

New
Economics
for Senior Secondary Schools

2

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First published 1992

Reprinted 1996, 1998, 2000, 2002, 2003, 2004, 2005, 2007

New edition 2014

ISBN 978 978 925 149 0

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Preface

Our set objective is to write a value-driven book which fully satisfies the syllabus requirements for Economics at the Senior Secondary School level.

In achieving this objective, we have, throughout the book, made a distinction between descriptive economics and mathematical economics. Such a distinction is not only an essential part of economics training but it also helps the subject come alive to the students.

Many years ago, Economics earned a place in our school timetable but it was only of recent that we have begun to witness a massive upsurge in the enrolment figures for this subject. This is probably not unexpected as the downturn in the national economy has virtually turned everybody into a student of Economics.

Every home, and indeed every office, must have witnessed a conversation on issues like the value of the naira, commodity price, consumer choice, role of banks, interest rates, rent, cost of living, population changes, Internet banking, human capital development, industrialisation and privatisation, commercialisation. These are all issues in Economics, and this book has shed more light on such issues and also on other related issues.

Although there are books on this subject each of which is partly relevant, there is obviously a dearth of standard books. This is an unsatisfactory situation and this book sets out to assuage the situation.

As a rule, each chapter in this book ends with a self-assessment exercise, a clear indication that we have kept in mind both the regular students and the private students.

We should like to seize this opportunity to thank all those who assisted us in diverse ways during the writing of this book.

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2014

Chapter 1

Basic tools for economic analysis

Performance objectives

By the end of this chapter, you will be able to show simple economic relationships with tables, graphs and charts.

Introduction

In Book 1, the usefulness of mathematics as a basic tool in the study of economics was emphasised. In this chapter, we shall deal with mathematics topics already introduced in Chapter 2 of Book 1. For example, we shall deal with simple linear equations and standard deviation which relies extensively on the mean.

Simple linear equation

In Book 1, we introduced the concept of functions and we noted that when one thing is dependent on another, a functional relationship exists between the two things. For example, if y is the quantity demanded of a good and x is the unit price, we can state that, other things being equal, the quantity demanded depends on the price. Algebraically, we can state as follows:

$$y = f(x)$$

That is, y is a function of x .

Every function can be depicted graphically. When this results in a straight line, the function is said to be a *linear function*. Since a function is written in the form of an equation, a linear function will produce a linear equation. Linear equations are used to represent a situation in which one variable increases or decreases in proportion to another. Typically, a linear equation is represented by:

$$y = f(x), \text{ where}$$

y is the unknown or dependent variable
 x is the known or independent or explanatory variable

a is the intercept, always a constant
 b is the gradient or the slope.

The intercept, a , shows the point at which the straight line cuts the horizontal axis or the vertical axis. It is given by the value of y when x is zero. The gradient, b , also called the slope, shows the ratio of vertical distance or rise to horizontal distance or run. Given a simple linear equation of the form:

$$y = a + bx$$

the intercept can be calculated by substitu-

ting zero for x while the gradient can be derived from the formula:

$$b = \frac{y_2 - y_1}{x_2 - x_1}, \text{ where}$$

$y_2 - y_1$ gives the vertical distance or rise and $x_2 - x_1$ gives the horizontal distance or run. If b is positive, the curve will slope upwards and if b is negative, the curve will slope downwards.

Example 1

$$Q = 40 - 6P, \text{ where}$$

Q is quantity demanded

P is the price per unit of the commodity.

In this example, the intercept is 40 while the gradient is -6. This equation shows that, at a price of zero, 40 units of the commodity will be demanded. It also shows that the quantity demanded will reduce by 6 if the unit price is increased by one naira. Fig. 1.1 shows the function.

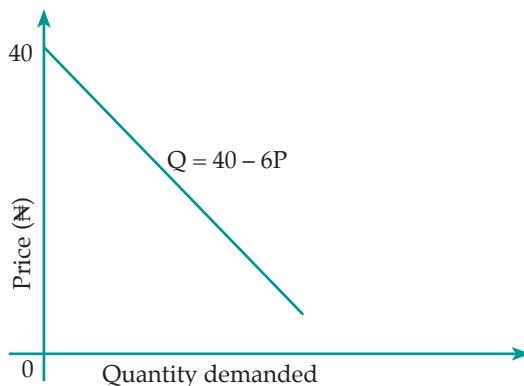


Fig. 1.1 A linear function with negative gradient

Example 2

$$C = 1.0 + 0.75y, \text{ where}$$

C is the amount of income spent on consumption

y is the amount of current income in naira.

In example 2, the intercept is 1 while the gradient is 0.75 or $\frac{3}{4}$. This equation shows that if current income becomes zero, at least one naira will be spent on consumption. It is immaterial whether this is borrowed or taken from previous savings. The equation shows also that 0.75 or $\frac{3}{4}$ of every naira increase in income will be spent on consumption. Fig. 1.2 graphically shows the function.

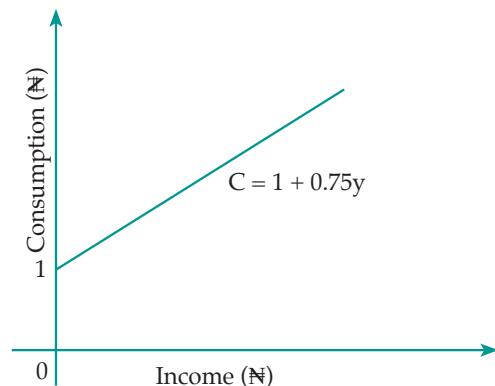


Fig. 1.2 A linear function with positive gradient

Simple applications of linear equations

Linear equations are used to link numbers which relate to two sets of variables. Examples are quantity demanded or supplied and price; consumption and income; savings and income; employment and investment; wages and period worked; savings and interest; inflation and the price level.

Example 3

Find the equilibrium price and quantity.

$$Q_d = 30 - 3P$$

$$Q_s = P + 20$$

To find equilibrium price using the formula

$$Q_d = Q_s$$

$$30 - 3P = P + 20$$

$$30 - 20 = P + 3P$$

$$10 = 4P$$

$$P = \frac{10}{4} = 2.5$$

To find quantity

$$Q_d = 30 - 3P$$

Substitute 2.5 for P

$$30 - 3(2.5) = 30 - 7.5 = 22.5$$

Equilibrium quantity = 22.5

Equilibrium price = 2.5

Example 4

Given the demand function for commodity X, $Q_d = 12 - 2P$ where Q_d is the quantity demanded and P the price of the commodity, use the demand function to complete Table 1.1.

