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25

NATIONAL INCOME AND ITS MEASUREMENT

In the previous lesson you have learnt about the various concepts relating to national income and their related aggregates Understanding of these concepts is necessary for measuring national income.

In this lesson, you will learn how national income is measured. In lesson No. 24 you have learnt that national income is a flow. This flow can be looked at from three different angles.. Hence, there are three different methods of measuring national income. Each one of these methods is explained in details in this lesson.

OBJECTIVES

After completing this lesson, you will be able to:

- define national income;
- relate the national income from three different angles;
- identify production units located in the economic territory of a country into different industrial sectors;
- explain the meaning of the primary, secondary and tertiary sectors;
- explain the production method (or value added method) of measuring national income;
- explain the precautions to be taken while measuring national income by production method;
- explain the income distribution method of measuring national income;
- explain the precautions to be taken while measuring national income by income distribution method;

- explain the final expenditure method of measuring national income;
- explain the precautions to be taken while measuring national income by final expenditure method;
- show that all the three methods of measuring national income lead to the same result; and
- calculate private income, personal income, personal disposable income, national disposable income (gross and net).

25.1 METHODS OF MEASURING NATIONAL INCOME

The production units produce goods and services. For this they employ four factors of productions viz, land, labour, Capital and entrepreneurship. These four factors of production jointly produce goods and services i.e. they add value to the existing goods. This value added i.e. net domestic product is distributed among the owners of four factors of production receive rent, compensation of employees, interest and profit for their contribution to the production of goods and services. The incomes received by the owners of the factors of production are spent on the purchase of goods and services from the production units for the purpose of consumption and investment. In short, production generates income. Income is used for expenditure, and expenditure, in turn, leads to further production. There are three phases of circular flow of national income. So there are three methods of measuring national Income. They are

(A) Output or value added method

(B) Income method

(C) Expenditure Method.

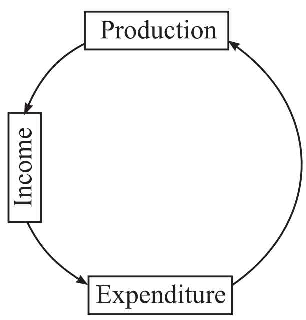

Fig. 25.1: Three phases in the circular flow of national income.

25.2 VALUE ADDED METHOD

With the help of this method national income is estimated at production level. At production level national income is the value of final goods and services produced in a country within the domestic territory plus net factor income from rest of the world. In this method following steps are involved:

Firstly, all the producing enterprises in an economy are broadly classified into three industrial sectors according to their activities. These are:

Primary sector: Primary sector consists of those producing units which are carried out by using natural resources. It includes productive activities like agriculture, forestry, fishing mining etc.

Secondary sector: This sector includes those producing units which transform inputs into output for example: transformation of wood into a chair. It includes sub sectors like construction, manufacturing, electricity, gas and water supply.

Tertiary sector: Producing units of this sector produce services of all kinds such as banking, trade, transport etc. This is also known as service sector. This sector includes transportation, communication, banking services etc.

Secondly: Net value added of each producing unit of the economy is estimated from their gross value of out put which is calculated by multiplying total volume of goods produced with their prices. After deducting the sum of value of intermediate goods (IG), depreciation and net indirect taxes (NIT) from value of output we get net value added at FC of the producing units. or

Net value added at FC = Gross value of output - IC - Dep - NIT

By adding up net value added at FC of all the producing units of a sector we get net value added at FC of that particular sector. The sum total of net value added at FC of all the three sectors in the domestic territory of a country gives us Net Domestic Product at Factor Cost.

Thirdly: Net National Product at factor cost is obtained by adding net factor income from ROW to net domestic product at factor cost.

If net factor income from ROW is negative, NDP at FC will be greater than net national product at factor cost (National Income), and if it is positive national income will be greater than NDP at FC.

