CHAPTER 1

DETERMINATION OF NATIONAL INCOME

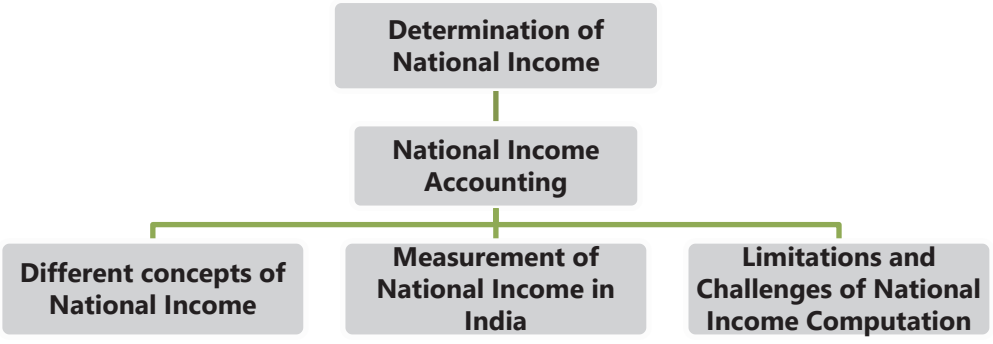
UNIT I: NATIONAL INCOME ACCOUNTING

LEARNING OUTCOMES

At the end of this unit, you will be able to:

- Define national income
- Explain the usefulness and significance of national income estimates
- Differentiate among the various concepts of national income
- Describe the different methods of calculation of national income
- Outline measurement of national income in India
- Describe the system of regional accounts in India
- Identify the challenges involved in national income computation.

UNIT OVERVIEW



1.1 INTRODUCTION

The performance of an economy depends on the output of goods and services produced by it. Just as there are accounting conventions which measure the performance of business, there are conventions for measuring and analyzing the economic performance of a nation. National Income Accounting, pioneered by the Nobel prize-winning economists Simon Kuznets and Richard Stone, is one such measure. National income is an important macroeconomic aggregate forming the basis of modern macroeconomic analysis and provides detailed measures of the value and composition of national output and incomes generated in the production of that output.

National Income is defined as the net value of all economic goods and 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 and profit in an accounting year'.

1.2 USEFULNESS AND SIGNIFICANCE OF NATIONAL INCOME ESTIMATES

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

1. National income accounts provide a comprehensive, conceptual and accounting framework for analyzing and evaluating the short-run performance of an economy. The level of national income indicates the level of economic activity and economic development as well as aggregate demand for goods and services of a country.
2. The distribution pattern of national income determines the pattern of demand for goods and services and enables businesses to forecast the future demand for their products.
3. Economic welfare depends to a considerable extent on the magnitude and distribution of national income, size of per capita income and the growth of these over time.
4. The estimates of national income show the composition and structure of national income in terms of different sectors of the economy, the periodical variations in them and the broad sectoral shifts in an economy over time. It is also possible to make temporal and spatial comparisons of the trend and speed of economic progress and development. Using this information, the government can fix various sector-specific development targets for different sectors of the economy and formulate suitable development plans and policies to increase growth rates.
5. National income statistics also provide a quantitative basis for macroeconomic modelling and analysis, for assessing and choosing economic policies and for objective statement as well as evaluation of governments' economic policies. These figures often influence popular and political judgments about the relative success of economic programmes.
6. National income estimates throw light on income distribution and the possible inequality in the distribution among different categories of income earners. It is also possible to 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 under 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 provides a guide to make policies for growth and inflation.

9. National income or a relevant component of it is an indispensable variable considered in economic forecasting and to make projections about the future development trends of the economy.

1.3 DIFFERENT CONCEPTS OF NATIONAL INCOME

The basic concepts and definitions of the terms used in national accounts largely follow those given in the UN System of National Accounts (SNA) developed by United Nations to provide a comprehensive, conceptual and accounting framework for compiling and reporting macroeconomic statistics for analysing and evaluating the performance of an economy. Each of these concepts has a specific meaning, use and method of measurement.

National income accounts have three sides: a product side, an expenditure side and an income side. The product side measures production based on concept of value added. The expenditure side looks at the final sales of goods and services, whereas the income side measures the distribution of the proceeds from sales to different factors of production. Accordingly, national income is a measure of the total flow of 'earnings of the factor-owners' which they receive through the production of goods and services. Thus, national income is the sum total of all the incomes accruing over a specified period to the residents of a country and consists of wages, salaries, profits, rent and interest.

On the product side there are two widely reported measures of overall production namely, Gross Domestic Product (GDP) and Gross National Product (GNP).

1.3.1 Gross Domestic Product (GDP_{MP})

Gross domestic product (GDP) is a measure of the market value of all final economic goods and services, gross of depreciation, produced within the domestic territory of a country during a given time period. It is the sum total of 'value added' by all producing units in the domestic territory and includes value added by current production by foreign residents or foreign-owned firms. The term 'gross' implies that GDP is measured 'gross' of depreciation.' Domestic' refers to 'the geographic confines' of a country. For example, if a Chinese citizen works temporarily in India, her production is part of the Indian GDP. If an Indian citizen owns a factory in another country, for e.g. Germany, the production at her factory is not part of India's GDP. However, GDP excludes transfer payments,

financial transactions and non-reported output generated through illegal transactions such as narcotics and gambling.

Gross Domestic Product (GDP) is in fact Gross Domestic Product at market prices (GDP_{MP}) because the value of goods and services is determined by the common measuring unit of money or it is evaluated at market prices. Money enables us to measure and find the aggregate of different types of products expressed in different units of measurement by converting them in terms of Rupees, say tonnes of wheat may, thus, be added with millions of apples and with value of services such as airplane journeys.

GDP_{MP} = Value of Output in the Domestic Territory – Value of Intermediate Consumption

$GDP_{MP} = \sum$ Value Added

While learning about national income, there are a few important points which one needs to bear in mind:

(i) The value of only final goods and services or only the value added by the production process would be included in GDP. 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.

(ii) 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.

(iii) Gross Domestic Product (GDP) is a measure of production activity. GDP covers all production activities recognized by SNA called the 'production boundary'. The production boundary covers production of almost all goods and services classified in the National Industrial Classification (NIC). Production of agriculture, forestry and fishing which are used for own consumption of producers is also included in the production boundary. Thus, Gross Domestic Product (GDP) of any nation represents the sum total of gross value added (GVA) (i.e, without discounting for capital consumption or depreciation) in all the sectors of that economy during the said year.

