UNIT 10 NATIONAL INCOME: CONCEPT AND MEASUREMENT
MODULE - 3
# UNIT 10  NATIONAL INCOME: CONCEPT AND MEASUREMENT

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## 10.0 INTRODUCTION

We have so far been concerned with microeconomic aspects of managerial economics. This chapter onwards, we will deal with macroeconomic aspects of managerial economics. The major aspects of macroeconomics that are generally used in business analysis, especially in analyzing and understanding business environment of the country include (i) the level and trends in national income, (ii) factors determining national income, (iii) factors and forces leading to business cycles, (iv) the trend in general level of price, especially inflation, (v) international economic aspects, and (vi) government policies, especially fiscal and monetary policies. In this chapter, we will discuss the meaning and methods of measuring national income and the methods of measuring national income in India.

## 10.1 UNIT OBJECTIVES

- To define national income and its importance
- To discuss various methods of measuring national income
- To describe the methods used in India for measuring national income
- To show the growth and trends in national income of India

## 10.2 DEFINITION OF NATIONAL INCOME

National income is the final outcome of all economic activities of a nation valued in terms of money. National income is the most important macroeconomic variable and
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determinant of the business level and environment of a country. The level of national income determines the level of aggregate demand for goods and services. Its distribution pattern determines the pattern of demand for goods and services, i.e., how much of which good is demanded. The trend in national income determines the trends in aggregate demand, i.e., the demand for the goods and services, and also the business prospects. Therefore, business decision makers need to keep in mind these aspects of the national income, especially those having long-run implications. National income or a relevant component of it is an indispensable variable considered in demand forecasting.

Conceptually, national income is the money value of the end result of all economic activities of the nation. Economic activities generate a large number of goods and services, and make net addition to the national stock of capital. These together constitute the national income of a ‘closed economy’—an economy which has no economic transactions with the rest of the world. In an ‘open economy’, national income includes also the net results of its transactions with the rest of the world (i.e., exports less imports).

Economic activities should be distinguished from the non-economic activities from a national point of view. Broadly speaking, economic activities include all human activities which create goods and services that can be valued at market price. Economic activities include production by farmers (whether for household consumption or for market), production by firms in the industrial sector, production of goods and services by the government enterprises, and services produced by business intermediaries (wholesalers and retailers), banks and other financial organizations, universities, colleges and hospitals, etc. On the other hand, non-economic activities are those which produce goods and services that do not have any economic value. Non-economic activities include spiritual, psychological, social and political services. The non-economic category of activities also includes hobbies, service to self, services of housewives, services of members of family to other members and exchange of mutual services between neighbours.

We have defined national income from the angle of product flows. The same can be defined in terms of money flows. While economic activities generate flow of goods and services, on the one hand, they generate money flows, on the other, in the form of factor payments—wages, interest, rent, profits, and earnings of self-employed. Thus, national income may also be obtained by adding the factor earnings and adjusting the sum for indirect taxes and subsidies. The national income thus obtained is known as national income at factor cost. It is related to money income flows.

The concept of national income is linked to the society as a whole. It differs fundamentally from the concept of private income. Conceptually, national income refers to the money value of the entire final goods and services resulting from all economic activities of the country. This is not true of private income. Also from the calculation point of view, there are certain receipts of money or of services and goods that are not ordinarily included in private incomes but are included in the national incomes, and vice versa. National income includes, for example, employer’s contribution to the social security and welfare funds for the benefit of employees, profits of public enterprises, and services of owner occupied houses. But it excludes the interest on war-loans, social security benefits and pensions. There items are, however, included in the private incomes. The national income is, therefore, not merely an aggregation of the private incomes. One can however obtain an estimate of national income by summing up the private incomes after making necessary adjustments for the items excluded from the national income.
10.3 MEASURES OF NATIONAL INCOME

10.3.1 Gross National Product (GNP)

Of the various measures of national income used in national income analysis, GNP is the most important and widely used measure of national income. It is the most comprehensive measure of the nation’s productive activities. The GNP is defined as the value of all final goods and services produced during a specific period, usually one year, plus incomes earned abroad by the nationals minus incomes earned locally by the foreigners. The GNP so defined is identical to the concept of gross national income (GNI). Thus, GNP = GNI. The difference between the two is only of procedural nature. While GNP is estimated on the basis of product-flows, the GNI is estimated on the basis of money income flows, (i.e., wages, profits, rent, interest, etc.).

