3 Concepts Related to National Income and Product Aggregates

After Keynes, much investigation has taken place in the field of national income accounting. The modern writers could evolve a detailed and integrated structure of various aggregates or sub-aggregates related to national income, product and expenditure. The main concepts concerning national income and product include Gross National Product (GNP), Real GNP, Gross Domestic Product (GDP), Net National Product (NNP) at market prices, Net national product at factor costs or National Income, Private Income, Disposable Income and Per Capita Income.

1. GROSS NATIONAL PRODUCT (GNP)

The money values of the final goods and services produced in a country during a given year can be termed as the gross national products. **McConnel** has defined it in these words, "*Gross national product is the total market value of all final goods and services produced in the economy in one year.*" The GNP can be estimated through the following approaches :

(*i*) *GNP as the sum of market values of final products* : In this approach, the quantities of all final goods and services produced in a given year are multiplied by their respective market prices and addition is made of net exports at market prices. This aggregate indicates the gross national product. If the quantities of final products are $Q_1, Q_2, Q_3 ... Q_n$ and their respective prices are $P_1, P_2, P_3 ... P_n$, the GNP will be

$$GNP = P_1Q_1 + P_2Q_2 + P_3Q_3 + ... P_nQ_n + [(P_1X_1 + Q_2X_2 + ... P_nX_n - (P_1M_1 + P_2M_2 + ... P_nM_n)]$$

Here X and M stand for quantities exported and imported respectively.

$$GNP = \sum_{i=0}^{n} P_iQ_i - \sum_{i=0}^{n} (P_iX_i - P_2M_2)$$

(*ii*) *GNP as the sum of all expenditures* : It is possible to estimate GNP through the aggregation of all the expenditures incurred by the people in a country during a given year. The different components of aggregate expenditure are consumers' purchases of goods and services or consumption expenditure (C), government expenditure on commodities and services (G), gross domestic investment which includes the net domestic investment (I) *i.e.* net addition to the stock of capital and the depreciation (D) or replacement investment and the net foreign investment (X–M). X refers to the receipts due to export of goods, services and capital and M refers to the payments due to import of goods, services and capital. This aggregate of all expenditures does not include any *transfer payments* which are made by the government not in return of any productive service, but are made by way of relief or gratuity. The aggregate of all expenditures is also referred as the *Gross National Expenditure (GNE)*. It is identically equal to the gross national product (GNP). Therefore

$$GNP = GNE = C + G + I + (X - M) + D$$

(*iii*) *GNP as the sum of all incomes* : Since the value of final products or aggregate expenditure is equivalent to the aggregate income, it is possible to compute the GNP through the sum total of all the factor incomes. The four productive factors–land, labour, capital and enterprise receive rents, wages, interests and profits. If all these payments are aggregated, that gives the measure of the gross national product. The *transfer payments*, which are not of the nature of factor income, remain excluded

from this aggregate. The net income from abroad which is the difference between the factor income receipts from abroad and the factor payments made to the foreign countries is also a part of this aggregate. Therefore,

GNP = All rents + All wages, salaries and supplementary earnings (excluding transfer payments) + All interests + All profits + Net income from abroad.

2. REAL GNP

If GNP is computed through the aggregation of market values of final commodities and services, this is the GNP at market prices or the nominal GNP. Such an estiamte is often distorted by the priçe variations. During the times of inflation, the GNP in money terms or at market prices is exaggerated, while it is under-estimated during a period of falling prices. The real GNP which is also called as the **GNP at Constant Prices**, eliminates the effect of price variations. It is computed as below :

Real GNP or GNP at Constant Prices

$$= \frac{\text{GNP at Current or Market Prices}}{\text{Price Index of Current Year}} \times \text{Price Index of Base Year}$$

Suppose the GNP at the market prices or current prices is Rs. 1200 crore, price index of current year (2019) is 125 and price index of base year of 2009 is 100, then

Real GNP or GNP at Constant Prices of Base Year

$$= \frac{1200}{125} \times 100 = \text{Rs. 960 Crore}$$

The real GNP is used for making international comparisons of real levels of economic activities in a specified year. Similarly the statistics of real GNP in the same country can facilitate comparisons of real levels of economic activities free from price distortions in different time periods.

