2.3. Circular flow of income

We know that in any economy, economic activities in the form of production and consumption of various goods and services take place continuously. The **production** of various goods and services in some sectors create incomes for the factors which are engaged in the production of those goods and services.

Thus, the value of those goods and services are **distributed** among the owners of the factors of production (say, among the households which supply labour, land, capital and entrepreneurship). Again, these households which have earned income by supplying their factor services to the production sectors, would **spend** that money for the purchase of various goods and services.

The consumption and investment expenditure would generate demand for various goods and services in the economy. This expenditure would induce the producers to undertake the production of various goods and services. So, this process continues.

In this unending process, the value of total output flows to the owners of the factors of production as factor-incomes and then this income agains flows to producers or sellers as expenditure on producing goods and services. So, there remains a circularity in this flow of income, expenditure and the value of output.

Hence, the circular flow of income refers to the circularity in the flow of production, income and expenditure in an economy making a close link between different sectors of the economy.

2.3.1. Circular flow of income in a two-sector economy

In a simple economy, if there exist only two sectors, viz., the household sector (say, H) and the firm sector (say, F), then transaction between these two sectors will lead to a circular flow of income. This is shown in Fig.-1. Here the 'F' sector produces goods, and these are consumed by the 'H'-sector. The 'H'-sector supplies labour to the 'F'- sector, and the 'F'-sector makes wage payment to the 'H'-sector for purchasing labour power. On the other hand, the 'H'-sector makes payment for the goods they purchase from the 'F'-sector. Thus, this circular flow of income can be measured in three ways :

(i) By estimating the total value of goods and services generated during a given time period (also considered as the **real flow**) ;

(ii) By estimating the total expenditure made by those sectors during that time period (also considered as the **money flow** corresponding to the real flow) ; and
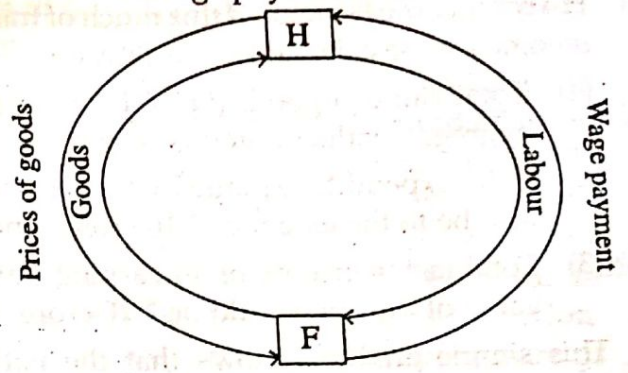

Fig.-1

(iii) By estimating the income of all earning units of these two sectors during that time period.

The **real flow** implies the flow of goods and services across different sectors of an economy. On the other hand, the **money flow** indicates the flow of money (in the form of expenditure on various goods and services) across different sectors of the economy.

The real flow and the money flow of income can be shown with the help of a simple diagram [Fig.-2].

