $C/Y$                       (d)  $\Delta Y/\Delta C$
- Which or is true?  
 (a)  $MPC + MPS = 0$                       (b)  $MPC + MPS < 1$   
 (c)  $MPC + MPS = 1$                       (d)  $MPC + MPS > 1$

#### Answer Key

1. (b)    2. (c)    3. (c)

## KEYNESIAN THEORY OF INCOME DETERMINATION

According to the Keynesian theory, equilibrium condition is generally stated in terms of aggregate demand (AD) and aggregate supply (AS). An economy is in equilibrium when aggregate demand for goods and services is equal to aggregate supply during a period of time.

$$AD = AS$$

$$\text{i.e. } C + I = C + S$$

$$\text{or } S = I$$

### Aggregate Demand–Aggregate Supply Approach (AD–AS Approach)

According to the Keynesian theory, the equilibrium level of income in an economy is determined when aggregate demand, represented by  $C + I$  curve is equal to the total output (Aggregate Supply or AS).

Aggregate demand comprises of two components:

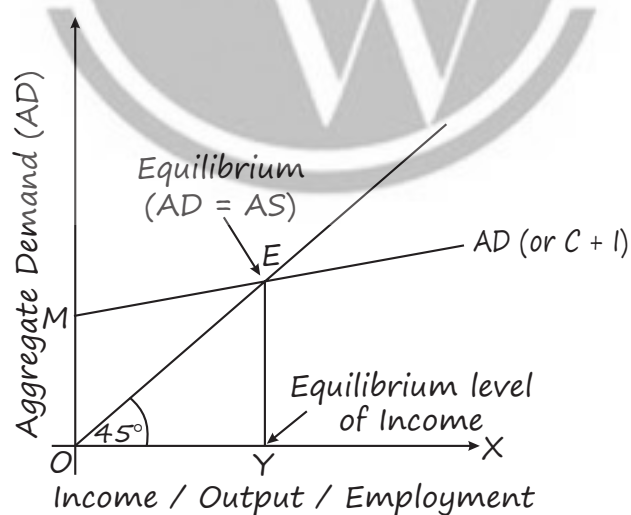
1. **Consumption expenditure (C):** It varies directly with the level of income, i.e. consumption rises with increase in income.
2. **Investment expenditure (I):** It is assumed to be independent of the level of income, i.e. investment expenditure is autonomous.

So, AD curve is represented by  $(C + I)$  curve in the income determination analysis.

3. **Aggregate supply:** is the total output of goods and services of the national income. It is depicted by a  $45^\circ$  line. Since the income received is either consumed or saved, the AS curve is represented by the  $(C + S)$  curve.

#### AD AS Schedule

Employment (Lakhs)	(Y)	(C)	(S)	(O)	$C + I$	$C + S$	
0	0	40	-40	40	80	0	$AD > AS$
10	100	120	-20	40	160	100	$AD > AS$
20	200	200	0	40	240	200	$AD > AS$
30	300	280	20	40	320	300	$AD > AS$
40	400	360	40	40	400	400	Equilibrium
50	500	440	60	40	480	500	$AD < AS$
60	600	520	80	40	560	600	$AD < AS$



- The AD or  $(C + I)$  curve shows the desired level of expenditure by consumers and firms corresponding to each level of income. The economy is in equilibrium at point 'E' where  $(C + I)$  curve intersects the  $45^\circ$  line.
- 'E' is the equilibrium point because at this point, the level of desired spending on consumption and investment exactly equals the level of total output.
- OY is the equilibrium level of output corresponding to point E.

- In Table, the equilibrium level of income is ₹ 400 crores, when  $AD$  (or  $C + I$ ) =  $AS$  = ₹ 400 crores.
- It is a situation of 'Effective Demand'. Effective demand refers to that level of  $AD$  which becomes 'effective' because it is equal to  $AS$ .

If there is any deviation from the equilibrium level of output, i.e. when planned spending ( $AD$ ) is not equal to planned output ( $AS$ ), then a process of readjustment will start in the economy and the output will tend to adjust up or down until  $AD$  and  $AS$  are equal again.

### WHEN $AD$ IS MORE THAN $AS$

When planned spending ( $AD$ ) is more than planned output ( $AS$ ), then  $(C + I)$  curve lies above the  $45^\circ$  line. It means that consumers and firms together would be buying more goods than firms are willing to produce. As a result, the planned inventory would fall below the desired level.

To bring the inventory back to the desired level, firms would resort to increase in employment and output until the economy is back at output level  $OY$ , where  $AD$  becomes equal to  $AS$  and there is no further tendency to change.

### WHEN $AD$ IS LESS THAN $AS$

When  $AD < AS$ , then  $(C + I)$  curve lies below the  $45^\circ$  line. It means that consumers and firms together would be buying less goods than firms are willing to produce. As a result, the planned inventory would rise.

To clear the unwanted increase in inventory, firms plan to decrease the employment and output until the economy is back at output level  $OY$ , where  $AD$  becomes equal to  $AS$  and there is no further tendency to change. It must be noted that equilibrium level may or may not be at the level of full employment, i. e. equilibrium is possible even at a level lower than the full employment level.

### TRY YOUR UNDERSTANDING 6.2.4

1. "Households and firms are planning to purchase less than what producers are planning to supply". What are the possible reasons for this?
  - (a) Aggregate demand = Aggregate supply
  - (b) Aggregate demand > Aggressive supply
  - (c) Aggregate demand < Aggregate supply
  - (d) None of the above

#### Answer Key

1. (c)

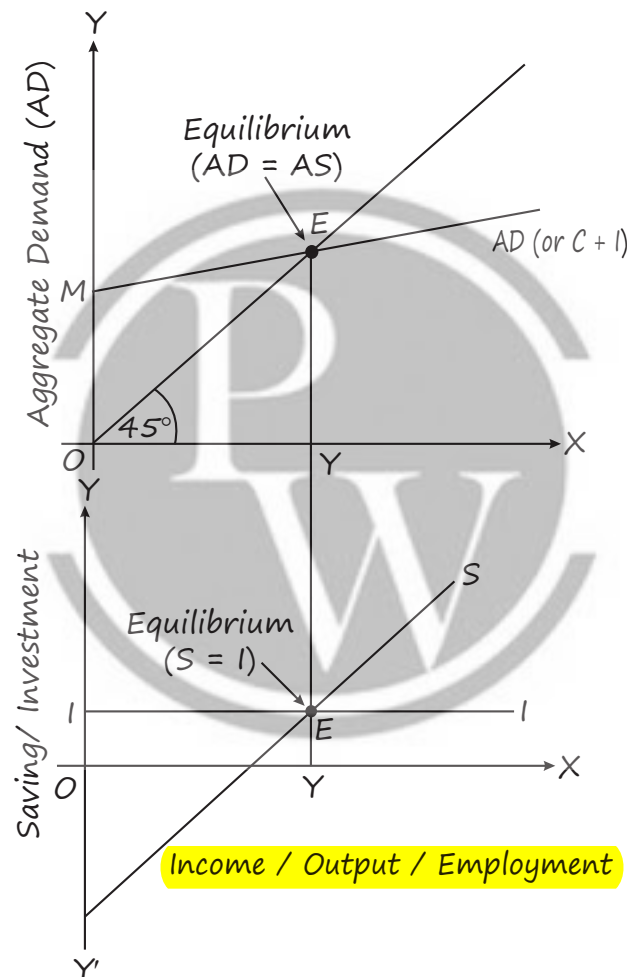
### SAVING-INVESTMENT APPROACH (S-L APPROACH)

According to this approach, the equilibrium level of income is determined at a level, when planned saving ( $S$ ) is equal to planned investment ( $I$ ).

Let us understand this with the help of following schedule and diagram:

### Equilibrium by Saving and Investment Approach

Income (Y)	Consumption (C)	Saving (S)	Investment (I)	Remarks
0	40	-40	40	$S < I$
100	120	-20	40	$S < I$
200	200	0	40	$S < I$
300	280	20	40	$S < I$
400	360	40	40	Equilibrium ( $S = I$ )
500	440	60	40	$S > I$
600	520	80	40	$S > I$



- Investment curve (I) is parallel to the X-axis because of the autonomous character of investments. The Saving curve (S) slopes upwards showing that as income rises, saving also rises. The economy is in equilibrium at point 'E' where saving and investment curves intersect each other.
- At point 'E', ex-ante saving is equal to ex-ante investment. .
- OY is the equilibrium level of output corresponding to point E.
- In Table, the equilibrium level of income is ₹ 400 crores, when planned saving = planned investment = ₹ 40 crores.

