

CONSUMPTION, SAVING AND INVESTMENT

Unit Objectives

After completing this unit, you will be able to:

- ❑ realize the relationship among consumption, saving, and investment;
- ❑ compute average and marginal propensity to consume and save; and
- ❑ appreciate the role of investment in economic growth.

Main Contents

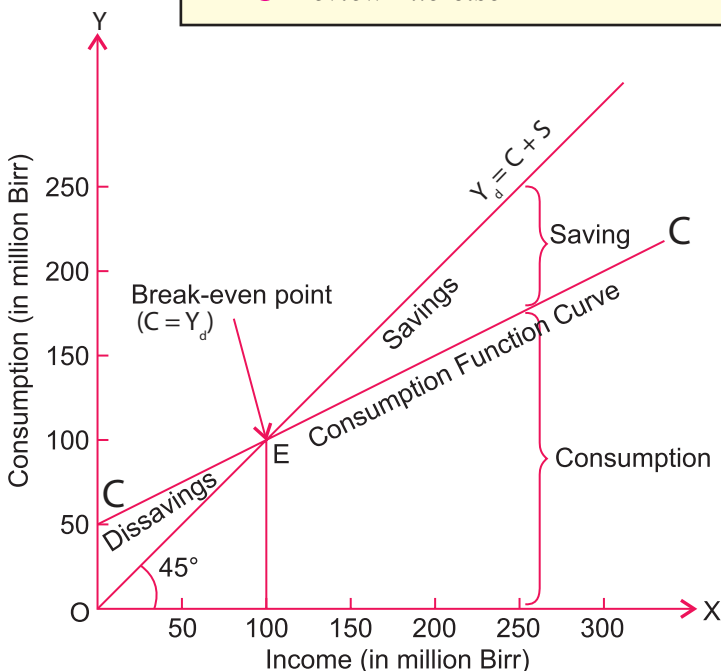
8.1 CONSUMPTION

8.2 SAVING

8.3 RELATIONSHIP BETWEEN CONSUMPTION AND SAVING

8.4 INVESTMENT

- Unit Summary
- Review Exercise



INTRODUCTION

The main purpose of every economic activity is consumption, whatever the type of economy. Most people spend the major part of their income on the consumption of goods and services. The balance of income which is not used for consumption is saved.

At the national level, developing countries spend a higher proportion of their income on consumption than do developed countries. Thus, developing countries save a smaller proportion of their income. A nation that saves a relatively small part of its income makes smaller investments and exhibits relatively lower rates of growth in productivity. On the other hand, nations that save and invest large parts of their income exhibit higher rates of growth in income and output.

From the above discussion, we can conclude that:

- *Income, consumption, saving, and investment are closely interlinked.*
- *Consumption, saving, and investment are crucial factors in any country's economic performance (income, output, employment, etc.).*

Earlier units briefly mentioned consumption and investment while discussing concepts such as aggregate demand and gross domestic product. This unit discusses consumption, saving, and investment in detail, emphasizing their roles in the economic growth of a country.

8.1 CONSUMPTION

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

- ☐ define the concept of consumption; and
- ☐ assess the basic determiners of consumption.

Key Terms and Concepts

- | | |
|---------------|----------------------------------|
| ➤ Income | ➤ Marginal propensity to consume |
| ➤ Consumption | ➤ Average propensity to save |
| ➤ Saving | ➤ Break-even point |
| ➤ Investment | ➤ Personal disposable income |

Start-up Activity

List down material consumptions you made in the previous week. Then compare your level of consumption with that of your friend. Are they similar or different? Why do you think they are similar or different?

As we know household consumption expenditure is one of the major components of aggregate demand or aggregate expenditure in an economy. We also know that households spend their income (apart from savings) on consumption of final goods and services for the satisfaction of their basic wants. *Consumption* may thus 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.

Does consumption depend upon income? Yes, 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. In such a case, households might be consuming from sources such as accumulated wealth, borrowing, or begging (seeking charity). In this context, 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 shows the relationship between increasing income and increasing consumption.

Table 8.1: Relationship between income and consumption

Income (in units of money)	Consumption expenditure (in units of money)
0	100
200	200
400	300
600	400
800	500
1000	600

As shown in the schedule in Table 8.1, there is always a minimum level of consumption expenditure, even if income is zero. This is why, at zero income level, consumption expenditure is represented by a positive value 100 units of money) rather than zero units. The table also shows that, with increases in income, consumption expenditure also increases but at lesser rate.

Table 8.1 also clearly shows that the relationship between income and consumption expenditure is always positive or direct.

Determinants of Consumption Expenditure

The previous section discussed consumption expenditure at the individual (household) level. Adding together individual consumption expenditures gives us national consumption expenditure. As discussed earlier, consumption expenditure as a macroeconomic variable (*national consumption expenditure*) is crucial to any economy's performance.