Let us assume that the 'F'-sector spends ₹ 10 crore for purchasing labour power from the 'H'-sector. So, the income of the 'H'-sector within that time span will be ₹ 10 crore. The 'H'-Sector in turn, would spend that amount on purchasing goods produced by the 'F'-sector. Hence, that amount again flows
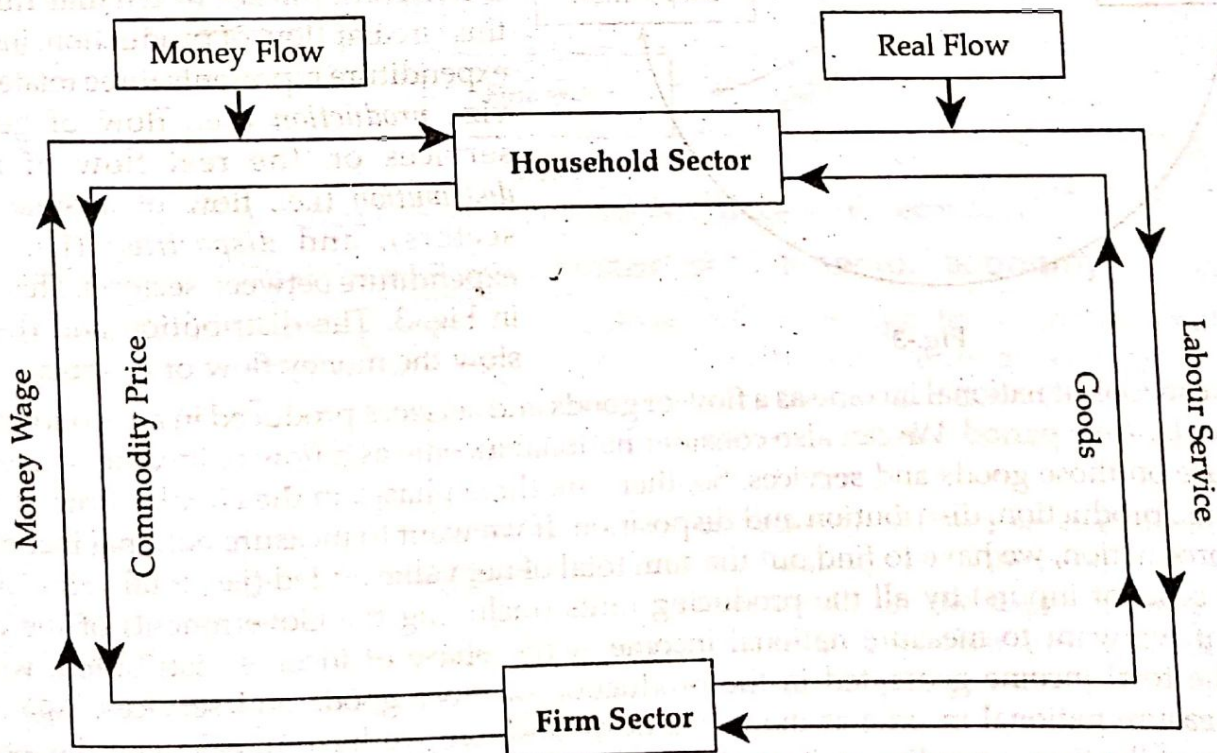

Fig.-2

∴ Gross Value Added (GVA) = [Value of sales of all firms + Change in inventory stock] – Intermediate consumption.

However, there are two concepts of value added : (1) Gross Value Added ; and (2) Net Value Added. If the value of consumption of fixed capital (or the depreciation cost) is deducted from the gross value added, we get the net value added. This depreciation allowance is required to keep the productivity of capital intact. Thus, a part of the output of capital goods is kept aside for this purpose. Unless the fixed capital is kept intact (i.e., worn out capital is replaced with new fixed capital), there will be a fall in total output.

> ∴ Net Value Added (NVA) = (Gross value added) – (Consumption of fixed capital)

At the national level, the consumption of fixed capital is defined as *current replacement cost* of the fixed assets used up during a particular year as a result of normal wear and tear, and natural obsolescence of capital.

2.4.1. Value added at factor cost and value added at market price

Value added at factor cost refers to the addition made to the value of inputs by the contributions of various factors of production. However, when this value added is valued in terms of market prices of goods and services, it is called *value added at market prices*. Now if we *deduct indirect business taxes* (e.g., excise duties, sales tax, etc.), and *add subsidy* to the value added at market prices, we get the value added at factor cost. In fact, market prices include these indirect taxes, imposed by the Government upon the enterprises, but these taxes do not flow to the factors as income. So, indirect taxes are to be deducted from the value added at market prices to arrive at the value added at factor cost. Again, market prices do not include subsidy. The Government makes subsidy payment to the enterprises to encourage production (or export promotion). This subsidy amount flows to the factors as their income. So, this amount is added to the value added at market prices to arrive at value added at factor cost.

Here, if we deduct subsidy from the indirect taxes, we get net indirect taxes. So, **Net indirect taxes = Indirect taxes – Subsidy.** It shows the net effect on the price of any commodity (since, *indirect taxes raise the price, while subsidy amount reduces it*).

> ∴ Value added at market price – Net indirect taxes = Value added at factor cost

Similarly we can say,

Value added at factor cost (–) Consumption of fixed capital or depreciation cost

= Net value added at factor cost

= Factor income (rent + wages + interest + profits).