If there is any deviation from the equilibrium level of income, i.e., if planned saving is not equal to the planned investment, then a process of readjustment will start which will bring the economy back to the equilibrium level.

### WHEN SAVING IS MORE THAN INVESTMENT

If planned saving is more than planned investment, i.e. after point 'E' in Fig. it means that households are not consuming as much as the firms expected them to. As a result, the inventory rises above the desired level.

To clear the unwanted increase in inventory, firms would plan to reduce the production till saving and investment become equal to each other.

### WHEN SAVING IS LESS THAN INVESTMENT

If planned saving is less than planned investment, i.e. before point 'E' in Fig., it means that households are consuming more and saving less than what the firms expected them to. As a result, planned inventory would fall below the desired level.

To bring the inventory back to the desired level, firms would plan to increase the production till saving and investment become equal to each other.

**Example 2.** If  $AS = C + S$  and  $AD = C + I$ , then equilibrium will be established at (Choose the correct alternative)

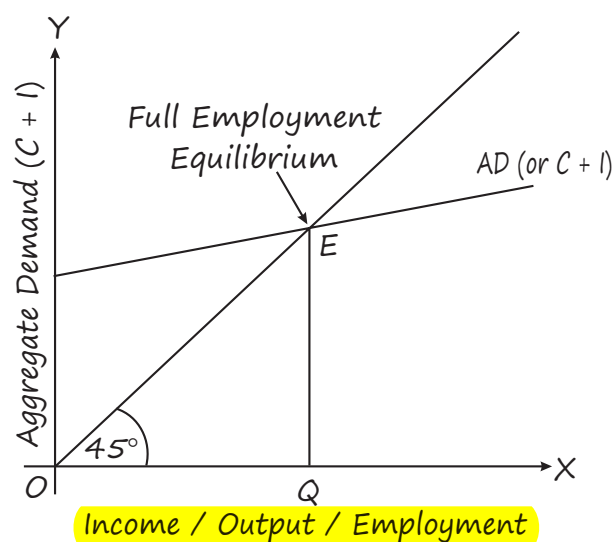
- (a)  $S = I$                       (b)  $S > I$                       (c)  $S < I$                       (d) All of the above

**Sol.** As per the Keynesian theory, equilibrium level can be achieved at:

- (i) Full employment level; or
- (ii) Underemployment level, i.e. less than full employment level; or
- (iii) Over full employment level, i.e. more than full employment level.

### FULL EMPLOYMENT EQUILIBRIUM

It refers to a situation when the aggregate demand is equal to the aggregate supply at full employment level

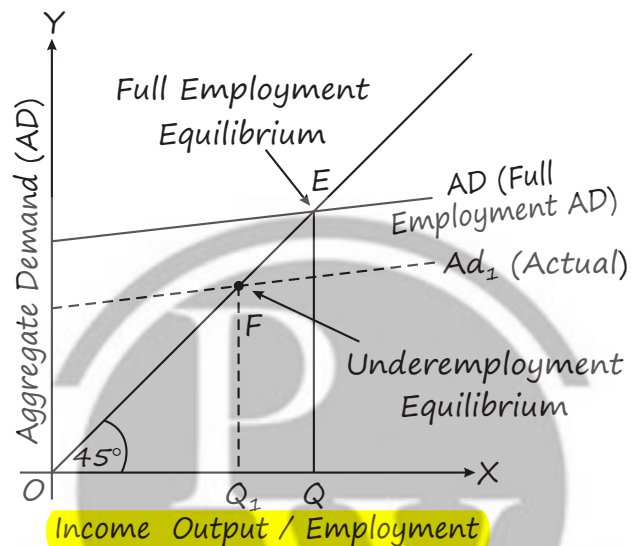


- $E$  is the full employment equilibrium because aggregate demand 'EQ' is equal to full employment level of output 'OQ'.
- At  $OQ$  level of output, all those who are willing to work at the prevailing wage rate, are able to find employment, i.e. there is no involuntary unemployment.

## EQUILIBRIUM WITH UNEMPLOYED OR INFLATION

### UNDEREMPLOYMENT EQUILIBRIUM

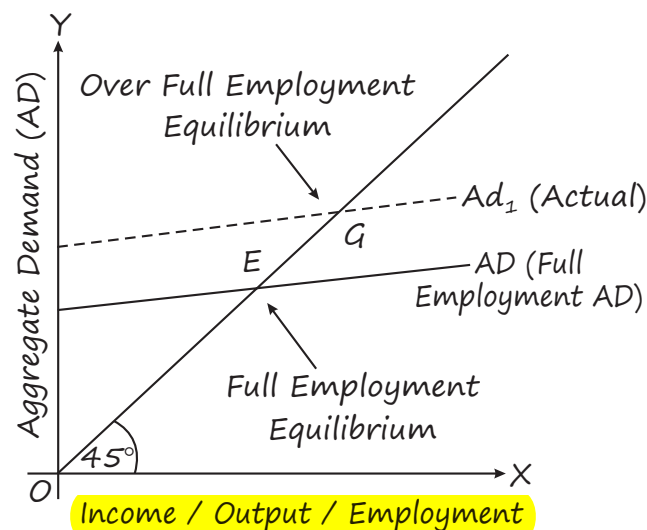
It refers to a situation when the aggregate demand is equal to the aggregate supply when the resources are not fully employed. It occurs prior to the full employment level.



- $AD_1 = AS$  at point 'F' which is lower than full employment level.
- As  $OQ_1$  is less than  $OQ$ , point 'F' signifies the under employment equilibrium.

### OVER FULL EMPLOYMENT EQUILIBRIUM

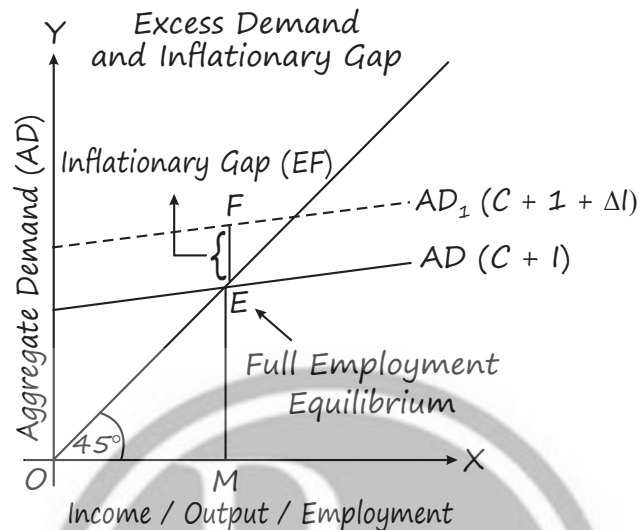
It refers to a situation when  $AD$  is equal to  $AS$  beyond the full employment level. It occurs after the full employment level.



- $AD_1 = AS$  at point 'G' which is higher than the full employment level.
- Point 'G' signifies the over full employment equilibrium.

### EXCESS DEMAND (INFLATIONARY GAP)

Excess demand refers to the situation when aggregate demand (AD) is more than the aggregate supply (AS) corresponding to full employment level of output in the economy. It is the excess of anticipated expenditure over the value of full employment output.



Excess demand gives rise to an inflationary gap. Inflationary gap refers to the gap by which actual aggregate demand exceeds the aggregate demand required to establish full employment equilibrium. It is called inflationary because this leads to a rise in general price level of the economy.

### REASONS FOR EXCESS DEMAND

Excess demand may arise due to several factors. Important, among them, are mentioned below:

1. Rise in the Propensity to consume: Excess demand may arise because of increase in consumption expenditure due to rise in the propensity to consume or fall in propensity to save.
2. Reduction in taxes: It may also occur due to increase in disposable income and consumption demand because of decrease in taxes.
3. Increase in Government Expenditure: Rise in government demand for goods and services due to increase in public expenditure will also result in excess demand.
4. Increase in Investment: Excess demand can also arise when there is increase in investment due to decrease in rate of interest or increase in expected returns.
5. Fall in Imports: Decrease in imports due to higher international prices in comparison to domestic prices may also lead to excess demand.
6. Rise in Exports: Excess demand may also arise when demand for exports increases due to comparatively lower prices of domestic goods or due to decrease in the exchange rate for domestic currency.
7. Deficit Financing: Excess demand may be caused due to increase in the money supply caused by deficit financing.