3. GROSS DOMESTIC PRODUCT (GDP)

Gross Domestic Product (GDP) is the sum of the market values of the final products turned out within the domestic territory of a country during a given year. The domestic territory of a country includes all the productive enterprises within the country, the off–shore installations within the maritime boundary of the country, ships, airplanes operating under the flag of the country and the embassies, High Commissions and trade offices of the country in the foreign countries. If the net exports (X – M) of a country during a given year are excluded from the GNP at market or current prices, the remainder is the GDP at the current or market prices.

GDP at Current or Market Prices = GNP at Current or Market Prices – Net Exports (X–M)

GDP is computed also at the factor costs when the quantities produced of final products within the domestic territory is evaluated at the prices of factors of production employed in production.

4. NET NATIONAL PRODUCT AT CURRENT PRICES

Net national product is the market value of the net output of final goods and services produced by the economy during the given income period. It represents a value derived by subtracting the capital consumption allowances or depreciation from the value of the gross national product.

NNP at Current or Market Prices

= GNP at Current or Market Prices

– Capital Consumption Allowances

If the amount retained to off-set depreciation of plants and equipment *plus* the amount spent on maintenance is deducted from the gross national output, the balance would clearly indicate as to how much output the nation can use for consumption in the private and the public sectors and for making addition to the stock of capital equipment, making definite allowances for maintaining a certain degree of efficiency of the plant. Thus this measure can have, *firstly*, a direct bearing upon the consumption standard of the people in a community through ensuring a particular level of production of consumer goods. *Secondly*, it can indicate the extent to which the economic, protective and administrative functions of the government can be expanded or further improved. *Thirdly*, it clearly suggests as to how far the existing stock of capital can be increased over the future production periods. The NNP, in this way, helps in the accurate determination of the growth potential of the economic system.

5. NET NATIONAL PRODUCT AT CONSTANT PRICES OR REAL NET NATIONAL PRODUCT

The NNP at current market prices is always affected by the upward or downward price movements. The real magnitude of NNP can be determined only if the impact of price variations is separated by *deflating the NNP at current prices by the price index.*

NNP at Constant or Base Period Prices or Real

$$NNP = \frac{NNP \text{ at Current Prices}}{\text{Price Index of Current Year}} \times \frac{\text{Price Index of}}{\text{Base Year}}$$

This can be illustrated through Table 1. The NNP for the subsequent years may be measured on the assumption that prices remain constant at the level of 2012 (base year) prices.

TABLE 1
The NNP at Current and Constant Prices

Year	NNP at Current Prices (in Crore Rs.)	Price Index (2012 = 100)	NNP at Constant Prices of 2012 (in Crore Rs.)
2012	1000	100	1000.00
2013	1350	125	1080.00
2014	1500	135	1111.11
2015	1800	160	1125.00
2016	2200	175	1257.14
2017	2800	200	1400.00
2018	3000	250	1200.00
2019	3500	300	1166.67

Table 1 shows that the price rise had over-exaggerated the growth in NNP at current prices. The real magnitude of NNP is determined by isolating from it the effect of inflationary conditions. In real terms, the NNP does not show the same sharp rise as is found in N.N.P. at current prices. The real NNP or NNP at constant prices shows a rather fluctuating pattern over this series.

Similarly if GDP at current prices is deflated by the price index of current year, it is the Real GDP or the *GDP deflated* by the price index.

