Unit 7

National Income Account

7.1 NATURE AND MEANING OF NATIONAL INCOME ACCOUNT

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.*

❖The 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.*

Importance of National Income Accounting

- It is *a method of preparing and presenting national income accounts based on the principle of double entry system of business* accounting.
- Moreover, national income accounts reveal information about production activities in the different producing sectors of an economy

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.*
- ***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.*
- ***Significance for Trade Unions:*** *National income accounts are of great use to trade unions and labor organizations.*
- *National income data provide information about the contribution of the labor force to the gross national product and the wages and salaries received by the workers.*

- ***Measure 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:*** *On the basis of national income, one can easily say whether a country is developed or underdeveloped*
- ***Knowledge of Structural Changes:*** *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:***

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

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 (GDPMP).*

- ***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.*

❖ ***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.*

- ***Final goods –*** *Goods which are used either for final consumption by the consumers or for investment by the producers are called final 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

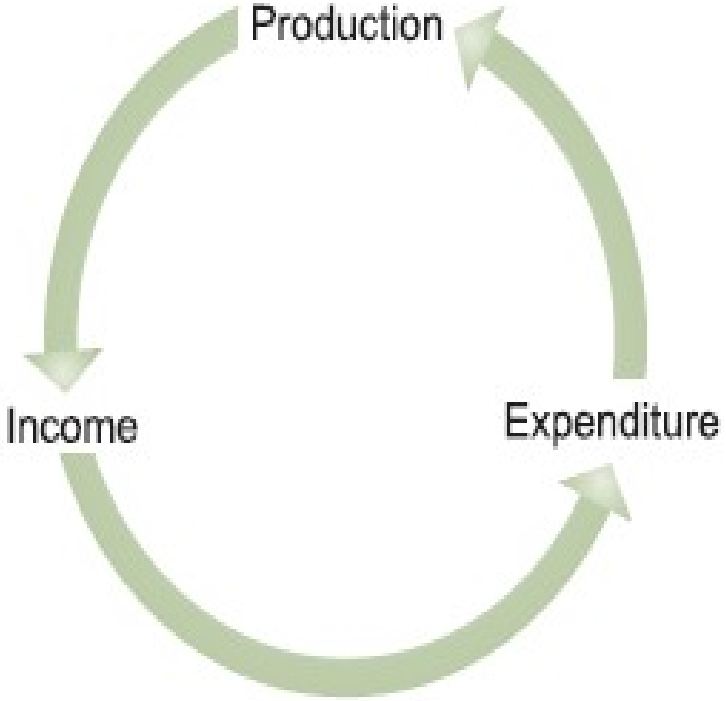
- *Gross National Product (GNP) is the money value of all final goods and services produced in the domestic territory of a country during a year plus net-factor income from abroad minus factor income of non residents in domestic territories.*

- GNPmp = GDPmp + NFI
  - Where, GNPmp = Gross National Product at market prices
  - GDPmp = 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.
- It is the difference between the factor income by a country's citizen living abroad and the factor income earned by nonresidents (foreigners) in the domestic territory of that country.

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, labor, 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.
- 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



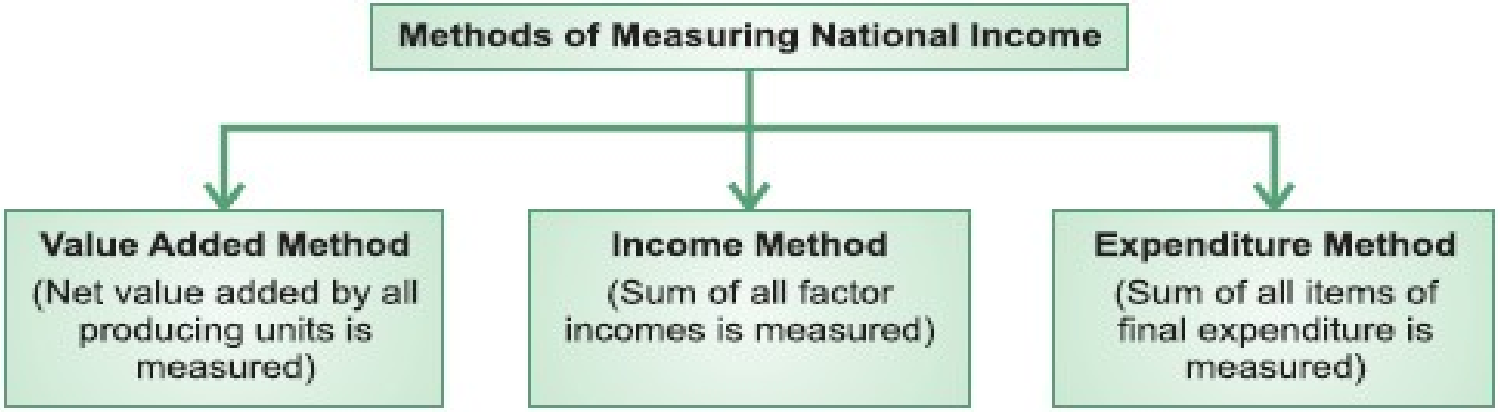


Figure 7.2: Methods of measuring national income

I *Production Method (Value Added Method)*

- In this method two approaches – 'Final Product Approach' and 'Value Added Approach' – are adopted.