It must be noted that the main reason for excess demand is apparently the increase in four components of aggregate demand.

## IMPACT OF EXCESS DEMAND

Excess demand is not a desired situation because it does not lead to any increase in level of aggregate supply as the economy is already at full employment level. Excess demand has the following effect on output, employment and general price level:

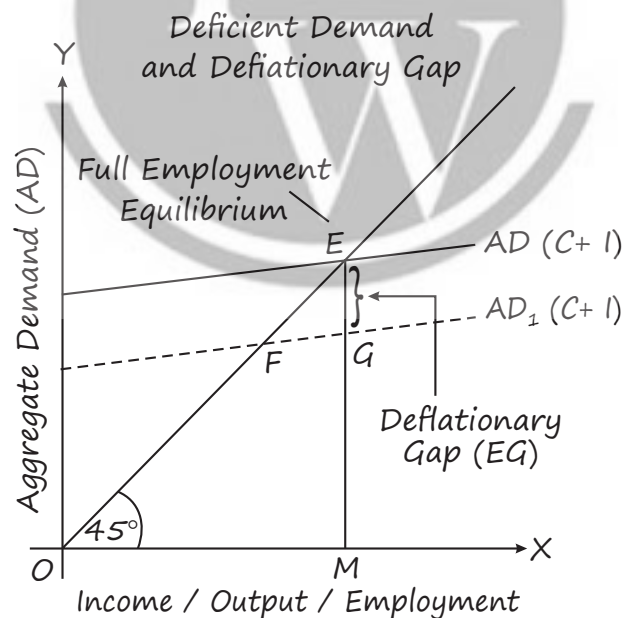
1. **Effect on Output:** Excess demand does not affect the level of output because economy is already at full employment level and there is no idle capacity in the economy.
2. **Effect on Employment:** There will be no change in the level of employment as the economy is already operating at full employment equilibrium and there is no involuntary unemployment.
3. **Effect on General Price Level:** Excess demand leads to rise in the general price level (known as inflation) as aggregate demand is more than aggregate supply.

## DEFICIENT DEMAND (DEFLATIONARY GAP)

Deficient demand refers to the situation when aggregate demand (AD) is less than the aggregate supply (AS) corresponding to full employment level of output in the economy.

The situation of deficient demand arises when planned aggregate expenditure falls short of aggregate supply at the full employment level. It gives rise to deflationary gap. Deflationary gap is the gap by which actual aggregate demand falls short of aggregate demand required to establish full employment equilibrium.

It leads to underemployment equilibrium. In this situation, there exists involuntary unemployment.



## REASONS FOR DEFICIENT DEMAND

The reasons for occurrence of deficient demand are almost opposite to the reasons for excess demand. The main causes for deficient demand are:

1. **Decrease in Propensity to consume:** A decrease in consumption expenditure, due to fall in the propensity to consume, leads to deficient demand in the economy.

2. *Increase in taxes: AD may also fall due to imposition of higher taxes. It leads to decrease in disposable income and, as a result, the economy suffers from deficient demand.*
3. *Decrease in Government Expenditure: When government reduces its demand for goods and services due to fall in public expenditure, it leads to deficient demand.*
4. *Fall in Investment expenditure: Increase in the rate of interest or fall in the expected returns lead to decrease in the investment expenditure. It reduces the AD and gives rise to deficient demand.*
5. *Rise in Imports: When international prices are comparatively less than the domestic prices, then it may lead to a rise in imports, implying a cut in the aggregate demand.*
6. *Fall in Exports: Exports may fall due to comparatively higher prices of domestic goods or due to increase in the exchange rate for domestic currency. This will lead to deficient demand.*

### **IMPACT OF DEFICIENT DEMAND**

*Deficient demand creates many difficulties in the economy due to its deflationary nature. Generally, deficient demand adversely affects the level of output, employment and price level in the economy.*

1. *Effect on Output: Due to lack of sufficient aggregate demand, there will be an increase in the inventory stock. It will force the firms to plan for lesser production for the subsequent period. As a result, planned output will fall.*
2. *Effect on Employment: Deficient demand causes involuntary unemployment in the economy due to fall in the planned output.*
3. *Effect on General Price Level Deficient demand causes the general prices to fall due to lack of demand for goods and services in the economy.*

### **TRY YOUR UNDERSTANDING 6.2.5**

1. *The 'difference between the Aggregate Demand at above full employment and Aggregate Demand at full employment is known as:*
  - (a) *Inflationary Gap*
  - (b) *Deflationary Gap*
  - (c) *Both (a) and (b)*
  - (d) *None of the above*
2. *What are the characteristics of Deficit Demand?*
  - (a) *Aggregate Demand falls short of Aggregate Demand required at full employment*
  - (b) *Aggregate Demand remains short of Aggregate Supply required of full employment level*
  - (c) *Both (a) and (b)*
  - (d) *None of above*

#### **Answer Key**

1. (a)    2. (c)

## CONCEPT OF INVESTMENT MULTIPLIER (K)

Investment Multiplier (K) expresses the relationship between an initial increment in investment and the resulting increase in aggregate income.

$$K = \Delta Y / \Delta I$$

Suppose an additional investment ( $\Delta I$ ) of ₹ 4,000 crores in an economy generates an additional income ( $\Delta Y$ ) of ₹ 16,000 crores. The value of multiplier (k), in this case will be:

$$K = 16,000/4000 = 4$$

### MULTIPLIER AND MPC

There exists a direct relationship between MPC and the value of multiplier. Higher the MPC, more will be the value of multiplier, and vice-versa.

The concept of multiplier is based on the fact that one person's expenditure is another person's income. When investment is increased, it also increases the income of the people. People spend a part of this increased income on consumption. However, the amount of increased income spent on consumption depends on the value of MPC.

- In case of higher MPC, people will spend a large proportion of their increased income on consumption. In such case, value of multiplier will be more.
- In case of low MPC, people will spend lesser proportion of their increased income on consumption. In such case, value of multiplier will be comparatively less.

The algebraic relation between Multiplier and MPC can be derived in the following manner: We know,