In fact, production actually means addition made to the value of inputs by the collective efforts of the factors of production (i.e., land, labour, capital, and entrepreneurship). In return for their contribution, they get paid in the form of rent, wages, interest and profits. Thus, net value added would be equal to the total factor income.

2.5. Measurement of National Income

National income can be measured in different ways. There are basically *three* methods of measuring national income : (1) the product method (also known as the *value added method*), (2) the income method, and (3) the expenditure method. Each of these methods is discussed below :

2.5.1. Product (or value-added) method

In this product census method, a complete census of all products produced by different members of a nation during a given year is taken into account, and the sum total of these values gives us an estimation of GNP. Since different goods and services are measured in different units, so their money value is taken into consideration.

Production occurs in stages and outputs of some firms are used as inputs by other firms, and these other firms in turn produce outputs which are also used as inputs by yet other firms. If we merely add up the market values of outputs produced by all firms, we would obtain a total that would exceed the value of GNP. The error which arises in estimating the nation's output by just adding the values of the outputs of all firms, is called as the *error of double counting or multiple counting.*

In short, by value added, we mean the total value of the output produced in a year by a producer *minus* the cost of raw materials and *intermediate inputs* used during the year. Consider, for instance, a bakery which produces bread, sells bread in the market and purchases the wheat to be used as inputs. Suppose, for simplicity, that wheat is the only non-labour input here. Then the value added by the bakery is the value of bread produced *minus* the cost of the wheat purchased.

If there are other raw materials or intermediate inputs (i.e., inputs which have been produced by other producers), these will also have to be subtracted from the value of output.

■ **Steps involved in the calculation of National income following the Value-added method :**

If we want to measure national income on the basis of value-added method, then we should follow the following steps :

(a) **Identification of production units in three broad sectors :** At first, we should indentify the production units and their productive activities should be classified into three broad sectors of the economy, viz., the primary sector (consisting of agriculture, forestry, fisheries, etc.), secondary sector (consisting of industrial sector) and the tertiary sector (consisting of trade and business sector, transport and communication services, etc.) For instance, the poultry farms, dairy farms, etc. would be included in the primary sector.

(b) **Calculation of net value-added (at factor cost) for each production unit :** If we deduct the value of intermediate goods (say, raw materials) and depreciation cost from the gross value of output, we get net value added at market prices. Then, if we deduct net indirect taxes from that value, we get net value-added (NVA) at factor cost.

∴   NVA (at factor cost) =   Value of gross output
        (−) Value of intermediate goods
        (−) Depreciation allowance
        (−) Net indirect taxes.

We know that Net indirect taxes = Indirect taxes (−) Subsidy payments.

(c) **Calculation of NDP at factor cost :** If we measure the net value-added of each enterprise in primary, secondary and tertiary sectors, we get the NDP at factor cost for those three sectors.

∴ $NDP_{fc} = NVA_{fc}$ in Primary Sector + NVA_{fc} in secondary Sector + NVA_{fc} in Tertiary Sector.

(d) **Calculation of National Income :** At the final stage, we are to add the Net factor income from abroad with the NDP_{fc} to determine the National Income or the NNP_{fc}.

∴ National income = NDP_{fc} + Net factor income from abroad.

One of the basic identities of macroeconomic analysis is GDP (at market price) = GDP_{mp}

$\equiv$ Summation of Gross Value Added (GVA) of all firms $\equiv \sum\limits_{i=1}^{n} GVA_i$ where, GVA_i = GVA of the i-th firm ($i = 1, 2, ..., n$)

Here '$\equiv$' sign means an 'identity', i.e., 'always equal'.

Since, $NVA_i = GVA_i -$ Depreciation of the i-th firm (D_i)

or, $GVA_i = NVA_i + D_i$

$$\therefore GDP_{mp} \equiv \sum\limits_{i=1}^{n} NVA_i + \sum\limits_{i=1}^{n} D_i$$

Error of double counting : Note that it is value added which measures the contribution of a producer towards the product. We cannot, for example, consider the total value of the almirah produced by the almirah-producer as the result of his efforts because the steel used as input is embedded in the almirahs, but the steel was produced elsewhere in the economy. Thus, if we consider the values of both steel almirahs as well as steel sheets produced in the economy during a given period, it creates an *error of double counting*.