(iv) Economic activities, as distinguished from non-economic activities, include all human activities which create goods and services that are exchanged in a market and valued at market price. Non-economic activities are those which produce goods and services, but since these are not exchanged in a market transaction they do not command any market value; for e.g. hobbies, housekeeping and child rearing services of home makers and services of family members that are done out of love and affection.

(v) National income is a 'flow' measure of output per time period—for example, per year—and includes only those goods and services produced in the current period i.e. produced during the time interval under consideration. The value of market transactions such as exchange of goods which already exist or are previously produced, do not enter into the calculation of national income. Therefore, the value of assets such as stocks and bonds which are exchanged during the pertinent period are not included in national income as these do not directly involve current production of goods and services. However, the value of services that accompany the sale and purchase (e.g. fees paid to real estate agents and lawyers) represent current production and, therefore, is included in national income.

(vi) An important point to remember is that two types of goods used in the production process are counted in GDP namely, capital goods (business plant and equipment purchases) and inventory investment—the net change

in inventories of final goods awaiting sale or of materials used in the production which may be positive or negative. Inventories are treated as capital. Additions to inventory stocks of final goods and materials belong to GDP because they are currently produced output.

The national income in real terms when available by industry of origin, give a measure of the structural changes in the pattern of production in the country which is vital for economic analysis.

1.3.2 Nominal GDP verses Real GDP: GDP at Current and Constant prices

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

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

The calculation of real GDP gives us a useful measure of inflation known as GDP deflator. The GDP deflator is the ratio of nominal GDP in a given year to real GDP of that year.

$$\text{GDP Deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}} \text{X}100$$

The GDP deflator, as the name implies, can be used to 'deflate' or take inflation out of GDP. In other words, the GDP deflator is a price index used to convert nominal GDP to real GDP

$$\text{Real GDP} = \frac{\text{Nominal GDP}}{\text{GDP Deflator}} \text{x}100$$

The deflator measures the change in prices that has occurred between the base year and the current year. In other words, it measures the current level of prices relative to the level of prices in the base year. For example, in 2019 if the nominal GDP is 6,000 billion and real GDP is 3,500 billion, the GDP deflator is 171.43. Since nominal GDP and real GDP must be the same in the base year, the deflator for the base year is always 100.

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

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

For example, if the GDP deflator in 2020 increased to 240 from 171 in 2019,

$$\text{Inflation rate in year 2} = \frac{240-171}{171} \times 100 = 40.35 \text{ percent}$$

Numerical Illustrations

Illustration 1

Find out GDP deflator? Interpret it

			(In Billion Rs.)
Years	**Nominal GDP**	**Real GDP**	**GDP Deflator**
2014	500	500	100
2015	800	650	123.08
2016	1150	800	143.75
2017	1300	950	136.84
2018	1550	1190	130.25
2019	1700	1240	137.10

Solution

Notice that we use 2014 (base year) prices to compute real GDP of subsequent years. Real GDP has risen over the years from 500 billion in 2014 to 1240 billion in 2019. This indicates that the increase is attributable to an increase in quantities produced because the prices are held constant at base year. A deflator above 100 is an indication of price levels being higher as compared to the base year. From years 2015 through 2019, we find that price levels are higher than that of the base year, the highest being in the year 2016.If the GDP deflator is greater than 100, then nominal GDP is greater than real GDP. If the GDP deflator next year is less than the GDP deflator this year, then the price level has fallen; if it is greater, price levels have increased.

Illustration 2

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

Solution

Nominal GDP = ₹ 3000 Crores

Real GDP = ₹ 4700 Crores

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

$$\frac{3000}{4700} \times 100 = 63.83$$

The price level has fallen since GDP deflator is less than 100 at 63.83.

Illustration 3

Find nominal GDP if real GDP = 450 and price index = 120

Solution

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

$$\text{Nominal GDP} = 450 \times \frac{120}{100} = 540$$

Illustration 4

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?

Solution

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

$$= 1200 \times \frac{100}{110} = 1090.9 \text{ Crores}$$

1.3.3 Gross National Product (GNP)

Gross National Product (GNP) is a measure of the market value of all final economic goods and services, gross of depreciation, produced within the domestic territory of a country by normal residents during an accounting year including net factor incomes from abroad. It is the total income earned by a nation's permanent residents (called nationals). It differs from GDP by including income that our citizens earn abroad and excluding income that foreigners earn here. In the example given in 1.3.1 above, the Chinese citizen's production is part of the Indian GDP, but it is not part of Indian GNP. (It is part of China's GNP).

Gross National Product (GNP) is evaluated at market prices and therefore it is in fact Gross National Product at market prices (GNP_{MP}).

GNP_{MP} = GDP_{MP} + Factor income earned by the domestic factors of production employed in the rest of the world - Factor income earned by the factors of production of the rest of the world employed in the domestic territory.

$$GNP_{MP} = GDP_{MP} + \text{Net Factor Income from Abroad}$$

$$GDP_{MP} = GNP_{MP} - \text{Net Factor Income from Abroad (NFIA)}$$

NFIA is the difference between the aggregate amount that a country's citizens and companies earn abroad, and the aggregate amount that foreign citizens and overseas companies earn in that country.

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

If Net Factor Income from Abroad is positive, then GNP_{MP} would be greater than GDP_{MP}.

You might have noticed that the distinction between 'national' and 'domestic' is net factor income from abroad.

National = Domestic + Net Factor Income from Abroad

The two concepts GDP and GNP differ in their treatment of international transactions. The term 'national' refers to normal residents of a country who may be within or outside the domestic territory of a country and is a broader concept compared to the term 'domestic'. For example, GNP includes earnings of Indian corporations overseas and Indian residents working overseas; but GDP does not include these. In other words, GDP excludes net factor income from abroad. Conversely, GDP includes earnings from current production in India that accrue to foreign residents or foreign-owned firms; GNP excludes those items. For instance, profits earned in India by X Company, a foreign-owned firm, would be included in GDP but not in GNP. Similarly, profits earned by Company Y, an Indian company in UK would be excluded from GDP, but included in GNP.

1.3.4 Net Domestic Product at market prices (NDP_{MP})

Net domestic product at market prices(NDP_{MP}) is a measure of the market value of all final economic goods and services, produced within the domestic territory of a country by its normal residents and non-residents during an accounting year less depreciation. The portion of the capital stock used up in the process of production or depreciation must be subtracted from final sales because depreciation represents capital consumption and therefore a cost of production.