6. NET NATIONAL PRODUCT AT FACTOR COSTS OR NATIONAL INCOME

The aggregate of goods and services produced by a community is the outcome of combined efforts of the different factors of production—workers, land owners, capitalists and entrepreneurs. The entire population in a country can be broadly divided into these four agents of production. The aggregate income, generated in the country during a specified year, is the sum total of the income accruing to all these agents of factors of production. In other words, NNP at factor costs or national income is the sum of the factor costs incurred during the process of turning out economy's current output.

The national income at factor cost includes

(i) Wages and salaries paid in return of the services of workers. In addition, it includes the supplements to wages and salaries of the form of different types of allowances.

(ii) Trading profits of the corporate and non-corporate business undertakings, proprietorship concerns and professionals.

(iii) Interest earnings.

(iv) All types of rents on industrial, commercial or household lands and buildings and the imputed rents on self-occupied properties. This also includes the royalties paid on lands and mines etc.

(v) Incomes of the self-employed people are the mixed income receipts.

(vi) Net factor income from abroad.

Wages and salaries are income from work. These are also known as *compensation of employees.*

Rents, interests and profits are the incomes from properties and assets. The aggregate of rents, interests and profits is referred as *Operating Surplus.*

From this aggregate, transfer payments must be subtracted because such payments made by the government or the employers are not in return for the productive services rendered by the agents of factors of production. These are paid only by way of relief or gratuity.

NNP at Factor Costs or National Income

= Wages, salaries and supplements + Gross profits of corporate, non-corporate and public sector undertakings + Mixed Income Receipts + All categories of rents including imputed rents + All interest earnings + Net factor payments from abroad –Transfer payments.

The estimates of NNP at factor costs are significant in explaining the main sources of the spending power of the community. Through these figures, it is possible to analyse the distribution of income among the various factors of production and the impact of relative changes in the factor income over time on the aggregate spending and the long-run growth of the economy.

7. RELATION BETWEEN NNP AT MARKET PRICES AND NNP AT FACTOR COSTS

The NNP at market prices is estimated by deducting capital consumption allowance from the market value of final goods and services counted without duplication or it is determined by aggregating the value added by various productive sectors of the economy and deducting therefrom the amount of depreciation. NNP at factor costs, on the other hand, is the sum total of factor payments within a particular year.

These two conceptions of NNP will coincide with each other in an economy where the government does not interfere through taxation and subsidies, otherwise there would be a divergence between the two. An identity, however, can be established between the two in a modern economic system where governments interfere in the economic activity.

NNP at market prices exceeds the NNP at factor costs by an amount equivalent to the indirect taxes imposed by the government. The incidence of such taxes is shifted to the persons other than those upon whom the tax is originally levied. The amount of tax gets added up in the prices of the products in the process of the shifting of tax incidence. This increase in market prices because of indirect taxes raises considerably the value of national product over and above the total factor incomes.

To equate NNP at market prices and at factor costs, the amount of indirect taxes must be deducted from the NNP at market prices.

The subsidies, paid out by the government to aid production or to protect the home industries, tend to keep the prices at a level lower than what these would have been, had no subsidies been paid by the government. As a result, the NNP at market prices falls short of the NNP at factor costs. Therefore, it is necessary to make adjustment in the former by adding the amount of subsidies to it.

In addition, if the business enterprises of the government secure profits which do not become a part of the factor incomes but go to the treasury, it is essential to subtract this amount of government surpluses also from the NNP at market prices. These surpluses accrue to the government because excessively high prices are charged by the government for the products supplied by it. Thus

NNP at Factor Costs

= NNP at Market Prices – Indirect Taxes
+ Subsidies – Government Surpluses. (If Any)

NNP at Market Prices

= NNP at Factor Costs + Indirect Taxes
– Subsidies + Government Surpluses (If Any)

8. GROSS NATIONAL EXPENDITURE

The general conception of gross national expenditure implies an aggregate of expenditures in the country during a given period. It is possible that the expenditure may be incurred on the same commodity at various stages of production. For example, the consumers' spending on bread, shoes and cloth is aggregated with the producers' spending on the purchase of wheat, leather or yarn. As a matter of fact, the national expenditure is greatly exaggerated because of the inclusion of the purchases of intermediate goods or the spending on resold products. In order to avoid the multiple counting, only such transactions should be included which are concerned with the final products and services. Thus gross national expenditure is the sum of all the final expenditures by the residents of a country during a given period. The gross national expenditure includes :

(*i*) Consumers' purchases of final goods and services.