Table 1.1

P	6	5	4	3	2	1	0
Q_d							

$$Q_d = 12 - 2P$$

$$\text{Where } P = 6$$

$$12 - 2(6)$$

$$12 - 12$$

$$Q_d = 0$$

$$\text{Where } P = 4$$

$$12 - 2(4)$$

$$12 - 8$$

$$Q_d = 4$$

$$\text{Where } P = 2$$

$$12 - 2(2)$$

$$12 - 4$$

$$Q_d = 8$$

$$\text{Where } P = 0$$

$$12 - 2(0)$$

$$12 - 0$$

$$Q_d = 12$$

$$\text{Where } P = 5$$

$$12 - 2(5)$$

$$12 - 10$$

$$Q_d = 2$$

$$\text{Where } P = 3$$

$$12 - 2(3)$$

$$12 - 6$$

$$Q_d = 6$$

$$\text{Where } P = 1$$

$$12 - 2(1)$$

$$12 - 2$$

$$Q_d = 10$$

tion are spread out or just clustered at a particular point. Measures of dispersion include range, semi-interquartile range (also called quartile deviation), mean deviation, standard deviation and variance. We shall discuss the last three.

Mean deviation

In both grouped and ungrouped distributions, means deviation can easily be calculated. For the ungrouped distribution, the mean deviation d is calculated using the formula:

$$d = \frac{\sum f|x - \bar{x}|}{\sum f}$$

Where

$\sum f$ = sum of frequencies

x = the variable

\bar{x} = any selected variable in the distribution called an *assumed mean*.

Example 5

Calculate the mean deviation of the following data: 5.3, 5.8, 5.3, 6.8, 5.5, 7.2, 7.1, 5.5, 5.5.

Let the assumed mean be 5.5. Prepare Table 1.2 as follows:

Table 1.2

x	\bar{x}	$\bar{x} - x$	f	$f/(x - \bar{x})$
5.3		-0.2	2	-0.4
5.5	5.5	0	3	0
5.8		0.3	1	0.3
6.8		1.3	1	1.3
7.1		1.6	1	1.6
7.2		1.7	1	1.7
Total			9	4.5

Measures of dispersion

A measure of dispersion is a figure which indicates whether the values in a distribu-

From Table 1.2

$$\sum f = 9$$

$$\sum f|x - \bar{x}| = 4.5$$

Substituting these values in the formula:

$$d = \frac{\sum f |x - \bar{x}|}{\sum f}$$

$$\text{we get } d \text{ as follows: } d = \frac{4.5}{9} = 0.5$$

In a grouped distribution, with equal class interval the formula

$$d = \frac{\sum f |x - \bar{x}|}{\sum f}$$

still holds, but here

x = the class mid-point of a class interval
(see Book 1)

f = the frequency of each class midpoint

$|x - \bar{x}|$ = the positive value of $x - \bar{x}$

Example 6

Table 1.3 shows the weight of 35 bags of cocoa in a warehouse.

Calculate the mean deviation.

Table 1.3

Weight (kg)	Number of bags
40 – 42	4
43 – 45	3
46 – 48	8
49 – 51	12
52 – 54	6
55 – 57	2

First, calculate the mean using the midpoint of the given data as in Table 1.4.

Table 1.4

Weight (kg)	Mid-point (x)	Frequency (f)	fx
40 – 42	41	4	164
43 – 45	44	3	132
46 – 48	47	8	376
49 – 51	50	12	600
52 – 54	53	6	318
55 – 57	56	2	112
Total		35	1702

$$\begin{aligned}\text{Mean } (\bar{x}) &= \frac{\sum fx}{\sum f} \\ &= \frac{1702}{35} \\ &= 48.6 \\ &= 49\text{kg}\end{aligned}$$

Using Table 1.5, calculate the mean deviation, d, as shown:

Weight (kg)	Midpoint (x)	Mean (calculated) (\bar{x})	Frequency (f)	$f/x - \bar{x}/$	$x - (x)$
40 – 42	41		4	-8	32
43 – 45	44		3	-5	15
46 – 48	47	49	8	-2	16
49 – 51	50		12	1	12
52 – 54	53		6	4	24
55 – 57	56		2	7	14
Total				35	113

$$\text{Mean deviation (d)} = \frac{\sum f|x - \bar{x}|}{\sum f} = \frac{113}{35} = 3.2 \text{ kg}$$

Example 7

Use Table 1.6 to calculate the mean deviation.

$$\text{Formula} = \frac{\sum f|x - \bar{x}|}{\sum f}$$

Table 1.6

x	5	6	10	12	16	30
f	4	5	4	4	2	1

Table 1.7

x	f	fx	/x - x/	Absolute deviation	f/x - x/
5	4	20	5 – 10 = -5	5	4 x 5 = 20
6	5	30	6 – 10 = -4	4	5 x 4 = 20
10	4	40	10 – 10 = 0	0	4 x 0 = 0
12	4	48	12 – 10 = 2	2	4 x 2 = 8
16	2	32	16 – 10 = 6	6	2 x 6 = 12
30	1	30	30 – 10 = 20	20	1 x 20 = 20
		$\sum f_x = 200$			$\sum f/x - x/ = 80$

$$\bar{x} = \frac{\sum f_x}{\sum f} = \frac{200}{20} = 10$$

$$\bar{x} = 10$$

$$\text{Mean deviation} = \sum f |x - \bar{x}| = \frac{80}{20} = 4$$

$$\text{Mean deviation} = 4$$

Example 8

Calculate mean deviation from Table 1.8.