1. 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.

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

$$GDPMP = P(Q) + P(S)$$

Where, P = Market price

Q = Quantity of goods

S = Quantity of services

- ***Problem of Double Counting in the Final Product Approach:*** *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.
- **2. 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.
- 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 territory 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 GDPMP by adding up the value added of all economic sectors.*
- *Estimating net factor income from abroad, which is added to GDPMP to obtain GNPMP.*

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.
- 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 GDPMP. Adding further net factor income from abroad gives us GNPMP.
- *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.*

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

- *Identifying enterprises which employ factors of production (land, labor, 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 GDPMP,*
- *Estimating net factor income from abroad, which is added to GDPMP to obtain GNPMP.*

- 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.*

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 (properietor's income)	30,000
Depreciation	10,000
Indirect business taxes	4,000
	GDP: 149,300

III *Expenditure Method*

- 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.

❑ GDPMP = *Private final consumption expenditure + government final consumption expenditure + gross fixed capital formation + change in stocks + net exports*

Example: Calculating GDP by expenditure approach

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

Let discuss briefly the components

- ***Private final consumption expenditure:*** *It measures the money value of goods and services purchased by households for current use during a time period.*
- ***Government final consumption expenditure:*** *It is defined as "Current expenditure on goods and services incurred in providing services of government administrative departments less sales."*
- ***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.*
- ***Net exports (exports less imports):*** *This refers to the difference between the value of exports and value of imports.*

- We may thus sum up as follows:

$$GDPMP = C + Ig + G + (X - M)$$

$$\text{Also, } GNPMP = GDPMP + NFI$$

- ❖ 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.*

Problems in Measuring GDP

- **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 nonproductive activities*
- *In developed and under-developed countries, the same pattern for the computation of national income should not be adopted.*
- **Statistical (or Practical) Problems**
- *Non-availability of data, Barter system, The problem of double counting, Production for self-consumption &Non-maintenance of accounts*

Nominal and Real GDP

- *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.*
- *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.*

❖ **Significance of the Distinction**

✓ 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.*

- ✓ 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.
- ✓ Real GDP is often used in making international comparisons of economic performance across countries.

Conversion of Nominal GDP into Real GDP

- In order 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:

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

Example:

Using the following data about a hypothetical nation, calcualte 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

7.3 OTHER NATIONAL INCOME ACCOUNT

❖ **Net Domestic Product at Market Prices (NDPMP)**

- *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.

NDPMP = GDPMP – Depreciation

❖ **Net National Product at market Prices (NNPMP)**

- *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:
- □□ NNPMP *can be obtained by subtracting depreciation from GNPMP.*

Hence, NNPMP = GNPMP – Depreciation

- □□ NNPMP *can also be obtained by adding net factor income from abroad to the Net Domestic Product at market prices (NDPMP).*

Hence, NNPMP = NDPMP + NFI

❖**Net National Product at Factor cost (NNPFc)**

- *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 NNPFC that we use the term national income (NI). NNPFC represents payments made to the factors of production as wages, rent, interest and profits. Hence,

  NNPFC or NI = NNPMP – Indirect taxes.

❖**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.*

Personal Income (Y) = NI – (*Corporate tax + Undistributed profit + All types of transfer incomes)*

- **Personal Disposable Income (Yd)**: *is that part of personal income which is available to the households for disposal as they like.*
- Personal Disposable Income (Yd) = personal income (Y) – personal taxes

7.4 GDP AND INCOME DISTRIBUTION

- Economists have been using GDP as a principal measure of economic growth and development for a very long period of time.

❖ When there is an increase in GDP,

- how it is distributed among different sections of the society?
- 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?

- The 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:** 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: Value of output = Sales + Change in Stock

= 70 + (10 – 15) = 65 million Birr.

Gross value added at MP = Value of output – intermediate consumption

= 65 – 40 = 25 million Birr.

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: Value added by firm X = (a) + (e) – (g) + (i)

Value added by firm X = 100 + 20 – 70 + 200 = 250

Value added by firm Y = (b) + (f) – (h) – (i)

Value added by firm Y = 500 + 10 – 250 – 200 = 60

- On the basis of information given below, calculate GDPMP. (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 + Ig + G + (X - M), Ig = c + d

GDPMP = (a) + (b) + (c) + (d) + (e) – (f)

= 45,000 + 5,000 + 5,000 + 1,000 + 6,000 – 7,000 = 55,000

From the following data, calculate GNP at MP (in million Birr) by i Income method, and 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 GNPMP (by income method) = GDPMP + NFI

GDPMP = (d) + (e) + (g) + (i) + (m) + (o)

= 90 + 210 + 100 + 30 + 20 + 450 = 900

GNPMP = GDPMP + NFI = 900 – 20 = 880

ii GNPMP (by expenditure method) GDPMP = (a) + (c) + (b) + (n) + Nx

= 250 + 150 + 20 + 500 + (–20) = 900

GNPMP = 900 – 20 = 800

Unit 8

Consumption, Saving and Investment

8.1 CONSUMPTION

- *Consumption may* be defined as *the expenditure by households on final goods and services.*
- The main elements of household consumption are expenditures on food, housing, clothing, transportation, medical care, etc.
- consumption is a part of income and directly depends upon income itself. However, we must note that consumption is necessary for survival and thus takes place even if income is zero.