(*ii*) Gross domestic investment.

Most of the expenditure of the business firms can be classed as intermediate purchases like the hiring of labour services, renting of lands and buildings and purchases of raw materials. Their inclusion in the gross national expenditure must result in multiple counting. But all the purchases of materials are not completely absorbed by the output

within a given period and firms might have purchased the materials in such quantities as are not utilised in production in the given period so that the stocks of materials accumulate at the end of the period. Thus such expenditures on materials are included in the gross national expenditure which are equivalent to the difference between closing and opening stock of the materials. In addition, the expenditure incurred by the business firms that helps in creating new durable equipments is also a part of the gross national expenditure.

Brooman raises two important questions in regard to stocks of materials. Firstly, do the stocks of materials consist simply of raw materials or semi-finished products or do they include also the unsold stocks of finished products during the given time period ? If the materials purchased by the business firms are completely absorbed by the production of finished products but these are not sold out within the same period, there would be an accumulation of the stocks of finished products which might neither be included in consumers' purchases nor in the purchases by the entrepreneurs. Brooman points out that the unsold stock of finished products may be considered as the purchases of the firms of their own products and thus included in the gross national expenditure. The second question is concerned with depreciation. The expenditure incurred on the maintenance of the old plants and equipment as well as the replacement expenditure can be treated as the intermediate product and not the final. The relevant question, therefore, is whether it should be excluded from gross expenditure or not. Brooman has himself answered it in following words, "However, because of the usual difficulties of identifying the part of capital expenditure devoted to replacement rather than to expansion of productive capacity, business spending on new equipment is usually given gross of depreciation."

(iii) National expenditure must also include the net foreign balance. The purchases made by the foreign residents from a country over and above the purchases made by the citizens of the country from abroad indicate the net spending due to foreign purchases.

(iv) Purchases of materials and services by the government and other public agencies must also be included.

Thus national expenditure includes aggregate spending by the consumers on final goods and services, all current expenditure on goods and services by the public authorities, all spending on capital formation (i.e. depreciation, replacement and new addition to capital equipment) and the purchases by the overseas customers of goods and services. Thus

$$GNE \equiv C_p + I_h + I_f + G_p$$

where GNE = the gross national expenditure, C_p = private consumer purchases, I_h = gross home investment, I_f = net foreign outlay and G_p = government purchases of materials and services.

The gross national expenditure can alternatively be expressed as :

$$GNE \equiv C + I + G + (X - M) + D$$

where C = private consumption expenditure, I = net domestic investment, G = government purchases of goods and services, (X – M) = difference between exports and imports or the net foreign balance, and D = depreciation.

The magnitude of GNE mentioned earlier is the gross national expenditure at market prices. Some other sub-aggregates related to national product, income and expenditure can be derived from GNE as follows :

Net National Expenditure (NNE) or

NNP at Market Prices = C + I + G + (X – M)

NNE or NNP at Factor Costs

$$= C + I + G + (X - M) - \text{Net Indirect Taxes}$$
$$\text{(Indirect Taxes – Subsidies)}$$

Gross Domestic Expenditure (GDE) or the Gross Domestic Product (GDP) can be computed by excluding the net foreign balance (X – M) from gross national expenditure.

Gross Domestic Expenditure (GDE) or

Gross Domestic Product (GDP) $\equiv$ C+I+G+D

Similarly, the Net Domestic Expenditure (NDE) or Net Domestic Product (NDP) can be measured by subtracting capital consumption allowances (D) from GDE or GDP.