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

As you are aware, the basis of distinction between 'gross' and 'net' is depreciation or consumption of fixed capital.

Gross = Net + Depreciation or Net = Gross – Depreciation

1.3.5 Net National Product at Market Prices (NNP_{MP})

Net National Product at Market Prices(NNP_{MP}) is a measure of the market value of all final economic goods and services, produced by normal residents within the

domestic territory of a country including Net Factor Income from Abroad during an accounting year excluding depreciation.

$NNP_{MP} = GNP_{MP} - \text{Depreciation}$

$NNP_{MP} = NDP_{MP} + \text{Net Factor Income from Abroad}$

$NNP_{MP} = GDP_{MP} + \text{Net Factor Income from Abroad} - \text{Depreciation}$

1.3.6 Gross Domestic Product at Factor Cost (GDP_{FC})

The production and income approach (which we will discuss later in this unit) measure the domestic product as the cost paid to the factors of production. Therefore, it is known as 'domestic product at factor cost'. GDP at factor cost is called so because it represents the total cost of factors viz. labour capital, land and entrepreneurship.

At this stage, we need to clearly understand the difference between the concepts: 'market price' and 'factor cost.' In addition to factor cost, the market value of the goods and services will include indirect taxes and subsidies such as:

- Production taxes or subsidies that are paid or received in relation to production and are independent of the volume of actual production. Examples of production taxes are land revenues, stamps and registration fees and tax on profession, factory license fee, taxes to be paid to the local authorities, pollution tax etc. Examples of production subsidies are subsidies to railways, subsidies to village and small industries.
- Product taxes or subsidies that are paid or received on per unit of product. Examples of product taxes are excise duties, sales tax, service tax and import export duties. Examples of product subsidies are food, petroleum and fertilizer subsidies.

The market price will be lower by the amount of subsidies on products and production which the government pays to the producer. Hence, the market value of final expenditure would exceed the total obtained at factor cost by the amount of product and production taxes reduced by the value of similar kinds of subsidies. Direct taxes do not have the same effect since they do not impinge directly on transactions but are levied directly on the incomes. For example, if the factor cost of a unit of good X is ₹ 50/, indirect taxes amount to ₹ 15/per unit and the government gives a subsidy of ₹ 10/per unit, then market price will be ₹ 55/-

Thus, we find that the basis of distinction between market price and factor cost is net indirect taxes (i.e., Indirect taxes - Subsidies).

Market Price = Factor Cost + Net Indirect Taxes

= Factor Cost + Indirect Taxes – Subsidies

Factor Cost = Market Price - Net Indirect Taxes

= Market Price - Indirect Taxes + Subsidies

Gross Domestic Product at Factor Cost (GDP_{FC})

= GDP_{MP} – Indirect Taxes + Subsidies

= Compensation of employees

+ Operating Surplus (rent + interest+ profit)

+ Mixed Income of Self- employed

+ Depreciation

1.3.7 Net Domestic Product at Factor Cost (NDP_{FC})

Net Domestic Product at Factor Cost (NDP_{FC})is defined as the total factor incomes earned by the factors of production. In other words, it is sum of domestic factor incomes or domestic income net of depreciation.

As mentioned above, market price includes indirect taxes imposed by government. We have to deduct indirect taxes and add the subsidies in order to calculate that part of domestic product which actually accrues to the factors of production. The measure that we obtain so is called Net Domestic Product at factor cost.

NDP_{FC} = NDP_{MP} – Net Indirect Taxes

= Compensation of employees

+ Operating Surplus (rent + interest+ profit)

+ Mixed Income of Self- employed

1.3.8Net National Product at Factor Cost (NNP_{FC})or National Income

National Income is defined as the factor income accruing to the normal residents of the country during a year. It is the sum of domestic factor income and net factor income from abroad. In other words, national income is the value of factor income generated within the country plus factor income from abroad in an accounting year.

NNP_{FC} = National Income = FID (factor income earned in domestic territory) + NFIA.

If NFIA is positive, then national income will be greater than domestic factor incomes.

1.3.9 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.

1.3.10 Personal Income

While national income is income earned by factors of production, Personal Income is the income received by the household sector including Non-Profit Institutions Serving Households. Thus, national income is a measure of income earned and personal income is a measure of actual current income receipts of persons from all sources which may or may not be earned from productive activities during a given period of time. In other words, it is the income 'actually paid out' to the household sector, but not necessarily earned. Examples of this include transfer payments such as social security benefits, unemployment compensation, welfare payments etc. Individuals also contribute income which they do not actually receive; for example, undistributed corporate profits and the contribution of employers to social security. Personal income excludes retained earnings, indirect business taxes, corporate income taxes and contributions towards social security. Households receive interest payments from the firms and governments; they also make interest payments to firms and governments. As such, the net interest paid by households to firms and government is also deducted from national income. Personal income forms the basis for consumption expenditures and is derived from national income as follows:

PI = NI + income received but not earned – income earned but not received.

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

An important point to remember is that national income is not the sum of personal incomes because personal income includes transfer payments (eg. pension) which are excluded from national income. Further, not all national income accrues to individuals as their personal income.

1.3.11 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. Disposable personal income is derived from personal income by subtracting the direct taxes paid by individuals and other compulsory payments made to the government.

DI = PI - Personal Income Taxes – Non tax payments

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

1. **Net National Disposable Income**

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

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

2. **Gross National Disposable Income (GNDI)** = NNDI + CFC = GNI + other net current transfers from the rest of the world (Receipts less payments)

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

   (For a detailed explanation of concepts please refer 'Glossary of Main Terms' Apr 1, 2020 - National Accounts Statistics-Sources & Methods, 2007, MOSPI)

Domestic Income may be categorized into:

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

1.3.12 Private Income

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

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

Numerical Illustrations

Illustration 5

From the following data, calculate NNP_{FC}, NNP_{MP}, GNP_{MP} and GDP_{MP}.

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

Solution

GDP_{MP} = Compensation of employees + mixed income of self-employed + operating surplus + depreciation + net indirect taxes

(Note: operating surplus = rent+ profit + interest)

=1000 + 1100 + 2000 + 400 + 450 =4950

GNP_{MP} = GDP_{MP} + NFIA = 4950 + (-50) = 4900

NNP_{MP} = GNP_{MP} – consumption of fixed capital = 4900 – 400 = 4500

NNP_{FC} or NI = NNP_{MP} – NIT =4500 – 450 = = 4050 Crores

Illustration 6

From the following data, estimate National Income and Personal Income.