The major determinants of consumption expenditure at individual and national levels are:

- **Money Income:** *The relationship between money income and consumption expenditure is positive and direct. The increase in income results in an increase of consumption expenditure. This principle also acts inversely.*
- **Distribution of Income:** *Consumption expenditure per unit of income is more for poor people than rich people. Unequal distribution of a nation's income reduces consumption expenditure, and equality in distribution of income increases it.*
- **Level of Direct Taxes:** *A higher level of direct taxes leads to a lower level of personal disposable income, and thus to a decrease in consumption expenditure. This principle also acts inversely.*
- **Expectation of the Future:** *If prices are expected to rise in the future, present consumption will be more. This principle also acts inversely.*
- **Rate of Interest:** *Increases in the rate of interest lead to a reduction of consumption expenditure and an increase in saving. This principle also acts inversely.*
- **Level of Wealth:** *A higher wealth level leads to higher consumption expenditure. This principle also acts inversely.*

Consumption Function

Consumption function is one of the most important tools in macroeconomics. *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. The functional relationship between consumption and income is generally expressed as:

$$C = f(Y_d) \quad (8.1)$$

Where C = consumption expenditure, and
Y_d = personal disposable income.

$C = a + bY_d$, where a is autonomous consumption, b is percentage of income for consumption, and bY_d is induced consumption.

Example: Consider a consumer with a consumption function given by $C = 110 + 0.75Y_d$, 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 $C = 110 + 0.75Y_d$
Disposable income = 4,800

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

$$\text{Autonomous consumption} = 110 + 0.75 \times 0 = 110$$

- b Induced consumption is = Total consumption
– Autonomous consumption

$$\text{Induced consumption} = 0.75 \times 4,800 = 3,600$$

- c Total consumption = Autonomous consumption
+ Induced consumption

$$= 110 + 3,600 = 3,710$$

- d Saving = $Y_d - C = 4,800 - 3,600 = 1,200$

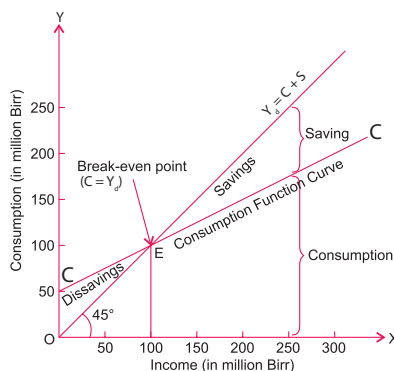
$$S = Y_d - bY_d$$

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.

Propensity to consume or consumption function demonstrates the fact that, as income increases, consumption also increases but by less than the increase in 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). The following hypothetical schedule and corresponding graph illustrate the concept of consumption function:

Table 8.2: Hypothetical Consumption Function Schedule

Level of National Income (in million Birr) (Y_d)	Consumption (in million Birr) (C)
0	50
50	75
100	100
150	125
200	150
250	175
300	200

**Figure 8.1: Consumption function curve**

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. When income level is zero, the minimum level of consumption is Birr 50 million in our hypothetical situation. When income is Birr 100 million, consumption is also Birr 100 million. When income exceeds Birr 100 million, consumption also increases, but it lags behind the increase in income.
- Consumption (i.e., autonomous consumption) can never be zero, even if income is zero, because a minimum level of consumption must be maintained for survival. That is why the consumption function curve starts from point C and not from zero. In such a situation, the economy draws on past savings in the absence of current income. In the figure, OC is the minimum level of consumption.
- The 45° line $Y_d = C + S$ is called the expenditure equals income line. Its significance is that each point on this line shows expenditure equal to income. Comparing the consumption function curve with the 45° line for any point tells us whether consumption is equal to, greater than or less than income level.

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).

Note:

The amount of dissaving or positive saving is measured by the vertical distance between the consumption curve and the 45° line.

- Line *CC* represents the consumption function curve, which is also simply called the consumption curve.

The relationships between consumption and income (propensity to consume) are expressed in the following ways. The next sections describe their numerical expressions.

- i Average Propensity to Consume (APC)
- ii Marginal Propensity to Consume (MPC)

I *Average Propensity to Consume (APC)*

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

$$APC = \frac{C}{Y_d} \quad (8.2)$$

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

$$APC = \frac{C}{Y_d} = \frac{175}{250} = 0.7 \text{ or } 70\%$$

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, $APC = 75/50 = 1.5$.

Thus the value of *APC* may be greater than 1, because when income is at a very low level, consumption exceeds income to meet the very basic necessities. (Then saving becomes negative).

Table 8.3 demonstrates the estimation of *APC*, using a hypothetical situation.

Table 8.3: Hypothetical estimation of APC

Income (in million Birr) (Y_d)	Consumption (in million Birr) (<i>C</i>)	APC $\left(\frac{C}{Y_d}\right)$
200	150	0.75
250	175	0.7
300	200	0.66

Observe that *APC* continues to decline as long as income increases.