NDE or NDP $\equiv$ GDP – D

$$\equiv C + I + G$$

9. PRIVATE INCOME

Private income can be defined as the income obtained from the private sector from any source, productive and otherwise, along with the retained income of corporations. It can be estimated by the aggregation of NNP at factor costs, transfer payments received both from the government and abroad, interest on national debt, gifts and windfall gains. Out of this aggregate, the deductions are made on account of (i) Property and entrepreneurial income of the government, (ii) Savings of non-departmental undertakings, and (iii) Social insurance contributions of the employees.

Private Income

= NNP at Factor Costs + Transfer Payments from the Government + Transfer Payments from Abroad + Interest on National Debt + Gifts + Windfall Gains − Property and Entrepreneurial Income of the Government − Savings of Non-departmental Undertakings − Social Insurance Contributions of the Employees.

10. PERSONAL INCOME

The national income aggregate, no doubt, measures the income earned by the owners of economic resources through their participation in the productive process, yet it does not measure the money income actually received by the persons and households during a given income period, because a part of the income is not actually received by the people in return of the supply of productive resources or services. It might have accrued to them in the form of transfer payments received from businesses and the government. The United States Department of Commerce defines personal income as the sum of income currently received by persons from all sources.

For obtaining the estimate of personal income, the major deductions from the national income to be made are :

(i) Contributions made by persons to social insurance.

(ii) Corporate profits tax liability.

(iii) Undistributed corporate profits.

After making these deductions from the national income what remains is the net money income

received by the persons purely on account of the productive services rendered by them. To this factor income, we must add the transfer payments received by persons from businesses and government. The transfer payments made by the government are of the following main types :

(1) Interest on public debts,

(2) Pensions to retired persons,

(3) Unemployment benefits,

(4) Other relief payments. Thus

Personal Income

= National Income − (Social insurance contributions + Corporate profits tax liability + Undistributed profits) + Transfer payments.

In other words, personal income (Y_P) equals national income (Y_F) *minus* undistributed earnings (U) *plus* transfer payments (T_R).

$$Y_P = Y_F - U + T_R$$

11. DISPOSABLE INCOME

Disposable income is that part of the personal income of the community which is available for disposition in the purchase of commodities and services after the deductions on account of personal income taxes are made. Thus disposable income measures the *after tax* purchasing power at the disposal of persons and households. If a person receives income from different channels, he is not free to spend the entire amount in any way he likes. His first obligation is to make the payment of personal direct taxes to the government. That part of personal income, which is left with an individual after the payment of direct taxes for the purchase of goods and services, is called disposable income. Thus disposable income is the personal income *minus* direct personal taxes.

$$Y_D = Y_P - T_D$$

Here Y_D stands for disposable income, Y_P for personal income and T_D for direct personal taxes.

The amount which is left after the payment of direct taxes may be partly disposed off by the individuals in the purchase of consumer goods and residue may be retained in the form of saving. The disposable income can thus be understood as the sum of private consumption expenditure and the

volume of saving.

$$Y_D = C + S$$

An alternative pattern of spending may be that the disposable income is partly used up in the purchase of consumers' goods and services and partly in making investments. Thus

$$Y_D = C + I$$

The concept of disposable income has been widely used for explaining the cyclical variations in consumption spending over the different phases of a business cycle. The disposable income emphasises also the role of government tax policy in influencing spending in particular and economic activity in general.

12. PER CAPITA INCOME

Per capita income is the average income of the people in a country during a given year. If the national income of 2019 is divided by population of the country in the year, it provides an estimate of the per capita income.

$$\text{Per Capital Income} = \frac{\text{National Income in 2019}}{\text{Population in 2019}}$$

Thus per capita income is the ratio of national income and population in a given year.

The per capita income is related *directly* with the national income but *inversely* with population.