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

Solution

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

= 1,891 – 175 + 30 = 1746crores

Personal Income = National income – Income from property and entrepreneurship accruing to government administrative departments – Saving of non-departmental enterprises +

National debt interest + Current transfers from government + Current transfers from rest of the world – Saving of private corporate sector – Corporate profit tax

= 1746 – 45 –10+ 15 + 35 + 20 – 25 – 25

= 1711 Crores

Illustration 7

Calculate the aggregate value of depreciation when the GDP at market price of a country in a particular year was ₹ 1,100 Crores. Net Factor Income from Abroad was ₹ 100 Crores. The value of Indirect taxes – Subsidies was ₹ 150 Crores and National Income was ₹ 850 Crores.

Solution

Given

GDP_{MP} = 1100 Crores, NFIA = 100 Crores, NIT =150 Crores, NNP_{FC} = 850 Crores

∴ $GDP_{FC} = GDP_{MP}$- NIT = 1100 – 150 = 950

$GNP_{FC} = GDP_{FC}$+ NFIA = 950 + 100 = 1050

$NNP_{FC} = GNP_{FC}$- Depreciation

850 = 1050- Depreciation

Depreciation = 1050 – 850 = 200 Crores.

Illustration 8

On basis of following information, calculate NNP at market price and Disposable personal income

Items	**₹ in Crores**
NDP at factor cost	14900
Income from domestic product accruing to government	150
Interest on National debt	170
Transfer payment by government	60
Net private donation from abroad	30
Net factor income from abroad	80
Indirect taxes	335

Direct taxes	100
Subsidies	262
Taxes on corporate profits	222
Undistributed profits of corporations	105

Solution

NNP at Market price = NNP at factor cost +indirect tax-subsidies

Where NNP at factor cost = NDP_{FC} + NFIA

= 14900 + 80=14980

Therefore, NNP_{MP} = Therefore, NNP_{MP} = 14980 + 335 – 262 = 15053

Disposable personal income (DI) = PI- Personal income tax

PI = NI + income received but not earned – income earned but not received
= 14980+ 170+60 +30 -150 -222- 105 = 14763

Therefore, DI= 14763- 100 = 14663 Crores

1.4 MEASUREMENT OF NATIONAL INCOME IN INDIA

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

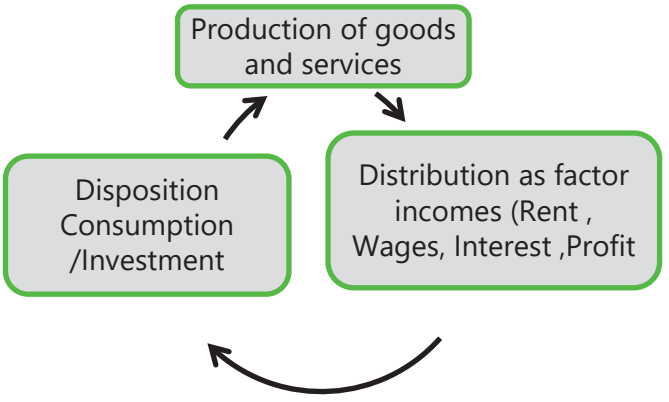
The Ministry of Statistics and Programme Implementation has released the new series of national accounts, revising the base year from 2004-05 to 2011-12. In the revision of National Accounts statistics done by Central Statistical Organization (CSO) in January 2015, it was decided that sector-wise estimates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

1.4.1 The 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 three different interlinked phases in a circular flow of income, namely: production, distribution and disposition as can be seen from the following figure.

Figure 1.1.1

Circular Flow of Income



(i) In the production phase, firms produce goods and services with the help of factor services.

(ii) 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

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

These processes of production, distribution and disposition keep going on simultaneously and enable us to look at national income from three different angles namely: as a flow of production or value added, as a flow of income and as a flow of expenditure. Each of these different ways of looking at national income suggests a different method of calculation and requires a different set of data. The details in respect of what is measured and what data are required for all three methods mentioned above are given in the following table.

Table 1.1.1

Data requirements and Outcomes of Different Methods of National Income Calculation

Method	Data required	What is measured
Phase of Output: Value added method (Product Method)	The sum of net values added by all the producing enterprises of the country	Contribution of production units
Phase of income : Income Method	Total factor incomes generated in the production of goods and services	Relative contribution of factor owners
Phase of disposition: Expenditure method	Sum of expenditures of the three spending units in the economy, namely, government, consumer households, and producing enterprises	Flow of consumption and investment expenditures

Corresponding to the three phases, there are three methods of measuring national income. They are: Value Added Method (alternatively known as Product Method); Income Method; and Expenditure Method.

1.4.2 Value Added Method or Product Method

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

Step1. Identifying the producing enterprises and classifying them into different sectors according to the nature of their activities

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

(i) Primary sector,

(ii) Secondary sector, and

(iii) Tertiary sector or service sector

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

Step 2. Estimating the gross value added (GVA_{MP}) by each producing enterprise (This is the same as GDP_{MP})

Gross value added (GVA_{MP}) = Value of output – Intermediate consumption

= (Sales + change in stock) – Intermediate consumption

While calculating the value added, we are actually finding value of production of the firm. Production of the firm = Value added + intermediate consumption. (Note that imports are included in the value of intermediate consumption if total purchases are given. If domestic purchases are specifically mentioned, then imports will also be added. Also, sales include exports, if domestic sales are separately mentioned, exports need to be added)

Step 3. Estimation of National income

For each individual unit, Net value added is found out.

$$\sum (GVA_{MP}) - \text{Depreciation} = \text{Net value added } (NVA_{MP})$$

Adding the net value-added by all the units in one sub-sector, we get the net value-added by the sub-sector. By adding net value-added or net products of all the sub-sectors of a sector, we get the value-added or net product of that sector. For the economy as a whole, we add the net products contributed by each sector to get Net Domestic Product. We subtract net indirect taxes and add net factor income from abroad to get national income.

Net value added (NVA_{MP}) – Net Indirect taxes = Net Domestic Product (NVA_{FC})

Net Domestic Product (NVA_{FC}) + (NFIA) = National Income (NNP_{FC})

The values of the following items are also included:

(i) Own account production of fixed assets by government, enterprises and households.

(ii) Imputed value of production of goods for self- consumption, and

(iii) Imputed rent of owner occupied houses.

(iv) Change in stock(inventory)

1.4.3 Income Method

Production is carried out by the combined effort of all factors of production. The factors are paid factor incomes for the services rendered. In other words, whatever is produced by a producing unit is distributed among the factors of production for their services.