Table 1.8

x	2	5	8	10	12	13	15
f	2	4	6	12	8	5	3

Table 1.9

x	f	fx	x - \bar{x}	Absolute deviation	f x - \bar{x}
2	2	4	2 - 10 = -8	8	2 × 8 = 16
5	4	20	5 - 10 = -5	5	4 × 5 = 20
8	6	48	8 - 10 = -2	2	6 × 2 = 12
10	12	120	10 - 10 = 0	0	12 × 0 = 0
12	8	96	12 - 10 = 2	2	8 × 2 = 16
13	5	65	13 - 10 = 3	3	5 × 3 = 15
15	3	45	15 - 10 = 5	5	3 × 5 = 15
	$\sum f = 40$	$\sum fx = 398$			$\sum f x - \bar{x} = 94$

$$x = \frac{\sum f_x}{\sum f} = \frac{398}{40} = 9.95$$

$$\bar{x} = 10$$

$$\text{Mean deviation} = \frac{\sum f |x - \bar{x}|}{\sum f} = \frac{94}{40} = 2.35$$

$$\text{Mean deviation} = 2.35$$

Advantages of mean deviation

- 1 Mean deviation uses all values in the data for calculation.
- 2 It is easy to obtain once the mean is known.
- 3 It shows a good picture of low spread of data under consideration.

Disadvantages of mean deviation

- 1 The absolute value it uses may be misleading.
- 2 It is not useful for further statistical calculation.

Standard deviation

Standard deviation is a measure of the extent to which a set of numbers has been dispersed about their arithmetic mean. The larger the standard deviation, the greater the dispersion.

Features of standard deviation

- 1 Standard deviation gives the most reliable indication of the dispersion of the individual values around the mean of the distribution.
- 2 Standard deviation uses values in the distribution without ignoring the signs of the deviations from the mean.

Calculation of standard deviation of ungrouped data

To calculate the standard deviation of a set of ungrouped data,

- 1 select an assumed mean, \bar{x}
- 2 determine the deviation of each value of the set of items from \bar{x} , i.e., $(x - \bar{x})$
- 3 square the deviation, i.e., $(x - \bar{x})^2$, ... $(x_n - \bar{x})^2$
- 4 find the sum of the squared items in (3), i.e., $(x_1 - \bar{x})^2 + \dots + (x_n - \bar{x})^2$
- 5 find the mean value of the sum of the squared items using the formula

$$= \frac{\sum f |x - \bar{x}|^2}{\sum f}$$

This is called the variance. (We shall later discuss more about variance)

- 6 Calculate the square root of the mean squares in 5.

$$\text{i.e. } \sqrt{\frac{\sum (x - \bar{x})^2}{\sum f}}$$

The value obtained in (6) above is the standard deviation S .

Example 9

The weights of eight goats were given, in kilograms, as 8, 11.5, 16.5, 10, 6, 3.5, 4, 12.5. Calculate the standard deviation to one decimal place.

Let the assumed mean, \bar{x} , be 10kg. Prepare the Table 1.10.

Table 1.10

x	f	\bar{x}	$x - \bar{x}$	$(x - \bar{x})^2$
3.5	1		-6.5	42.25
4	1		-6	36
6	1		-4	16
8	1		-2	4
10	1	10	0	0.
11.5	1		1.5	2.
12.5	1		2.5	6.25
16.5	1		6.5	42.25
Total	8			149

From Table 1.10, $\sum f = 8$

$$\sum (x - \bar{x})^2 = 149$$

Substituting in the formula:

$$S = \sqrt{\frac{\sum (x - \bar{x})^2}{\sum f}}$$

$$\begin{aligned} \text{we obtain } S &= \sqrt{\frac{149}{8}} \\ &= 4.31 \\ &= 4.3 \text{ kg} \end{aligned}$$

Calculation of standard deviation of grouped data

Standard deviation of grouped data can be calculated following steps 1-6, one after the other.

- 1 Ensure that the class interval of the distribution is represented by a single value.
- 2 Calculate the mid-point, x , of the grouped data.
- 3 Calculate the mean, \bar{x} , of the mid-points of the distribution.
- 4 Determine the deviation, d , which is the deviation of the mid-point, x , of the class from the calculated mean \bar{x} (i.e., $d = (x - \bar{x})$)
- 5 Calculate the variance using the formula

$$\frac{\sum f(x - \bar{x})^2}{\sum f}$$

- 6 Calculate the standard deviation S by taking the positive value of the square root of the variance, i.e.,

$$S = \sqrt{\frac{\sum f(x - \bar{x})^2}{\sum f}}$$

Note that the value of the standard deviation always has the same unit as the variable in the distribution.

Example 10

The scores of 30 students in a test were recorded in Table 1.11.

Table 1.11

Score	Number of students
10 – 19	2
20 – 29	3
30 – 39	2
40 – 49	4
50 – 59	3
60 – 69	8
70 – 79	4
80 – 89	2
90 – 99	2
Total	30

Calculate the standard deviation to the nearest whole number.

Construct Table 1.12 and use it to determine the mean of the group.

Table 1.12

Scores	Mid-point x	Frequency (f)	fx
10 – 19	14.5	2	29.0
20 – 29	24.5	3	73.5
30 – 39	34.5	2	69.0
40 – 49	44.5	4	178
50 – 59	54.5	3	163.5
60 – 69	64.5	8	516
70 – 79	74.5	4	298
80 – 89	84.5	2	169
90 – 99	94.5	2	189
Total		30	1685

$$\begin{aligned} \text{Mean, } \bar{x} &= \frac{\sum fx}{\sum f} \\ &= \frac{1685}{30} \\ &= 56.2 \end{aligned}$$

Using the calculated mean, construct Table 1.13. Calculate the variance and hence the standard deviation as follows:

Table 1.13

Score	Mid-point x	Frequency x	\bar{x}	$x - \bar{x}$	$(x - \bar{x})^2$	$f(x - \bar{x})^2$
10 – 19	14.5	2 3 2 4 3 8 4 2 2	56.2	-41.7	1738.89	3477.78
20 – 29	24.5			-31.7	1004.89	3014.67
30 – 39	34.5			-21.7	470.89	941.78
40 – 49	44.5			-11.7	136.89	547.56
50 – 59	54.5			-1.7	2.89	8.67
60 – 69	64.5			8.3	68.89	551.12
70 – 79	74.5			18.3	334.89	1339.56
80 – 89	84.5			28.3	800.89	1601.78
90 – 99	94.5			38.3	1466.89	2933.78
Total		30				14416.7

$$\text{Variance} = \frac{\sum f(x - \bar{x})^2}{\sum f} = \frac{14416.7}{30} = 480.6$$

$$\text{Standard deviation } S = \sqrt{\frac{\sum f(x - \bar{x})^2}{\sum f}} = \sqrt{480.6} = 21.9$$

Example 11

Calculate the standard deviation from the frequency distribution in Table 1.14.

