

## NATIONAL INCOME ACCOUNT

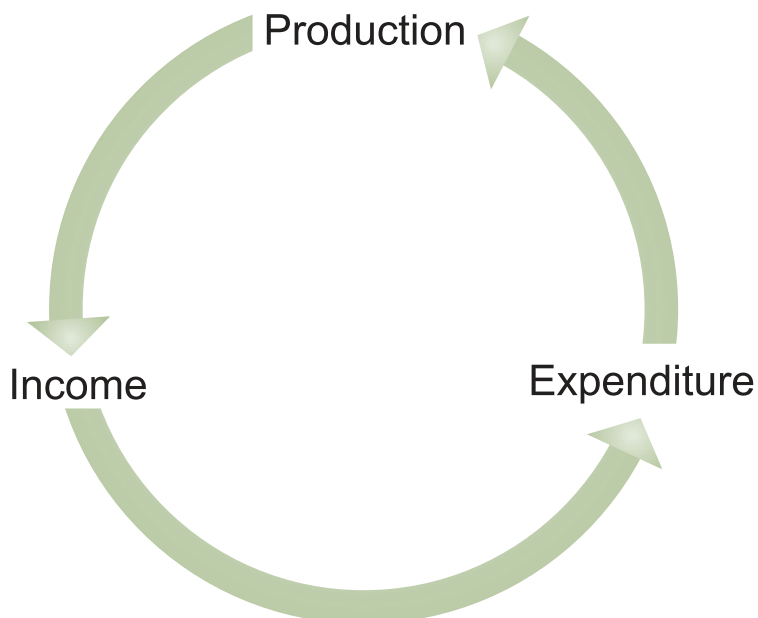
### Unit Objectives

*After completing this unit, you will be able to:*

- ❑ appreciate national income account and its importance;
- ❑ understand and compute the different approaches used to measure GDP; and
- ❑ analyse the difference between nominal and real GDP.

### Main Contents

- 7.1 NATURE AND MEANING OF NATIONAL INCOME ACCOUNT
- 7.2 GDP (GROSS DOMESTIC PRODUCT) DEFINITION AND ITS MEASUREMENT
- 7.3 OTHER NATIONAL INCOME ACCOUNT
- 7.4 GDP AND INCOME DISTRIBUTION
  - *Unit Summary*
  - *Review Exercise*



## INTRODUCTION

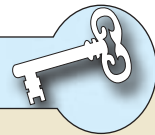
National income is often considered as the most comprehensive measure of how well an economy is performing. It is necessary and important, therefore, to measure the national income of a country so as to have an idea of the performance of the economy. Measuring national income is an extremely complicated large task. However, economists have devised various ways of estimating national income. In fact, national income estimates are made in every country these days. In Ethiopia, the task of estimating national income is entrusted with the Central Statistical Organisation (CSO), that works in collaboration with ministry of finance. In this unit we discuss the various concepts related to national income accounting and the methods of measuring national income.




### 7.1 NATURE AND MEANING OF NATIONAL INCOME ACCOUNT

*At the end of this section, you will be able:*

- define and state national income account and its importance; and
- define GDP and GNP.

#### Key Terms and Concepts





-  National income
-  Gross National Product (GNP)
-  Gross Domestic product (GDP)
-  Net factor income from abroad

#### Start-up Activity

A personal income looks easy to know. What about income of a nation? What constitutes incomes of a nation?

#### National Income Features

National income is an essential element in the study of macroeconomics. It is broadly defined as *the aggregate monetary value of all the final goods and services produced in a country during a year*. Based on this definition, we can identify the following main features of national income:

-  National income is counted for a period of one accounting year;
-  National income is a flow concept. National income is a measure of the flow of goods and services during a year;

- *We include only final goods and services in the calculation of national income. Intermediate goods are not included in the calculation of national income,*
- *National income is expressed in terms of monetary value of goods and services.*

Note that national income is also defined as the sum of factor incomes in a country in a year's time and is sometimes expressed in terms of aggregate expenditure of a country in a year's time.

### **Importance of National Income Accounting**

National income accounting is *a method of preparing and presenting national income accounts* based on the principle of double entry system of business accounting.

Preparation of national income accounts is important for the formulation of economic policies and also as a measure of economic growth. Moreover, national income accounts reveal information about production activities in the different producing sectors of an economy. We list below some *reasons for which national income accounts are important*:

- **Indicator of Economic Progress:** *Particularly in underdeveloped economies, the State has to actively participate in various programs of development, and for that it has to formulate economic policies. For the formulation of plans and determination of priorities, it has to estimate national income data. In economic planning, it is also essential to collect information about the national income, savings.*
- **Investment, consumption, employment, etc:** *All these estimates require data relating to national income. National accounts are also helpful in the assessment of various programs of development.*
- **Significance in Business Policy Making:** *National income data are also needed for formulation of policies in different businesses. Individual firms are always interested to know the contribution to national income by the particular industry to which they belong. National income statistics also provide information to business firms about the nature and extent of demand of various products in the market.*
- **Significance for Trade Unions:** *National income accounts are of great use to trade unions and labour organisations. National income data provide information about the contribution of the labour force to the gross national product and the wages and salaries received by the workers.*

- **Measure of Economic Growth:** National income accounts are used to measure the rate of economic growth. These accounts reveal the trend of output, income, consumption and capital formation during a given period of time.
- **Comparison with other Countries:** National income accounts help in international comparisons. On the basis of national income, one can easily say whether a country is developed or underdeveloped. By analysing the national income statistics of the developed countries, the developing countries may change their strategy of development.
- **Knowledge of Structural Changes:** National income accounts reveal the structural changes taking place in an economy. It gives information about the relative importance of different sectors of the economy and shows the distribution of income among various producing sectors.
- **Significance for Economic Analysis:** National income is an important concept of economic theory. Study of national income accounts is essential to identifying interrelationships between different sectors of an economy.