10.3.2 Gross Domestic Product (GDP)

The Gross Domestic Product (GDP) is defined as the market value of all final goods and services produced in the domestic economy during a period of one year, plus income earned locally by the foreigners minus incomes earned abroad by the nationals. The concept of GDP is similar to that of GNP with a significant procedural difference. In case of GNP the incomes earned by the nationals in foreign countries are added and incomes earned locally by the foreigners are deducted from the market value of domestically produced goods and services. In case of GDP, the process is reverse – incomes earned locally by foreigners are added and incomes earned abroad by the nationals are deducted from the total value of domestically produced goods and services.

10.3.3 Net National Product (NNP)

NNP is defined as GNP less depreciation, i.e., NNP = GNP – Depreciation

Depreciation is that part of total productive assets which is used to replace the capital worn out in the process of creating GNP. Briefly speaking, in the process of producing goods and services (including capital goods), a part of total stock of capital is used up. ‘Depreciation’ is the term used to denote the worn out or used up capital. An estimated value of depreciation is deducted from the GNP to arrive at NNP.

The NNP, as defined above, gives the measure of net output available for consumption and investment by the society (including consumers, producers and the government). NNP is the real measure of the national income. NNP = NNI (net national income). In other words, NNP is the same as the national income at factor cost. It should be noted that NNP is measured at market prices including direct taxes. Indirect taxes are, however, not a point of actual cost of production. Therefore, to obtain real national income, indirect taxes are deducted from the NNP. Thus, NNP–Indirect taxes = National Income.

10.3.4 National Income: Some Accounting Relationships

(a) Accounting Indentities at Market Price

\[ \text{GNP} \equiv \text{GNI} \quad \text{(Gross National Income)} \]

\[ \text{GDP} \equiv \text{GNP less Net Income from Abroad} \]

\[ \text{NNP} \equiv \text{GNP less Depreciation} \]

\[ \text{NDP} \quad \text{(Net Domestic Product)} \equiv \text{NNP less net income from abroad} \]

(b) Some Accounting Indentities at Factor Cost

\[ \text{GNP at factor cost} \equiv \text{GNP at market price less net indirect taxes} \]

Check Your Progress

1. How is national income defined?
2. What are the measures of national income?
3. What is the difference between GNP and GDP?
4. What is meant by NNP?
10.4 METHODS OF MEASURING NATIONAL INCOME

For measuring national income, the economy through which people participate in economic activities, earn their livelihood, produce goods and services and share the national products is viewed from three different angles.

(1) The national economy is considered as an aggregate of producing units combining different sectors such as agriculture, mining, manufacturing, trade and commerce, etc.

(2) The whole national economy is viewed as a combination of individuals and households owning different kinds of factors of production which they use themselves or sell factor-services to make their livelihood.

(3) The national economy may also be viewed as a collection of consuming, saving and investing units (individuals, households and government).

Following these notions of a national economy, national income may be measured by three different corresponding methods:

(1) Net product method—when the entire national economy is considered as an aggregate of producing units;

(2) Factor-income method—when national economy is considered as combination of factor-owners and users;

(3) Expenditure method—when national economy is viewed as a collection of spending units.

The procedures which are followed in measuring the national income in a closed economy—an economy which has no economic transactions with the rest of the world—are briefly described here. The measurement of national income in an open economy and adjustment with regard to income from abroad will be discussed subsequently.

10.4.1 Net Output or Value-Added Method

The net output method is also called the value added method. In its standard form, this method consists of three stages: “(i) estimating the gross value of domestic output in the various branches of production; (ii) determining the cost of material and services used and also the depreciation of physical assets; and (iii) deducting these costs and depreciation from gross value to obtain the net value of domestic output...”. The net value of domestic product thus obtained is often called the value added or income product which is equal to the sum of wages, salaries, supplementary labour incomes, interest, profits, and net rent paid or accrued. Let us now describe the stages (i) and (ii) in some detail.

Measuring Gross Value. For measuring the gross value of domestic product, output is classified under various categories on the basis of the nature of activities from which they originate. The output classification varies from country to country depending on (i) the nature of domestic activities; (ii) their significance in aggregate economic activities, and (iii) availability of requisite data. For example, in the US, about seventy-one divisions and subdivisions are used to classify the national output; in Canada and the Netherlands, classification ranges from a dozen to a score; and in Russia, only half a dozen divisions are used. According to the CSO publication, fifteen sub-categories are currently used in India.
After the output is classified under the various categories, the value of gross output is computed in two alternative ways: (i) by multiplying the output of each category of sector by their respective market price and adding them together, or (ii) by collective data about the gross sales and changes in inventories from the account of the manufacturing enterprises and computing the value of GDP on the basis thereof. If there are gaps in data, some estimates are made thereof and gaps are filled.