$$Y = C + I$$

Similarly,  $\Delta Y = \Delta C + \Delta I$

Dividing both sides by  $\Delta Y$ , we get

$$\Delta Y / \Delta Y = (\Delta C / \Delta Y) + (\Delta I / \Delta Y)$$

$$1 = MPC + 1/K$$

$$1/K = 1 - MPC$$

$$K = 1 / 1 - MPC$$

$$K = 1 / MPS$$

### MULTIPLIER IS DIRECTLY RELATED TO MPC AND INVERSELY RELATED TO MPS

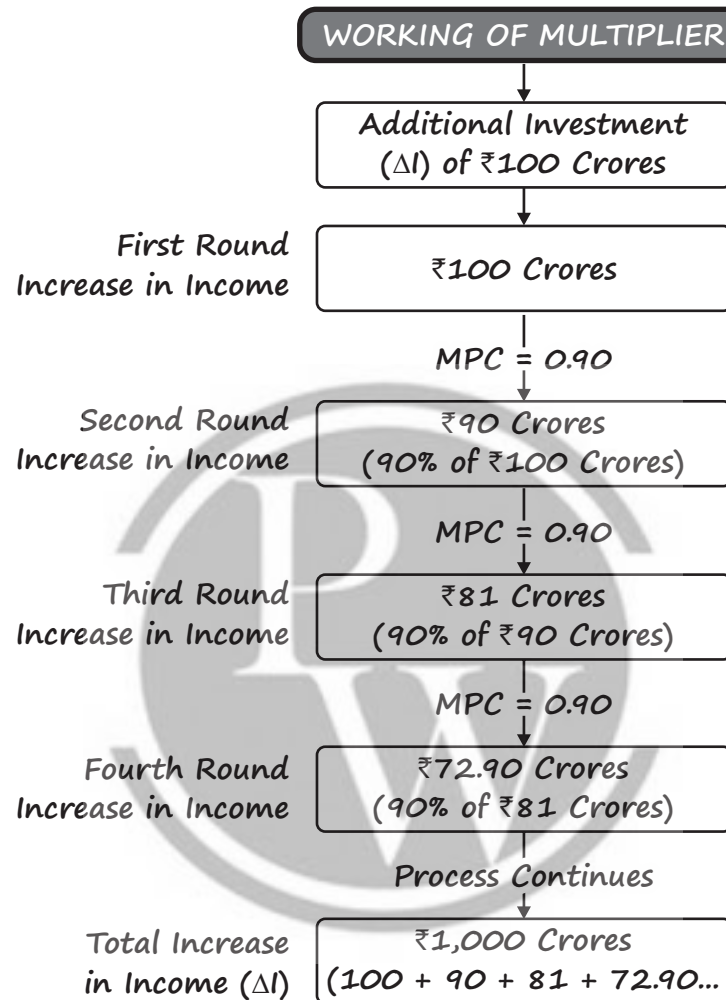
The value of multiplier depends upon the value of marginal propensity to consume. Multiplier (k) and MPC are directly related, i.e., when MPC is more, k is more and vice-versa. On the contrary, higher the MPS, lower will be the value of multiplier and vice-versa

### MAXIMUM VALUE OF MULTIPLIER

The maximum value of multiplier is infinity when the value of MPC is 1.  $MPC = 1$  indicates that the economy decides to consume the whole of its additional income. Here, not even a bit of the additional income is saved. It will lead to a continuous increase in the consumption expenditure and value of multiplier will be infinity.

## MINIMUM VALUE OF MULTIPLIER

The minimum value of multiplier is one when the value of MPC is zero.  $MPC = 0$  indicates that the economy decides to save the whole of its additional income and nothing is spent as consumption expenditure. So, there will be no further increase in income. As a result, the total increase in income ( $\Delta Y$ ) will be equal to the increase in investment ( $\Delta I$ ), i.e.,  $\Delta Y = \Delta I$ . Here, the value of multiplier is equal to 1.



### TRY YOUR UNDERSTANDING 6.2.6

1. Multiplier can be expressed as:

- (a)  $K = \frac{\Delta S}{\Delta I}$       (b)  $K = \frac{\Delta Y}{\Delta I}$       (c)  $K = 1 - S$       (d) None of these

2. Which factor affects Keynesian Multiplier?

- (a) Marginal Propensity to Save      (b) Marginal Propensity to Consume  
(c) Both (a) and (b)      (d) None of the above

#### Answer Key

1. (b)    2. (c)

## PRACTICE QUESTIONS

1. 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.

Sol.  $Y = C + I$

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

$$C = 2500 - 100 = 2400 \quad C = \bar{C} + bY$$

$$2400 = 300 + 2500b$$

$$b \quad 2400 - 300 = 2500b$$

$$b = 0.84;$$

$$MPS = 1 - MPC = 1 - 0.84 = 0.16.$$

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

Sol.  $Y = \bar{C} + I$

$$Y = \bar{C} + MPC(Y) + I$$

where

$$MPC = 1 - MPS$$

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

$$Y = 300 + 0.8Y$$

$$Y - 0.8Y = 300$$

$$0.2Y = 300,$$

$$Y = 1500.$$

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

Sol.  $Y = C + I$

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

$$Y = 30 + 0.8Y$$

$$Y - 0.8Y$$

$$Y = 30$$

$$Y = 150$$

4. Suppose the consumption function  $C = 7 + 0.5Y$ , Investment is 100, Find out equilibrium level of Income, consumption and saving?

Sol. Equilibrium Condition –  $Y = C + I$ ,

Given  $C = 7 + 0.5Y$  and  $I = 100$

Therefore  $Y = 7 + 0.5Y + 100$

$$Y - 0.5Y = 107$$

$$Y = 107 / 0.5$$

$$Y = 214$$

$$Y = C + I$$

$$214 = C + 100$$

$$C = 114$$

$$S = Y - C = 100$$

5. If the consumption function is  $C = 250 + 0.80Y$  and  $I = 300$ . Find out equilibrium level of  $Y$ ,  $C$  and  $S$ ?

Sol.  $Y = C + I$

$$Y = 250 + 0.80Y + 300$$

$$Y = 550 + 0.80Y$$

$$Y - 0.80Y = 550$$

$$0.20Y = 550$$

$$Y = 550/0.20$$

$$Y = 2750$$

$$C = 250 + .80 \times 2750$$

$$C = 2450$$

$$Y = C + S$$

$$2750 = 2450 + S$$

$$S = 2750 - 2450$$

$$S = 300$$

6. If saving function  $S = -10 + 0.2Y$  and autonomous investment  $I = 50$  Crores. Find out the equilibrium level of income, consumption and if investment increases permanently by ₹ 5 Crores, what will be the new level of income and consumption?

Sol.  $S = I$

$$-10 + 0.2Y = 50$$

$$0.2Y = 50 + 10$$

$$Y = 300 \text{ Crores}$$

$$C = Y - S$$

Where  $S = -10 + 0.2(300) = 50$

$$C = 300 - 50 = 250 \text{ Crores}$$

With the increase in investment by ₹ 5 Crores, the new investment will become equal to ₹ 55 Crores.

$$S = I - 10 + 0.2Y = 55$$

$$Y = 325 \text{ Crores}$$

$$C = 270 \text{ Crores}$$

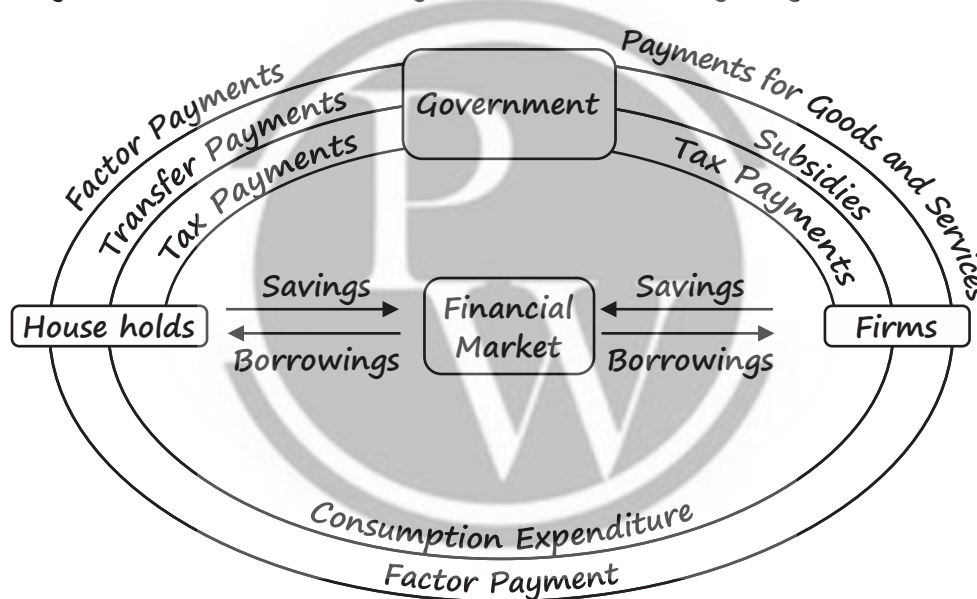
## INCOME DETERMINATION IN THREE SECTOR MODEL

Circular flow of income in a three-sector economy, consists of households, firms and the government sector. Government plays a very important role in the economic development of a country. It acts as both consumer and a firm.

As a consumer, it spends on consumption of goods and services produced by firms. As a producer, it produces goods and services for the economy. In addition to flows of circular flow in two-sector economy with financial market, the introduction of Government leads to following flows:

- **Between Households and Government:** Money flows from government to households in the form of:
  - (i) Transfer payments like scholarships, old age pension, etc.; and
  - (ii) Factor payments for hiring factor services of households.
 Money flows back to the government from households in the form of direct taxes like income tax, interest tax, etc.
- **Between Firms and Government:** Money flows from firms in the form of direct taxes and indirect taxes.
  - Money flows to the firms from government, when the latter grants subsidies and makes payment to the former for purchase of goods and services produced by the firms.