We may thus conclude that national income accounts are very useful for measuring economic growth and formulating economic policies.

## Activity 7.1



“National income accounting is important for every nation – developed, developing or underdeveloped — in spite of its limitation that it does not indicate the real economic welfare of the people and the loss to the nation because of environmental damages”. Discuss the statement in a group and identify the major uses and limitations of national income accounting. Prepare a report on your discussions.

## 7.2 GDP (GROSS DOMESTIC PRODUCT) AND GNP (GROSS NATIONAL PRODUCT) DEFINITION AND MEASUREMENT

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

- identify the problems associated with measuring GDP;
- identify and define the three approaches that are used to measure GDP;
- define and compute GDP based on product approach;

- ❑ define and compute GDP based on the expenditure approach;
- ❑ define and compute GDP based on the income approach;
- ❑ define concept of GDP; and
- ❑ distinguish the difference between nominal and real GDP.

## Key Terms and Concepts

- |               |                      |
|---------------|----------------------|
| 🔑 Nominal GDP | 🔑 Depreciation       |
| 🔑 Real GDP    | 🔑 Double counting    |
| 🔑 Green GDP   | 🔑 Intermediate goods |

## Start-up Activity

Is everything being produced in Ethiopia belongs to the country? Why measuring national income is not as easy as measuring personal income. Why? Discuss.

Various aggregates and concepts concerning domestic income and national income are used in national income accounting. All these concepts have their own relevance. We discuss below two of the most important aggregates related to domestic income and national income.

## Gross Domestic Product

*Gross Domestic Product (GDP) is the market value of all the final goods and services produced within the domestic territory of a country during a year.*

In order to understand the meaning of GDP, note the following points:

- **Gross Measure:** *It is an aggregate measure. It measures gross value of the products.*
- **Market value:** *GDP measures the value of goods and services at their Market Price. Hence it is also termed as Gross Domestic Product at market prices ( $GDP_{MP}$ ).*
- **New Production:** *GDP includes the value of output produced in the “new” current accounting year only. It does not account for the value of existing or old goods.*
- **GDP includes only the value of final goods and services, i.e., finished products only:** *It does not take into account the value of intermediate goods, such as raw materials, power, fuel, etc. We differentiate between intermediate and final goods as follows:*

- ✎ **Intermediate goods** – Goods which are used for further production by passing through some production process as secondary inputs are called intermediate goods. Goods which are used for resale in the same year are also included in intermediary goods. For example, cotton for the thread manufacturing mill, thread for the cloth mill and cloth for the ready made goods lying with wholesalers and retailers for resale in the same year are also intermediate goods.
- ✎ **Final goods** – Goods which are used either for final consumption by the consumers or for investment by the producers are called final goods. For example bread, butter, biscuits, milk, clothes, shoes, watches, radios, etc. used by the consumers, and also machines and tractors used by the producers are final goods or finished goods.
- In Gross Domestic Product, we include only the goods and services produced within the domestic territory of a country. It includes the incomes locally earned by the non-nationals and excludes the incomes received by the resident nationals from abroad.

## Gross National Product

Gross National Product (GNP) is the money value of all final goods and services produced in the domestic territory of a country during a year plus net-factor income from abroad minus factor income of non residents in domestic territories.

We may say it is the Gross Domestic Product at market price plus NFI (net factor income from abroad minus factor income of non-residents in domestic tertiary).

Thus,

$$\text{GNP}_{\text{MP}} = \text{GDP}_{\text{MP}} + \text{NFI} \quad (7.1)$$

Where,  $\text{GNP}_{\text{MP}}$  = Gross National Product at market prices

$\text{GDP}_{\text{MP}}$  = Gross Domestic Product at market prices

NFI = Net Factor Income

NFI is the difference between factor income flowing out of the country and flowing into the country. Alternatively, it is the difference between the factor income by a country's citizen living abroad and the factor income earned by non-residents (foreigners) in the domestic territory of that country.

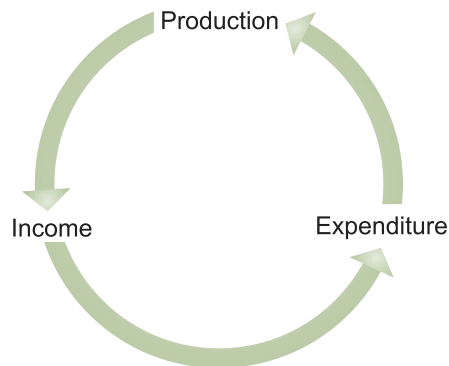
NFI = Factor income earned from abroad by residents

– factor income of non-residents in domestic territory (7.2)

Net factor income from abroad can be positive or negative. When net factor income from abroad is positive, domestic product is smaller than the national product (or the national product is greater than the domestic product). And when net factor income from abroad is negative, domestic product is greater than the national product.

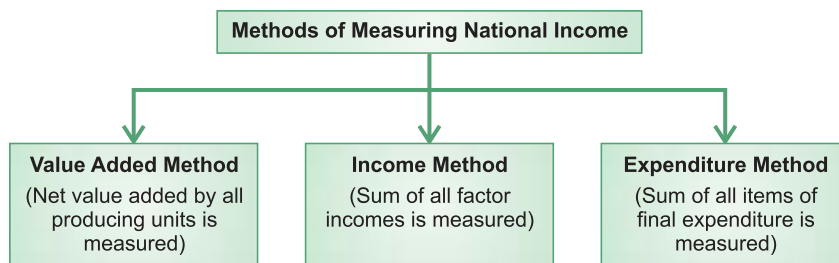
## Approaches to Measuring GDP

There are three different phases in circular flow of national income: *production, income and expenditure*. Production of goods and services is the result of combined efforts of factors of production (land, labour, capital and entrepreneurs). The net output emerging from the production process gets distributed in the form of money income (rent, wages, interest and profit) among factors of production. With this income factors of production we purchase goods and services for final consumption and investment. In this way income creates expenditure. Expenditure in turn gives rise to further production. This leads to continuous circular movement of production, income and expenditure.