Under Factor Income Method, also called Factor Payment Method or Distributed Share Method, national income is calculated by summation of factor incomes paid out by all production units within the domestic territory of a country as wages and salaries, rent, interest, and profit. By definition, it includes factor payments to both residents and non- residents.

Thus,

NDP_{FC} = Sum of factor incomes paid out by all production units within the domestic territory of a country

NNP_{FC} or National Income= Compensation of employees
+ Operating Surplus (rent + interest+ profit)
+ Mixed Income of Self- employed
+ Net Factor Income from Abroad

Only incomes earned by owners of primary factors of production are included in national income. Thus, while wages of labourers will be included, pensions of retired workers will be excluded from national income. Compensation of employees includes, apart from wages and salaries, bonus, dearness allowance, commission, employers' contribution to provident fund and imputed value of compensation in kind. Non-labour income includes rent (actual and imputed), royalty, interest on loans availed for productive services, dividends, undistributed profits of corporations

before taxes, and profits of unincorporated enterprises and of government enterprises.

(Note: Interest paid by government on public debt, interest on consumption loans and interest paid by one firm to another are excluded.

Profits = Corporate taxes+ Dividend + Retained earnings)

While using income method, capital gains, windfall profits, transfer incomes and income from sale of second-hand goods and financial assets and payments out of past savings are not included. However, commissions, brokerages and imputed value of services provided by owners of production units will be included as these add to the current flow of goods and services.

Usually it is difficult to separate labour income from capital income because in many instances people provide both labour and capital services. Such is the case with self-employed people like lawyers, engineers, traders, proprietors etc. In economies where subsistence production and small commodity production is dominant, most of the incomes of people would be of mixed type. In sectors such as agriculture, trade, transport etc. in underdeveloped countries (including India), it is difficult to differentiate between the labour element and the capital element of incomes of the people. In order to overcome this difficulty a new category of incomes, called 'mixed income' is introduced which includes all those incomes which are difficult to separate.

1.4.4 Expenditure Method

In the expenditure approach, also called Income Disposal Approach, national income is the aggregate final expenditure in an economy during an accounting year.

$$GDP_{MP} = \sum \text{Final Expenditure}$$

In this approach to measuring GDP which considers the demand side of the products, we add up the value of the goods and services purchased by each type of final user mentioned below.

1. Final Consumption Expenditure

(a) Private Final Consumption Expenditure (PFCE)

To measure this, the volume of final sales of goods and services to consumer households and non-profit institutions serving households acquired for consumption (not for use in production) are multiplied by market prices and then summation is done. It also includes the value of

primary products which are produced for own consumption by the households, payments for domestic services which one household renders to another, the net expenditure on foreign financial assets or net foreign investment. Land and residential buildings purchased or constructed by households are not part of PFCE. They are included in gross capital formation. Thus, only expenditure on final goods and services produced in the period for which national income is to be measured and net foreign investment are included in the expenditure method of calculating national income.

(b) Government Final Consumption Expenditure

Since the collective services provided by the governments such as defence, education, healthcare etc. are not sold in the market, the only way they can be valued in money terms is by adding up the money spent by the government in the production of these services. This total expenditure is treated as consumption expenditure of the government. Government expenditure on pensions, scholarships, unemployment allowance etc. should be excluded because these are transfer payments.

2. Gross Domestic Capital formation

Gross domestic fixed capital formation (Gross Investment) is that part of country's total expenditure which is not consumed but added to the nation's fixed tangible assets and stocks. It consists of the acquisition of fixed assets and the accumulation of stocks. The stock accumulation is in the form of changes in stock of raw materials, fuels, finished goods and semi-finished goods awaiting completion. Thus, gross investment includes final expenditure on machinery and equipment and own account production of machinery and equipment, expenditure on construction, expenditure on changes in inventories, and expenditure on the acquisition of valuables such as, jewellery and works of art.

3. Net Exports

Net exports are the difference between exports and imports of a country during the accounting year. It can be positive or negative.

How do we arrive at national income or NNP_{FC} using expenditure method? We first find the sum of final consumption expenditure, gross domestic capital formation and net exports. The resulting figure is gross domestic product at market price (GDP_{MP}). To this, we add the net factor income from abroad and obtain Gross National Product at market price (GNP_{MP}). Subtracting net indirect

taxes from GNP_{MP}, we get Gross National Product at factor cost (GNP_{FC}). National income or NNP_{FC} is obtained by subtracting depreciation from Gross national product at factor cost (GNP_{FC}).

Ideally, all the three methods of national income computation should arrive at the same figure. When national income of a country is measured separately using these methods, we get a three dimensional view of the economy. Each method of measuring GDP is subject to measurement errors and each method provides a check on the accuracy of the other methods. By calculating total output in several different ways and then trying to resolve the differences, we will be able to arrive at a more accurate measure than would be possible with one method alone. Moreover, different ways of measuring total output give us different insights into the structure of our economy.

Income method may be most suitable for developed economies where people properly file their income tax returns. With the growing facility in the use of the commodity flow method of estimating expenditures, an increasing proportion of the national income is being estimated by expenditure method. As a matter of fact, countries like India are unable to estimate their national income wholly by one method. Thus, in agricultural sector, net value added is estimated by the production method, in small scale sector net value added is estimated by the income method and in the construction sector net value added is estimated by the expenditure method.

Numerical Illustrations

Illustration 9

Calculate National Income by Value Added Method with the help of following data-

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

Solution

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

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

Value of Output = Sales+ change in stock

= 700+ (400-500)=600

$GVA_{(MP)}$ = 600 – 350= 250

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

= 70 Crores

Illustration 10

Calculate the Operating Surplus with the help of following data-

Particulars	**₹ in Crores**
Sales	4000
Compensation of employees	800
Intermediate consumption	600
Rent	400
Interest	300
Net indirect tax	500
Consumption of Fixed Capital	200
Mixed Income	400

Solution

GVA_{MP} = Gross Value $Output_{MP}$ – Intermediate consumption

= (Sales + change in stock) – Intermediate consumption

= 4000-600 = 3400

GDP_{MP} = GVA_{MP} = 3400 Crores

NDP_{MP} = GDP_{MP} – consumption of fixed capital

= 3400 – 200

= 3200 Crores

NDP_{FC} = NDP_{MP} – NIT

= 3200 – 500 = 2700 Crores

NDP_{FC} = Compensation of employees + Operating surplus + Mixed income

2700 = 800 + Operating Surplus + 400

Operating surplus = 1500 Crores

Illustration 11

Calculate national income by value added method.