A part of the income earned by government is also saved and deposited in the financial market. Government also borrows money from the financial market to meet its expenditure. A brief summary of this circular flow is given in the following diagram:



## ROLE OF GOVERNMENT SECTOR IN AN ECONOMY

1. Government Sector performs the following activities in the economy:
  - (a) Government collects taxes from households and firms.
  - (b) Government makes transfer payments to the households and provides subsidies to the firms.
  - (c) Government makes the payment for purchase of goods and services from the firms.
  - (d) Government saves and borrows money with the help of financial market.

## ANALYSIS OF 3 SECTOR CIRCULAR FLOW OF INCOME

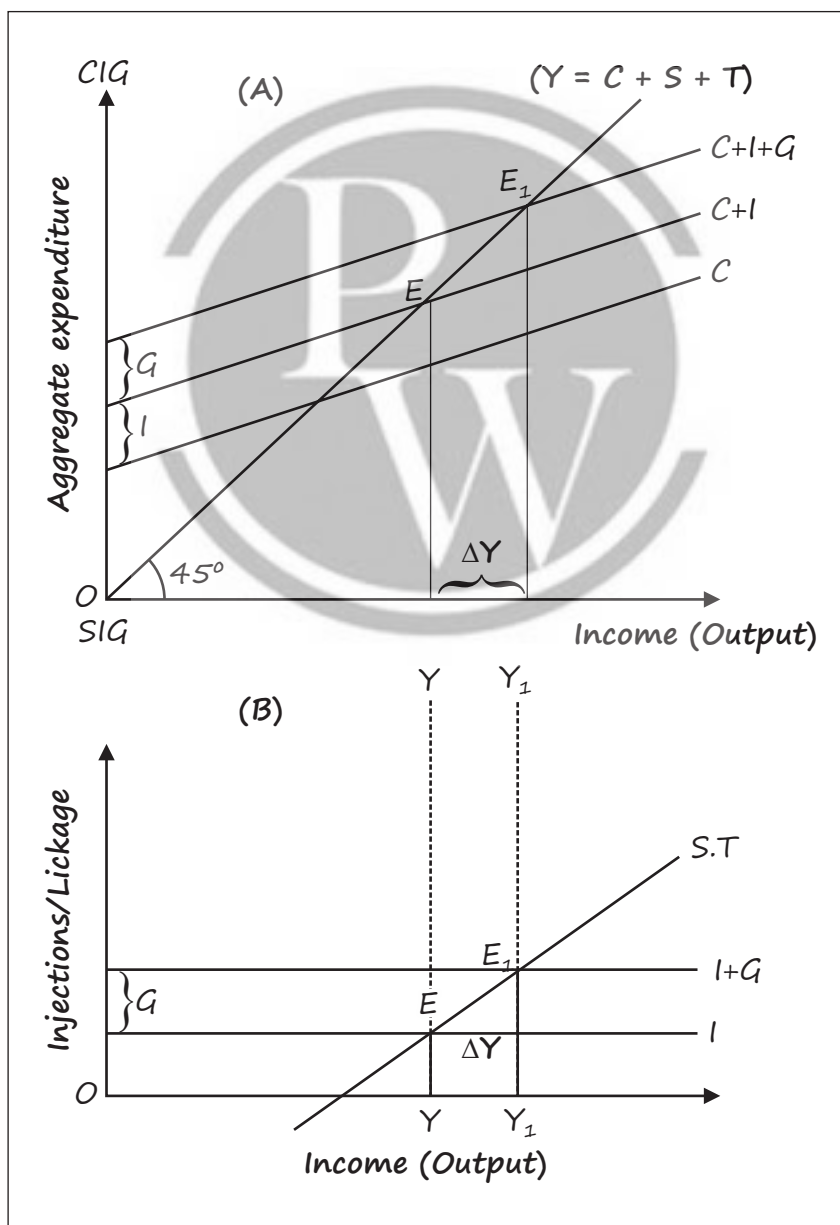
- Unlike in the two sector model, the whole of national income does not return directly to the firms as demand for output. There are two flows out of the household sector in addition to consumption expenditure namely, saving flow and the flow of tax payments to the government. These are actually leakages.

- The saving leakage flows into financial markets, which means that the part of that is saved is held in the form of some financial asset (currency, bank deposits, bonds, equities, etc.). The tax leakage goes to the government sector.
- The leakages which occur in household sector do not necessarily mean that the total demand must fall short of output. There are additional demands for output on the part of the business sector itself for investment and from the government sector. In terms of the circular flow, these are injections.
- The investment injection is shown as a flow from financial markets to the business sector. The purchasers of the investment goods, typically financed by borrowing, are actually the firms in the business sector themselves.

The three-sector Keynesian model is commonly constructed assuming that government purchases are autonomous

$$AD = C + I + G$$

$$AS = C + S + T$$



## INCOME DETERMINATION WITH LUMP SUM TAX

We assume that the government imposes lump sum tax, i.e. taxes that do not depend on income, has a balanced budget ( $G=T$ ) and also that there are no transfer payments. The consumption function is defined as –

$$C = \bar{C} + bY_d$$

Where  $Y_d = Y - T$  (disposable income),

$T =$  lump sum tax

$$Y = \bar{C} + b(Y - T) + I + G$$

**Example 3.** 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?

**Sol.** (a) Since  $G = T$ , budget of the government is balanced. Substituting the values of  $C$ ,  $I$  and  $G$  in  $Y$  we have

$$Y = C + I + G$$

$$Y = \bar{C} + bY_d + I + G$$

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

$$Y = 10 + 0.75Y - 15 + 50 + 20 \text{ or, } Y - 0.75Y = 65 \text{ or,}$$

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

$$0.25Y = 65 \text{ or,}$$

$$Y = 65 / 0.25 = 260$$

The equilibrium value of  $Y = 260$

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

## INCOME DETERMINATION WITH LUMP SUM TAX AND TRANSFER PAYMENTS

The consumption function is defined as –

$$C = \bar{C} + bY_d$$

$$Y_d = Y - T + TR$$

where  $T$  is a lump sum tax and  $TR$  is autonomous transfer payments

$$C = \bar{C} + b(Y - T + TR)$$

$$Y = C + I + G$$

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

**Example 4.** Suppose the structural model of an economy is given –  $C = 100 + 0.75Y_d$ ;  $I = 200$ ,  $G = T = 100$ ;  $TR = 50$ , find the equilibrium level of income?

**Sol.**  $Y = C + I + G$

$$Y = 100 + 0.75 Y_d + 200 + 100$$

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

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

$$Y = 1450$$

### INCOME DETERMINATION WITH TAX AS A FUNCTION OF INCOME

In (i) and (ii) above, we have analysed the effect of balanced budget with an autonomous lump sum tax. In reality, the tax system consists of both lump sum tax and proportional taxes. The tax function is defined as;

$$\text{Tax function } T = \bar{T} + tY$$

Where

$\bar{T}$  = autonomous constant tax

$t$  = income tax rate

$T$  = total tax

The consumption function is  $C = \bar{C} + bY_d$

Where

$$Y_d = Y - T \text{ or } Y - \bar{T} - tY$$

$$C = \bar{C} + b(Y - \bar{T} - tY)$$

Therefore, the equilibrium level of national income can be measured as

$$Y = C + I + G$$

$$Y = \bar{C} + bY_d + I + G$$

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

Value of Multiplier when Taxes Exist

$$K = 1 / 1 - b(1 - t)$$

Where

$b$  = MPC

$t$  = tax rate

**Example 5.** 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?

**Sol.** (a)  $Y = C + I + G$

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

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

$$Y = 440.91$$

(b) Multiplier

$$K = 1 / 1 - b(1 - t)$$

$$\text{i.e. } 1/[1 - 0.5(1 - 0.1)] = 1.82$$

**Example 6.** Suppose  $C = 100 + 0.80(Y - T + TR)$ ;  $I = 200$ ;  $T = 25 + 0.1Y$ ;  $TR = 50$ ;  $G = 100$   
 Find out equilibrium level of Income?