Table 1.14

x	0	1	2	3	4	5	6	7	8
f	1	8	28	5	10	15	8	12	2

Table 1.15

x	f	fx	\bar{x}	$(x - \bar{x})$	$(x - \bar{x})^2$	$f(x - \bar{x})^2$
0	1	0		0 – 3 = -3	(-3) x (-3) = 9	0
1	8	8		1 – 3 = 2	(-2) x (-2) = 4	32
2	28	56	3	2 – 3 = -1	(-1) x (-1) = -1	56
3	5	15		3 – 3 = 0	0 x 0 = 0	0
4	10	40		4 – 3 = 1	1 x 1 = 1	20
5	15	75		5 – 3 = 2	2 x 2 = 4	60
6	8	48		6 – 3 = 3	3 x 3 = 9	72
7	12	84		7 – 3 = 4	4 x 4 = 16	192
8	2	16		8 – 3 = 5	5 x 5 = 25	50
	$\Sigma f = 89$		$\Sigma fx = 240$			$\Sigma f(x - \bar{x})^2 = 482$

$$\bar{x} = \frac{\sum fx}{\sum f} = \frac{240}{89} = 2.6$$

$$\bar{x} = 3$$

$$\begin{aligned}\text{Standard deviation} &= \sqrt{\frac{\sum f(x - \bar{x})^2}{\sum f}} \\ &= \sqrt{\frac{482}{89}} \\ &= \sqrt{5.4} = 2.3\end{aligned}$$

$$\text{Standard deviation} = 2.3$$

Example 12

Below are the shoe sizes of 25 children.

20, 20, 18, 22, 20, 20, 22, 18, 10, 10, 10, 22, 22, 18, 20, 20, 18, 18, 18, 10, 10, 22, 22, 10, 20. Calculate the standard deviation.

Table 1.16

x	f	fx	(x - \bar{x})	$(x - \bar{x})^2$	$f(x - \bar{x})^2$
10	6	60	$10 - 18 = -8$	$(-8) \times (-8) = 64$	$60 \times 64 = 3840$
18	6	108	$18 - 18 = 0$	$0 \times 0 = 0$	$108 \times 0 = 0$
20	7	140	$20 - 18 = 2$	$2 \times 2 = 4$	$140 \times 4 = 560$
22	6	132	$22 - 18 = 4$	$4 \times 4 = 16$	$132 \times 16 = 2112$
	$\sum f = 25$	$\sum fx = 440$			$\sum f(x - \bar{x})^2 = 6512$

$$\bar{x} = \frac{\sum fx}{\sum f}$$

$$= \frac{440}{25}$$

$$= 17.6$$

$$= 18 \text{ approx.}$$

$$\bar{x} = 18$$

$$\begin{aligned}\text{Standard deviation} &= \sqrt{\frac{\sum f(x - \bar{x})^2}{\sum f}} \\ &= \sqrt{\frac{6512}{25}} \\ &= \sqrt{260.4} \\ &= 16.1\end{aligned}$$

$$\text{Standard deviation} = 16.1$$

Advantages of standard deviation

- 1 Standard deviation is useful for further statistical calculations.
- 2 It is the commonly used among measures of dispersion and variation.

- 3 All the values in the data are used for its calculation.
- 4 It is useful for those involved in statistical sampling theory.

Disadvantages of standard deviation

- 1 Standard deviation is difficult to understand.
- 2 It is also difficult to calculate.

Variance

The variance is the product obtained when the standard deviation is multiplied by itself. In other words, variance is the square of standard deviation. The importance of variance lies in its amenability to the arithmetical process of addition.

Despite this fundamental importance of the variance as a measure of dispersion, its usefulness is impaired by the fact that it is measured in units which are the squares of those of the actual values. For instance, if the weights of certain articles are given in kg, the standard deviation is also in kg, but the variance is kg².

Variance is given as $V = S^2$

Variance is calculated using the following formula:

Ungrouped data	Grouped data
$S^2 = \frac{\sum(x - \bar{x})^2}{n}$	$V = \frac{\sum(x - \bar{x})^2}{\sum f}$

Example 13

Find the variance of this set of numbers, 1, 3, 4, 5, 7.

Step 1

Find the mean.

$$\bar{x} = \frac{1+3+4+5+7}{5} = \frac{20}{5} = 4$$

Table 1.17

x	\bar{x}	$(x - \bar{x})$	$(x - \bar{x})^2$	
1	4	1 - 4 = -3	9	
3	4	3 - 4 = -1	1	
4	4	4 - 4 = 0	0	
5	4	5 - 4 = 1	1	
7	4	7 - 4 = 3	9	
				$\sum (x - \bar{x})^2 = 20$

$$V = \frac{20}{5} = 4$$

Example 14

Find the variance from this set of numbers: 2, 4, 6, 8, 10, 12, 14.

Find the mean.

$$\bar{x} = \frac{2+4+6+8+10+12+14}{7} = \frac{56}{7} = 8$$

Table 1.18

x	\bar{x}	$x - \bar{x}$	$(x - \bar{x})^2$	
2	8	2 - 8 = -6	36	
4	8	4 - 8 = -4	16	
6	8	6 - 8 = -2	4	
8	8	8 - 8 = 0	0	
10	8	10 - 8 = 2	4	
12	8	12 - 8 = 4	16	
14	8	14 - 8 = 6	36	
				$\sum (x - \bar{x})^2 = 112$

$$V = \frac{\sum(x - \bar{x})^2}{n}$$

$$V = \frac{112}{7} = 16$$

$$V = 16$$

Variance from grouped data

$$\text{Formula} = \sum f \frac{(x - \bar{x})^2}{\sum f}$$

Consider this data:

Table 1.19

x	8	5	7	9	11	13	14
f	2	4	3	5	3	2	2

Table 1.20

x	f	fx	$x - \bar{x}$	$(x - \bar{x})^2$	$f(x - \bar{x})^2$
8	2	16	$8 - 9 = -1$	1	$2 \times 1 = 2$
5	4	20	$5 - 9 = -4$	16	$4 \times 16 = 64$
7	3	21	$7 - 9 = -2$	4	$3 \times 11 = 12$
9	5	45	$9 - 9 = 0$	0	$5 \times 0 = 0$
11	3	33	$11 - 9 = 2$	4	$3 \times 4 = 12$
13	2	26	$13 - 9 = 4$	16	$2 \times 16 = 32$
14	2	28	$14 - 9 = 5$	25	$2 \times 25 = 50$
	$\sum f = 21$	$\sum fx = 189$			$\sum f(x - \bar{x})^2 = 172$

$$\begin{aligned}\bar{x} &= \frac{\sum fx}{\sum f} \\ &= \frac{189}{21} = 9 \\ &= 9\end{aligned}$$

$$V = \frac{\sum f(x - \bar{x})^2}{\sum f}$$

$$V = \frac{172}{21}$$

$$V = 8.2$$

Example 15

The scores of thirty (30) students in a test were recorded in Table 1.21.