**Figure 7.1: Circular Flow of Production, Income and Expenditure**

We can look at national income from three angles – as a flow of goods and services, as a flow of income or as a flow of expenditure. Accordingly, there are three methods of measuring national income as shown below in [Figure 7.2](#):



**Figure 7.2: Methods of measuring national income**

**Note:**

Since the above three methods are only different view points of the same flow of goods and services, totals from each method should therefore be equal to each other.

We now discuss each of these three methods one by one.

### I **Production Method (Value Added Method)**

In this method two approaches – ‘Final Product Approach’ and ‘Value Added Approach’ – are adopted.

- i **Final Product Approach:** According to this approach, in the estimation of GDP, we include the market value of all final goods and services produced in a country. For example, if we manufacture thread from cotton, cloth from thread and shirts from cloth, here shirts are the final good. Hence, we should include the value of shirts only in the calculation of national income.

Thus, GDP is calculated by multiplying all the final goods and services produced in a country with their respective market prices.

$$\text{GDP}_{\text{MP}} = P(Q) + P(S) \quad (7.3)$$

Where, P = Market price

Q = Quantity of goods

S = Quantity of services

**Problem of Double Counting in the Final Product Approach:** The final product approach cannot be used in actual practice because production is a continuous process and in this process it is difficult to know the final product. It gives rise to the problem of double counting. What is the problem of double counting? *Counting the value of a commodity more than once in the measurement of national income is called double counting.* So far as an individual enterprise is concerned, it considers its output as final product. For example, for a farmer, cotton is a final product, for a spinning mill, thread is a final product, for a cloth-mill, cloth is a final product, and for a garment manufacturer, shirts are a final product. All these enterprises take the sale value of their products as the value of their final output. When we



take into account the sum total of the value of output of all these individual enterprises in the estimation of national income, it suffers the problem of double counting. This leads to overestimation of the value of goods and services produced.

To overcome the difficulty of double counting, the value added approach is used.

- ii Value Added Approach:** The value added approach measures the value added (contribution) by each producing enterprise in the production process in the domestic territory of a country in an accounting year. Value added is defined as the difference between total value of the output of a firm and the value of inputs bought from other firms. Clearly, the value added approach measures the contribution of each producing unit in the domestic economy without any possibility of double counting.

The following steps are involved in estimating national income by the value added approach:

- *Identifying all the producing units in the domestic economy and classifying them into three economic sectors: primary, secondary and tertiary sectors. (The primary sector exploits natural resources, the secondary sector transforms one type of commodity into another, and the tertiary sector renders services.),*
- *Estimating the value added by each producing unit. (By deducting intermediate consumption, from value of output, we get the value added.),*
- *Estimating the value added of each economic sector by summing up the value added of all producing units falling in each industrial sector,*
- *Computing  $GDP_{MP}$  by adding up the value added of all economic sectors.*
- *Estimating net factor income from abroad, which is added to  $GDP_{MP}$  to obtain  $GNP_{MP}$*

**Example:** GDP by final product approach.

The final productions of a hypothetical nation is given by the following table. The table shows how GDP is calculated using final product and current prices.

	Product	Quantity (millions)	Price (per 1 unit)	Birr value (millions)
Goods	Shoes	1	250	250
	Cars	2	75,000	150,000
	Bed	10	900	9,000
Services	Haircuts	24	10	240
	Legal advice	2	3,000	6,000
	Medication	5	750	3,750
				GDP: 169,240

## II Income Method

The income method measures national income from the side of payments made to the primary factors of production in the form of rent, wages, interest, and profit for their productive services in an accounting year. Since the income of factors of production is cost to their employers, so factor income and factor cost are the same. Thus if the factor incomes of all the producing units generated within the domestic economy are added up, the resulting total will be the domestic income at factor cost. If we add the value of depreciation and indirect taxes to this, we get  $GDP_{MP}$ . Adding further net factor income from abroad gives us  $GNP_{MP}$ .

### Remarks:

- 1 *Depreciation means loss of the value of fixed capital assets during production. In other words, depreciation is the value of existing capital stock that has been consumed (used up) in the process of producing output. Fall in the value of fixed assets due to normal wear and tear and to expected obsolescence is called consumption of fixed capital or depreciation.*
- 2 *Taxes which are levied by the government on production and sale of commodities are called indirect taxes — for example, excise duty, sales tax, custom duty, etc. The buyer of a taxed commodity pays the tax indirectly because the tax is included in the price which the buyer pays. The effect of indirect tax is that it increases the price of a commodity.*

The following steps are involved in estimating national income by the income method.

- Identifying enterprises which employ factors of production (land, labour, capital and entrepreneurship),
- Classifying various types of factor payments like rent, wages, interest and profit,
- Estimating the amount of factor payments made by each enterprise,
- Summing up of all factor payments made within the domestic territory to get the domestic income at factor cost,
- Adding the value of depreciation and indirect taxes to domestic income at factor cost to get  $GDP_{MP}$
- Estimating net factor income from abroad, which is added to  $GDP_{MP}$  to obtain  $GNP_{MP}$

To correctly compute national income by the income method, the following precautions need to be taken.

- Only factor incomes which are earned by rendering productive services are included. All types of transfer income are not included.
- Imputed rent of owner-occupied dwellings and the value of production for self-consumption are included, but the value of self-consumed services is not included.
- Income from illegal activities like smuggling, black marketing, etc., as well as windfall gains from lotteries, etc., are not included.