The conception of per capita income given above is the nominal per capita income or the per capita income at current or market prices. The per capita income in real terms can be computed through the following formula :

Real Per Capita Income =

$$\frac{\text{Real National Income in 2019}}{\text{Population in 2019}}$$

or Réal Per Capita Income =

$$\frac{\text{Per Capita Income at Current Prices of 2019}}{\text{Price Index of 2019}} \times 100$$

The concept of per capita income is used for measuring the standard of living of the people of a country. It is possible to make the international comparisons of living standards on the basis of per capita incomes.

13. NATIONAL INCOME IDENTITIES FOR AN OPEN ECONOMY

The inter-relations of various national income, expenditure and product aggregates can be expressed through the following algebraic relations :

$$GNP \equiv GNE$$
$$GNP \equiv C + I + G + (X - M) + D \qquad ...(i)$$

where $(X - M)$ signifies the difference between exports and imports or net foreign balance.

NNP at market prices can be determined by excluding depreciation from the GNP.

$$\text{NNP or } Y_M \equiv C + I + G + (X - M) \qquad ...(ii)$$

NNP at market prices (Y_M) can be equated to the net national product at factor costs (Y_F) by making the adjustments due to indirect taxes, subsidies and government surpluses. If we assume that the profits of public enterprises are to be included in the factor costs and that the government does not accumulate any surpluses, the relationship between Y_M and Y_F can be expressed as below :

$$Y_F \equiv Y_M - T_I + S \qquad ...(iii)$$

where T_I stands for indirect taxes and S for subsidies.

Personal income (Y_P) can be measured by substracting undistributed profits of the business enterprises (U) and adding to it the amount of transfer payments. Thus

$$Y_P \equiv Y_F - U + T_R \qquad ...(iv)$$

The disposable income (Y_D) is the amount of money income available for spending after the deduction of direct personal taxes (T_D) is made from the personal income.

$$Y_D \equiv Y_P - T_D \qquad ...(v)$$

The relationship of Y_D with Y_M can be expressed by making a series of substitutions.

$$Y_D \equiv Y_P - T_D$$

Substituting (iv) in (v)

$$Y_D \equiv (Y_F - U + T_R) - T_D$$
$$Y_D \equiv Y_F - U + T_R - T_D \qquad ...(vi)$$

Substituting (iii) in (vi)

$$Y_D \equiv (Y_M - T_I + S) - U + T_R - T_D$$

$$Y_D \equiv Y_M - T_I + S - U + T_R - T_D$$

$$Y_D \equiv Y_M - (T_I + T_D) + S - U + T_R$$

From the above identity, it is also possible to show the identity between GNP and GNE in an economy.

$$Y_D \equiv Y_M - (T_I + T_D) + S - U + T_R$$

or $\quad Y_M \equiv Y_D + (T_I + T_D) - S - T_R + U$

Adding the amount of depreciation to both the sides

$$Y_M + D \equiv Y_D + (T_I + T_D) - S - T_R + U + D \qquad ...(vii)$$

The disposable income is the sum of private consumption (C) and private saving (S_p).

$$Y_D \equiv C + S_P \qquad ...(viii)$$

Substituting (viii) in (vii)

$$Y_M + D \equiv C + S_P + (T_I + T_D) - S - T_R + U + D \qquad ...(ix)$$

$(T_I + T_D)$ represents the total revenue of the goverment from all taxes which equals aggregate expenditure by the government. If the expenditure on account of subsidies (S) and transfer payments (T_R) is deducted from the aggregate government expenditure, what is left is the government expenditure on the purchase of materials and services (G).

$$G \equiv (T_I + T_D) - S - T_R \qquad ...(x)$$

Substituting (x) in (ix)

$$Y_M + D \equiv C + S_P + [(T_I + T_D) - S - T_R] + U + D$$

$$GNP = C + S_P + G + U + D \qquad ...(xi)$$

The above identity shows, on its right hand side, the two variables – private savings by the individuals (S_P) and the undistributed profits (U). The sum of these two variables may be identically equal to gross investment which is constituted by domestic investment (I) and the net foreign balance (X – M).

$$S_P + U = I + (X - M) \qquad ...(xii)$$

Substituting (xii) in (xi)

$$GNP \equiv C + G + I + (X - M) + D$$

or $\quad GNP \equiv GNE$

The above identities thus bring out the internal consistency between the gross national product and the gross national expenditure in an economic system.