- There are two categories of consumption:
- ***Consumption when income is zero – i.e.,*** *when a minimum level of consumption must be maintained for survival. This is called autonomous consumption, and it is independent of income level.*
- ***Consumption when income rises:*** *With an increase in income, consumption also increases, but usually less than the income increased. This part of consumption, which varies with income, is called induced consumption.*
- **Table 8.1: Relationship between income and consumption**

Determinants of Consumption Expenditure

- *Money Income*
- *Distribution of Income*
- *Level of Direct Taxes*
- *Expectation of the Future*
- *Rate of Interest*
- *Level of Wealth*

consumption function

- *It shows the relationship between level of consumption and level of income. The* consumption function is also known as ***propensity to consume****.*
- The consumption function indicates how consumption responds to different levels of income.

  C = f (Yd) *(8.1)*
- Where C = consumption expenditure, and

  Yd = personal disposable income

  C = a + bYd,
- where a is autonomous consumption, b is percentage of income for consumption, and bYd is induced consumption

- Example: Consider a consumer with a consumption function given by
- C = 110 + 0.75Yd, and disposable income of Birr 4,800. Calculate the consumer's:

  a. autonomous consumption

  b. induced consumption

  c. total consumption

  d. saving

Solution: *Given: Consumption function C = 110 + 0.75Yd*

Disposable income = 4,800

a. Autonomous consumption is the level of consumption when income is zero. Thus,

Autonomous consumption = 110 + 0.75 × 0 = 110

b. Induced consumption is =Total consumption – Autonomous consumption

Induced consumption = 0.75 × 4,800 = 3,600

c. Total consumption = Autonomous consumption + Induced consumption

= 110 + 3,600 = 3,710

d. Saving = Yd – C = 4,800 – 3,600 = 1,200 S = Yd – bYd

- Note that propensity to consume does not mean desire to consume. It means the actual consumption that takes place, or is expected to take place, out of varying levels of income.
- A distinction may be made here between consumption and consumption function. *Consumption refers to the amount of income which is* spent upon the purchase of goods and services at a given level of income, but *consumption function refers to the whole of a schedule that shows consumption* expenditure at various levels of income.
- An important fact about the behavior of the consumption function is that it is stable in the short run. Further, even when income is zero, consumption is always positive (i.e., there is always some minimum level of consumption even when income is zero).

- Consider the preceding Table 8.2 and Figure 8.1 for the hypothetical situation, and note the following facts:
- *Consumption increases with increase in income*
- *Consumption (i.e., autonomous consumption) can never be zero, even income is zero, because a minimum level of consumption must be maintained for survival.*
- *The 45° line Yd = C + S is called the expenditure equals income line. Its significance is that each point on this line shows expenditure equal to income.*
- *Line CC represents the consumption function curve, which is also simply called the consumption curve.*

- *The point at which the consumption function curve intersects the 45° line is known as the break-even point. It indicates equality between consumption and income.*
- *Above the 45° line, consumption spending is more than income (indicating dissaving), whereas below this line consumption expenditure is less than income (indicating positive saving).*
- The relationships between consumption and income (propensity to consume) are expressed in the following ways

I *Average Propensity to Consume (APC)*

- *APC is the ratio of total consumption expenditure (C) to total income (Yd) at a given level of income in an economy. Symbolically,*

  APC = C/Yd

- For example, if at a particular time, the income level in an economy is Birr 250 million, and consumption is Birr 175 million,

APC = C/Yd = 175/250 = 0.7 or 70%

- This example indicates that 70% of income was spent by way of consumption expenditure. But if aggregate income is very low — for example, Birr 50 million – and if aggregate consumption is Birr 75 million, APC = 75/50 = 1.5.

II *Marginal Propensity to Consume (MPC)*

- *The ratio of change in consumption (ΔC) to change in income (ΔYd) is called marginal propensity to consume. Literally, marginal means additional (or* incremental) and *propensity to consume means desire (or urge) to consume.*

  MPC= $\Delta C / \Delta yd$

- For example if a country's national income increases from Birr 200 million to Birr 250 million, and as a result consumption expenditure goes up from Birr 150 million to Birr 175 million, then
- MPC = $\Delta C / \Delta yd$ = 25/50 = 0.50
- Note that, with an increase in income, consumption expenditure also increases (i.e., MPC > 0), but the entire increase in income is not spent on consumption (i.e., MPC < 1).