From value of output to National Income (Production Method Value Added)

Intermediate Consumption				
Consumption of fixed capital	Consumption fixed capital			
Net Indirect taxes (NIT)	NIT	NIT		Net Factor Income from ROW
NVA_{FC} in the Tertiary Sector	NVA_{FC} in the Tertiary Sector	NVA_{FC}, in the Tertiary Sector	NVA_{FC} in the Tertiary Sector	NDP_{FC}=
NVA_{FC} in the Secondary Sector	NVA_{FC} in the Secondary Sector	NVA_{FC} in the Secondary Sector	NVA_{FC} in the Secondary Sector	compensation of employees + Rent + Interest + Profit
NVA_{FC} in the Primary Sector	NVA_{FC} in the Primary Sector	NVA_{FC} in the Primary Sector	NVA_{FC} in the Primary Sector	+ Mixed Inceome
Gross Value of output at MP	GDP at MP	NDP at MP	NDP at FC	NNP at FC (National Income)

Chart 25.2

Numerical Example

1. Calculate Gross value added at factor cost from the following :

(i)	Gross value of output at MP	10,500
(ii)	Depreciation	1000
(iii)	Indirect taxes	750
(iv)	Economic subsidies	200
(v)	Intermediate consumption	4000
(vi)	Compensation of employees	2000

Solution

Gross value added at Factor cost will be calculated as under:

Gross value of output at MP	10,500
+ Economic Subsidies	+200
– Intermediate Consumption	–4000
– Indirect Taxes	–750
	₹ 5950

Precautions

The following precautions are necessary while estimating national income by production method

(i) Production for self consumption : That output which is produced for self-consumption and whose value can be estimated, must be included in the estimates of production because it is a part of production of current year.

(ii) Sale of second hand goods : The sale of second hand goods should not be included in national income because the value of these goods had already been included earlier.

(iii) Commission paid to the broker for sale and purchase second hand goods should be included because it is payment made for the services provided in the current year.

(iv) Value of intermediate goods should not be included because it leads to double counting.

(v) Services of house wife should not be included because it is very difficult to evaluate them.

INTEXT QUESTIONS 25.1

Fill in the blanks with the help of clues given below Primary sector, secondary sector, Industrial sectors, value of production for self consumption tertiary sector.

(i) Fishing is a part of .... sector

(ii) The first step of estimating national income with the help of value added method is to identify the different economic activities and classifying them into different .... according to their activities.

(iii) .... should be included in the estimation of value of output.

(iv) Transportation is a part of .... sector.

25.3 INCOME METHOD

Income method is used for measuring national income at distribution level. According to this method, national income is estimated by adding incomes earned by all the factors of production for their factor services during a year. If includes the following steps:

(i) Firstly: Classify the production units into primary, secondary and tertiary sector. The classification is same as in value added method

(ii) Secondly: Estimate the following factor incomes paid out by the production units in each industrial sector.

(i) Compensation of employees

(ii) Rent

(iii) Interest

(iv) Profit

(v) Mixed income of self employed

The sum total of the above factor incomes paid out is the same as net value added at factor cost by the industrial sectors.

Thirdly : Take the sum of factor payments by all the industrial sectors to arrive at the net domestic product at factor cost.

Lastly : Add net factor income from abroad to the net domestic product at factor cost to arrive at net national, product at factor cost.

National Income and Related Aggregates (Income Method)

					Net Indirect taxes
Net Indirect Taxes				Consumption of fixed capital	Consumption of fixed capital
Consumption of fixed capital	Consumption of fixed capital		Net factor in come from ROW	Net factor in come from ROW	Net factor in come from ROW
Profit	Profit	Profit	Profit	Profit	Profit
Interest	Interest	Interest	Interest	Interest	Interest
Rent	Rent	Rent	Rent	Rent	Rent
Mixed income of self employed	mixed income	mixed income	mixed income	mixed income	mixed income
Compensation of employees	Compensation of employees	Compensation of employees	Compensation of employees	Compensation of employees	Compensation of employees
GDP at MP	GDP at FC	NDP at FC	NNP at FC (National Income)	GNP at FC	GNP at MP