The real world, undoubtedly, is much more complicated than the above accounting identities suggest, yet they attempt to indicate in a useful, though imperfect way, the level of economic phenomenon in a particular country.

14. PROBLEMS IN THE MEASUREMENT OF NATIONAL INCOME AND PRODUCT

The exact estimation of national income and product involves several conceptual and practical problems or difficulties which are discussed below:

(i) *Meaning of nation* : In the estimation of national income or product, the most elementary problem concerns the meaning of nation. Nation, in fact, does not signify the people residing within the political boundries of a country. For computing national income, nation includes those living, working and earning incomes in the foreign countries. Similarly, the home country is required to make payments to foreign nationals who render productive services in the home country. The difference between receipts from abroad and payments to the foreign country constitutes one of the component of national income.

(ii) *Choice of method* : Alternative methods are suggested for the measurement of the aggregates of national income and product. Each one of the product, income and expenditure methods, has its own characteristics and merits. But none of them is perfect. Each has certain deficiencies. In view of them, it becomes difficult to select any one of them for computing national income or product. To overcome this problem of choice of method, it is suggested that two or more methods, should be properly blended. For instance, the National Income Committee in India synthesises the product and income methods for arriving at a proper conclusion about national income or product.

(iii) *Multiple counting* : The most serious problem in the calculation of national income and product is that of double or multiple counting. If the same product at different stages of production is included in the national product, there will be over-estimation of it. For instance, the inclusion of the values of cotton, yarn and cloth or of wheat, flour and bread results in multiple counting. In order to avoid multiple counting, it is suggested that the market values of only final products such as bread,

cloth, fruit, vegetables, shoes, sugar, automobiles etc. should be included in the national product. Alternatively, the multiple counting can be avoided through the value-added technique.

(iv) Choice between final and intermediate products : It has been pointed out above that the final products alone should be included in the national product. The inclusion of intermediate products (the products which are produced and/or purchased for resale in a given period) can result in multiple counting. However, in case of several commodities, like steel and cement, it becomes difficult to decide what proportion of those products is final or intermediate.

(v) Problem related to services : Sometimes services are rendered out of love, affection or mercy. For instance, a nurse serves her ailing mother or a housewife does cooking or washing etc. The question is raised whether these services are to be included or not in the national income and product. In this connection, it may be followed that such services should not be included in the national income or product. Only those services which are in return of some monetary payment should alone be included in the national income.

(vi) Transfer payments : The transfer payments such as pensions, unemployment compensation, sickness and accident benefits etc. also create problem in the exact estimation of national income and product. These are the transactions in terms of money, yet these have to remain excluded. Since transfer payments are not in return of productive services, the value of national product does not includes them. But these amounts are spent by the people and the aggregate expenditure includes them. Thus transfer payments create inconsistency between the aggregate expenditure and the aggregate product. Since the national product does not include transfer payments, it is proper to exclude it even from the national expenditure.

(vii) Windfall gains : The windfall gains are the unexpected or sudden gains in the values of assets due to some uncertain and uncontrollable factors. For instance, sudden increase in value of a barren or waste land due to the discovery of oil in that area or the decision of the government to construct a railway station in its close proximity, can be considered as windfall gains.The increase in land value is not due

to any genuine productive actvity. Therefore, the windfall gains are not included in the national product. However, these are included in incomes of the owners. These amounts are also likely to be spent. Thus a discrepency arises among the estimates of national product, income and expenditure. To remove this discrepency, it is suggested that the windfall gains should also remain excluded from the aggregate product.