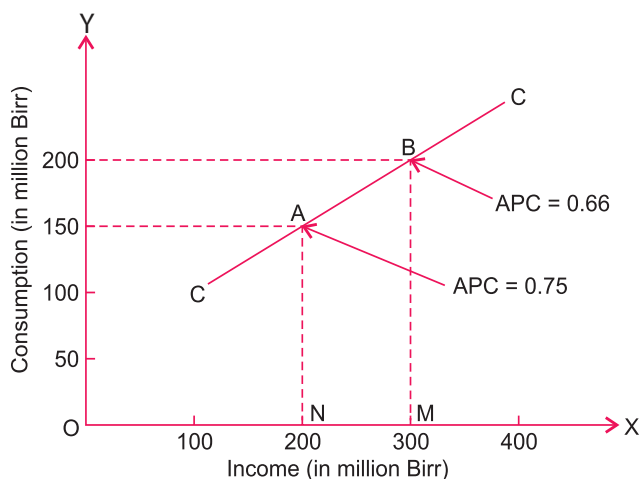


Figure 8.2: Estimation of APC

In **Figure 8.2**, CC is the consumption curve. It shows that, at point A,

$$APC = \frac{C}{Y_d} = \frac{AN}{ON} = \frac{150}{200} = 0.75, \text{ and that, at point B,}$$

$$APC = \frac{BM}{OM} = \frac{200}{300} = 0.66$$

Thus, as income increases, APC falls.

II Marginal Propensity to Consume (MPC)

The ratio of change in consumption (ΔC) to change in income (ΔY_d) is called *marginal propensity to consume*. Literally, *marginal* means additional (or incremental) and *propensity to consume* means desire (or urge) to consume. Thus MPC is the ratio of additional consumption expenditure to additional income. It indicates the proportion of the additional income that is spent on additional consumption. Symbolically,

$$MPC = \frac{\Delta C}{\Delta Y_d} \quad (8.3)$$

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

$$MPC = \frac{\Delta C}{\Delta Y_d} = \frac{25}{50} = 0.50$$

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., $MPC < 1$).

The following table demonstrates MPC estimations, using a hypothetical situation.

Table 8.4: Hypothetical MPC estimation

Income (in million Birr) (Y_d)	Change in Income (ΔY_d)	Consumption (in million birr) (C)	Change in Consumption (ΔC)	MPC $\left(\frac{\Delta C}{\Delta Y_d} \right)$
150	—	100	—	—
250	100	150	50	0.5
350	100	175	25	0.25

Table 8.4 shows that, with increase in income, consumption also increases but by less than the increase in income. In the hypothetical situation, when income increased from Birr 150 million to 250 million, consumption increased from Birr 100 million to Birr 150 million. Therefore,

$$MPC = \frac{\Delta C}{\Delta Y_d} = \frac{50}{100} = 0.50$$

This indicates that people spent 50% of the increased income. Also observe that MPC goes on declining with increases in income.

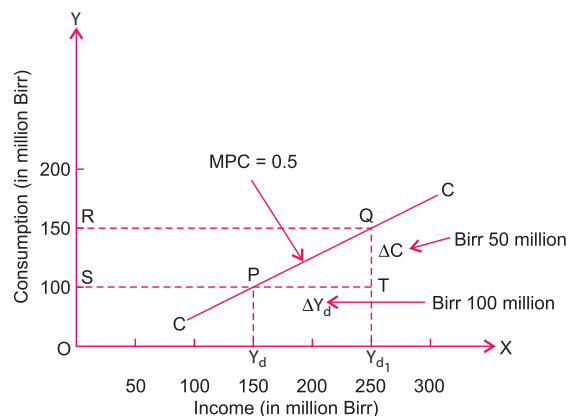


Figure 8.3: Estimation of MPC

Figure 8.3 shows OY_d as original income = Birr 150 million. It goes up to OY_{d_1} . Thus change in income is YY_{d_1} = Birr 100 million. With this change, consumption level changes from Birr 100 million to Birr 150 million — i.e., by QT = Birr 50 million. At point Q,

$$MPC = \frac{\Delta C}{\Delta Y_d} = \frac{50}{100} = 0.50$$

Properties of MPC

The following are the main 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.

Activity 8.1



- 1 Suppose a given family has an income of Birr 10,000 and saves only Birr 500. What is its average propensity to consume? Can you tell from this information about the MPC of the family?
- 2 Assume for the above example that the income of the family rises to Birr 12,000 and, as a result, the family increases the amount that it saves to Birr 700. What is the marginal propensity to consume?
- 3 Suppose that a given family spends Birr 2,000 at zero income and then, as its income increases, it spends 80 per cent of it on consumption over and above the Birr 2,000. What is the family's total consumption spending when its income is Birr 20,000?
- 4 Answer the following:
 - a Can the value of APC be greater than one? Give reasons for your answer.
 - b Can the value of MPC be greater than one? Give reasons for your answer.
 - c Copy and complete the following tabulation. Its values are in million Birr.