There are two ways of avoiding the problem of double counting : (i) to take into account the value-added at each stage of production during the year, and (ii) to distinguish between final products and intermediate products, and only the value of final goods should be taken into account.

When any product, produced in any year, is employed and used up as an input for producing another product in the same year, it is termed as an intermediate product. All other uses of a product are final uses. The term 'final demand' refers to the purchase of these final goods and services for consumption, investment (including inventory accumulation), export and for use by the Government. Let us consider the following numerical example :

Table-2

Stage of Production	Sales Value (₹ '000)	Purchase of Intermediate Inputs (₹ '000)	Value Added (₹ '000)
1. Wooden logs	40	—	40
2. Wood pieces after sawing	100	40	60
3. Wooden furniture	130	100	30
			Total = 130

Table-2 shows that either the sum of value-added (i.e., ₹ 1,30,000) or the value of the final product (i.e., the sales value of the wooden furniture) should be taken into consideration.

For instance, if we take into account value of wooden logs, wooden pieces after sawing and wooden furniture produced in a country during any year, there will be an error of double counting because the value of wooden furniture includes the value of wooden pieces after sawing etc. Hence, we should either consider the sum of the value-added or the value of the final product (see Table-2).

■ **Items to be included in this calculation :** The value of the following goods and services are to be included in this estimation procedure :

(1) Value of all goods and services which are marketed ;

(2) Imputed value of goods produced and consumed in the household sector (which form a major part of total production, particularly in less developed countries) ;

(3) Imputed value of owner-occupied house ;

(4) Value of goods produced but not yet marked ;

(5) Imputed value of common public services like defence service, police service etc.

For instance, the imputed value of a owner-occupied house can be determined on the basis of the rental charges of a similar house within the locality. Similarly, the goods which have been consumed by the producers themselves, may be valued at market prices at which similar such products are sold in the market. The valuation of some public services (like police service) can also be done on the basis of the Government expenditure on the provision of such services.

However, all personal and household services, which are not marketed, are excluded from this estimation procedure. For instance, if a mother nurses her baby, the value of her service is not taken into account ; but if the same service is provided by a paid nurse, its value has to be included in the national income accounting. Thus, in case self-employed persons (like doctors, lawyers, accountants etc.) the values of their services are included in the GNP total. Similarly, the value of pure exchange transactions are also not included in this estimation (please see Section 2.2.).

2.5.2. Income method

Another method of calculating national income is the *income method*. In this method, the phrase 'national income' is interpreted quite literally : it is the income of the nation, i.e., the total income of all the income earning units of the country.

We first compute the income of each and every earning unit in the country, then we add up all these incomes.

(a) **Different types of incomes :** The different types of incomes to be added up in this way can be described under the following headings : (1) wages and salaries, (2) interest, (3) rent and (4) profits. Profits, in turn, can be divided into two parts : (a) profits of entrepreneurial firms and (b) corporate profits, i.e., the profits of joint stock companies. One part of corporate profits goes to the shareholders as dividend. The other part consists of undistributed profits and is kept in the company's reserve fund. Both parts are to be included in national income.

Where do the incomes of the professional people like lawyers, physicians, singers, etc., fit into this picture ? In the eye of law, there is no difference between the nature of profits of a firm and that of the 'income' of a professional person. Because, profit is calculated as the difference between earnings and costs. Incomes of professional people are, therefore, considered to belong to the category of 'profits of entrepreneurial firms'.

(b) **Treatment of durable goods :** Another point needs to be mentioned in connection with the Income Method. It is not that we are concerned with the monetary value of a commodity for the sake of itself. The money value is taken to be an indicator of the satisfaction or utility obtained from the commodity. Many investigators engaged in the measurement of national income advance this argument for focussing on the money values of commodities and services. Even if this argument is valid, we must be careful in applying it in a particular context. These days we would find a host of durable consumer goods (a car, a radio, a TV set, and so on) in any household. Even if money value is taken to be the measure of utility, the sales values of such goods in a given year should not be totally included in the national income for the year because the goods are used over a number of years, i.e., they yield their utility over all these years. If a durable good lasts 25 years and is sold at a price of ₹ 1,000, any year's national income should include only $1/25$ of this value, i.e., ₹ 40.