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

Solution

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

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

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

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

Illustration 12

Calculate Net Value Added by Factor Cost from the following data

Items	**₹ in Crores**
Purchase of materials	85
Sales	450
Depreciation	30
Opening stock	40
Closing stock	30
Excise tax	45
Intermediate consumption	200
Subsidies	15

Solution

GVA_{MP} = Sales+ change in stock - Intermediate consumption

= 450+ (30-40) -200

= 240Crores

NVA_{MP} = GVA_{MP} – Depreciation

NVA_{MP} = 240-30 = 210 Crores

NVA_{FC} = NVA_{MP} – (indirect tax - subsidies)

= 210 – (45 -15) = 180Crores

Illustration 13

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

Items	**₹ in Crores**
Compensation of employees	1,200
Net factor income from Abroad	20

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

Solution

By Expenditure method

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

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

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

= 4030 – 130 + 20 – 120= 3800 Crores

By Income method

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

= 1200+ 1820+ 700+ 20= 3740Crores

Illustration 14

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

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

Solution

(a) GDP at factor cost = NDP at factor cost + Depreciation

= Compensation of employees+ Rent+ Interest+ Profit +Mixed income+ (Gross domestic capital formation - Net domestic capital formation)

= ₹ 3,000 + ₹ 800 + ₹ 900 + ₹ 1,300 + (₹ 900 - ₹ 800)

= ₹ 6100 Crores

(b) Gross Domestic Product at Market Price

= GDP at factor cost + Net Indirect taxes =₹ 6100 + ₹ 300

= 6400 Crores

Illustration 15

Calculate NNP_{FC} by expenditure method with the help of following information-

Items	₹ in Crores
Private final consumption expenditure	10
Net Import	20
Public final consumption expenditure	05
Gross domestic fixed capital formation	350

Depreciation	30
Subsidy	100
Income paid to abroad	20
Change in stock	30
Net acquisition of valuables	10

Solution

Calculation of national income by expenditure method:

GDP_{MP} = Government final consumption expenditure (Public final consumption expenditure) + Private final consumption expenditure + Gross domestic capital formation (Gross domestic fixed capital formation + change stock + Net acquisition of valuables) + Net export (Note: As net import is20, hence, net export is -20)

= 5 +10 + [350 + 30 +10]+(- 20) = 5+10+390-20 = 385 Crores

NNP_{FC} = GDP_{MP} – Depreciation + Net factor income from abroad (Income from abroad – Income paid to abroad) – Net Indirect tax (Indirect tax – subsidies)

= 385 – 30 + [0 – 20] – [0-100] = 385 – 30 – 20 + 100 = 435 Crores.

1.5 THE SYSTEM OF REGIONAL ACCOUNTS IN INDIA

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

The state level estimates are prepared by the State Income Units of the respective State Directorates of Economics and Statistics (DESs). The Central Statistical Organisation assists the States in the preparation of these estimates by rendering advice on conceptual and methodological problems. In the preparation of state income estimates, certain activities such as railways, communications, banking

and insurance and central government administration, that cut across state boundaries, and thus their economic contribution cannot be assigned to any one state directly are known as the 'Supra-regional sectors' of the economy. The estimates for these supra regional activities are compiled for the economy as a whole and allocated to the states on the basis of relevant indicators.

1.6 GDP AND WELFARE

Can the GDP of a country be taken as an index of 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.

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

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

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

(d) 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.

(e) 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.

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

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

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

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

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

1.7 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:

(a) lack of an agreed definition of national income,

(b) accurate distinction between final goods and intermediate goods,

(c) issue of transfer payments,

(d) services of durable goods,

(e) difficulty of incorporating distribution of income,

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

(g) valuation of government services

Other challenges relate to:

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

(b) presence of non-monetised sector,

(c) production for self-consumption,

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

(e) lack of proper occupational classification, and

(f) accurate estimation of consumption of fixed capital

SUMMARY

- National income accounts are extremely useful for analyzing and evaluating the performance of an economy, knowing the composition and structure of the national income, income distribution, economic forecasting and for choosing economic policies and evaluating them.
- Gross domestic product (GDP_{MP})is a measure of the market value of all final economic goods and services, gross of depreciation, produced within the domestic territory of a country during a given time period gross of depreciation.
- Capital goods (business plant and equipment purchases) and inventory investment—the net change in inventories of final goods awaiting sale or of materials used in the production are counted in GDP
- To eliminate the effect of prices, in addition to computing GDP in terms of current market prices, termed 'nominal GDP' or GDP at current prices,the national income accountants also calculate 'real GDP 'or GDP at constant prices which is the value of domestic product in terms of constant prices of a chosen base year.
- $GNP_{MP} = GDP_{MP}$ + Net Factor Income from Abroad
- $NDP_{MP} = GDP_{MP}$ - Depreciation
- $NDP_{MP} = NNP_{MP}$ - Net Factor Income from Abroad
- $NNP_{MP} = GNP_{MP}$ - Depreciation
- Market Price = Factor Cost + Net Indirect Taxes= Factor Cost + Indirect Taxes – Subsidies
- Gross Domestic Product at Factor Cost (GDP_{FC}) = GDP_{MP} – Indirect Taxes + Subsidies
- Net Domestic Product at Factor Cost (NDP_{FC}) is defined asthe total factor incomes earned by the factors of production.

- Net National Product at Factor Cost (NNP_{FC})or National Income
- NNP_{FC} = National Income = FID (factor income earned in domestic territory) + NFIA.
- Personal income is a measure of the actual current income receipt of persons from all sources. Disposable Personal Income (DI) that is available for their consumption or savings DI = PI - Personal Income Taxes
- Circular flow of income refers to the continuous interlinked phases in circulation of production, income generation and expenditure involving different sectors of the economy.
- Product Method or Value Added Method is also called Industrial Origin Method or Net Output Method and entails the consolidation of the production of each industry less intermediate purchases from all other industries.
- Under income method, national income is calculated by summation of factor incomes paid out by all production units within the domestic territory of a country as wages and salaries, rent, interest, and profit. Transfer incomes are excluded.
- Under the expenditure approach, also called Income Disposal Approach, national income is the aggregate final expenditure in an economy during an accounting year composed of final consumption expenditure (private& government), gross domestic capital formation and net exports.

TEST YOUR KNOWLEDGE

I Multiple Choice Type Questions

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. Read the following statements and answer the following question.