#### Example:

*GDP at market price measured by income approach, of a hypothetical nation.*

Types of Income	Amount (in millions Birrs)
Compensation of employes	84,000
Rental income	9,200
Interest income	12,100
Profits (proprietor's income)	30,000
Depreciation	10,000
Indirect business taxes	4,000
GDP: 149,300	

### III Expenditure Method

The expenditure method gives us the value of GDP at MP when measured at the point of expenditure. From the expenditure point of view, GDP is gross expenditure on the final use of domestically produced goods and services during

a period of account. Basically the final use of goods and services is for two purposes: *consumption purposes* for direct satisfaction of wants, and *investment purposes*, for expanding productive capacity. And expenditure on them is called final consumption expenditure and final investment expenditure. They are further subdivided into five components as shown below. Total final expenditure is equal to GDP at MP.

$$\text{GDP}_{\text{MP}} = \text{Private final consumption expenditure} + \text{government final consumption expenditure} + \text{gross fixed capital formation} + \text{change in stocks} + \text{net exports} \quad (7.5)$$

**Example:** Calculating GDP by expenditure approach

Expenditure		Amount (in millions of Birr)
1. Personal final consumption expenditure	4,500	12,000
Durable goods	1,500	
Non durable goods		
Services	6,000	
2. Government final consumption expenditure	1040	5440
Federal defence	2100	
Federal non-defence		
State and local governments	2300	
3. Gross fixed capital formation (Gross private Domestic Investment)	3,940	7410
Construction Expenditure	2,200	
Machinery equipment Expenditure (Business fixed investment)		
Changes in inventories	1,270	
4. Net Exports	94	-111
Exports		
Imports	205	
		GDP: 24,739

We discuss briefly each of these components:

- **Private final consumption expenditure:** It measures the money value of goods and services purchased by households for current use during a time period. In this category we include consumption expenditure by consumer households on all types of consumer goods (i.e., durable, semi-durable, and nondurable goods and services).

- **Government final consumption expenditure:** It is defined as “Current expenditure on goods and services incurred in providing services of government administrative departments less sales.” It is incurred by general government to satisfy collective needs of the people. For example, government expenditure on health, education, general administration, law and order, etc. belongs to this category.
- **Gross fixed capital formation:** Expenditure on it consists of mainly two items
  - ✎ Construction, and
  - ✎ Machinery and equipment.
- **Change in stocks:** This refers to the physical change in stocks of inventories like raw material, semi-finished goods and finished goods lying with the producers for smooth working of production processes. It is the difference between the stocks in the beginning of and at the end of the accounting year. (inventories or unsold outputs).
- **Net exports (exports less imports):** This refers to the difference between the value of exports and value of imports. Note that exports and imports include both material goods as well as services.

**Note:**

Change in stocks is sometimes taken as a part of gross fixed capital formation.

We may thus sum up as follows:

$$\text{GDP}_{\text{MP}} = C + I_g + G + (X - M) \quad (7.6)$$

Where, C = Consumption expenditure by households

I<sub>g</sub> = Gross Investment expenditure by firms

G = Government expenditure on goods and services

X – M = Net exports

Also,  $\text{GNP}_{\text{MP}} = \text{GDP}_{\text{MP}} + \text{NFI}$

The following precautions need to be taken to correctly estimate national income by the expenditure method:

- To avoid double counting, expenditure on all intermediate goods and services is excluded.
- Government expenditure on all transfer payments, such as scholarships, unemployment allowances, old age pensions, etc., is excluded because non-productive services are rendered by the recipients in exchange.

- Expenditure on purchase of second-hand goods is excluded from national income because this type of expenditure is not on currently produced goods.
- Expenditure on purchase of old shares/bonds or new shares/bonds etc. is excluded because it is not payment for goods or services currently produced. It shows mere transfer of property from one person to another.

## Problems in Measuring GDP

We face a number of problems or difficulties in the estimation of national income, especially in under-developed countries like Ethiopia. These various problems are of generally two types: conceptual problems and statistical problems.

### Conceptual Problems

- *Product, income or expenditure – Which method – should be selected and which is more appropriate – it is a constant problem for enumerators to solve.*
- *Opinions differ regarding the meaning and definition of national income.*
- *There is no clear-cut demarcation between productive and non-productive activities. There are a number of activities regarding which opinions differ regarding whether they should be treated as productive activities or not. For instance, production for self-consumption, services rendered without remuneration, services of an artist, etc.*
- *In developed and under-developed countries, the same pattern for the computation of national income should not be adopted. But in under-developed countries, we generally adopt the pattern suggested by the U.N.O., which may be quite suitable for developed countries but difficult to follow for an under-developed country.*

### Statistical (or Practical) Problems

- **Non-availability of data:** *We do not have proper and reliable data regarding various activities of the economy. It is more difficult to have these data in under-developed countries.*
- **Barter system:** *In developing countries, even today a good part of exchange is performed through barter systems. It is very difficult to estimate the money value of this type of transaction.*
- **The problem of double counting:** *In actual practice it is very difficult to distinguish between intermediate goods and final goods. Therefore, sometimes the value of intermediate goods enters into our calculation of national income. It poses the problem of double counting.*

- **Production for self-consumption:** *In developing countries like Ethiopia, a good part of production is kept for self-consumption. It is very difficult to estimate the quantity and value of this production for self-consumption.*
- **Non-maintenance of accounts:** *In developing countries small unincorporated enterprises and self-employed persons do not maintain their accounts properly. Thus it is difficult to get accurate information about their contribution to national income.*

## Nominal and Real GDP

We have seen that GDP is, broadly, the market value of final goods and services produced. It can be measured in two ways: at current market prices and at constant prices. *When final goods and services included in GDP are valued at current market prices, i.e., prices prevailing in the year for which GDP is being measured then it is called GDP at current market prices or Nominal GDP.* For example, Nominal GDP of 2009 is the value of output produced in 2009 calculated at the market prices prevailing in 2009.