National Income (Y)	Consumption (C)	APC	MPC
0	30	-----	-----
100	100	-----	-----
200	170	-----	-----
300	240	-----	-----
400	310	-----	-----
500	380	-----	-----
600	450	-----	-----

- 5 In your economics workgroup, discuss the relationship between income and consumption.
- 6 In your economics workgroup, discuss and answer this question: How does MPC affect the level of national income?


8.2 SAVING

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

- explain what saving is; and
- identify the determinant of saving.

Key Terms and Concepts



 Average Propensity to save (APS)

Start-up Activity

Comment on the saving habits of your family members.

The part of income which is not spent on consumption is called savings. This is because income is either consumed or saved. Thus, we may say 'Savings is an excess of income over consumption expenditure'. By deducting consumption expenditure (C) from income (Y_d), we get savings (S). Symbolically:

$$S = Y_d - C \quad (8.4)$$

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

The major determinants of saving at the individual and national levels are:

- **Level of Income:** *As stated above, as income increases, saving also increases. But the rate of increase in saving is higher than the rate*

of increase in income. This is because, with an increase in income, consumption increases but by less than the increase in income.

- **Distribution of Income:** Saving increases when income inequality increases. This is because the tendency to save is greater for rich people than poor people.
- **Expectation Future for the:** If prices are expected to fall in the future, present consumption is less, and hence saving is more. This principle also acts inversely. Similarly, an expected future increase in income, reduces present saving, and the inverse.
- **Rate of Interest:** A higher rate of interest induces greater saving. This principle also acts inversely.
- **Level of Wealth:** A lower wealth level leads to a lower saving level. This principle also acts inversely.
- **Level of Direct Taxes:** A higher level of direct taxes produces a lower level of personal disposable income and hence reduced savings. This principle also acts inversely.
- **Individual Nature:** Saving is directly related to the nature of the individual. For example, a miser saves more than a spendthrift.

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 (Y_d). Symbolically:

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

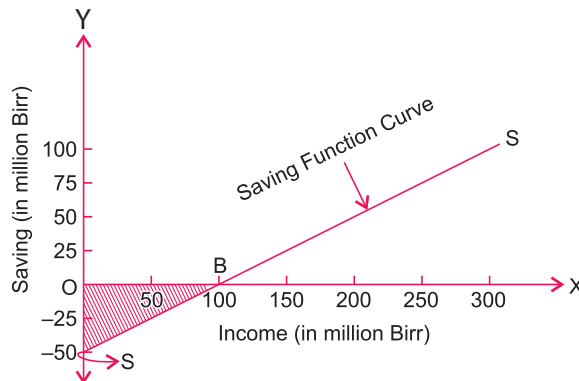
The saving function shows the tendency of households to save at given levels of income. Thus the saving function is a corollary or reciprocal of the consumption function.

The following hypothetical schedule and corresponding graph illustrate the concept of the saving 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

Table 8.6 shows that saving (S) tends to increase with income (Y_d). When income is zero, saving is negative because consumption exceeds income. When income in our hypothetical schedule increases beyond Birr 100 million, saving increases faster than income. Figure 8.4 also shows that saving is negative until income reaches Birr 100 million. After Birr 100 million, saving increases with every increase in income.

**Figure 8.4: Hypothetical Saving function curve**

Point B in Figure 8.4 represents the break-even point, because at this point savings are zero — i.e., consumption is equal to income. The shaded area reflects dissavings, which are equal to autonomous consumption.

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. Thus, if we know an income, we can derive the saving function directly from the consumption function, as shown in Figure 8.5. Part A of the figure shows the consumption

function, and Part B shows the saving function. Observe from the figure that the saving function is the mirror image of the consumption function.

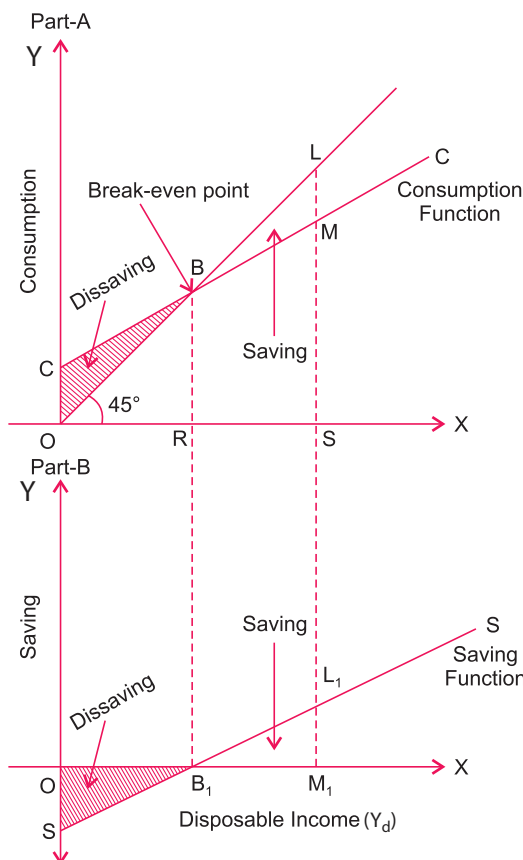


Figure 8.5: Consumption and saving functions

As in the case of the consumption function, the relationships between saving and income (propensity to save) are expressed in the following ways. The next sections present their numerical expressions.