I. Intermediate consumption consists of the value of the goods and services consumed as inputs by a process of production,

II. Intermediate consumption excludes fixed assets whose consumption is recorded as consumption of fixed capital.

(a) Only I is true

(b) Both I and II are true

(c) Only II is true

(d) Neither I nor II is true

3. 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

4. Read the following statements

I 'Value added' refers to the difference between value of output and purchase of intermediate goods.

II. 'Value added' represents the contribution of labour and capital to the production process.

(a) Statements I and II are incorrect

(b) Statements I and II are correct

(c) Statement I is correct and II is incorrect

(d) Statement II is correct and I is incorrect

5.. 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

6. Which of the following does not enter into the calculation of national income?

(a) Exchange of previously produced goods

(b) Exchange of second hand goods

(c) Exchange of stocks and bonds

(d) All the above

7. Which of the following enters into the calculation of national income?

(a) The value of the services that accompany the sale

(b) Additions to inventory stocks of final goods and materials

(c) Stocks and bonds sold during eth current year

(d) (a) and (b) above

8. Gross National Product at market prices GNP_{MP} is

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

(b) GDP_{MP} - Net Factor Income from Abroad

(c) GDP_{MP} - Depreciation

(d) GDP_{MP} + Net Indirect Taxes

9. 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} = National Income = FID (factor income earned in domestic territory) – NFIA.

(c) Capital goods and inventory investment are excluded from computation of GDP

(d) $NDP_{MP} = GDP_{MP}$ + Depreciation

10. 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)

11. 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

12. The GDP per capita is

(a) a measure of a country's economic output per person

(b) actual current income receipts of persons

(c) national income divided by population

(d) (a)and (c) above

13. 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

14. Mixed income of the self -employed means

(a) net profits received by self -employed people

(b) outside wages received by self- employed people

(c) combined factor payments which are not distinguishable,

(d) wages due to non- economic activities

15. Which of the following is added to national income while calculating personal income?
    (a) Transfer payments to individuals
    (b) Undistributed profits of corporate
    (c) Transfer payments made to foreigners
    (d) Mixed income of self employed

II Short Answer Type Questions

1. Define national income.
2. What function does the System of National accounts (SNA) serve?
3. Define GDP $_{MP.}$
4. What do you understand by 'value added'?
5. Distinguish between Intermediate goods and final goods.
6. Distinguish between non-economic activities and economic activities.
7. Distinguish between nominal GDP and real GDP.
8. Draw the basis of distinction between GDP current and constant prices.
9. What is the difference between 'national' and 'domestic'?
10. What do you understand by 'factor cost'?
11. Differentiate between 'taxes on production' and 'product taxes'.
12. Define 'mixed income of self- employed'
13. Define Per Capita Income.
14. How does Personal Income differ from Disposable Personal Income?
15. Define 'Private income' as used in India.
16. Illustrate the circular flow of income.
17. How do you arrive at 'gross value added'
18. What is meant by intermediate consumption?
19. How is production for self-consumption treated in national income accounts?
20. Define 'Net Factor Income from Abroad'.

21. What is meant by the term 'net exports'?

III Long Answer Type Questions

1. Define national income and explain the usefulness of national income estimates.
2. Describe the generally used concepts of national income.
3. What are the different methods of calculation of national income?
4. Explain the term Gross Domestic Product (GDP). How is it estimated?
5. Distinguish between GDP current and constant prices. What purpose does real GDP serve?
6. What is the difference between the concepts 'market price' and 'factor cost in national income accounting?
7. Illustrate the circular flow of income and describe its relevance for measurement of national income.
8. Explain Value Added Method as applied in national income accounting.
9. How is national income calculated under 'Income Method'?
10. Explain 'Expenditure Method' for calculation of national income?
11. Write notes on the system of regional accounts in India.
12. Explain with illustrations the limitations of national income computation?
13. Distinguish between Personal Income and Disposable personal income.
14. How real GDP is better measure of economic well-being? Explain.

IV Application Oriented Questions

1. Compute National income

Consumption	750
Investment	250
Government Purchases	100
Exports	100
Imports	200

2. Calculate Gross Domestic Product at market Prices (GDP_{MP}) and derive national income from the following data (in Crores of ₹)

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

3. Find GDP_{MP} and GNP_{MP} from the following data (in Crores of ₹) using income method. Show that it is the same as that obtained by expenditure method.

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

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

	(₹ in Crores)
Value of output in primary sector	500
Net factor income from abroad	-20
Value of output in tertiary sector	700
Intermediate consumption in secondary sector	400
Value of output in secondary sector	900
Government Transfer Payments	600
Intermediate consumption in tertiary sector	300
Intermediate consumption in primary sector	250

5. Calculate 'Sales' from the following data :

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

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

Particulars	**₹ in Crores**
Private Final Consumption Expenditure	1000
Government Final Consumption Expenditure	550
Compensation of Employees	600
Net Exports	-15

Net Indirect Taxes	60
Net Domestic Fixed Investment	385
Consumption of Fixed Capital Formation	65
Net Factor Income from Abroad	-10
Interest	310
Rent	200
Mixed Income of Self-Employed	350
Profit	400

ANSWERS/HINTS

I Multiple Choice Type Questions

1.	(b)	**2.**	(b)	**3.**	(b)	**4.**	(b)	**5.**	(b)
6.	(d)	**7.**	(d)	**8.**	(a)	**9.**	(a)	**10.**	(b)
11.	(a)	**12.**	(d)	**13.**	(d)	**14.**	(c)	**15.**	(a)

II Hints to Short Answer Type Questions

1. The net value of all economic goods and services produced within the domestic territory of a country in an accounting year plus the net factor income from abroad/ the sum total of factor incomes generated by the normal residents of a country in the form of wages, rent , interest and profit in an accounting year'

2. SNA, developed by United Nations, provide a comprehensive conceptual and accounting framework for compiling and reporting macroeconomic statistics for analysing and evaluating the performance of an economy.

3. GDP $_{MP}$ is the market value of all final economic goods and services, gross of depreciation, produced within the domestic territory of a country during a given time period.

4. 'Value added' we mean the difference between value of output and purchase of intermediate goods.

5. Intermediate goods used to produce other goods rather than being sold to final purchasers are not counted as it would involve double counting whereas final goods are those that meant for final consumption

6. Economic activities as distinguished from non-economic activities include all human activities which create goods and services that can be valued at market price**.** Non-economic activities are those which produce goods and service, but are not exchanged in a market transaction sothey do not command any market value.