Chart 25.3

Numerical Example

1. Calculate national income from the following data:

		(₹ Crores)
(i)	Consumption of fixed capital	50
(ii)	Employers contribution to social security	75
(iii)	Interest	160
(iv)	Net Indirect Taxes	55
(v)	Rent	130
(vi)	Dividends	45
(vii)	Corporate Tax	15
(viii)	Undistributed profit	10
(ix)	Net factor income from abroad	–10
(x)	Wages and salaries	450

Solution

NDPfc = (X) + (ii) + (iii) + (v) + (vi) + (vii) + (viii)

= 450 + 75* + 160 + 130 + 45 + 15 + 10 = 885 Cr.

NNP at fc = NDPfc + (ix)

= 885 + (-10) = 875 Cr.

Notes of solution

- Since wages and salaries and employer contribution to social security are given separately, these must be added to obtain compensation to employees.
- Dividend, undistributed profit and corporate taxes are to be added to get Total profit/Retained Earnings.
- Net indirect taxes, is not required in this question. Similarly consumption of fixed capital is also not required in this question.

Precautions

The following are some of the main precautions which must be taken while estimating national income by the income distribution method

(a) While estimating compensation of employees all benefits accruing to the employees whether in cash or in kind must be included.

(b) In estimating interest, the interest on only those loans should be included which are taken for production, The interest on loans taken to meet consumption expenditure is not included in national income as it is treated as transfer payment.

(c) Gifts, donations, charities, taxes, fines, income from lotteries etc., are not factor incomes but transfer incomes. These should not be included in estimating national income.

(d) Income from sale of second hand goods should not be included as it is not the income received from the goods produced in the current year.

INTEXT QUESTIONS 25.2

Which of the following are included in National Income and why as per Income Method.

(a) The Income of dertist.

(b) Rent Recieved on two Bed room Apartment.

(c) The Service of painter painting his own room

(d) The monthly pocket money received by student from his father.

25.4 FINAL EXPENDITURE METHOD

National income can also be measured at disposition phase with the help of expenditure method. It estimates national income by measuring final expenditure on gross domestic product at market price.

Expenditure incurred on final goods is final expenditure. Final goods are those goods which are demanded for final consumption and investment. The demand for final consumption and investment is made by all the four sectors of the economy, namely, households, firms and the government and rest of the world.

The main steps involved in measuring national income by this method are:

Firstly: Estimate the following expenditure incurred on the final products of all the sectors of the economy.

(i) Private final consumption expenditure.

(ii) Government final consumption expenditure.

(iii) Gross Investment

(iv) Net exports (exports - imports).

The sum total of all the above expenditures on final products of all the sectors of the economy gives us gross domestic product at market price.

Secondly: Deduct consumption of fixed capital (Depreciation) and net indirect taxes from gross domestic product at market price to get net domestic product at factor cost.

NDPFC = GDPmp - consumption of fixed capital - Net indirect tax (indirect taxes - subsidies)

Thirdly: Add net factor income from abroad to the net domestic product at factor cost to obtain net national product at factor cost which is the national income.

NNPFC = NDPfc + net factor income from abroad

(National Income)

National Income (Expenditure Method)

Gross Investment	(-) Depreciation		
Private Final consumption expenditure		(-) Net Indirect Tax	+ Net Factor Income from Abroad
Govt. Final consumption expenditure			
Net Exports (Exports - Imports)			
GDP_{MP}	NDP_{MP}	NDP_{FC}	$NNP_{F}C$ (National Income)

Chart 25.4

Numerical Example

Calculate national income from the data given below by expenditure method.