On the other hand, *when goods and services included in GDP are valued at constant (fixed) prices i.e., prices of the base year it is called GDP at constant prices or Real GDP.* Constant prices refer to prices prevailing in some carefully chosen year called the base year.

### Significance of the Distinction

- 1 Real GDP (i.e., at constant prices) truly reflects the performance and level of economic growth in an economy, whereas Nominal GDP (i.e., at current prices) does not. Nominal GDP is affected by two factors:
  - *Change in physical output, and*
  - *Change in prices. If current market prices rise fast, Nominal GDP will also rise fast even though physical output remains the same.*

In contrast, real GDP is affected by only one factor, change in physical output because prices are fixed or constant. Thus real GDP can rise only when there is a rise in physical output during a year. A country is interested in change in physical output (real GNP) and not in monetary or Nominal GDP because an increase in real GDP leads to a rise in the standard of living of the people.

- 2 Real GDP is a better tool for making a year-to-year comparison of changes in the physical output of goods and services. A sustained rise in real GNP reflects the economic growth of the country, whereas a continuous fall in real GDP is an indicator of recession, and depression.
- 3 Real GDP is often used in making international comparisons of economic performance across countries.

### Conversion of Nominal GDP into Real GDP

An increase in Nominal GDP does not necessarily mean an increase in the physical output of goods and services because the said increase might have been due to an increase in prices. Therefore, to eliminate the effect of price increase and to know the real change in physical output, Nominal GDP is converted into real GDP, using the following formula:

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

#### Example:

Using the following data about a hypothetical nation, calculate Real GDP for the nation in the years 2000, 2001, 2002, 2003.

No	Year	Nominal GDP (Birr)	CPI
1	2000	360 billion	100
2	2001	420 billion	140
3	2002	520 billion	200
4	2003	570 billion	300

#### Solution:

No	Year	Nominal GDP (Birr)	CPI	Real GDP = $\frac{\text{Nominal GDP}}{\text{Price Index of Current Year}} \times 100$
1	2000	360 billion	100	360 billion
2	2001	420 billion	140	300 billion
3	2002	520 billion	200	260 billion
4	2003	570 billion	300	190 billion

Note that real GDP is decreasing while the nominal GDP is increasing. This is happening due to higher level of consumer's price index.





## Activity 7.2

- 1 We understand that, while estimating national income, only the income from productive activities is to be included and not that from unproductive activities. Try to identify the main features which make a distinction between productive activities and unproductive activities.
- 2 Discuss the difference between GDP and GNP.
- 3 Supposing a person marries his own maid. What do you think the effect will be on the value of GDP?
- 4 Do you think, in a closed economy, GDP and GNP are equal?
- 5 Identify and list as many examples of transfer payments as you can.
- 6 How can we say that the sum of value added is equal to the sum of factor incomes?
- 7 On the basis of the following information, calculate Gross National Product (in million Birr):
  - a GDP = 50,720. Net factor income from abroad = 2,400.
  - b GDP = 1,20,720. Income receivable from abroad = 4,720. Income payable to foreign countries = 5,830.
- 8 Explain why real GDP is a better indicator of economic growth than.
- 9 Calculate, by the income method, GDP at MP from the following data (in million Birr):
  - a Government final consumption expenditure = 7,351
  - b Mixed income of self-employed = 28,267
  - c Gross domestic fixed capital formation = 13,248
  - d Change in stock = 3,170
  - e Event, interest and profit = 9,637
  - f Private final consumption expenditure = 51,177
  - g Net factor income from abroad = (-) 255
  - h Indirect taxes = 8,834
  - i Depreciation = 4,046
  - j Imports = 5,674
  - k Exports = 4,812
  - l Compensation of employees = 24,420
- 10 Draw a diagram that shows the inter-relationships among various aggregates of national and domestic income on the basis of the following:
  - a Net Factor Income from Abroad (NFIA)
  - b Depreciation
  - c Indirect taxes

- 11 Draw a box diagram which indicates the components of the following:
- Domestic income
  - National income
  - Personal income
- 12 In a group, discuss how the following should be treated (included or excluded) while estimating national income.
- Services of owner occupied houses.
  - Profit earned by foreign banks in Ethiopia.
  - Rent, received by Ethiopian residents, from buildings rented out to the foreign embassies in Ethiopia.
  - Sale of an old car.
  - Windfall gains.
  - Money received from sales of shares.
  - Commission received by a property dealer from the buyer and from the seller of a house.
- Prepare a report on your discussion.






## 7.3 OTHER NATIONAL INCOME ACCOUNT

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

- explain other national income account.

### Key Terms and Concepts



-  Net domestic product
-  Net national product
-  Personal income
-  Corporate tax
-  Personal disposable income

### Start up Activity

GDP is not the actual measure of national income. How should the net income of a country be calculated?

As mentioned in the introduction to the preceding section various aggregates and concepts concerning domestic income and national income are used in national income accounting. We have discussed in detail the meaning and measurement of two out of them – GDP and GNP. The following sections give a brief introduction to some other concepts relating to national income.

## Net Domestic Product at Market Prices ( $NDP_{MP}$ )

*Net Domestic Product at market prices is the net market value of all the final goods and services produced in the domestic territory of a country during a year.*

The net market value of goods and services is equal to the market value of the goods and services minus depreciation.