7. GDP in terms of current market prices, termed 'nominal GDP' or GDP at current prices, the national income accountants also calculate 'real GDP 'or GDP at constant prices which is the value of domestic product in terms of constant prices of a chosen base year.

8. Refer Hint 7 above.

9. The term 'national' refers to normal residents of a country who may be within or outside the domestic territory of a country and is a broader concept compared to the term 'domestic' which refers to the domestic territory of the country.

10. Factor Cost = Market Price - Net Indirect Taxes = Market Price - Indirect Taxes + Subsidies

11. Product taxes are related to the quantum of production and are levied by the government on goods and services (These taxes are known as indirect taxes).

    Taxes on production are taxes which are not related to quantum of production like factory, license fee, pollution tax etc.,

12. Mixed income includes all those incomes which are difficult to separate eg. labour income from capital income because people provide both labour and capital services.

13. 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.

14. Personal income is a measure of the actual current income receipt of persons from all sources. Disposable personal income is what is available for their consumption or savings and is derived from personal income by subtracting the direct taxes paid by individuals and other compulsory payments made to the government.

15. National income plus the sum of government transfer payments and interest on national debt and subtracting the property income of government departments and profits of government enterprises.

16. Circular flow of income refers to the continuous circulation of production, income generation and expenditure involving different sectors of the economy, Illustrate with diagram.

17. Used in the process of production , not counted to avoid double counting

18. 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; the goods or services may be either transformed or used up by the production process.

19. Production for self consumption added under Value Added Method

20. The difference between the aggregate amount that a country's citizens and companies earn abroad, and the aggregate amount that foreign citizens and overseas companies earn in that country.

21. Net exports are the difference between exports and imports of a country during the accounting year. It can be positive or negative.

III Hints to Long Answer Type Questions

I. The length of the answer should relate to the marks allotted.

II. The answer should be structured in three parts in the following style.

(a) Explain the economic fundamentals underlying the action/issue by integrating the course material in innovative ways; not necessarily confined to one unit. This part provides an opportunity for students to explain their understanding of the underlying theory. The examiner may easily discern the level of cognition of the student. This should be a compulsory component with a reasonably high proportion of marks earmarked.

(b) Analyse the issue at hand (given the framework and tools) and explain the policy position by applying the fundamentals as explained in (a) above.

(c) Substantiate with illustrations from current economic scenario

IV Application Oriented Question

1. Expenditure Method: National income equals domestic spending

Y = C + I + G + (X – M)

(*C* + *I* + *G* = 1100) plus exports (*X* = 100) less imports (*M* = 200). *Y* =**1000**

2. Expenditure Method

GDP_{MP} = Personal consumption expenditure + Gross Investment (Gross business fixed investment + inventory investment) + Gross residential construction investment + Gross public investment + Government purchases of goods and services + Net Exports (Exports-imports)

GNP_{MP} = GDP_{MP} +Net factor income from abroad

GNP_{MP} - Indirect Taxes = GNP_{FC}

GNP_{FC} – Depreciation = NNP_{FC} (National Income)

		₹
$GDP_{Mp=}$		
Personal consumption expenditure	=	3500
+ Gross Investment	=	900
which include(Gross Business fixed investment	=	*300*
Gross residential construction investment	=	*300*
Gross public investment	=	*200*
Inventory investment	=	*100)*
+ Government purchases of goods arid services	=	1000
+ Net exports *which include:*	=	100
(Exports	=	*200*
Imports	=	*100)*
$GDP_{Mp=}$	**=**	**5500 Crores**
+Net Factor Income From Abroad	=	-50
GNP_{MP} =	**=**	**5450 Crores**
-Indirect Taxes	=	100
GNP_{FC}	=	**5350 Crores**

- Depreciation	=	50
NNP_{FC} (National Income)	=	**5300 Crores**

3. Income Method

GDP_{MP} = Employee compensation (wages and salaries + employers' contribution towards social security schemes) + profits + rent + interest + mixed income + depreciation + net indirect taxes (Indirect taxes - subsidies)

GDP_{MP} = 6,508+ 34 + 1060 + 806+ 682 + 1,000 + 800 = **10,890**

GNP_{MP} = GDP_{MP} + NFIA =10,890+ 40 =**10,930 Crores.**

Expenditure Method

Y = C + I + G + (X – M)

Y = 7314 + 1442 + 2196+ (1346 –1408)

Y = (7314 + 1442 + 2196) – 62

GDP_{MP} = Y = 10890

GNP_{MP} = GDP_{MP} + NFIA =10,890+ 40 =**10,930 Crores**

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

Value of output in primary sector	=	500
- Intermediate consumption of primary sector	=	250
+ Value of output in secondary sector	=	900
- Intermediate consumption in secondary sector	=	400
+ Value of output in tertiary sector	=	700
- Intermediate consumption of tertiary sector	=	300
GDP_{MP}	=	**₹ 1150** Crores

GNP_{MP} = GDP_{MP} + NFIA

GNP_{MP} = 1150 – 20 = **₹ 1130** Crores

5. Net Value Added at factor cost = Sales + change in stocks - intermediate consumption- depreciation – NIT

2000 = Sales + 500 – 3000 – 700 –(-200)

Sales= 2000- 500 +3000 + 700 – 200= 5000 lakhs

6. Expenditure Method formula:

NDP_{MP} = Private Final Consumption Expenditure + Net Domestic Fixed Investment + Government final consumption expenditure + Net Exports (Exports-imports)

NNP_{MP} = NDP_{MP} + Net factor income from abroad

NNP_{MP} – Indirect Taxes = **NNP_{FC} = National Income**

Income Method Formula:

NDP_{FC} = Employee compensation + profits + rent + interest + mixed income

NNP_{FC} = NDP_{FC} + NFIA = **National Income**

Particulars	₹ in crores
Expenditure Method	
Private Final Consumption Expenditure	1000
+Government Final Consumption Expenditure	+550
+Net Domestic fixed Investment	+385
+Net Exports	+(-15)
NDP@MP	**=1920**
+Net Factor Income from Abroad	**+(-10)**
NNP@MP	**=1910**
-Net Indirect Taxes	-60
NNP@FC	**= 1850**
Consumption of Fixed Capital	65

Income Method	
Compensation of Employees	600
Interest	+310
Rent	+200
Mixed Income of Self-Employed	+350
Profit	+400
NDP@FC	**=1860**
+Net Factor Income from Abroad	**+(-10)**
NNP@FC	**= 1850**