	Item	₹ (In crores)
	Item	₹ (In crores)
(i)	Personal consumption expenditure	3500
(ii)	Consumption of fixed capital	50
(iii)	Net fixed capital formation	1250
(iv)	Change in stock 500 (v) Exports	400
(vi)	Imports 750 (vii) Net indirect taxes	40
(viii)	Governments' consumption expenditure	1600
(ix)	Net factor income from abroad	(-) 10
(x)	Wages and salaries	450

Solution

	₹ **(In crores)**
Personal Consumption expenditure	3500
+ Net fixed Capital Formation	1250
+ Change in Stock	500
+ Govt. Consumption Expenditure	1600
+ Net Exports (Exports-Imports)	-350
Net Domestic product at market price	**6500**
(-) Net Indirect Taxes	40
Net Domestic product at Factor Cost	**640**
+ Net factor Income from abroad	(-) 10
NNP FC (National Income)	**6450**

Please Note

1. Since Net Fixed Capital Formation is given, we are asked to calculate net National Product at factor cost. Thus, consumption of fixed capital is not required here.
2. Since, fixed capital is given, we need to add change in stock to get the total domestic capital formation (Investment)
3. The entry wages and salaries are not required here.

Precautions

The main precautions required to be taken in estimating national income by expenditure method are:

(i) Expenditure on intermediate products should not he included to avoid the problem of double counting.

(ii) Expenditure on gifts, donations, taxes, scholarships etc. should not be included in National Income as these are transfer payments.

(iii) Expenditure incurred on purchase of second hand goods should not be included as the expenditure on these goods has already been included when bought for the first time.

(iv) Expenditure on purchase of bonds and shares should not be included as these are financial transactions.

INTEXT QUESTIONS 25.3

Which of the following are included in GDPmp and why as per Expenditure Method.

(a) A purchase of a share.

(b) Construction of a room in existing building.

(c) Purchase of machinery.

(d) Money received by student who has sold his book back to book seller.

25.5 RECONCILIATION OF THE THREE METHODS

The three methods are summarized in the following table:

Value Added Method	Income Distribution Method	Final Expenditure Method
Sum of GVAmp, of all	Compensation of employees	Private final consumption
industrial sectors	+ Rent	expenditure.
	+ Interest	+ Government final
	+ Profit	consumption expenditure
	+ Mixed Income	+ Gross domestic capital
	+ Consumption of fixed capital	formation (Gross Investment)
	+ Indirect Tax	+ Net exports
	– Subsidy	
= GDP_{MP}	GDP_{MP}	= GDP_{MP}
– consumption of	– Consumption of fixed	– consumption of fixed
fixed capital	capital	capital
– indirect taxes	– Indirect tax	– indirect taxes
+ subsidies	+ Subsides	+ subsidies
+ Net factor income	+ Net factor income from	+ Net factor income from
from abroad	abroad	abroad
= NNPfc	= NNPfc	= NNPfc

Chart 25.5

INTEXT QUESTIONS 25.4

Fill in the blanks:

Tertiary, compensation, transfer, investment, consumption

(i) Gifts, donations taxes etc. are .... payments.

(ii) Interest payment on loans taken to meet .... expenditure is not treated as factor income.

(iii) Benefits in kind received by the employees is a part of the .... of employees.

(iv) The expenditure on purchasing furniture by a production unit is a part of ....

(v) Employing of domestic servant is a part of .... sector.

25.6 NATIONAL PRODUCT AND OTHER AGGREGATES

We have already studied that the sum of net value added by all the production units in the domestic territory is net domestic product of factor cost (NDP_{fc}). All the income generated in a year is not received by consumer households. Income from property and entrepreneurship accruing to the departmental commercial enterprise of the government is retained by the government. Secondly non-departmental enterprises of the government save a part of their profits for future expansion. This sum also is not available for distribution. It these two sums are deducted from NDP_{fe}, we get income from domestic product or NDP_{fc} accruing to private sector.

Income from domestic product accruing to private sector = NDPfe – income from property and entrepreneurship accruing to government administration department savings of non-departmental enterprises.