Table 1.21

Scores	Number of students
10 – 19	2
20 – 29	3
30 – 39	2
40 – 49	4
50 – 59	3
60 – 69	8
70 – 79	4
80 – 89	2
90 – 99	2

To find the mean, we have to get the mid-point.

Table 1.22

Scores	x Mid-point	f Frequency	fx	x – \bar{x}	x – x^2	f (x – \bar{x})²
10 – 19	14.5	2	29.0	-14.7	1738.89	3477.78
20 – 29	24.5	3	73.5	-31.7	1004.89	3014.62
30 – 39	34.5	2	69.0	-21.7	470.89	941.78
40 – 49	44.5	4	178	-11.7	136.89	547.56
50 – 59	54.5	3	163.5	-1.7	2.89	8.67
60 – 69	64.5	8	516	8.3	68.89	551.12
70 – 79	74.5	4	298	18.3	334.89	1339.56
80 – 89	84.5	2	169	28.3	800.89	1601.78
90 – 99	94.5	2	189	38.3	1466.89	2933.78
		$\sum f = 30$	$\sum fx = 1685$			$\sum f(x - \bar{x})^2 = 14416.7$

$$\bar{x} = \frac{\sum fx}{\sum f}$$

$$= \frac{1685}{30}$$

$$= 56.2$$

$$\bar{x} = 56.2$$

$$V = \frac{\sum f(x - \bar{x})^2}{\sum f}$$

$$V = \frac{14416.7}{30}$$

$$V = 480.6$$

Calculation of standard deviation of grouped data

Standard deviation of grouped data can be calculated following steps 1–6, one after the other.

Steps

- 1 Ensure that the class interval of the distribution is represented by a single value.

2 Calculate the midpoint of the grouped data.

3 Calculate the mean, \bar{x} , of the mid-points of the distribution.

4 Determine the deviation, d , which is the deviation of the midpoint, x , of the class from the calculated mean \bar{x} (i.e., $d = (x - \bar{x})$)

5 Calculate the variance using the formula

$$\frac{\sum f(x - \bar{x})^2}{\sum f}$$

6 Calculate the standard deviation S by taking the positive value of the square root of the variance, i.e.,

$$S = \sqrt{\frac{\sum f(x - \bar{x})^2}{\sum f}}$$

Note that the value of the standard deviation always has the same unit as the variable in the distribution.

Summary

- A linear equation depicts a mathematical relationship between two variables which increase or decrease proportionately.
- A linear equation is of the general form $y = a + bx$, where y is the dependent variable, x is the independent variable, a is the intercept and b is the gradient.
- A linear equation will always produce a straight line graph, sloping upwards if the gradient is negative.
- Standard deviation gives an indication of the dispersal of a set of figures about their arithmetic mean.
- Variance is the square of the standard deviation.

Review questions

Multiple-choice questions

- 1 The question $S = 3 + 0.2r$ where S is the amount of savings in naira, and r is the rate of interest in per cent means that, other things being equal,
 - savings increase as interest rates increase.
 - savings decrease as interest rates increase.
 - savings and interest rates must be equal.
 - none of the above.
- 2 In the equation, $S = 3 + 0.2r$
 - at least ₦3.00 will be saved, even if the interest rate is zero.
 - at least ₦2.00 will be saved, whatever the interest rate.
 - at least ₦5.00 will be saved, whatever the interest rate.
 - none of the above
- 3 Which of A–D is correct if in the savings function, $S = 3 + 0.2r$, $r = 15\%?$

- savings would be ₦10.00
- savings would be ₦8.00
- savings would be ₦15.00
- savings would be ₦6.00

- 4 Given $\Sigma f = 15$, $\Sigma f(x - \bar{x})^2 = 1815$ for a grouped data, which of A–D is the standard deviation?
 - 22
 - 11
 - 33
 - 44
- 5 If in question 4 the units were in centimetres, the variance would be____
 - 484 cm.
 - 121 cm.
 - 484 cm^2 .
 - 121 cm^2 .

Essay questions

- 1 What is the main weakness of the variance as a measure of dispersion?
- 2 The prices of 8 bars of soap were given in naira as 16, 23, 33, 20, 12, 25, 8 and 7. Using an assumed mean of ₦20.00, calculate the standard deviation to the nearest kobo.
$$Q = \frac{5}{2}P$$
where
 Q = Quantity supplied
 P = Price in kobo per unit
Calculate
 - the quantity supplied at a price of 4k.
 - the unit price if quantity supplied is 15.
- 3 State three advantages of standard deviation.
- 4 What are the disadvantages of mean deviation?

Performance objectives

By the end of this chapter, you will be able to:

- 1 explain the meanings of
 - a) demand and supply
 - b) market equilibrium.
- 2 explain the factors that affect demand and supply.
- 3 distinguish between the factors that cause a shift in demand and supply curves, and those that cause movements along demand and supply curves.
- 4 draw the schedules and curves to explain the changes.
- 5 distinguish between various types of demand.

Introduction

In this chapter, we shall examine the concepts and laws of demand and supply. We shall also discuss the following: demand and supply schedule and curve; factors affecting demand and supply; and determination of equilibrium price and quantity.

Demand

Demand is the quantity of a good or service which households, firms and governments are willing to purchase at any given price at a given time.

The first thing that must be noted about

demand is that it is related to price. There cannot be any discussion of demand without reference to a price level. If cars, for example, were offered at no cost, that is, free of charge, surely almost everybody would demand one. If the price of a car was put at three million naira, however, then we would have much fewer cars on our roads than there are today.