- i Average Propensity to Save (APS)
- ii Marginal Propensity to Save (MPS)

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:

$$APS = \frac{S}{Y_d} \quad (8.6)$$

For example, if income (Y_d) is Birr 250 million and saving(s) is Birr 75 million,

$$APS = \frac{S}{Y_d} = \frac{75}{250} = 0.3 \text{ or } 30\% = 0.3 \text{ or } 30\%$$

Table 8.7 demonstrates APS estimations, using a hypothetical situation.

Table 8.6: Hypothetical APS estimation

Income (in million Birr) (Y_d)	Saving (in million Birr) (S)	APS $\left(\frac{S}{Y_d}\right)$
200	50	0.25
250	75	0.3
300	100	0.33

Observe that *APS continues to increase as long as income increases.*

In Figure 8.6, SS is the saving curve. It shows that, at point A,

$$APS = \frac{S}{Y_d} = \frac{50}{200} = 0.25$$

and that, at point B,

$$APS = \frac{100}{300} = 0.33$$

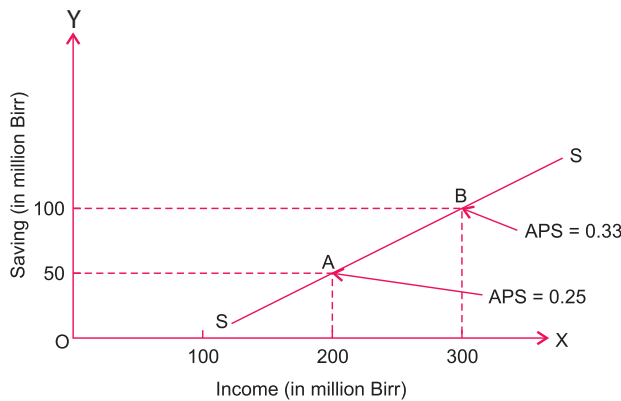


Figure 8.6: Estimation of APS

II Marginal Propensity to Save (MPS)

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

$$MPS = \frac{\Delta S}{\Delta Y_d} \quad (8.7)$$

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

$$MPS = \frac{\Delta S}{\Delta Y_d} = \frac{25}{50} = 0.50$$

Table 8.7 shows MPS estimation, using a hypothetical situation.

Table 8.7: Hypothetical MPS estimation

Income (in million Birr) (Y_d)	ΔY_d	Saving (in million Birr) (S)	ΔS	MPS $\left(\frac{\Delta S}{\Delta Y_d}\right)$
150	–	50	–	–
250	100	100	50	0.50
350	100	175	75	0.75

Table 8.7 shows that, when income increases, saving also increases. When income increases in the hypothetical situation from Birr 150 million to Birr 250 million, saving increases from Birr 50 million to Birr 100 million. Therefore,

$$MPS = \frac{\Delta S}{\Delta Y_d} = \frac{50}{100} = 0.50$$

This indicates that people saved 50% of the increased income.

Observe that *MPS continues to increase as long as income increases*.

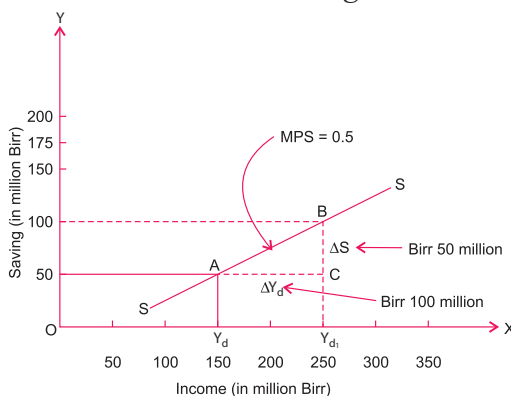


Figure 8.7: Hypothetical Estimation of MPS

In Figure 8.7, when income is $OY_d = 150$, saving is $AY_d = 50$. When income increases to $OY_{d1} = 250$, saving increases to $BY_{d1} = 100$. Thus $\Delta Y_d = 100$ and $\Delta S = 50$. Therefore MPS at point B,

$$B = \frac{\Delta S}{\Delta Y_d} = \frac{BC}{AC} = \frac{50}{100} = 0.50$$

Properties of MPS

The main properties of MPS are:

- 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

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

- show the relationship between consumption and saving.

Key Terms and Concepts

🔑 Saving function

🔑 Rate of interest

Start-up Activity

What is your personal opinion of this statement? "Many Ethiopian families do not know how to balance their consumption and saving levels for their households?"