**Sol.**  $Y = C + I + G$

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

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

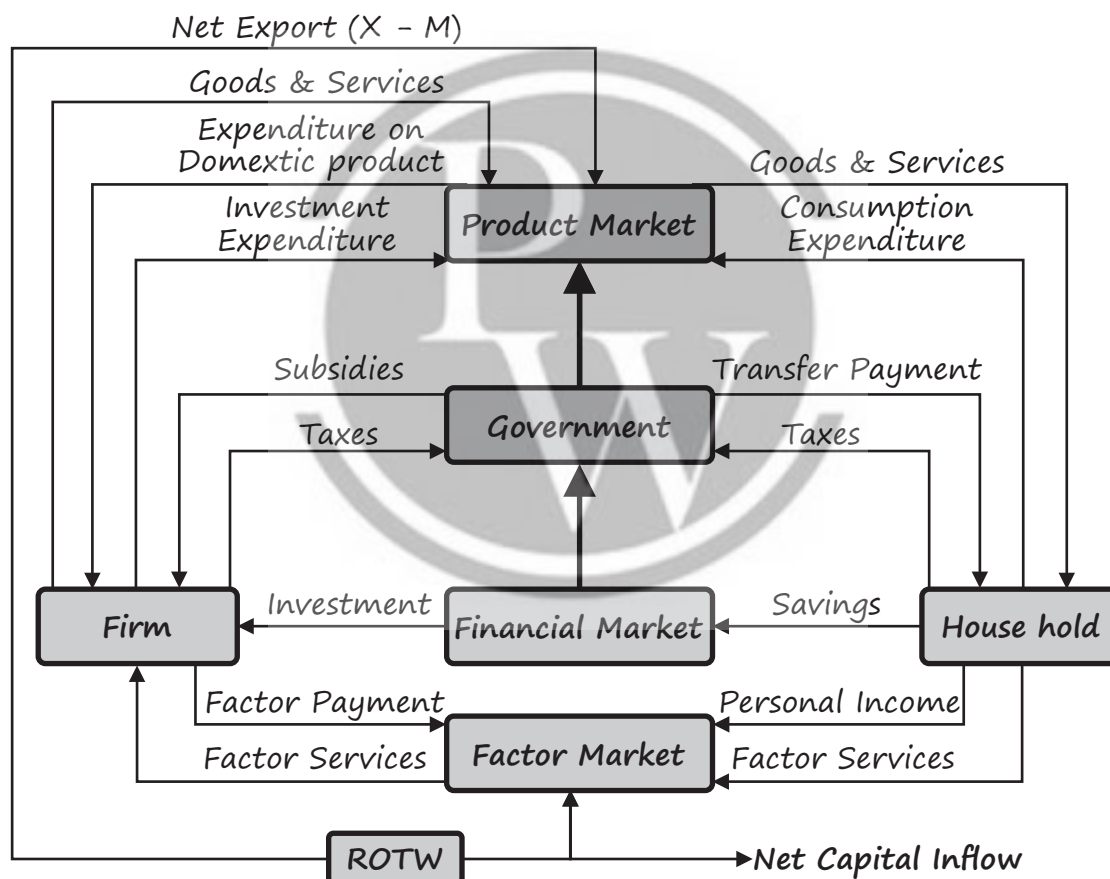
$$Y - 0.80Y + 0.08$$

$$Y = 420 \quad Y(1 - 0.8 + 0.08) = 420 \quad Y = 1500$$

## CIRCULAR FLOW IN A FOUR-SECTOR ECONOMY

Circular flow of income in a four-sector economy consists of households, firms, government and foreign sector.

### C) Determination of Equilibrium Income - Four Sector Model

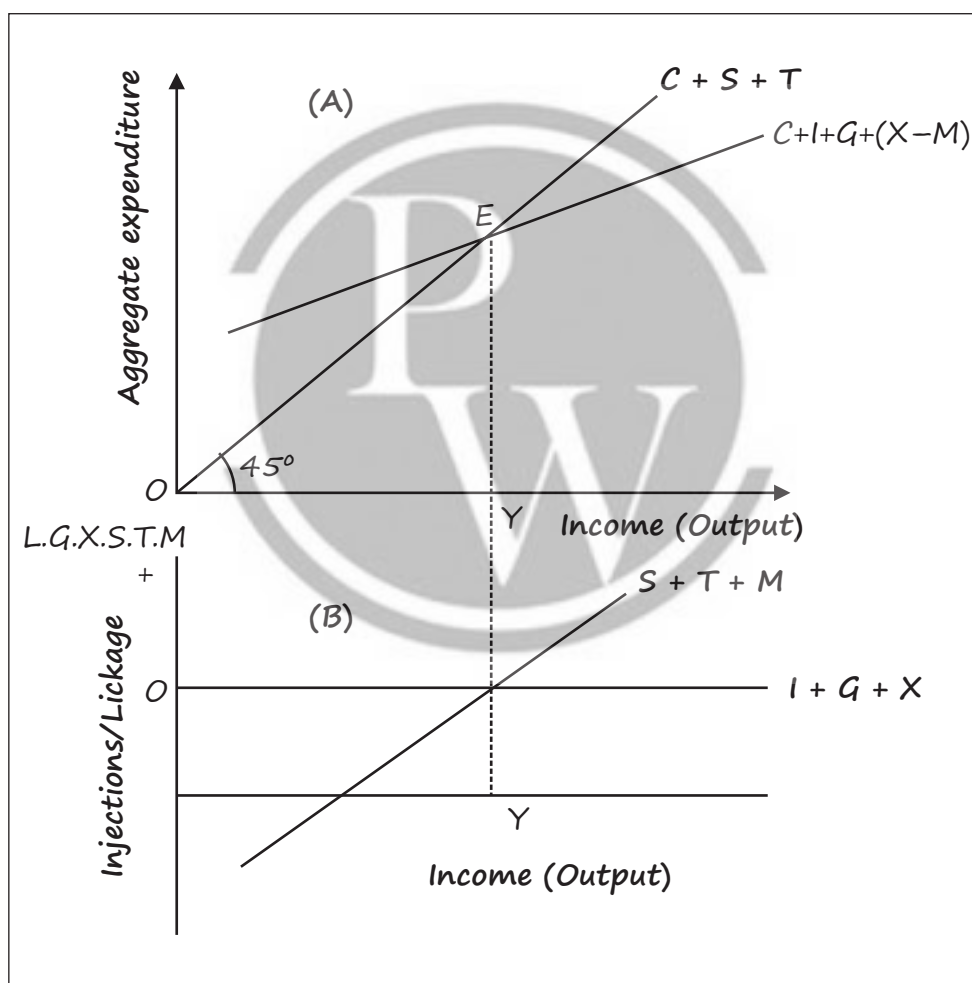


- ❑ In the four sector model, there are three additional flows namely: exports, imports and net capital inflow which is the difference between capital outflow and capital inflow.
- ❑ The  $C + I + G + (X - M)$  line indicates the total planned expenditures of consumers, investors, governments, and foreigners (net exports) at each income level. In equilibrium, we have  $iY = C + I + G + (X - M)$
- ❑ The domestic economy trades goods with the foreign sector through exports and imports. Exports are the injections in the national income while imports act as leakages or outflows of national income

- Exports represent foreign demand for domestic output and therefore, are part of aggregate demand.
- Imports are subtracted from exports to derive net exports, which is the foreign sector's contribution to aggregate expenditures. With the help of figure, we shall explain income determination in the four sector model. Governments, and foreigners (net exports) at each income level.

In equilibrium, we have!  $Y = C + I + G + (X - M)$

- The domestic economy trades goods with the foreign sector through exports and imports. Exports are the injections in the national income while imports act as leakages or outflows of national income.
- Exports represent foreign demand for domestic output and therefore, are part of aggregate demand.