Thus, Net Domestic Product at market prices is equal to the Gross Domestic Product at market prices minus depreciation or capital consumption allowance.

$$NDP_{MP} = GDP_{MP} - \text{Depreciation} \quad (7.8)$$

## Net National Product at market Prices ( $NNP_{MP}$ )

*Net National Product at market prices is the net market value of all the final goods and services produced by the normal residents of a country during a year.*

It can be calculated in two ways:

- $NNP_{MP}$  can be obtained by subtracting depreciation from  $GNP_{MP}$ . Hence,

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

- $NNP_{MP}$  can also be obtained by adding net factor income from abroad to the Net Domestic Product at market prices ( $NDP_{MP}$ ). Hence,

$$NNP_{MP} = NDP_{MP} + \text{NFI}$$

## Net National Product at Factor cost ( $NNP_{FC}$ )

*Net National Product at factor cost is the sum total of net value added at factor cost by all the normal resident producer enterprises of a country during a year.*

It is for  $NNP_{FC}$  that we use the term national income (NI).  $NNP_{FC}$  represents payments made to the factors of production as wages, rent, interest and profits. In short, NI is the sum total of all factor payments.  $NNP_{FC}$  or NI can be obtained by subtracting indirect taxes from net national product at market prices. Hence,

$$NNP_{FC} \text{ or NI} = NNP_{MP} - \text{Indirect taxes.} \quad (7.9)$$

## Personal Income (Y)

*Personal income is the sum of earned income and transfer income received by persons (households) from all sources within and outside the country.*

The point to be noted here is that personal income includes not only factor incomes which are earned from productive services but also transfer incomes (or payments) which are received without rendering any productive service. It is a receipt concept as compared to national income, which is an earning concept.

Note that national income is not the sum total of personal incomes, since the former includes only earned incomes, whereas the latter includes earned incomes as well as transfer incomes. Again, personal income is different from national income because two components of national income, namely, corporate tax and undistributed profit of corporate enterprise are not included in personal income. The reason is that corporate tax goes to the government and undistributed profit is retained by the company — i.e., these two are not received by households.

Put in the form of an equation:

$$\text{Personal Income (Y)} = \text{NI} - (\text{Corporate tax} + \text{Undistributed profit} + \text{All types of transfer incomes}) \quad (7.10)$$

## Personal Disposable Income ( $Y_d$ )

*Personal disposable income is that part of personal income which is available to the households for disposal as they like.*

Alternatively it is the income which remains with individuals after deduction of taxes and fees of the government. We can say, it is the income which the households can spend on consumption or can save as they please. Because households utilise personal disposable income for personal expenditure and personal savings, PDI is also equal to personal expenditure + personal savings. Personal disposable income can be arrived at by deducting personal taxes (like income tax, property tax, fire tax, etc.) from personal income. Thus,

$$\text{Personal Disposable Income (Y}_d\text{)} = \text{personal income (Y)} - \text{personal taxes} \quad (7.11)$$

### Activity 7.3



- 1 Some basic terms introduced in this unit are listed on [Page 270](#). Go back and review the definitions given for each term in the text. Then write the definition of each term on a separate sheet of paper, using your memory.

- 2 Discuss the two approaches used in the measurement of GDP by the production method.
- 3 Describe the problem of double counting in the measurement of GDP and how can we avoid it?


## 7.4 GDP AND INCOME DISTRIBUTION

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

- show the relationship between income and GDP.

### Key Term and Concepts



 Green GDP

### Start-up Activity

How do you explain the inequality of income distribution in many developing countries?

Economists have been using GDP as a principal measure of economic growth and development for a very long period of time. Hence increase in GDP is considered good and decrease in GDP is taken as bad for the economy. But nowadays a number of questions are being raised regarding development. When there is an increase in GDP, how it is distributed among different sections of the society or what happens to the distribution of income with the rise in GDP in a country? What is the effect of an increase in GDP on the natural resources of the country? What happens to the quality of life and human development with rises in income?

Thus, today and particularly in developing countries we are facing the problems of inequality of income distribution, environmental degradation, and the problems of pollution, deterioration in the quality of life, depletion of natural resources, and increasing unemployment. All these problems have created serious gaps between different sections of society in terms of their economic and social status. Not only that, they have also created gaps between nations.

Hence, we must be aware that mere increases in GDP does not provide guarantees of the economic welfare of the country and an equitable distribution of income. That is why some economists have suggested an alternative measure, which is called *Green GDP*.

**Green GDP:** Green GDP is defined as “GDP which would help attain a sustainable use of natural environment and equitable distribution of benefits of

*development.*” This concept is used to denote sustainable economic development i.e., development which should not cause environmental degradation (pollution) and depletion of natural resources, and should, at the same time, promote economic welfare for a long period of time.

## Practical Work

- 1 From the following data about firm ‘X’ for the year 2009-10, calculate gross value added at MP during that year (in million Birr):
  - a Sales = 70
  - b Intermediate consumption = 40
  - c Opening stock = 15
  - d Closing stock = 10
  - e Depreciation = 15
  - f Wages and salaries = 10

### Solution:

$$\begin{aligned}\text{Value of output} &= \text{Sales} + \text{Change in Stock} \\ &= 70 + (10 - 15) = 65 \text{ million Birr.}\end{aligned}$$

$$\begin{aligned}\text{Gross value added at MP} &= \text{Value of output} - \text{intermediate consumption} \\ &= 65 - 40 = 25 \text{ million Birr.}\end{aligned}$$

- 2 Calculate the values added by firm X and firm Y from the following data (in million Birr):
  - a Sale by firm X = 100
  - b Sale by firm Y = 500
  - c Purchases by households from firm Y = 300
  - d Export by firm Y = 50
  - e Change in stock of firm X = 20
  - f Change in stock of firm Y = 10
  - g Imports by firm X = 70
  - h Sales by firm Z to firm Y = 250
  - i Purchases by firm Y from X = 200

### Solution:

$$\begin{aligned}\text{Value added by firm X} &= (a) + (e) - (g) + (i) \\ \text{Value added by firm X} &= 100 + 20 - 70 + 200 = 250 \\ \text{Value added by firm Y} &= (b) + (f) - (h) - (i) \\ \text{Value added by firm Y} &= 500 + 10 - 250 - 200 = 60\end{aligned}$$

- 3 From the following data, calculate GDP at MP (in million Birr):
  - a Value of output in primary sector = 2,000
  - b Intermediate consumption of secondary sector = 800
  - c Intermediate consumption of primary sector = 1,000