Another thing that must be noticed about demand is that it is a desired quantity. It is simply how much the consumers wish to buy, not necessarily the quantity actually bought. This is because demand is different from want. Want is a wish or desire to have something. Demand is more than that. Effective demand is a desire or wish to have something, backed up with the ability to pay for it at the prevailing price. When we talk of demand in economics, we are actually referring to effective demand, not mere want. For instance, if I feel a need for a car, but at five hundred thousand naira, I cannot pay for one, then that would be a mere want. On the other hand, if I was willing and able to pay for one at that price, then that would be effective demand.

A third observation about demand is that it is a flow. Thus, demand is not a constant or fixed quantity. In discussing demand, we do not refer to just a single, isolated purchase but, rather, a whole series of purchases. It is for this reason that demand is always given as a quantity per period, e.g., twenty oranges per day or two goats per month.

Demand schedule and curve

In this section, we shall study demand schedule and demand curve under separate headings.

Demand schedule

The demand schedule is a list, usually presented as a table, showing the quantity of a good or service that will be bought at various price levels, assuming that all other factors determining demand remain constant. There are individual demand schedule and market demand schedule. An individual demand schedule is a table showing the quantities of a good or service demanded by an individual at varying prices, while a market demand schedule shows the overall quantity of a commodity that consumers are willing to pay for at various prices, without regard to any other relevant factors.

Examples of both are given in Tables 2.1, 2.2 and 2.3.

Table 2.1 An individual demand schedule

Price per loaf of bread (₦)	Quantity demanded per week
100.00	28
150.00	24
200.00	20
250.00	16
300.00	12
350.00	8

Table 2.2 Individuals demand schedule

Price per loaf of bread (₦)	Quantity demanded per week		
	Miss Iyabo	Miss Amina	Miss Chinyere
100.00	28	18	30
150.00	24	15	26
200.00	20	12	20
250.00	16	9	18
300.00	12	6	15
350.00	8	3	10

If we assume that Iyabo, Amina and Chinyere are the only consumers of bread, the market demand schedule will show their combined demand at the various prices, as in Table 2.3.

Table 2.3 A market demand schedule

Price per loaf bread (₦)	Quantity demanded per week
100.00	76
150.00	65
200.00	52
250.00	43
300.00	33
350.00	21

The market demand schedule (Table 2.3) shows that, at a price of one hundred naira per loaf of bread, a total of 76 loaves will be bought from the market-place in a week, and so on.

It is important to note that in all the demand schedules so far considered *the quantity demanded falls as price rises*. This is the first law of demand and supply.

Demand curve

The demand curve is a graphical representation which shows the relationship between the price per unit of a product and the quantity of that product which consumers are willing to buy at that price. This relationship is normally shown on a smooth curve on a graph in which the price is measured along the vertical axis, while the quantity demanded is measured along the horizontal axis.

As with demand schedule, there are demand curve for the individual consumer as well as for the market as a whole. The market demand curve is a combination of individual demand curves. All demand curves are drawn from the demand schedule on a graph. The demand curve may be normal or abnormal.

Normal demand curve

The normal demand curve slopes downwards from left to right, reflecting the fact that the lower the price, the greater the quantity of the commodity demanded. Below is a normal demand curve for an individual, based on information contained in the demand schedule in Table 2.1.

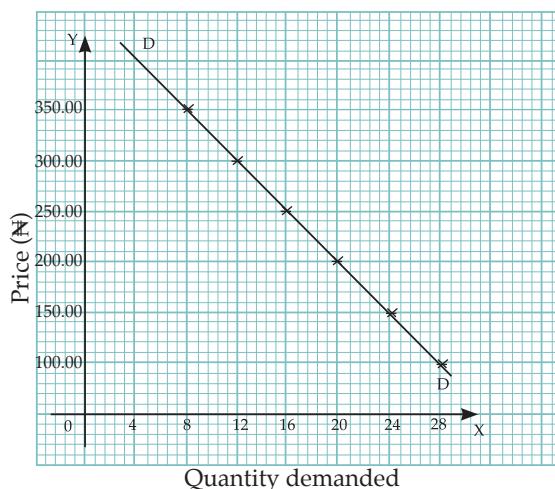


Fig. 2.1 Normal demand curve

Abnormal demand curve

An abnormal demand curve, also called an exceptional demand curve, is one which does not slope downwards from left to right, reflecting the fact that sometimes, a fall in the price of a commodity may not be followed by an increase in the quantity demanded. An abnormal demand curve is said to be regressive or backward sloping. An example is given in Fig. 2.2.

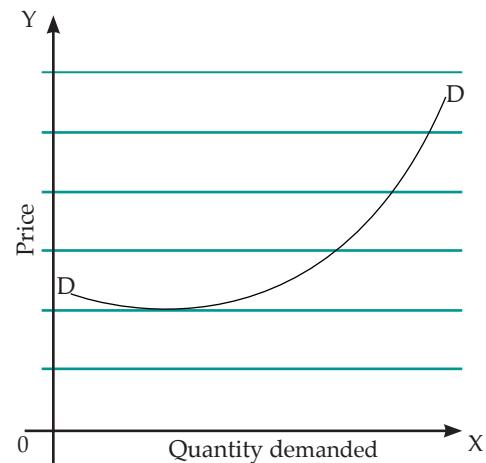


Fig. 2.2 An exceptional demand curve

Why abnormal demand curves occur

Abnormal demand curves occur because of the following:

- 1 Quality-related prices
- 2 Articles of ostentation
- 3 Inferior or Giffen goods
- 4 Speculation
- 5 Necessary goods

Quality-related prices

Any commodity whose quality is believed to be indicated by its prices will have an abnormal demand because the higher its price, the higher its quality is believed to be. Consumers will therefore buy more of it at

higher prices than at lower prices. Examples are wine and whisky.

Articles of ostentation

These are goods consumed by rich people just to show off their wealth. As the price of such a good increases, rich people buy more of it to show that they are able to purchase it, thereby causing the demand curve to slope upwards which is abnormal. Examples are certain types of cars, jewellery and antiques.

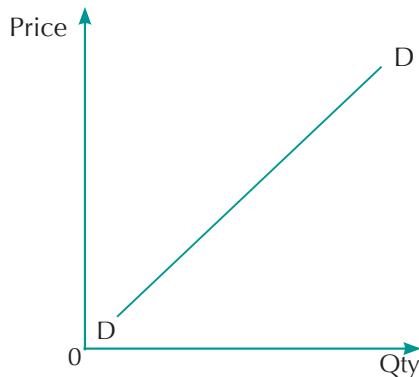


Fig. 2.3 Articles of ostentation

Inferior or Giffen goods

These goods are normally those consumed by the poor, who merely demand the basic necessities. These goods are so essential to life that an increase in price will not cause a decrease in demand so that, as price rises to a point, quantity demanded rises also. Such goods have an abnormal demand curve. Examples are salt and kerosene.