**Estimating Cost of Production.** The next step in estimating the net national product is to estimate the cost of production including depreciation. Estimating cost of production is, however, a relatively more complicated and difficult task because of non-availability of adequate and requisite data. Much more difficult is the task of estimating depreciation since it involves both conceptual and statistical problems. For this reason, many countries adopt factor-income method for estimating their national income.

However, countries adopting net-product method find some ways and means to calculate the deductible cost. The costs are estimated either in absolute terms (where input data are adequately available) or as an overall ratio of input to the total output. The general practice in estimating depreciation is to follow the usual business practice of depreciation accounting. Traditionally, depreciation is calculated at some percentage of capital, permissible under the tax-laws. In some estimates of national income, the estimators have deviated from the traditional practice and have instead estimated depreciation as some ratio of the current output of final goods.

Following a suitable method, deductible costs including depreciation are estimated for each sector. The cost estimates are then deducted from the sectoral gross output to obtain the net sectoral products. The net sectoral products are then added together. The total thus obtained is taken to be the measure of net national products or national income by net product method.

### 10.4.2 Factor-Income Method

This method is also known as income method and factor-share method. Under this method, the national income is calculated by adding up all the "incomes accruing to the basic factors of production used in producing the national product". Factors of production are conventionally classified as land, labour, capital and organization. Accordingly, the national income equals the sum of the corresponding factor earning. Thus, National income = Rent + Wages + Interest + Profit

However, in a modern economy, it is conceptually very difficult to make a distinction between earnings from land and capital, on the one hand, and between the earnings from ordinary labour and entrepreneurial functions, on the other. For the purpose of estimating national income, therefore, factors of production are broadly grouped as labour and capital. Accordingly, national income is supposed to originate from two primary factors, viz., labour and capital. In some activities, however, labour and capital are jointly supplied and it is difficult to separate the labour and capital contents from the total earnings of the supplier. Such incomes are termed as mixed incomes. Thus, the total factor-incomes are grouped under three categories: (i) labour incomes; (ii) capital incomes; and (iii) mixed incomes.

**Labour Incomes.** Labour incomes included in the national income have three components: (a) wages and salaries paid to the residents of the country including bonus and commission, and social security payments; (b) supplementary labour incomes including employer’s contribution to social security and employee’s welfare funds, and direct pension payments to retired employees; (c) supplementary labour incomes in kind, e.g., free health and education, food and clothing, and accommodation, etc. Compensations in kind in the form of domestic servants and such other free-of-cost services provided to the employees are included in labour income. War bonuses, pensions, service grants are not included in labour income as they are regarded as ‘transfer payments’.
Certain other categories of income, e.g., incomes from incidental jobs, gratuities, tips etc., are ignored for lack of data.

**Capital Incomes.** According to Studenski, capital incomes include the following capital earnings:

- \((a)\) dividends excluding inter-corporate dividends;
- \((b)\) undistributed before-tax profits of corporations;
- \((c)\) interest on bonds, mortgages, and saving deposits (excluding interests on war bonds, and on consumer-credit);
- \((d)\) interest earned by insurance companies and credited to the insurance policy reserves;
- \((e)\) net interest paid out by commercial banks;
- \((f)\) net rents from land, buildings, etc., including imputed net rents on owner-occupied dwellings;
- \((g)\) royalties; and
- \((h)\) profits of government enterprises.

The data for the first two items are obtained mostly from the firms' accounts submitted for taxation purposes. But the definition of profit for national accounting purposes differs from that employed by taxation authorities. Some adjustments in the income tax data become, therefore, necessary. The data adjustments generally pertain to \((i)\) excessive allowance of depreciation made by the firms; \((ii)\) elimination of capital gains and losses since these do not reflect the changes in current income; and \((iii)\) elimination of under or over-valuation of inventories on book-value.

**Mixed Income.** Mixed incomes include earnings from \((a)\) farming enterprises, \((b)\) sole proprietorship (not included under profit or capital income); and \((c)\) other professions, e.g., legal and medical practices, consultancy services, trading and transporting etc. This category also includes the incomes of those who earn their living through various sources as wages, rent on own property, interest on own capital, etc.

All the three kinds of incomes, viz., labour incomes, capital incomes and mixed incomes added together give the measure of national income by *factor-income method*.