(viii) Illegal activities : The incomes earned through illegal activities such as gambling, smuggling distillation of illicit liquors remain excluded from the national income and product. However the incomes of state-approved casinos or gambling houses or those of licensed liquor shops are included in the national income. Thus there seems to be some anomoly which so far has not been removed.

(ix) Price variations : The inflationary or deflationary trends in an economy tend to exaggerate or under-state the national product because the physical quantities of final goods are to be multiplied by their market prices. So the price changes cause serious errors in the estimation of national income and product.They also cause much problem in the international and intertemporal comparisons of national income, product and consumption standards. In order to overcome the problem caused by the price movements, it is advisable to compute the national product or income in real terms i.e., at the constant prices of some base period rather than at the current or market prices.

(x) Change in inventories : Inventories mean the stock of finished products. The stock of inventories depends upon the current level of sales and addition to stock due to current production. While current production is evaluated at the current prices, the reduction in stock due to sale is evaluated at the prices of some previous period when these goods were produced. The problem gets more complicated when there are either inflationary or deflationary price movements.

(xi) Depreciation : Depreciation is the reduction in the stock of fixed capital assets like building, plant, machinery equipment etc. due to wear and tear. The producers have to incur some outlay in any production period to offset the war and tear or capital consumption. If depreciation is underestimated, the GNP is over-estmated and vice-versa.

5. PROBLEMS OR DIFFICULTIES IN MEASURING GNP IN LESS DEVELOPED COUNTRIES

Apart from the conceptual problems in the measurement of GNP discussed above, there are certain problems or difficulties in its accurate measurement particularly in the less developed countries. These problems are as follows :

(i) *Illiteracy* : These is widespread illiteracy among the people in these countries. They often donot maintain accounts of their production, sales or income. It results in gross under-statement of national product or income.

(ii) *Non-monetised sector* : In less developed countries, there is vast non-monetised sector. In rural areas, the goods are exchanged for goods and a large part of production is retained for self-consumption. So the entire production does not get included in the gross national product.

(iii) *Non-market transactions* : In rural areas of these countries, various products are grown but these are not sold in the market. They are kept for consumption by the members of the families of producers. In addition, people construct their own huts, tools, clothes etc. All these non-market transactions remain excluded from the gross national product.

(iv) *Lack of occupational specialisation* : There is an absence of occupational specialisation in these countries. One person, suppose, gets wages from work in factory. He earns some income by hawking some articles in his spare time. He also receives some income from his land in the village. Some of these sources of income may not be disclosed by him. As a result, there is under-estimation of national product.

(v) *Lack of reliable statistics* : The most serious problem in the exact measurement of GNP and other national income aggregates is on account of non-availability of reliable statistics in various economic activities such as cultivation, forestry, fishing, animal husbandry, dairy farming, small enterprises, retail trade, etc. The statistics related to incomes of self-employed people and people employed in services are also not available. There is lack of reliable statistics also related to consumption and rural investment. Consequently, accurate estimation of GNP becomes extremely difficult.

We now proceed to analyse the measurement of other product and income aggregates.

Questions

Multiple Choice Questions

1. GNP is the sum of all
   (a) Market values of final products
   (b) Expenditure
   (c) All income
   (d) All the above

2. During inflation, the nominal GNP is
   (a) Less than real GNP
   (b) More than real GNP
   (c) Equal to real GNP

3. NNP at market prices exceeds the NNP at factor costs by
   (a) Indirect taxes
   (b) Subsidies
   (c) Net indirect taxes

4. The errors in the measurement of national product result from
   (a) Multiple Counting
   (b) Windfall gains
   (c) Transfer payments
   (d) Illegal activities
   (e) All the above

Answers : 1. (d), 2. (b), 3. (c), 4. (e).

Very Short Answer Type Questions

1. Define Gross National Product.
2. Give the meaning of (i) GDP, (ii) GNP and (iii) GNE,.