Properties of MPC

- *MPC is greater than zero but less than one This is because, with an increase in income, consumption expenditure also increases. But the entire increase in income is not spent — part of it is saved. Thus, MPC > 0, but MPC < 1.*
- *MPC falls with increase in income As the community becomes richer, it tends to consume a smaller percentage of each increment to its aggregate income.*
- *MPC of the poor class is higher than those of other classes: In the case of poor people, most of their basic needs remain unfulfilled. As a result, an additional increment to income leads to greater consumption.*
- *MPC is stable in the short run: This is because it depends upon psychological factors which do not change in the short run.*

8.2 SAVING

- *The part of income which is not spent on is called savings.* Thus, we may say ‘Savings is an excess of income over consumption expenditure’.

  S = Yd – C

- Note the following points in the context of saving:
- *Just like consumption, saving depends directly upon income.*
- *As income increases, savings also increase, but the rate of increase in*
- *savings is more than the rate of increase in income. This means that as income increases, the proportion of income saved increases (and the proportion of income consumed decreases).*
- *At low income levels, savings is negative. In other words, when there is no income or a very low level of income, consumption expenditure is more than income, leading to negative saving (i.e., dissaving).*

Determinants of Saving

- *Level of Income:*
- *Distribution of Income*
- *Expectation Future for the*
- *Rate of Interest:*
- *Level of Wealth*
- *Level of Direct Taxes*
- *Individual Nature*

Saving Function

- *The functional relationship between saving and income is called saving function (or propensity to save). The saving function is the proportion of income which is* saved. Thus saving (S) is a function (f) of income (Yd). Symbolically:

$$S = f(Yd) \text{ or } S = Yd - C \quad (8.5)$$

- The saving function shows the tendency of households to save at given levels of income. Thus the saving function is a corollary or reciprocal of the consumption function.

Table 8.5: Hypothetical Saving Function Schedule (in million Birr)

Income (Y_d)	Consumption (C)	Savings (S)
0	50	–50
50	75	–25
100	100	0
150	125	25
200	150	50
250	175	75
300	200	100

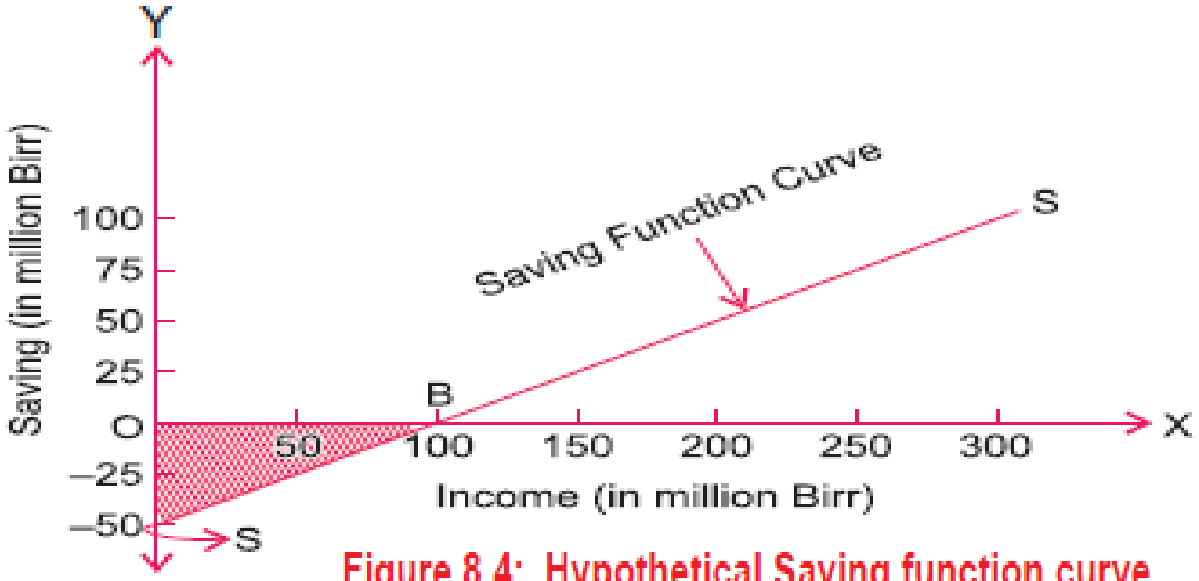


Figure 8.4: Hypothetical Saving function curve

Consumption and Saving Functions are Complementary

- Since income is either consumed or saved, consumption + saving is always equal to income. This indicates that the consumption and saving curves, which represent the consumption and saving functions, are complementary.
- Observe from the figure that the saving function is the mirror image of the consumption function
- **Figure 8.5: Consumption and saving functions**