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

Where

$$C = \bar{C} + b(Y - T)$$

$$M = \bar{M} + mY$$

$$\text{Multiplier}(K) = 1 / 1 - b(1 - t) + m$$

## TRY YOUR UNDERSTANDING 6.2.7

- In the Keynesian model, equilibrium aggregate output is determined by
  - aggregate demand
  - consumption function
  - the national demand for labor
  - the price level
- Keynes believed that an economy may attain equilibrium level of output
  - only at the full-employment level of output
  - below the full-employment level of output
  - only if prices were inflexible
  - (a) and c) above
- The marginal propensity to consume (MPC) can be defined as
  - a change in spending due to a change in income
  - a change in income that is saved after consumption
  - part of income that is spent on consumption.
  - part of income that is not saved.
- If the consumption function is expressed as  $C = a + bY$  then  $a$  represents
  - autonomous consumer expenditure.
  - the marginal propensity to consume.
  - the consumption income relationship
  - Non-linear consumption function

### Answer Key

1. (a)    2. (b)    3. (a)    4. (a)

**Example 7.** The consumption function is  $C = 40 + 0.8Y_d$ ,  $T = 0.1Y$ ,  $I = 60$  Crores  $G = 40$  Crores,  $X = 58$  and  $M = 0.05Y$ . Find out equilibrium level of income, Net Export, net export if export were to increase by 6.25

**Sol.**  $C = 40 + 0.8Y_d$

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

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

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

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

$$Y - 0.72Y + 0.05Y = 198$$

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

$$Y(0.33) = 198$$

$$Y = 198/0.33 = 600 \text{ Crores}$$

$$\text{Net Export} = X - M = 58 - 0.05Y$$

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

If exports increase by 6.25, then exports = 64.25 Then,

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

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

$$Y(0.33) = 204.5$$

$$Y = 204.5/0.33 = 619.697$$

$$\text{Then import} = .05 \times 619.697 = 30.98$$

$$\text{Net Export} = 64.25 - 30.98 = 33.27 \text{ Crores}$$

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

**Example 8.** 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.

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

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

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

$$Y = 600$$

$$\text{Trade Balance} = X - M$$

$$= 20 - 10 - 0.05(600) = -20$$

Thus, trade balance in deficit.

$$\text{Foreign trade multiplier} = 1 + 1 - b + m \text{ i.e. } 1/1 - 0.9 + 0.05 = 6.66$$

## EXERCISE

- \_\_\_\_\_ refers to money value of at the final goods services produced by a country during a year.  
(a) National Income (b) Personal Income  
(c) Personal Disposable Income (d) Government Income
- National dividendures money value of goods and services produced by residents eultry during current year  
(a) Producer (b) Consumer (c) Intermediary (d) Final
- National Income helps the Government to—  
(a) Analyse the level of production and economic welfare in the economy.  
(b) Analyse the stability and growth of the economy.  
(c) Formulate appropriate economic policie to direct the economy.  
(d) All of the above
- Domestic Territory includes—  
(a) National frontiers of India  
(b) Territorial waters of India  
(c) Embassies, Consulates and Military Establishments of India, which are located abroad.  
(d) All of the above

5. Domestic Territory includes—
- Ships and Aircrafts operated by the residents of the country between two or more countries.
  - Fishing Vessels, Oil and Natural Gas Rigs, and Floating Platforms operated by the residents of the country in international waters, or engaged in extraction in areas in which the country has exclusive rights of exploitation.
  - Territory lying within the political frontiers, including territorial waters of the country.
  - All of the above.
6. Which of the following concepts of National Income takes into consideration the geographical boundaries of a country, rather than the origin of the Factors of Production?
- Gross
  - Net
  - National
  - Domestic
7. Concepts like GDP, GNP, NDP, NNP, etc. are measured at—
- Market Prices
  - Factor Cost
  - Both (a) and (b)
  - Neither (a) nor (b)
8. Measurement at Market Prices constitute—
- External sale price angle
  - Internal value addition angle
  - Both (a) and (b)
  - Neither (a) nor (b)
9. Measurement at Factor Cost constitute—
- External sale price angle
  - Internal value addition angle
  - Both (a) and (b)
  - Neither (a) nor (b)
10. Which of the following constitute the reason for difference between Market Prices and Factor Cost
- Indirect Taxes
  - Subs
  - Both (a) and (b)
  - Neither (a) nor (b)
11. Which of the following equations are correct?
- Value at Factor Cost plus Indirect Taxes minus
  - Value at Factor Cost minus Indirect Taxes minus Subsidies = Value at Market Prices
  - Value at Factor Cost plus Indirect Taxes plus Subsidies = Value at Market Price
  - Value at Factor Cost minus Indirect Taxes plus Subsidies = Value at Market Prices
12. Which of the following equations are correct
- Value at Factor Cost = Value at Market Prices plus Indirect Taxes minus Subsidies
  - Value at Factor Cost = Value at Market Prices plus Indirect Taxes plus Subsidies
  - Value at Factor Cost = Value at Market Prices minus Indirect Taxes minus Subsidies
  - Value at Factor Cost = Value at Market Prices minus Indirect Taxes plus Subsidies.
13.  $GDP_{PC} = GDP_{mp} - \text{_____} + \text{subsidies}$
- Indirect taxes
  - Depreciation
  - NFA
  - None

14. *GOP at factor cost \_\_\_\_\_*
- (a) *GDP at market price + subsidies*
  - (b) *GDP at market price + subsidies – Indirect tax*
  - (c) *GDP at market price – subsidies + Indirect tax*
  - (d) *GDP at market price + subsidies + Indirect tax*
15. *Indirect Taxes Subscaled-*
- (a) *Net Subsidies*
  - (b) *Net Indirect Taxes*
  - (c) *Geo Subsidies*
  - (d) *Gross Indirect Taxes*
16. *The difference between values at Market Prices and Factor Cost is attributed to –*
- (a) *Net Factor Income from abroad*
  - (b) *Depreciation*
  - (c) *Net Indirect Taxes*
  - (d) *All of the above*
17. *Allowance given for using Capital Equipment for Production is known as-*
- (a) *Appreciation*
  - (b) *Deficit*
  - (c) *Loss*
  - (d) *Depreciation*
18. *Depreciation Allowance is also called as-*
- (a) *Fixed Asset Allowance*
  - (b) *Capital Allowance*
  - (c) *Capital Consumption Allowance*
  - (d) *None of the above*
19. *The difference between GNP and NNP equals*
- (a) *Consumer Expenditure on Durable Goods*
  - (b) *Indirect Business Taxes*
  - (c) *A statistical discrepancy*
  - (d) *Depreciation*
20. *is the sum of the Gross Domestic Product and Net Factor Incomes from Abroad.*
- (a) *Gross Domestic Product*
  - (b) *Net Domestic Product*
  - (c) *Gross National Product*
  - (d) *Net National Product*
21. *Net National Product (NNP) equals*
- (a) *GDP plus Depreciation*
  - (b) *GDP minus Depreciation*
  - (c) *GNP plus Depreciation*
  - (d) *GNP minus Depreciation*
22. *National Income refers to at Factor Cost*
- (a) *Gross Domestic Product*
  - (b) *Net Domestic Product*
  - (c) *Gross National Product*
  - (d) *Net National Product*
23. *National Income means-*
- (a) *GNP at Market Prices*
  - (b) *NNP at Market Prices*
  - (c) *GNP at Factor Cost*
  - (d) *NNP at Factor Cost*
24. *Net National Product at Factor Cost can be calculated as-*
- (a) *NNP at Market Prices less Net Indirect Taxes*
  - (b) *GNP at Factor Cost less Depreciation*
  - (c) *NDP at Factor Cost plus Net Factor Income from abroad*
  - (d) *All of the above*

25. National Income differs from Net National product at market price by the amount of  
 (a) Net indirect taxes (b) National debt interest  
 (c) Subsidies (d) Current transfers from the rest of the world
26. Which of the following is not an approach used to measure National Income?  
 (a) Product Approach  
 (b) Two Sector Model in circular flow of Income  
 (c) Income Approach  
 (d) Expenditure Approach
27. Product Method focusses on measurement of National Income at-  
 (a) Phase of Production of Goods and Services  
 (b) Phase of Income Distribution  
 (c) Phase of Income Disposition  
 (d) All of the above
28. The production method of calculating national income is also known as  
 (a) Value added method (b) Income method  
 (c) Expenditure method (d) None of the above
29. Income Method focusses on measurement of National Income at-  
 (a) Phase of Production of Goods and Services  
 (b) Phase of Income Distribution  
 (c) Phase of Income Disposition  
 (d) All of the above
30. Expenditure Method focusses on measurement of National Income at-  
 (a) Phase of Production of Goods and Services  
 (b) Phase of Income Distribution  
 (c) Phase of Income Disposition  
 (d) All of the above
31. Method is suitable for measuring National Income in the case of Agricultural Sector.  
 (a) Product (b) Income (c) Expenditure (d) All of the above
32. Method is suitable for measuring National Income in the case of Small Scale Sector.  
 (a) Product (b) Income (c) Expenditure (d) All of the above
33. \_\_\_\_\_ constitutes expenditure on Capital Goods.  
 (a) Consumption Expenditure (b) Investment Expenditure  
 (c) Both (a) and (b) (d) Neither (a) nor (b)
34. Method of measuring National Income aggregates all the money spent by Private Citizens, Firms and the Government within a given year.  
 (a) Income (b) Expenditure (c) Savings (d) Input
35. Constitutes expenditure on consumer goods and services  
 (a) Consumption Expenditure (b) Investment Expenditure  
 (c) Both (a) and (b) (d) Mather (a) or (b)