As you already know, the consumption function and the saving function are interrelated and counterparts of each other. Consumption and saving both depend on income, and their sum total is equal to total income i.e., $C + S = Y_d$. From this, it also follows that the concepts of APC and MPC are respectively related to the concepts of APS and MPS.

Relationship between APC and APS

We know $Y_d = C + S$, dividing both sides by Y_d , we get

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

$$1 = APC + APS$$

or $APC = 1 - APS$, and $APS = 1 - APC$

(8.8)

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

Note that the value of APS is negative when consumption expenditure is greater than income.

Relationship between MPC and MPS

We know $Y_d = C + S$

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

Dividing both sides by ΔY_d , we get

$$\frac{\Delta Y_d}{\Delta Y_d} = \frac{\Delta C}{\Delta Y_d} + \frac{\Delta S}{\Delta Y_d}$$

$$1 = \frac{\Delta C}{\Delta Y_d} + \frac{\Delta S}{\Delta Y_d}$$

$$1 = MPC + MPS$$

$$\text{or } MPC = 1 - MPS, \text{ and } MPS = 1 - MPC \quad (8.9)$$

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

- $APC + APS = 1$
- $APS = 1 - APC$
- $APC = 1 - APS$
- $MPC + MPS = 1$
- $MPS = 1 - MPC$
- $MPC = 1 - MPS$

Activity 8.2



- 1 Can the value of APS be negative? If so, when? Give an example in support of your answer.
- 2 What is the maximum possible value of MPS?
- 3 What is the value of MPC when $MPS = 0$?

4 Calculate MPS from the following data:

Income (Birr)	Consumption expenditure (Birr)
1000	1500
2000	2000

5 If disposable income is Birr 1000, and consumption expenditure is Birr 700, what is the average propensity to save? Can you use this information to calculate the marginal propensity to save?

6 Calculate MPS from the following data:

Income (Birr)	Saving (Birr)
100	60
200	100

7 In your economics work group, discuss the relationship between income and saving. Create a diagram that interprets the result of your discussion.


8.4 INVESTMENT


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

- define investment;
- state the determinants of investment; and
- appreciate about the impact of investment on economic growth.

Key Terms and Concepts



 Autonomous investment

 Induced investment

Start-up Activity

What type of investment activities are occurring in your locality? Comment the overall activities of such investments.

Meaning of Investment

In economics, the meaning of *investment* is quite different from its common use by an ordinary person who speaks of ‘investing’ when he or she purchases a piece of land, an old house, securities, debentures, etc. In economic analysis, these transactions are simply the transfer of ownership rights from one person to the other and, as such, result in no increase in income and employment. 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.

Investment can be *induced* as well as *autonomous*.

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. This occurs because an increase in national income leads to an increase in the demand for goods and services, which increases investor interest in meeting that demand, and therefore leads to investment. Thus, we can say that induced investment takes place when levels of income and demand in the economy go up. That is why the induced investment curve, like the supply curve, is positively sloped, as shown in Figure 8.8.

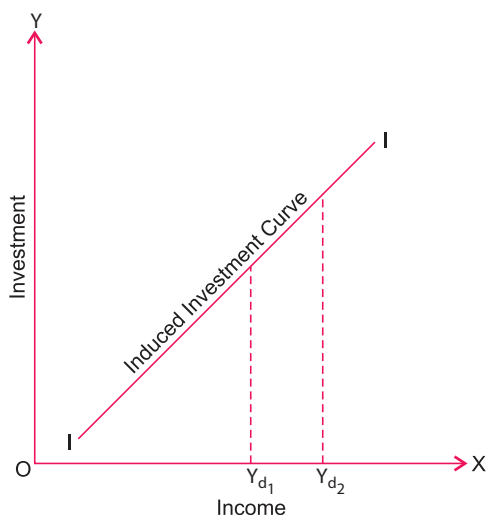


Figure 8.8: Induced investment

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.

The volume of autonomous investment is the same at all levels of income. That is why the autonomous investment curve is a straight line, parallel to the X-axis, as shown in Figure 8.9. Autonomous investment is generally affected by autonomous factors (other than income) such as public utility works, construction of railways and roads, changes in the nature of consumer demand, increase in population, discovery of new resources, new technology, etc. For instance, government investment in public utilities like the construction of railways, roads, post and telegraph, electricity, etc., is normally autonomous investment.