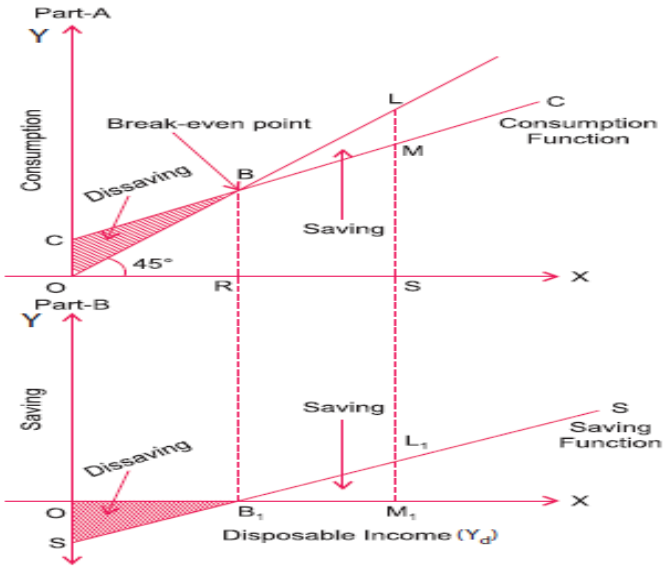
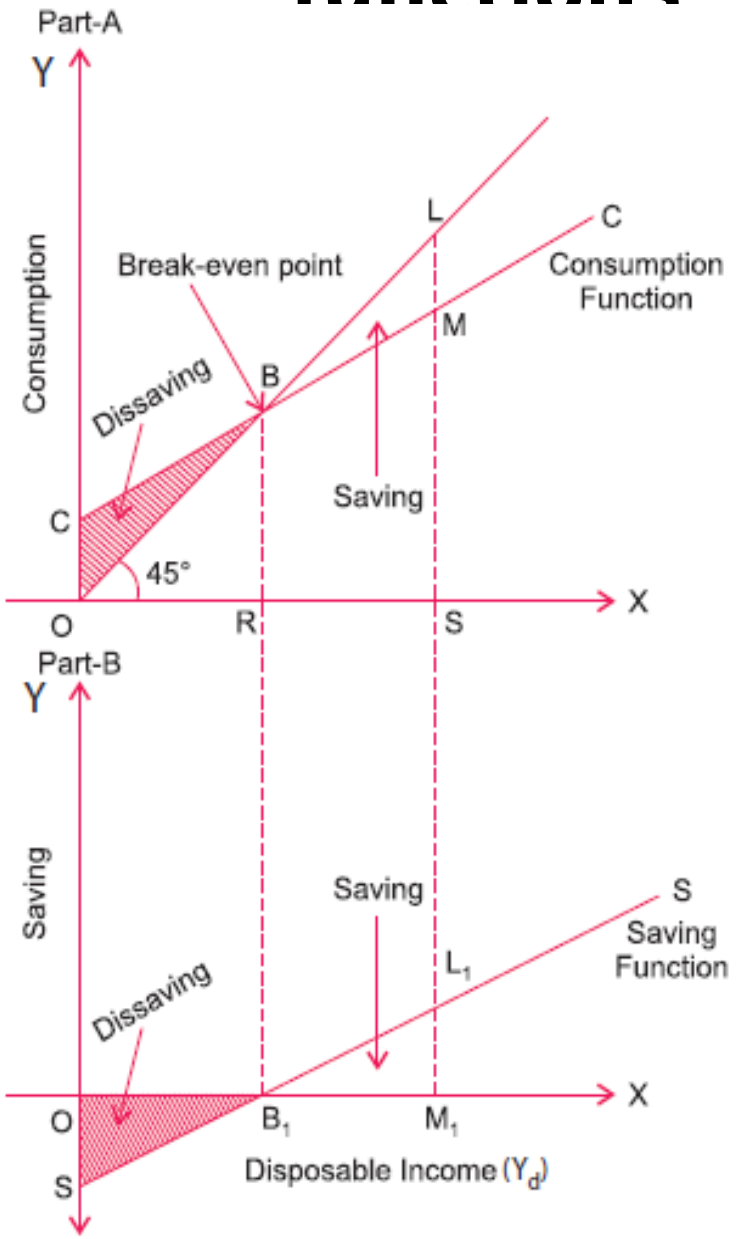


Figure 8.5: Consumption and saving functions



- As in the case of the consumption function, the relationships between saving and income (propensity to save) are expressed in the following ways.

I *Average Propensity to Save (APS)*

- *Average propensity to save is the ratio of total savings (S) to total income (Y). It* is the part of total income which is saved. Symbolically:

$$APS = S/Yd$$

- For example, if income (Yd) is Birr 250 million and saving(s) is Birr 75 million,
- APS = S/ Yd = 75/250 = 0.3 or 30%