**10.4.3 Expenditure Method**

The expenditure method, also known as *final product method*, measures national income at the final expenditure stages. In estimating the total national expenditure, any of the two following methods are followed: **first**, all the money expenditures at market price are computed and added up together, and **second**, the value of all the products finally disposed of are computed and added up, to arrive at the total national expenditure. The items of expenditure which are taken into account under the **first method** are \((a)\) private consumption expenditure; \((b)\) direct tax payments; \((c)\) payments to the non-profit-making institutions and charitable organizations like schools, hospitals, orphanages, etc.; and \((d)\) private savings. Under the **second method**, the following items are considered: \((a)\) private consumer goods and services; \((b)\) private investment goods; \((c)\) public goods and services; and \((d)\) net investment abroad. The second method is more extensively used because the data required in this method can be collected with greater ease and accuracy.

**Treatment of Net Income from Abroad.** We have so far discussed methods of measuring national income of a ‘closed economy’. But most economies are *open* in the sense that they carry out foreign trade in goods and services and financial transactions with the rest of the world. In the process, some nations get net income through foreign trade while some lose their income to foreigners. The net earnings or loss in foreign trade affects the national income. In measuring the national income, therefore, the net
result of external transactions are adjusted to the total. Net incomes from abroad are added to, and net losses to the foreigners are deducted from the total national income arrived at through any of the above three methods.

Briefly, speaking, all exports of merchandise and of services like shipping, insurance, banking, tourism, and gifts are added to the national income. And, all the imports of the corresponding items are deducted from the value of national output to arrive at the approximate measure of national income. To this is added the net income from foreign investment. These adjustments for international transactions are based on the international balance of payments of the nations.

10.5 CHOICE OF METHODS

As discussed above, there are three standard methods of measuring the national income, viz., net product (or value added) method, factor-income or factor cost method and expenditure method. All the three methods would give the same measure of national income, provided requisite data for each method is adequately available. Therefore, any of the three methods may be adopted to measure the national income. But all the three methods are not suitable for all the economies simply for non-availability of necessary data and for all purposes. Hence, the question of choice of method arises.

The two main considerations on the basis of which a particular method is chosen are: (i) the purpose of national income analysis, and (ii) availability of necessary data. If the objective is to analyse the net output or value added, the net output method is more suitable. In case the objective is to analyse the factor-income distribution, the suitable method for measuring national income is the income method. If the objective at hand is to find out the expenditure pattern of the national income, the expenditure or final products method should be applied. However, availability of adequate and appropriate data is a relatively more important consideration is selecting a method of estimating national income.

Nevertheless, the most common method is the net product method because: (i) this method requires classification of the economic activities and output thereof which is much easier than to classify income or expenditure; and (ii) the most common practice is to collect and organize the national income data by the division of economic activities. Briefly speaking, the easy availability of data on economic activities is the main reason for the popularity of the output method.

It should be however borne in mind that no single method can give an accurate measure of national income since the statistical system of no country provides the total data requirements for a particular method. The usual practice is, therefore, to combine two or more methods to measure the national income. The combination of methods again depends on the nature of data required and sectoral break-up of the available data.

10.6 MEASUREMENT OF NATIONAL INCOME IN INDIA

In India, a systematic measurement of national income was first attempted in 1949. Earlier, many attempts were made by some individuals and institutions. The earliest estimate of India’s national income was made by Dadabhai Naoroji in 1867–68. Since then many attempts were made, mostly by the economists and the government authorities, to estimate India’s national income. These estimates differ in coverage, concepts and methodology and are not comparable. Besides, earlier estimates were mostly for one year, only some estimates covered a period of 3 to 4 years. It was therefore not possible to construct a consistent series of national income and assess the performance of the economy over a period of time.
In 1949, a National Income Committee (NIC) was appointed with P.C. Mahalanobis as its Chairman, and D.R. Gadgil and V.K.R.V. Rao as members. The NIC not only highlighted the limitations of the statistical system of that time but also suggested ways and means to improve data collection systems. On the recommendation of the Committee, the Directorate of National Sample Survey was set up to collect additional data required for estimating national income. Besides, the NIC estimated the country’s national income for the period from 1948–49 to 1950–52. In its estimates, the NIC also provided the methodology for estimating national income, which was followed till 1967.