- d Net factor income from abroad = - 30
- e Net indirect taxes = 300
- f Value of output in tertiary sector = 1,400
- g Value of output in secondary sector = 1,800
- h Intermediate consumption of tertiary sector = 600

**Solution:**

$$\begin{aligned} \text{GDP at MP} &= \text{Value added by primary sector} \\ &\quad + \text{secondary sector} + \text{tertiary sector} \\ &= (2000 - 1000) + (1800 - 800) + (1400 - 600) \\ &= 2800 \end{aligned}$$

- 4 On the basis of information given below, calculate  $\text{GDP}_{\text{MP}}$  (in Birr):

- a Personal consumption expenditure = 45,000
- b Government consumption expenditure = 5,000
- c Gross domestic fixed investment = 5,000
- d Increase in inventories = 1,000
- e Exports of goods and services = 6,000
- f Imports of goods and services = 7,000
- g Net indirect taxes = 3,500
- h Depreciation = 4,500

**Solution:**  $C + I_g + G + (X - M)$ ,  $I_g = c + d$ 

$$\begin{aligned} \text{GDP}_{\text{MP}} &= (a) + (b) + (c) + (d) + (e) - (f) \\ &= 45,000 + 5,000 + 5,000 + 1,000 + 6,000 - 7,000 = 55,000 \end{aligned}$$

- 5 From the following transactions, find out  $\text{NNP}_{\text{MP}}$  (in Birr):

- a Household expenditure on consumption = 100,000
- b Government expenditure on consumption = 12,500
- c Gross capital formation = 25,000
- d Depreciation = 6,000
- e Exports = 6,000
- f Imports = 9,000
- g Net factor income from abroad = 750

**Solution:**

$$\text{GNP}_{\text{MP}} = \text{GDP} + \text{NFI}$$

$$\text{GDP}_{\text{MP}} = C + I_g + G + \text{Nx}$$

$$= 100,000 + 12,500 + 25,000 - 3,000 = 134,500$$

$$\text{GNP}_{\text{MP}} = 134,500 + 750 = 135,250$$

$$\text{NNP}_{\text{MP}} = \text{GNP}_{\text{MP}} - \text{Depreciation} = 135,250 - 6,000 = 129,250$$

- 6 From the following data, calculate GNP at MP (in million Birr) by
- i Income method, and
  - ii Expenditure method.
- a Government final consumption expenditure = 250
  - b Change in stocks = 20
  - c Net domestic capital formation = 150
  - d Interest = 90
  - e Profits = 210
  - f Corporation tax = 50
  - g Rent = 100
  - h Factor income from abroad = 20
  - i Indirect taxes = 30
  - j Factor income to abroad = 40
  - k Exports = 60
  - l Imports = 80
  - m Consumption of fixed capital (depreciation) = 20
  - n Private final consumption expenditure = 500
  - o Compensation of employees (salaries) = 450
  - p Value of rent free accommodation to employees = 40

**Solution:**

- i  $GNP_{MP}$  (by income method) =  $GDP_{MP} + NFI$   
 $GDP_{MP} = (d) + (e) + (g) + (i) + (m) + (o)$   
 $= 90 + 210 + 100 + 30 + 20 + 450 = 900$   
 $GNP_{MP} = GDP_{MP} + NFI = 900 - 20 = 880$
- ii  $GNP_{MP}$  (by expenditure method)  
 $GDP_{MP} = (a) + (c) + (b) + (n) + N_x$   
 $= 250 + 150 + 20 + 500 + (-20) = 900$   
 $GNP_{MP} = 900 - 20 = 880$

### Activity 7.4



- 1 What is the relationship between GDP and economic welfare?
- 2 Does an increase in GDP indicate economic growth or development?



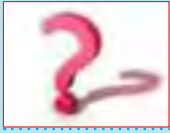
# UNIT REVIEW

## UNIT SUMMARY

- ❑ *National income account* is defined as the aggregate monetary value of all the final goods and services produced in a country during a year.
- ❑ *Domestic product* is defined as the value of all final goods and services produced by all the enterprises located within the territory of a country.
- ❑ *National product* refers to the amount of final goods and services produced by normal residents of a country.
- ❑ *National product*
  - = Domestic Product + Net Factor Income.
- ❑ *Net factor income* is the difference between the factor income received from abroad and the factor income accruing to foreigners.
- ❑ *National income (product) at market prices* is the value of final goods and services produced in the economy, calculated at their market prices.
- ❑ *National income (product) at factor cost* expresses national income as the sum of all factor payments.
- ❑ *Net Domestic Product* = Gross Domestic Product – Depreciation.
- ❑  $GDP_{MP}$  is the value of all final goods and services, at prices prevailing in the market, produced in the domestic territory of a country during a given year, inclusive of depreciation.
- ❑  $NDP_{MP} = GDP_{MP} - \text{depreciation}$ .
- ❑  $GNP_{MP}$  is the aggregate market value of all final goods and services produced by normal residents of a country during a year.
- ❑  $GNP_{MP} = GDP_{MP} + \text{net factor income}$ .
- ❑  $NNP_{MP} = GNP_{MP} - \text{depreciation}$ .
- ❑ *Transfer payments* are payments received without any contribution to current output.
- ❑ *Personal income* is the income received by persons from all sources in the forms of factor income and current transfer payments.
- ❑ *Personal disposable income* is the income available to individuals to be used as they like:

$$\text{Personal Disposable Income} = \text{Personal Income} - \text{Personal Taxes}$$

- ❑ *Per capita income* is average income of normal residents of a country in a particular year.
- ❑ *National income at current prices* (Nominal GDP) is the value of all final goods and services produced in a country during a particular year, expressed at market prices prevailing in that year.
- ❑ *National income at constant prices* (real GDP) measures the goods and services constituting the national income, in terms of the prices of the base year.
- ❑ Corresponding to three phases in the circular flow of income — production of goods and services, distribution of income, and expenditure of income – there are three methods of measuring national income: the value added method, income method and expenditure method.
- ❑ *Value added method* estimates national income as the sum total of the final output or net value added by all the producing units.
- ❑ *Income method* calculates national income by adding up all the incomes generated in the course of producing the national output.
- ❑ *Expenditure method* estimates national income by estimating the expenditure on final products.
- ❑ In terms of national income accounting, the three methods of estimating national income give the same magnitude of national income, i.e., National product  $\equiv$  income generated  $\equiv$  total expenditure.
- ❑ Problems in measuring GDP are generally of two types – conceptual problems and practical problems.
- ❑ Green GDP is defined as GDP which would help attain a sustainable use of the natural environment and the equitable distribution of benefits of development.