II *Marginal Propensity to Save (MPS)*

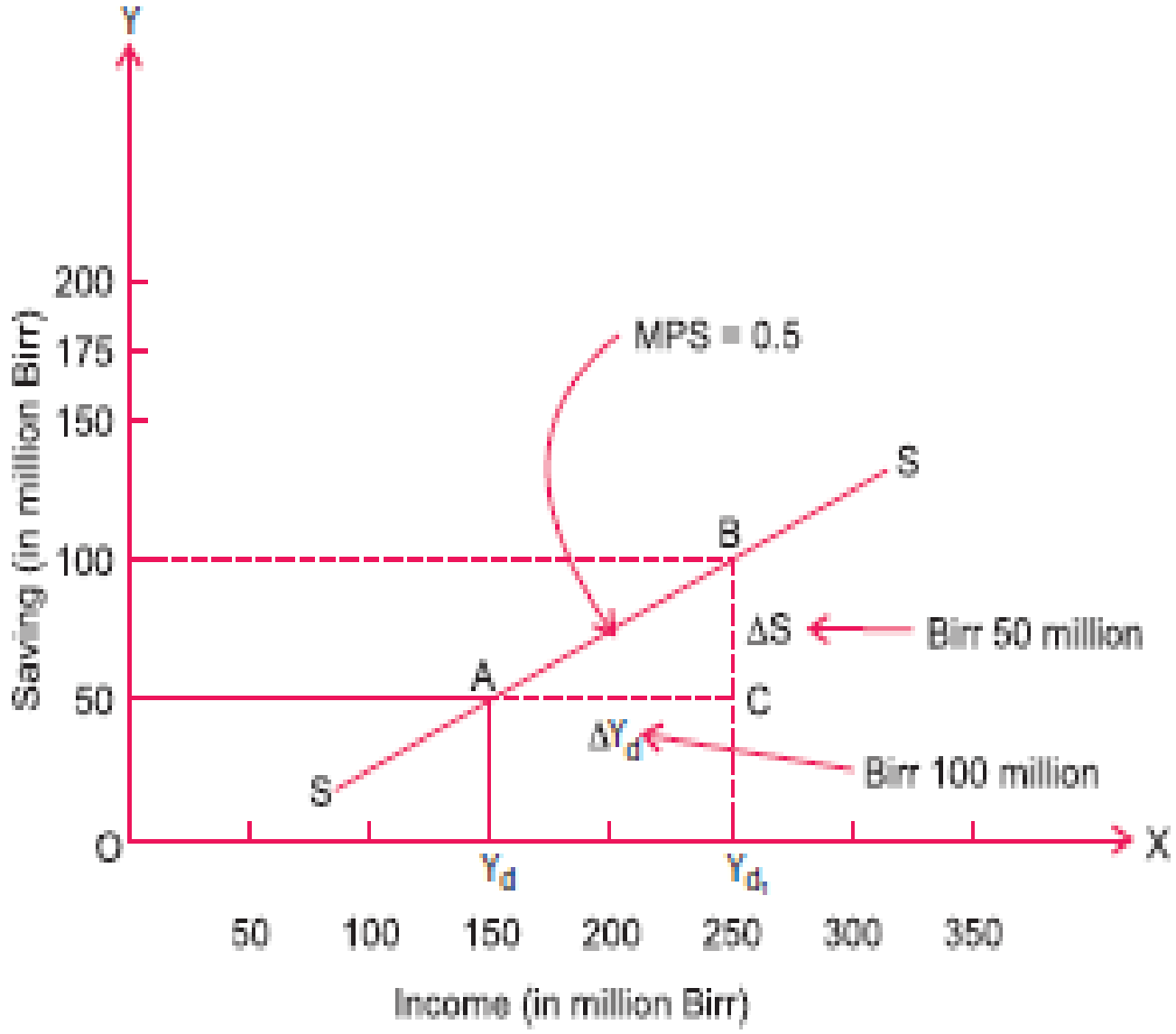
- *It is the ratio of the change in saving (ΔS) to the change in income (ΔYd).*Symbolically:

$$MPS = \Delta S / \Delta Yd$$

- For example, if a country's national income increases from Birr 200 million to Birr 250 million, and saving increases from Birr 50 million to Birr 75 million, then

$$MPS = \Delta S / \Delta yd = 25/50 = 0.5$$

Table 8.7: Hypothetical MPS estimation



Properties of MPS

- *Value of MPS lies between 0 and 1. In other words, 0 < MPS < 1.*
- *MPS increases with increase in income.*
- *The MPS of the poor is lower than that of the rich*

8.3 RELATIONSHIP BETWEEN CONSUMPTION AND SAVING

- Relationship between APC and APS We know Yd = C + S, dividing both sides by Yd, we get

$$\frac{Yd}{Yd} = \frac{C}{Yd} + \frac{S}{Yd}$$

- 1 = APC + APS

or APC = 1 – APS, and APS = 1 – APC

- We may conclude: *the sum of APC and APS is always equal to unity (1). This is* because income is either consumed or saved.