(i) **Private income:** Private income consists of factor incomes earned within the domestic territory and abroad by private enterprises and workers (factor owners in the private sector) and current transfer from government and the rest of the world.

Private income = Income from domestic product accruing to private sector + Net factor income from abroad + national debt interest + current transfers from government + other current transfers from the rest of the world (net)

(ii) **Personal income** : Personal income is defined as the current income of persons or households from all sources. We have to deduct undistributed profit and corporate tax payable by the enterprise from private income to arrive at personal income

Personal inome = private income - saving of private corporate sector (undistributed profit) - corporation tax

(iii) Personal disposable income: The household cannot spend the entire personal inome. Government takes away a part of it by way of inome tax and other miscellaneous taxes such as education tax, fire tax, sanitation tax. These taxes have to be deducted from personal income to arrive at personal disposable income.

Personal disposable income = Personal inome – direct taxes paid by the households – miscellaneous receipts of the government.

Personal disposable inome is the inome available to persons from all sources to dispose of as they choose.

27.7 NATIONAL DISPOSABLE INOME (NET AND GROSS)

National disposable income refers to the inome which is available to the whole country for disposal. It includes both earned inome and transfer income (unearned income)

Net national disposable inome = NNP_{mp} + Net current transfers from rest of the world.

or NNP_{fc} + NIT + Net current transfer from rest of the world

Gross National Disposable income = GNP_{mp} + Net current transfers from rest of the world.

Numerical examples on calculator of national income and other related aggregates

Example 1: From the data given below, calculate private income:

		(₹ in crores)
(i)	NDPfc	2,000
(ii)	Income from property and entrepreneurship accruing to government]	100
(iii)	Saving of non-departmental enterprises	20
(iv)	National debt interest	5
(v)	Net factor income from abroad	(-)10
(vi)	Net current transfers from government	15
(vii)	Net current transfers from ROW	25

Soution:

Income from domestic product accruing to private sector

= NDPfc – (ii) – (iii)

= 2000 – 100 – 20

= ₹ 1880 Crores

Private income = Income from domestic product accruing to private sector

+ (iv) + (v) + (vi) + (vii)

= 1880 + 5 + (-)10 + 15 + 25

= ₹ 1915 crores

Example 2: Calculate (a) personal income (b) Personal disposable income

		₹ in crore
(i)	Private income	1915
(ii)	Income from domestic product accruing to private sector	1880
(iii)	Net factor income from abroad	(-) 10
(iv)	Corporation tax	25
(v)	Savings of private corporate sector	15
(vi)	Direct taxes paid by households	25
(vii)	Other miscellaneous receipts of government administrave departments	5

Soution:

(a) Personal income = Private income – (iv) – (v)

= 1915 – 25 – 15

= ₹ 1875 crores

(b) Personal disposable income

= personal income – (vi) – (vii)

= 1875 – 25 – 5

= ₹ 1845 crores

Example 3: Calculate (a) Gross National disposable inocme (b) Net National disposable income

		₹ in crore
(i)	NNP_{fc}	3,000
(ii)	Net current transfers from government	20
(iii)	Net current transfers from Row	25
(iv)	Net indriect taxes	50
(v)	Depreciation	40

Soution:

(a) Gross National Disposable income

= GNPmp + Net current transfers from Row

= [(i) + (v) + (iv)] + (iii)

= 3000 + 40 + 50 + 25

= ₹ 3115 crores

(b) Net national disposable income

= NNP_{mp} + Net current transfers from ROW

= [(i) + (iv)] + (iii)

= 3000 + 50 + 25

= ₹ 3075 crores

WHAT YOU HAVE LEARNT

- There are three phases of circular flow of national income. Accordingly there are three methods of measurement of national income: value added or production method, income distribution method and final expenditure method.
- The first step in the measurement of national income of a country is to classify its production units into different industrial sectors. The primary sector includes all units engaged in exploiting natural resources. The secondary sector transforms one good into another good. The production units in the services sector produce services.