## REVIEW EXERCISE FOR UNIT 7

### I *Write detailed answers to the following:*

- 1 What do you mean by national income accounting? Explain the various reasons for which national income accounts are important.
- 2 Discuss in detail the concepts of Gross Domestic Product and Gross National Product.
- 3 “Production generates income, income generates expenditure, and expenditure in turn calls forth production” – Explain.
- 4 Discuss the two approaches used in the measurement of GDP by the production method.
- 5 Describe the problem of double counting in the measurement of GDP.
- 6 Describe the steps involved in the estimation of national income by the income method.
- 7 State precautions to be taken while estimating national income by the income method.
- 8 Discuss the various components of GDP in the expenditure phase.
- 9 State precautions to be taken while estimating national income by the expenditure method.
- 10 What are the various problems faced in measurement of GDP? Discuss in detail.
- 11 Explain the significance of the distinction between nominal and real GDP.
- 12 “Real GDP is a better indicator of economic growth” — Explain.
- 13 How is nominal GDP converted into real GDP? Explain with an example.
- 14 Discuss the concepts of personal income and personal disposable income.

### II *Distinguish between the following:*

- 15 Final goods and intermediate goods
- 16 National income at current prices and at constant prices
- 17 Factor income and transfer income
- 18 Domestic income and national income

**III Write 'True' or 'False' for each of the following:**

- 19 Gross national product and gross national income are the same.
- 20 The concept of domestic product is related to the geographical boundary of the country.
- 21 Transfer income is included in personal income.
- 22 Sale proceeds of shares and debentures are part of national income.
- 23 National income calculated on the bases of the output method, income method, and expenditure method are different.
- 24 Windfall gain is a part of national income.
- 25 National product is equal to domestic product when net factor income from abroad is zero.
- 26 The National product of an economy is less than its domestic product when net factor income from abroad is negative.

**IV Fill in each of the blanks with one of the following three words:**

- a Depreciation
- b Net income taxes
- c Net factor income from abroad.
- 27  $NDP = GDP - \underline{\hspace{2cm}}$
- 28  $GDP = NDP + \underline{\hspace{2cm}}$

**V For each of the following, four choices are given, but only one out of them is correct. Choose the correct one:**

- 29 If goods and services are valued at the prevailing price of the year, it will be a valuation at:
- |                  |                        |
|------------------|------------------------|
| A constant price | C cost price           |
| B current price  | D extra ordinary price |
- 30 Net exports will be negative if:
- |                                 |                          |
|---------------------------------|--------------------------|
| A exports exceed imports        | C imports exceed exports |
| B exports and imports are equal | D none of the above      |
- 31 The sale of second-hand goods is not included in Gross Domestic Product because:
- |  |
|--|
| A it is not current-year production          |
| B these goods are available at cheaper rates |

- C these goods are less useful
- D these goods have a short life
- 32 A commission received by a broker on sale of second-hand goods will be included in GDP because:
- A commission is being received in cash
- B it is an income for the services rendered during current year
- C broker services are very important
- D commission adds to the price of goods
- 33 Indirect taxes are not included in national income because:
- A they are not a factor income
- B they are an income of lesser value
- C they affect the price of goods
- D they are income for the government
- 34 Income from theft, smuggling, pick-pocketing is not included in the national income because:
- A they do not result in flow of income
- B these are illegal activities
- C these are anti-social activities
- D these forms of income are easily earned
- 35 Pension and unemployment allowances are:
- A transfer income
- B generated income
- C mixed income
- D income earned

**VI Write very short answers to the following.**

- 36 Mention two uses of national income accounting.
- 37 Name different methods of measuring national income.
- 38 How can double counting be avoided?
- 39 What is an alternative name given to value added method?
- 40 What is final consumption expenditure?
- 41 Name the components of final consumption expenditure.
- 42 Why are exports included in national income?
- 43 Why are imports excluded from national income?

- 44 Why is income from smuggling not included in national income?
- 45 What is meant by net exports?
- 46 Do you include the value of retained goods for self-consumption in national income?
- 47 Why is imputed rent included in national income?
- 48 Write the relationship between  $GNP_{MP}$  and  $GDP_{MP}$  in equation form.
- 49 When is NDP be smaller than NNP?
- 50 When is NDP be greater than NNP?
- 51 What does the difference between NDP and NNP indicate?
- 52 Write the relationship between GDP and NDP in equation form.
- 53 What does consumption of capital imply?
- 54 How do we get Personal Disposable Income from Personal Income?
- 55 Name the alternative measure of GDP which takes into account the sustainable use of the natural environment.
- 56 Given the following information (in millions of Birr)
- a government final consumption expenditure = 1400
  - b change in stocks = 210
  - c private final consumption expenditure = 820
  - d net domestic capital formation = 275
  - e exports = 175
  - f imports = 225
  - g depreciation = 80
  - h factor income to abroad = 78
  - i factor income from abroad = 194
- Find
- i  $GDP_{MP}$  by expenditure approach
  - ii NFI
  - iii GNP
  - iv NDP
  - v NNP