- Relationship between MPC and MPS

  We know $Yd = C + S$

  $\Rightarrow \Delta Yd = \Delta C + \Delta S$

- Dividing both sides by ΔYd, we get

  $\Delta Yd/ \Delta Yd = \Delta C/ \Delta Yd + \Delta S/ \Delta Yd$

  $1 = \Delta C/ \Delta Yd + \Delta S/ \Delta Yd$

  $1 = MPC + MPS$

  or $MPC = 1 – MPS$, ad $MPS = 1 – MPC$

- We may conclude: *the sum of MPC and MPS is always equal to unity (1). The* following list shows this inter-relationship:
  - □□ *APC + APS = 1*
  - □□ *APS = 1 – APC*
  - □□ *APC = 1 – APS*
  - □□ *MPC + MPS = 1*
  - □□ *MPS = 1 – MPC*
  - □□ *MPC = 1 – MPS*

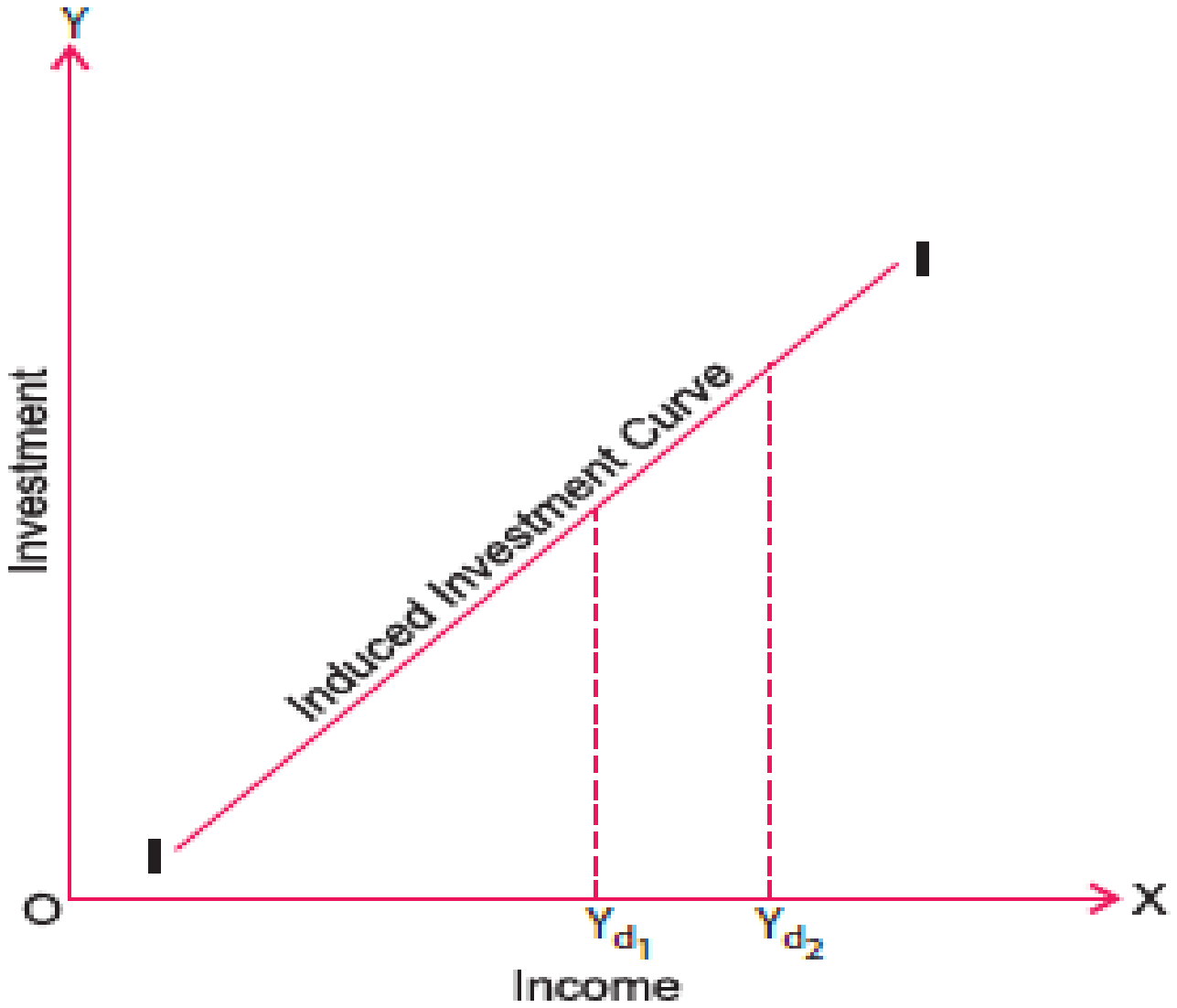
8.4 INVESTMENT

- In economics, *investment means an addition, during a predefined 'current period', to national resources such as:*
- *existing stock of physical (or real) assets for example, the building of new factories, new machines or equipment;*
- *existing stock of finished goods or raw materials.*