(c) **Income earned abroad :** It should also be borne in mind that a citizen of the country can earn income from a foreign country. It is not only wage income that can be earned abroad. By investing funds abroad, one can earn interest and dividend as well. A producer, too, can sell his goods to a buyer in a foreign country. The income of all the earning units of the country should

be included in the national income. It is immaterial whether this income comes from abroad or from within the geographical boundaries of the country.

(d) **Some incomes to be excluded :**

(i) **Transfer income :** If we are to calculate national income in this way, we must carefully exclude all transfer incomes (for instance, unemployment compensations, pensions, grants, flood or drought reliefs, etc.) from the national income. These incomes do not spring from any productive activity.

(ii) **Interest income :** To be strictly correct we must, in fact, exclude from the national income of a year, all incomes not generated through the production or sale in *that particular year.* Consider, for example, the interest on consumption loans. The person getting this interest-income does not earn it through current production. Thus, interest income accruing to households is not included in national income because this is already included in the operating surplus of business firms.

(iii) **Income from the sale of second hand goods :** Similarly, income earned by selling old articles like paintings or used old cars would not find a place in national income.

(iv) **Illegal income :** The illegal incomes are also excluded from this measurement.

(v) **Corporation tax :** Corporation tax is a part of profits of enterprises. So, while calculating national income, profits before deduction of corporation tax have to be included. Hence, corporation tax should not be included separately.

(vi) **Voluntary works :** Again, there are some activities which are excluded from national income calculations because they cannot be measured. No money is paid for these activities. Work performed by a housewife or by a voluntary social worker is of this type.

(vii) **Windfall gains :** Windfall gains like lotteries are also excluded from this measurement.

(viii)**Income tax :** The income tax paid by the employees of any organisation should not be included separately in this calculation because this amount is already included in the 'compensation of employees.'

(ix) **Payment of wealth tax, gift tax and estate duty :** Since these taxes are paid out past savings of different individuals, so these tax receipts of the government should not be included in national income.

(x) **Sale of shares, bonds and debentures :** The amount received by any individual or organisation from the sale of second hand shares, bonds and debentures is not also included in national income because these transactions do not generate new assets (it only leads to capital gains) within that year.

■ **Steps involved for the calculation of national income following 'income method' :**

From our previous discussion, we can now identify the stages or steps involved in the calculation of national income on the basis of 'income method'.

(1) **Step I : Identification of earning units :**

At the first stage we are to identify or classify the earning units according to their sectoral affiliation (i.e., whether their activities are concerned with primary/agricultural sector, industrial/secondary sector and service/tertiary sector). Hence, we get

(i) Earning units in the primary sector,

(ii) Earning units in the secondary sector and

(iii) Earning units in the tertiary sector.

(2) Step II : Categorization of factor incomes :

In the second stage, we are to identify or categorize the factor incomes under the following heads :

(i) Compensation of employees (say, wages & salaries),

(ii) Operating surplus (say, rent, interest, profits),

(iii) Mixed income of self-employed, and

(iv) Net factor income from abroad.

(3) Step III : Estimation of domestic and national income :

At this final stage, different types of factor incomes are added together to estimate domestic and national income.

Here, Domestic income (or, NDP_{fc}) = Compensation of employees
+ Operating surplus
+ Mixed income of self-employed

and National income (or, NNP_{fc}) = Domestic income
+ Net factor income from abroad = NDP_{fc} + Net factor income from abroad.