In 1967, the task of estimating national income was given to the Central Statistical Organization (CSO). Till 1967, the CSO had followed the methodology laid down by the NIC. Thereafter, the CSO adopted a relatively improved methodology and procedure which had become possible due to increased availability of data. The improvements pertain mainly to the industrial classification of the activities. The CSO publishes its estimates in its publication, Estimates of National Income.

**Methodology used in India**

Currently, net output and factor income methods are used by the CSO to estimate the national income of the country. The output method is used for agriculture and manufacturing sectors, i.e., the commodity producing sectors. For these sectors, the value added method is adopted. Income method is used for the service sectors including trade, commerce, transport and government services. In its conventional series of national income statistics from 1950-51 to 1966-67, the CSO had categorized the income in 13 sectors. But, in the revised series, it had adopted the following 15 break-ups of the national economy for estimating the national income; (i) Agriculture; (ii) Forestry and logging; (iii) Fishing; (iv) Mining and quarrying; (v) Large-scale manufacturing; (vi) Small-scale manufacturing; (vii) Construction; (viii) Electricity, gas and water supply; (ix) Transport and communication; (x) Real estate and dwellings; (xi) Public Administration and Defence; (xii) Other services; and (xv) External transactions. The national income is estimated at both constant and current prices.

**10.7 SUMMARY**

- National income is the market value of all final goods and services produced in a country over a period of time, generally one year.
- In general, there are three important measures of national income, viz., (i) GNP, (ii) GDP, and (iii) NNP.
- In measuring GNP, income earned abroad by the nationals is added and income earned by foreigners in the country is subtracted from national income estimates; on the contrary, a reverse process is used in estimating GDP.
- NNP is defined as GNP–Depreciation. Depreciation equals the loss of national capital in the process of production.
- There are three methods of measuring national income: (i) Value-added method, (ii) factor-income method, and (iii) expenditure method.
- The choice of method depends on the availability of data required for estimating national income. Often two or all the three methods are combined to estimate national income.
- In India, an organisation called CSO estimates the national income. It uses net output and factor income method for estimating national income.
10.8 ANSWERS TO ‘CHECK YOUR PROGRESS’

1. National income is defined as the market value of all final goods and services produced during a period of time, usually one year.

2. In general, three measures of national income are used in economic and business analysis: (i) GNP, (ii) GDP, and (iii) NNP.

3. The difference between GNP and GDP lies in the treatment of income earned abroad by nationals and income earned by foreigner in the domestic economy. In measuring GNP, income abroad by nationals is added and income earned by foreigners in the country is deducted from the value estimated. In case of GDP, a reverse process is used.

4. NNP means GNP less depreciation, i.e., the value of national capital lost in the process national production.

5. There are three methods of measuring national income: (i) net product or value added method, (ii) factor income method, and (iii) expenditure method.

6. Under value-added method, first gross value of national product is estimated. Then costs of material and services also depreciation are estimated. These costs are deducted from the gross value to arrive at national income.

7. In general, factor income method follows the principle that national income = wages + rent + interest + profit. For estimating national income, however, factor incomes are classified as (i) labour income, (ii) capital income, and (iii) mixed income.

8. The adjustment of income earned abroad depends on GNP and GDP estimation. In case of GNP, income earned abroad by the citizens of a country is added to the gross value. But in case of GDP, this is deducted from the gross value.

10.9 EXERCISES AND QUESTIONS

1. What is the relevance of national income statistics in business decisions? What kinds of business decisions are influenced by the change in national income?

2. Describe the various methods of measuring national income. How is a method chosen for measuring national income?

3. Distinguish between net-product method and factor-income method. Which of these methods is followed in India?

4. Does the method of measuring national income of a ‘closed economy’ differ from one followed in an ‘open economy’? How is foreign income treated in national income estimates?


10.10 FURTHER READING


NOTES


References


2. Conventionally, pension to the retired employees is considered to be a ‘transfer payment’ and is excluded from the labour income and national income accounting. In the US, however, this item is included in national income (See Studenski, *op. cit.*, pp. 11 and 118–20).

3. Some often quoted estimates were made by F.J. Atkinson, (1875 and 1895); Major Baring (1881); W. Digby, (1898–99); Curzon (1901); E.A. Home, (1911); C.N. Vakil and S.K. Muranjn (1891–94 and 1911–14); Shirras Findlay (1911 and 1921); K.T. Shah and K.J. Khambata (1900–14 annual and 1921–22); V.K.R.V. Rao (1925–29 and 1931–32); *Commerce, Journal* (1938–39, 1942–43 and 1947–48). (Year in the parantheses are the reference years).