Induced Investment

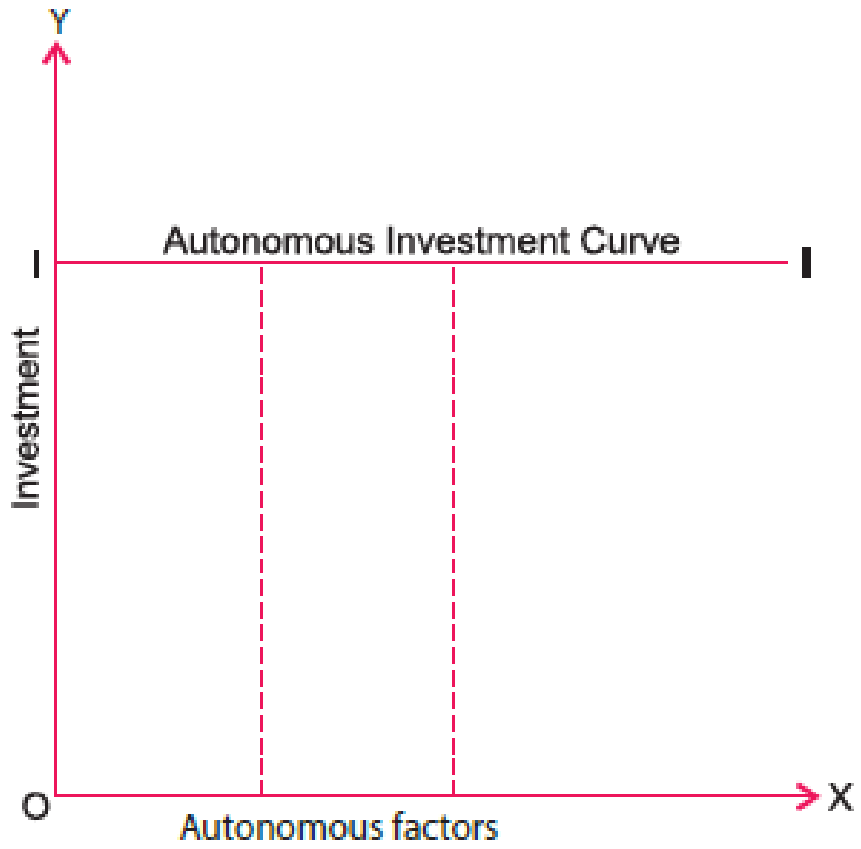
- *Induced investment is investment which is made with the motive of earning a profit as in the private sector. Induced investment depends directly upon profit* expectations.
- It is income-elastic. If national income goes up, induced investment also goes up – an increase in income induces investment.

- **Figure 8.8: Induced investment**



Autonomous Investment

- *Autonomous investment refers to investment which is made irrespective of income level.*
- *This approach is generally taken in the government sector. Autonomous* investment is income inelastic – it is not affected by changes in income level.
- **Figure 8.**



Determinants of Investment

- ***Profit Expectation:*** *Business investment depends upon the expectations of the business firms involved. If the business people feel confident that opportunities for making profits in the future exist, they will be prepared to undertake investment expenditure*
- *Rate of Interest: After business expectation of profit opportunities is taken into account, investment depends upon the rate of interest, on the one hand, and upon the expected rate of return on capital.*
- *If investment is to be profitable, then the expected rate of profit cannot be less than the current rate of interest in the market. For instance, if an entrepreneur finds out that funds for a project must be borrowed at a 15% interest rate, then the proposed investment would be undertaken only if the project's expected rate of profit were more than 15%.*

- ***Corporate Tax:*** *Taxes are imposed by governments on corporations. A corporation uses part of its revenues to pay these taxes. The higher the tax rate is, the more that paying taxes reduces revenues and, in turn, reduces profits.*
- ***Level of National Income: If national income goes up, induced*** *investment also goes up. The reason is that an increase in national income leads to an increase in the demand for goods and services and in investors' interest in supplying them, which leads to increased investment. Therefore, we can say that a higher level of national output induces investment. This principle also acts inversely.*

Role of Investment in Economic Growth

- Investment plays a crucial role in the economic growth of a nation. Nations that invest a large part of their income tend to have rapid output growth. As you know, investment in an economy can be in the private sector and in the public (government) sector.

❖Role of Private Investment in Economic Growth

- Investment made by the private sector in the form of new machinery and equipment, the building of new factories, increases in inventories, etc., increases the productive capacity of the economy and hence increases output and income.

❖ Role of Public Investment in Economic Growth

- Public investment plays an active role in promoting economic growth, especially in developing countries.
- *Public investment promotes economic growth directly by developing social overhead and infrastructure, by establishing capital-good industries, basic and key industries, etc.*
- *Public investment can stimulate economic growth indirectly by providing education, training, and research facilities. Public investment in education and training and in public health and social security schemes increases peoples' efficiency and skills, and thereby contributes to economic growth.*
- *Public investment reduces disparities in income and wealth as well as regional disparities. Thus public investment promotes the achievement of economic growth with social justice.*

- Answer each of these questions and then consider the solutions.

a If APS is 0.6, how much is APC?

Solution: APC = 1 – APS = 1 – 0.6 = 0.4

b If APC is 0.7, how much is APS?

Solution: APC + APS = 1, therefore APS = 1 – 0.7 = 0.3

c If MPC is 0.75, what is MPS?

Solution: MPS = 1 – MPC = 1 – 0.75 = 0.25

d If APC is 0.75, how much is APS?

Solution: APS = 1 – APC = 1 – 0.75 = 0.25

e If MPS = 1, how much is MPC?

Solution: MPC = 1 – MPS = 1 – 1 = 0