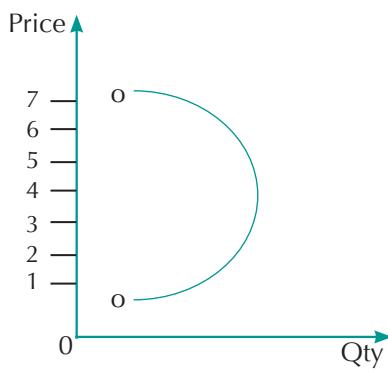


Fig. 2.4 Inferior or Giffen goods

Speculation

Speculation can also cause the demand curve to be abnormal. If the price of a commodity increases, consumers may rush to buy more of it for fear that prices will increase further. This happens in agricultural products especially when harvests are expected to be poor.

Necessary goods

Goods without substitute like salt will create an abnormal demand curve since any change in price, either rise or fall, will not affect the quantity demanded. It will therefore create a zero elastic or perfectly inelastic demand.

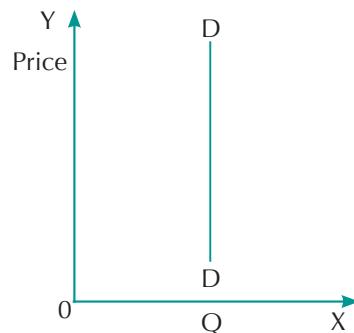


Fig. 2.5 Necessary goods

Change in demand and quantity demanded

As we have seen, a normal demand curve shows that the lower the price of a commodity, the greater the quantity demanded of it. This represents a change in quantity demanded.

By change in quantity demanded, we mean a rise in the quantity demanded as a result of a change in price. A change in the quantity demanded only means a movement along the same demand curve. It is merely an operation of the first law of demand and supply which states that the higher the price of a commodity, the lower will be the quantity of it demanded, and vice versa.

Fig. 2.6 illustrates change in quantity demanded.

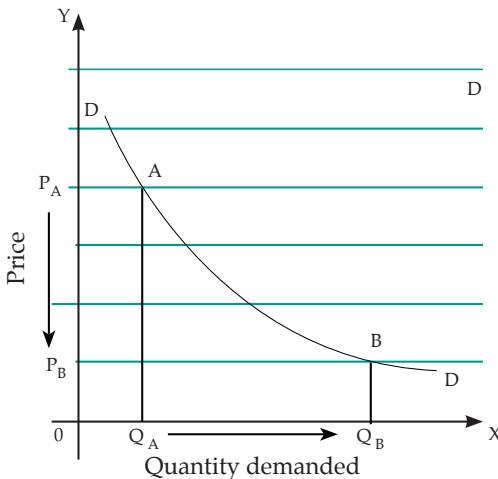


Fig. 2.6 Change in quantity demanded

In Fig. 2.6, DD is a normal demand curve sloping downwards from the left to right, in keeping with the first law of demand and supply. At point A on the demand curve, the price is P_A and the quantity that will be demanded is Q_A . At point B, the price has fallen to P_B and the quantity that will be demanded expands or extends to Q_B . If the price should rise again to P_A , then the quantity demanded will contract to Q_A .

Note that movement is still along the same demand curve, DD. Note also, the use of the terms extension or expansion, and contraction of demand, to describe a movement from one point to another on the same demand curve, as in Fig. 2.6. It does not involve any new demand curve. When the price falls and the quantity demanded rises, we describe this as an expansion or extension of demand. When prices and quantity demanded fall, we call this a contraction of demand.

Thus, the terms expansion and contraction of demand are reserved for changes in demanded quantity which take place only as

a result of changes in the price of the commodity; that is, a normal reaction of demand to price.

Factors responsible for expansion and contraction of demand

When the price of a commodity falls, people usually buy more of it, for the following reasons:

- 1 Income effect
- 2 Substitution effect
- 3 Diminishing marginal utility

Income effect

When the price of a commodity falls, it increases the purchasing power of the consumer, called the real income. So, he can now buy a higher quantity than before. Suppose the money income of a consumer is ₦70. If he spends all of it on garri which costs ₦10 per bag, he will have 7 bags. But suppose the price falls to ₦7 per bag, he can now purchase the same number of bags with only ₦49. This will leave him with ₦21 to spare. In effect, his real income has increased by ₦21 as a result of the price fall from ₦10 to ₦7 per bag of garri. With the extra ₦21, he can now increase his demand for garri to 10 bags from 7. Thus, income effect is one factor which causes demand to expand or contract.

Substitution effect

When the price of a commodity falls, that commodity becomes more attractive to consumers than its substitutes whose prices have not fallen. More of it will therefore be bought instead of its substitutes. With its price fallen, people who were previously unable to buy it can now afford it, and so the demand for it expands. This is how the substitution effect causes the quantity demanded to expand or contract.

Diminishing marginal utility

Utility is the ability of a good to satisfy a human want. Marginal utility is the satisfaction which the consumer gets from consuming one extra unit of the good. Now, it is a fact of human existence that the more an individual has of a commodity, the less of it he generally wants because his marginal utility for it diminishes. For him to have more of it then, the price of the commodity must be lower, so as to encourage him to buy it. Thus, diminishing marginal utility is part of the explanation for expansion and contraction of demand.

Changes in demand

A change in demand, also known as a shift in demand, must be distinguished from change in quantity demanded just discussed. A change or shift in demand is a complete change in the state of demand such that quantity demanded increases or decreases without any change in price. This causes the demand curve to shift either to the right hand side or to the left hand side. If the demand curve shifts to the right, this means that a higher quantity is being demanded at the old price. If, however, the demand curve shifts to the left, it means that the quantity demanded has fallen, although the price has not changed. Fig. 2.7 illustrates a change or shift in demand.

From the diagram, we see that price is fixed at P for all three demand curves. Along the original demand curve, DD, the quantity demanded is given as Q. When the demand curve shifts to the right at $D_R D_{R'}$, the quantity demanded increases from Q to Q_R but when the curve shifts leftwards to $D_L D_{L'}$, the quantity demanded decreases to Q_L .