- The main steps in the value added method are: estimate NVAfc by all sectors and add them to arrive at NDP_{FC}. Add net factor income from abroad to NDP_{FC} to obtain NNP_{FC}.
- The main steps in the income distribution method are: estimate factor incomes paid out by each sector; take the sum of these incomes paid out by all the sectors to get, NDP_{FC}; add net factor income from abroad to get NNP_{FC}.
- The main steps in the final expenditure method are: estimate the sum of final expenditure on consumption and investment to get GDP_{MF}, deduct consumption of fixed capital and indirect taxes and add subsidies to GDPmp to arrive at NDP_{FC} and add net factor income from abroad to NDPfc to get NNPFC.

TERMINAL EXERCISE

1. Explain the three phases of circular flow of national income.
2. Explain the nature of functions of primary, secondary and tertiary sectors.
3. Explain the steps taken in measuring national income through the value added method.
4. What are the main precautions required to be taken in estimating national income by the value added method?
5. Explain the steps involved in estimating national income through the income distribution method.
6. What are the main precautions required to be taken in estimating national income by the income distribution method?
7. What are the main steps in the expenditure method of estimating national income?
8. Point out some of the precautions taken in estimating national income through the final expenditure method.
9. From the following data, estimate the net value added at factor cost and show that it is equal to the sum of factor incomes :

(i)	Sales	9600
(ii)	Increase in stock	2080
(iii)	Intermediate Consumption	2370
(iv)	Depreciation	450
(v)	Wages and salaries	5400
(vi)	Internet	250
(vii)	Rent	750
(viii)	Profit	2150
(ix)	Net indirect Taxes	310

10. Find out "Net value added at factor cost by an enterprise from the following data:

		₹ In crores
(i)	Consumption of Fixed Capital	10
(ii)	Subsidies	5
(iii)	Indirect Taxes	25
(iv)	Purchase of material and Services from other production units	75
(v)	Value of output	125

(Ans. = 70 Corers)

11. Calculate value added by Firm A & B from the following data:

		₹ (Lakh)
(i)	Purchase by Firms B from Firm A	40
(ii)	Sales by Firm B	80
(iii)	imports by Firm. B	10
(iv)	Rent Paid by Finn B	05
(v)	Opening stock of Firm B	15
(vi)	Closing stock of Firm B	20
(vii)	Purchases by Firm A from Firm B	20
(viii)	Closing stock of Firm A	20
(ix)	Opening stock of Firm A	10

12. From the data given below, calculate
    (a) National income
    (b) Private income
    (c) Personal income
    (d) Personal disposable income
    (e) Gross National disposable income

		₹ (in crores)
(i)	Compensation of employees	1000
(ii)	Mixedx income of self employed	2500
(iii)	Depreciation	50
(iv)	Net factor income from abroad	20
(v)	Rent	200
(vi)	Interest	100

(vii)	Profit	500
(viii)	Net Indirect taxes	300
(ix)	National debt interest	70
(x)	Current transfers from governmment	60
(xi)	Net current transfers from ROW	70
(xii)	Corporation tax	30
(xiii)	Savings of private corporate sector	20
(xiv)	Direct taxes paid by households	15

ANSWERS TO INTEXT QUESTIONS

25.1

(i) Primary sector (ii) Industrial sectors (iii) Production for self consumption (iv) tertiary

25.2

(a) Included, as it is payment for final service/factor payment.

(b) Included, as it is payment for final service used by the tenant.

(c) Excluded, as it is not a market transaction.

(d) Excluded, as it is a transfer payment (unilateral payment or unearned income).

25.3

(a) Excluded, as it is mere transfer of ownership from one person to another.

(b) Included, as it is a part of gross Investment.

(c) Included, as it is a part of gross Invesmtment.

(d) Excluded, as it is second hand transaction and value had already been counted at the time of its production.

25.4

(i) Transfer (ii) consumption (iii) compensation (iv) investment (v) tertiary