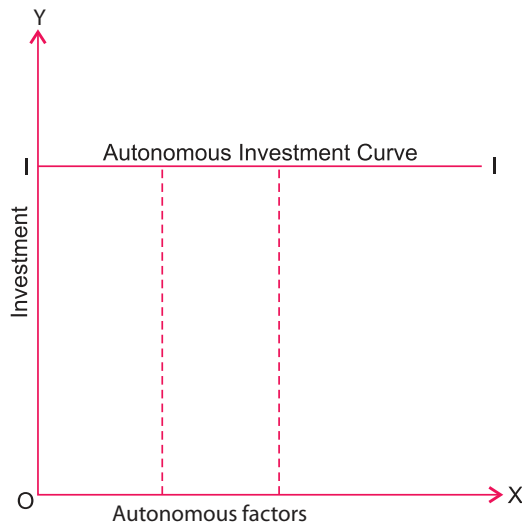


Figure 8.9: Autonomous factors

Remark: Any investment made for the purpose of compensating for depreciation caused by production in a current year is not real investment. Rather, it is what is sometimes known as *replacement investment*.

Determinants of Investment

The basic motive for any private sector entrepreneur to invest is to earn profits (which, as you know, is the excess of revenue over production cost). Thus expectation of profit is the main determinant of the level of investment in an economy. Here is more information about this factor and about related factors and 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. On the other hand, if they do not expect to make profits, they will not invest.

- ✎ *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. This expected rate of return is called marginal efficiency of capital or marginal efficiency of investment.
- ✎ *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%. We thus see that investment depends upon the marginal efficiency of investment, on the one hand, and upon the rate of interest, on the other.*
- **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. Therefore, we can say that a decrease in the rate of corporate tax induces investment. This principle also acts inversely.
- **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

Economic growth refers to an increase in the total output of a nation over time. 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. The roles of these two types of investment in economic growth are discussed below.

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. Note that, whenever investment is increased in a country, income and output increase many times more than the increase in investment. Therefore, we can say that an increase in the level of investment brings rapid economic growth to a country.

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.*

Activity 8.3



In your economics work group, discuss and answer this question: How does induced investment depend upon the market rate of interest? Create a graphic presentation of the results of your discussion.

Practical Work

- 1 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: $MPC = 1 - MPS = 1 - 1 = 0$

- f From the following income consumption schedule, calculate:

- i saving
- ii average propensity to consume
- iii marginal propensity to consume

Income	0	100	200	300	400
Consumption	60	110	150	180	200

Solution:

Income (Y_d)	Consumption (C)	Saving (S) ($Y_d - C$)	APC $\left(\frac{C}{Y_d}\right)$	MPC $\left(\frac{\Delta C}{\Delta Y_d}\right)$
0	60	-60	∞	—
100	110	-10	1.10	0.50
200	150	50	0.75	0.40
300	180	120	0.60	0.30
400	200	200	0.50	0.20

- 2 From the following information, find out:

- i average propensity to save
- ii marginal propensity to save

Income	100	200	300
Saving	20	80	150

Solution:

Income (Y_d)	Savings (S)	APS $\left(\frac{S}{Y_d}\right)$	MPS $\left(\frac{\Delta S}{\Delta Y_d}\right)$
100	20	0.20	—
200	80	0.40	0.60
300	150	0.50	0.70

- 3 If disposable income is Birr 1,000 and consumption expenditure is Birr 750, what is APS?

Solution:

$$\text{APS} = \frac{S}{Y_d} = \frac{250 (1,000 - 750)}{1,000} = \frac{1}{4} = 0.25 \text{ or } 25\%$$

UNIT REVIEW

UNIT SUMMARY

- ❑ Consumption refers to the amount of income which is spent by households to purchase final goods and services.
 - Autonomous consumption is consumption when income is zero.
 - Induced consumption is consumption which varies with income. Determinants of induced consumption are:
 - ∞ Money income
 - ∞ Distribution of income
 - ∞ Level of direct taxes
 - ∞ Expectations of the future price
 - ∞ Rate of interest
 - ∞ Level of wealth

- ❑ Consumption function shows the relationship between consumption level and income level $C = f(Y_d)$ $C = a + b Y_d$
- ❑ The break-even point is the point in income level at which consumption expenditure is exactly equal to income and there is no saving.
- ❑ Average propensity to consume (APC) is the ratio between total consumption and total income.

$$APC = \frac{C}{Y_d}$$

- ❑ Marginal propensity to consume (MPC) is the ratio of change in consumption to change in income.

$$MPC = \frac{\Delta C}{\Delta Y_d}$$

- ❑ Savings is that part of income which is not spent on consumption $S = Y_d - C$. Determinants of savings are:
 - Level of income
 - Distribution of income
 - Future expectations of price
 - Rate of interest
 - Level of wealth
 - Level of direct taxes
 - Individual nature

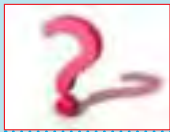
- ❑ The saving function shows the relationship between saving level and income level $S = f(Y)$. Consumption and saving functions are complementary.
- ❑ Average propensity to save (APS) is the ratio between total saving and total income.

$$APS = \frac{S}{Y_d}$$

- ❑ Marginal propensity to save (MPS) is the ratio between change in saving and change in income.

$$\text{MPS} = \frac{\Delta S}{\Delta Y_d}$$

- ❑ MPS value lies between 0 and 1. $\text{APC} + \text{APS} = 1$. $\text{MPC} + \text{MPS} = 1$.
- ❑ *Investment* means the expenditure by people or business firms on the purchase or production of new capital goods such as machinery, factories, tools, houses, etc., which leads to the addition to the stock of capital in the economy. Investment also includes additions to the inventories of consumer goods and raw materials.
- ❑ *Induced investment* is investment made with the motive of earning profits.
- ❑ *Autonomous investment* is investment which is made irrespective of income level.
- ❑ *Determinants of investment are:*
 - Profit expectations
 - Corporate tax
 - Rate of interest
 - Level of national income.