36. Which of the following is not included in Gross Investment?
- (a) Additions to Business Inventory
  - (b) Business and Residential Constructions
  - (c) Expenditures on Consumer Goods
  - (d) Expenditures on Machinery
37. Consumption Expenditure is done by Sectors of the economy
- (a) Household and Business
  - (b) Business and Government
  - (c) Government and Household
  - (d) Household, Business and Government
38. Expenditure on Defence is-
- (a) Private Investment
  - (b) Public Investment
  - (c) Private Consumption
  - (d) Public Consumption
39. Investment Expenditure is done by Sectors of the economy
- (a) Household and Business
  - (b) Business and Government
  - (c) Government and Household
  - (d) Household, Business and Government
40. Which is not the major source of Government Saving?
- (a) Taxes
  - (b) Surpluses of Public Enterprises
  - (c) Transfer Payments
  - (d) None of the above
41. Transfer Payments refer to payments which are made-
- (a) Without any exchange of goods and services
  - (b) To workers on transfer from one job to another
  - (c) As compensation to employees
  - (d) None of the above
42. Which of the following is an example of a Government Transfer Payment?
- (a) Salary paid to a Soldier
  - (b) Purchase of a new car for the Ministry of Finance
  - (c) Funding of a clinic to provide free vaccinations
  - (d) Free Food Coupons issued to persons as part of an anti-poverty program
43. Identify the item which is not a Factor Payment
- (a) Free uniform to Defence Personnel
  - (b) Salaries to the Members of Parliament
  - (c) Imputed Rent of an Owner-Occupied Building
  - (d) Scholarships given to Scheduled Caste Students
44. In computing National Income under Expenditure Method, the expenditure on Final Goods and Services produced is included.
- (a) In the current period
  - (b) In preceding periods
  - (c) Both (a) and (b)
  - (d) Neither (a) nor (b)

45. In computing National Income under Expenditure Method, the expenditure on is excluded.
- Raw Materials and Intermediate Goods and Services
  - Final Goods and Services
  - Both (a) and (b)
  - Neither (a) nor (b)
46. In computing National Income under Expenditure Method, Government Expenditure on Pensions, Scholarships, Unemployment Allowance, etc. is
- Included
  - Excluded
  - First included, then excluded
  - Nothing can be said
47. Under Expenditure Method, Consumption Expenditure + Net Domestic Investment Replacement Expenditure equals -
- Gross Domestic Expenditure
  - Gross National Expenditure
  - Net Domestic Expenditure
  - Net National Expenditure
48. Under Expenditure Method, Consumption Expenditure + Net Domestic Investment + Net Foreign Investment Replacement Expenditure equals
- Gross Domestic Expenditure
  - Gross National Expenditure
  - Net Domestic Expenditure
  - Net National Expenditure
49. Under Expenditure Method, Consumption Expenditure Net Domestic Investment equals
- Gross Domestic Expenditure
  - Gross National Expenditure
  - Net Domestic Expenditure
  - Net National Expenditure
50. Under Expenditure Method, Expenditure + Net Domestic Investment Foreign Investment equals - Consumption
- Gross Domestic Expenditure
  - Gross National Expenditure
  - Net Domestic Expenditure
  - Net National Expenditure
51. Which of the following relationships is true?
- Net Domestic Saving Net Personal Saving - Retained Earning of Domestic Companies
  - Gross Domestic Saving Net Domestic Saving + Budget Surplus
  - Gross Domestic Investment Gross F Investment Change in Consumption
  - Gross Domestic Product Consumption Gross Investment Government Expenditure + Exports
52. Net Domestic Expenditure is Consumption Expenditure plus -
- Net Foreign Investment
  - Net Foreign Investment plus Net Domestic Investment
  - Net Domestic Investment
  - Replacement Expenditure
53. Which of the following economic policies by Governments help maintain full employment and reasonable price stability in an economy?
- Monetary Policy
  - Fiscal Policy
  - Stabilization Policies
  - Both (b) and (c)

54. Which of the following is correct?
- Increase in the % of per capita income is less than the increase in % of national income
  - Increase in the % of national income is less than the increase in % of per capita income
  - Per capita income rises when population increases
  - Per capita income rises when population increases
55. In the Keynesian model, equilibrium aggregate output is determined by
- aggregate demand
  - consumption function
  - the national demand for labor
  - the price level
56. Keynes believed that an economy may attain equilibrium level of output
- only at the full employment level of output
  - below the full-employment level of output
  - only if prices were inflexible
  - (a) and (c) above
57. According to Keynes, consumption expenditure is determined by
- the level of interest rates
  - extent of government taxes and subsidies
  - disposable income
  - autonomous investment expenditure
58. The marginal propensity to consume (MPC) can be defined as
- a change in spending due to a change in income
  - a change in income that is saved after consumption
  - part of income that is spent on consumption
  - part of income that is not saved.
59. If the consumption function is expressed as  $C = a + bY$  then  $b$  represents
- autonomous consumer expenditure when income is zero
  - the marginal propensity to consume.
  - the expenditure multiplier when consumption is increased.
  - part of disposable income
60. If the consumption function is expressed as  $C = a + bY$  then  $a$  represents
- autonomous consumer expenditure
  - the marginal propensity to consume.
  - the consumption income relationship
  - Non-linear consumption function
61. If the consumption function is  $C = 20 + 0.5 Y_d$ , then an increase in disposable income by ₹ 100 will result in an increase in consumer expenditure by ₹ \_\_\_\_\_
- 25
  - 70
  - 50
  - 100
62. 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 ₹ \_\_\_\_\_
- 8,000
  - 6,000
  - 10,000
  - None of the above

63. In the Keynesian cross diagram, the point at which the aggregate demand function crosses the 45-degree line indicates the
- (a) level of full employment income.
  - (b) less than full employment level of income
  - (c) equilibrium level of income which may or may not be full employment level of income
  - (d) autonomous level of income which may not be full employment level of income
64. In a closed economy, aggregate demand is the sum
- (a) consumer expenditure, demand for exports and government spending
  - (b) consumer expenditure, planned investment spending and government spending.
  - (c) consumer expenditure, actual investment spending, government spending and net exports
  - (d) consumer expenditure, planned investment spending, government spending, and net exports.
65. Under equation  $C = a + by$ ,  $b = 0.8$ , what is the value of 2 sector expenditure multiplier?
- (a) 4
  - (b) 2
  - (c) 5
  - (d) 1

**Answer Key**

1. (a)	2. (d)	3. (d)	4. (d)	5. (d)	6. (d)	7. (c)	8. (a)	9. (b)	10. (c)
11. (a)	12. (d)	13. (a)	14. (b)	15. (b)	16. (c)	17. (d)	18. (c)	19. (d)	20. (c)
21. (d)	22. (d)	23. (d)	24. (d)	25. (a)	26. (b)	27. (a)	28. (a)	29. (b)	30. (c)
31. (a)	32. (b)	33. (b)	34. (a)	35. (b)	36. (c)	37. (c)	38. (d)	39. (b)	40. (c)
41. (a)	42. (d)	43. (d)	44. (a)	45. (a)	46. (b)	47. (a)	48. (b)	49. (c)	50. (d)
51. (d)	52. (c)	53. (d)	54. (a)	55. (a)	56. (b)	57. (c)	58. (a)	59. (b)	60. (a)
61. (c)	62. (c)	63. (c)	64. (b)	65. (c)					