If W_i = Wages and salaries received by the i-th household (the owner of the labour service) ;
P_i = Gross profits earned by the i-th household (the owner of entrepreneurship service) ;
r_i = Interest payments received by the i-th household (owner of capital), and
R_i = Rents received by the i-th household (owner of land),

then, $GDP_{mp} \equiv \sum_{i=1}^{m} W_i + \sum_{i=1}^{m} P_i + \sum_{i=1}^{m} r_i + \sum_{i=1}^{m} R_i \ (i = 1, 2, \ldots, m)$

■ **Disadvantage :**

(i) The main disadvantage of computing national income in this way is that, if we adopt this method, we have to keep track of all the earning units of the country. It is not only time consuming and laborious but also very expensive to contact each and every one of the millions of earning units of the country ; calculate their incomes and add them up.

(ii) We also face some difficulties in the allocation of factor incomes.

1. It is very difficult to measure how much of profits earned by any entrepreneur has been generated out of his monopoly power, and how much due to the risk taken.

2. It also becomes difficult to allocate the profits among factors of production if it arises because of price inflation.

3. It is also difficult to allocate the income of self-employed as rent, interest, wages and profits among the factors of production.

2.5.3. Expenditure method

The third method of estimating the national income of a country is the *expenditure method*. The basic idea behind this method is that every action that leads to the creation of income is also an action that can be described as expenditure. Suppose that, individual X receives an amount of money from individual Y. Here, X earns a (gross) income and Y incurs an expenditure.

Hence, any expenditure is an income and *vice versa* and the sum-total of all incomes earned by the country (i.e., national income) will be equal to the sum-total of all expenditure incurred on the

commodities produced by the country during the given year. Thus, an alternative method of estimating income would be to calculate the total amount of expenditure in the country.

Obviously the answer to this question depends on whether the private and the Government investment expenditure is *gross* investment or *net* investment (i.e., whether depreciation has been deducted from investment expenditure or not) and on whether the various types of expenditure (consumption, investment and net exports) have been calculated on the basis of market prices or factor costs (i.e., whether sales taxes and other indirect business taxes have been deducted from market prices or not).

The **total expenditure on GDP is divided into three parts :**

(a) Final consumption expenditure,

(b) Gross Domestic Capital Formation (GDCF), and

(c) Net exports of goods and services.

Again, the final consumption expenditure consists of private final consumption expenditure (C), and Government final consumption expenditure (G). It is to be noted that the government final consumption expenditure consists of (i) compensation of employees (working in the government sector) and (ii) net purchase of goods and services by the government. This expenditure shows the current expenditure on goods and services incurred by the government for providing services of its administrative departments (*less* sales). The GDCF also consists of two parts, viz., Gross Fixed Capital Formation (e.g., expenditure on construction, machinery, etc.) and the *change in stock* of raw materials, finished and semi-finished goods, etc. The GDCF is considered as gross domestic investment (I). Again, net exports refer to the difference between the value of exports (X) and the value of imports (M). It is the net expenditure made by the foreigners on the domestic product of the concerned country.

Further, the final consumption expenditure incurred by the resident households includes (i) expenditure on new durable and non-durable goods and services (the value of net sales of second-hand goods, scraps and wastes has to be deducted), (ii) direct purchases made abroad, (iii) food and other items produced for self-consumption, (iv) imputed gross rent of owner-occupied buildings, (v) wages, salaries and other benefits received in kind, (vi) value of gifts received in kind (net).

In the domestic territory of a country, the final consumption expenditure made by the resident households and private non-profit institutions (who serve households) can be considered as **private final consumption expenditure (C).** However, direct purchases of consumption goods and services made by the non-residents (households and extra-territorial bodies such as foreign embassies) should not be included in this domestic private final consumption expenditure.

Thus, C, I, G and (X – M) denote consumption, private investment, Government expenditure and net exports respectively *at market prices.*

Hence, the sum of these terms gives us Gross Domestic Product (GDP) at market prices. If we wish to get Net National Product (NNP) at factor cost or national income, we deduct depreciation (denoted by D) from this sum. Note that D denotes depreciation of *all* the capital stock owned by the country, i.e., capital owned by the private sector as well as capital owned by the Government. Finally we deduct net Indirect Business Taxes (IBT) from GDP$_{mp}$ and add Net Factor Income earned abroad (F). Thus, we have :

$$GDP_{mp} = C + I + G + (X - M)$$
$$\therefore NNP_{fc} = GDP_{mp} - D - IBT + F$$
$$= \text{National Income.}$$