REVIEW EXERCISE FOR UNIT 8

I Write detailed answers to the following.

- 1 Explain the concept of consumption function, using an example and a diagram.
- 2 Explain the concept of saving function, using an example and a diagram.
- 3 Explain the concepts of consumption function and saving function, using examples and diagrams.
- 4 Explain the relationship between marginal propensity to consume and marginal propensity to save.
- 5 Explain the relationship between average propensity to consume and average propensity to save.
- 6 Describe briefly the major factors that affect consumption expenditure.
- 7 Describe briefly the determinants of saving.
- 8 Consumption function and saving function are complementary to each other. Explain this fact, using a diagram.
- 9 Create a schedule and curve to explain propensity to save.
- 10 Explain clearly the concept of investment as used in macroeconomics.

- 11 What do you mean by private investment and public investment?
- 12 Explain the concept of induced investment and autonomous investment.
- 13 “Autonomous investment is income-inelastic”. Explain this statement, using an example.
- 14 Describe the main determinants of investment.
- 15 Explain the role of investment in economic growth.

II *Distinguish between the following:*

- 16 Private investment and public investment
- 17 Induced investment and autonomous investment
- 18 Average propensity to consume and marginal propensity to consume
- 19 Average propensity to save and marginal propensity to save
- 20 Marginal propensity to consume and marginal propensity to save

III *For each of the following statements, indicate whether it is ‘True’ or ‘False’.*

- 21 The relationship between disposable income and consumption is known as propensity to consume.
- 22 Investment is the part of income which is used for the creation of new capital assets.
- 23 Demand for investment continues increasing as rate of interest increases.
- 24 At the break-even point, consumption is more than income.
- 25 The value of APC can be greater than 1.
- 26 MPC increases with increase in income.
- 27 As income increases, saving also increases.
- 28 The tendency to save is less for rich people than for poor people.
- 29 A lower level of wealth leads to a lower level of saving.
- 30 A higher level of direct taxes leads to increased saving.

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

- 31 At the break-even point:
 - A disposable income is equal to consumption
 - B income is less than consumption
 - C income is more than consumption
 - D none of the above.

- 32 Important considerations for making investments are:
- A safety of funds
 - B rate of interest
 - C return on investment
 - D all of the above
- 33 The consumption function is a relationship between:
- A level of consumption and investment
 - B level of income and consumption
 - C level of income and saving
 - D level of consumption and saving
- 34 The saving function is a relationship between:
- A level of saving and investment
 - B level of saving and consumption
 - C level of saving and income
 - D none of the above
- 35 Autonomous investment is:
- A income-inelastic
 - B income-elastic
 - C dependent upon rate of interest
 - D dependent upon rate of corporate tax

V Match the following:

<u>Column A</u>		<u>Column B</u>
36 APC		$\frac{S}{Y_d}$
37 APS	A	$\frac{\Delta S}{\Delta Y_d}$
38 MPC	B	$\frac{C}{Y_d}$
39 MPS	C	$\frac{\Delta C}{\Delta Y_d}$
	D	

VI *Write very short answers to the following.*

- 40 Can consumption be greater than income?
- 41 What type of relationship is found between consumption and income?
- 42 What is the relationship between MPC and MPS?
- 43 What is the relationship between APC and APS?
- 44 What is the value of MPS when $MPC = 0$?
- 45 How much is MPS in an economy in which $MPC = 0.6$?
- 46 How much is MPC in an economy in which $MPS = 0.2$?
- 47 If $APC = 0.65$, how much is APS?
- 48 If $APS = 0.26$, how much is APC?
- 49 If disposable income is Birr 1200, and consumption expenditure is Birr 800, what is APS?
- 50 If disposable income is Birr 2000, and saving is Birr 500, what is APC?
- 51 Mention two factors that determine the level of investment in an economy.
- 52 Mention two factors that determine the level of saving in an economy.
- 53 Consumption at zero level of income is known by what name?
- 54 What is the impact of an increase in the rate of corporate tax on the level of investment in an economy?
- 55 If the consumption function of a given individual is given as $C = 44 + 0.86Y_d$, and the individual's disposable income for a specific period was Birr 3600, then calculate the:
- a autonomous consumption
 - b induced consumption
 - c total consumption
 - d saving
 - e APC and APS