Note also that the terms 'increase' and 'decrease' are used to describe a movement

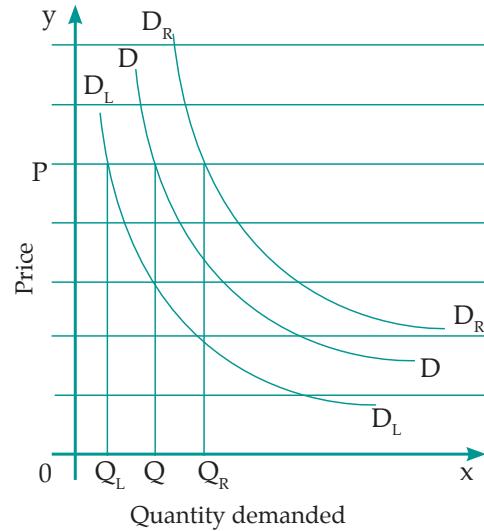


Fig. 2.7 Change or shift in demand

from one demand curve to another completely different one. When a new demand curve is drawn to the right of the old one, we call this an increase in demand. When it is drawn to the left of the old one, this is referred to as a decrease in demand. The change in demand is not simply the result of changes in the prices of the commodity alone, but also the result of a number of other factors.

Factors affecting changes in demand

A number of factors affect changes in demand. These include:

- 1 Change in income
- 2 Income redistribution
- 3 Tax policy
- 4 Prices of other commodities
- 5 Change in taste and fashion
- 6 Seasonal effects
- 7 Changes in consumer population

Change in income

A general increase in the disposable income

of consumers will give rise to a shift of the demand curve to the right; that is, an increase in the quantity consumers are willing to purchase, assuming there is no change in price. This is because the number of consumers will increase as more persons are now able to afford the commodity with their higher incomes. This happened in Nigeria in 1974 when the Udoji Awards took place which was a general increase in workers' incomes. On the other hand, if there was a general fall in real incomes, consumers would have less money to spend and this would cause a decrease in demand. This also happened in Nigeria after the introduction of the Second-tier Foreign Exchange Market (SFEM) in September 1986.

Income redistribution

In an economy having wide inequalities of income and wealth, the general level of demand will be low because the average propensity to consume is low. If, however, the income is redistributed more evenly, the average ability to consume will increase. Consequently, demand will also increase.

Tax policy

The policy of the ruling government on taxes also affects changes in demand. Where the tax rate is very high, consumers will have less money to spend, and so demand will decrease. Where, on the other hand, the government lowers the tax rate, the demand curve will shift to the right.

Prices of other commodities

The demand for one commodity and the prices of other goods are often related. If two commodities are close substitutes, like yams and potatoes, or bus rides and taxi rides, a rise in the price of one will cause

an increase in the demand for the other. If, however, the goods are used together, like tea and sugar, a fall in the price of one will result in an increase in the demand for both.

Change in taste and fashion

A particular good may cease to be attractive to people as a result of the invention of a new and better one. The demand for it will then fall as consumers switch over to the new product. When a commodity is no longer fashionable, the demand for it will fall. This frequently happens with items of clothing, such as dresses, hats and shoes.

Seasonal effects

Some commodities have a demand structure determined by the seasons. For example, the demand for blankets and cardigans normally increases during the harmattan season in West Africa. So does the demand for rain-coats in the rainy season. When the seasons change again, the demand also changes.

Changes in consumer population

The demand for a good will decrease if a large proportion of its consumers emigrates to other places. A rise in their population will increase the level of demand again. To illustrate from a practical example, at the beginning of the Nigerian civil war in 1966, there was an exodus of the Igbo from northern Nigeria. This caused a drastic decrease in the demand for yams in that part of the country.

Supply

Supply is the quantity of an economic good which sellers are ready to offer for sale at a particular price and at a specified time. This definition raises a number of points about supply.

First, only an economic good can be supplied. An economic good is one which is capable of satisfying a human want, is limited in supply and commands a market price. Hence, air is not an economic good, although human beings need it for life. Another thing to note about supply is that it is different from total production. Supply is usually smaller because it refers to the amount the producer is willing to bring to the market at a given time and price. For example, if a farmer produces 20 bags of millet, keeps 4 for his personal use and brings 16 bags to the market for sale at the prevailing price, the supply of millet is 16 bags while total production is 20 bags.

We must note also that supply is only spoken of with regard to price. In a market economy like ours, the producer is encouraged to offer his products for sale only because he hopes to make some profit. For this reason, consumers have to pay a price for what the producer is offering.

There cannot be such a thing as the supply of motor cars. They are supplied only at a price, say, ₦1 000 000. However, this is not saying that supply will immediately change when price changes. Land, for example, generally cannot be increased in supply, no matter how rents rise. The same is true for many agricultural products.

Finally, we must note that supply is a flow, not a stock. Supply refers to only how willing producers are to sell, not how much they actually sell in the end, for the desired and the actual do differ. This is why we speak of supply as so much per period of time.

Supply schedule and curve

Earlier on we studied demand schedule and curve. For supply, we also have schedule

and curve. We shall study these separately beginning with supply schedule.

Supply schedule

A supply schedule is a table showing the amount of a commodity that will be offered for sale at various prices, while other factors which determine supply remain constant. There are individual supply schedule and market supply schedule. An individual producer will supply at various prices while a market supply schedule shows the total of all quantities which all suppliers will offer for sale at various prices, provided other factors affecting supply remain unchanged.

Table 2.4: Individual supply schedule

Price per kg of beef (₦)	Quantity supplied per week
100.00	10
150.00	13
200.00	17
250.00	20
300.00	25
350.00	35

Table 2.5 Market supply schedule

Price per kg of meat (₦)	Quantity supplied per week
100.00	100
150.00	150
200.00	190
250.00	250
300.00	300
350.00	350

Observe in both cases, that *the higher the price, the higher the quantity supplied*. This is the second law of demand and supply.

Supply curve

A supply curve is one that shows how much of a good will be supplied per unit of time at any given price, assuming that other factors affecting supply remain unchanged. The supply curve shows the way in which prices and quantity supplied are related.

The supply curve is represented in a graph on which price is measured along the Y-axis and quantity supplied, along the X-axis. We can distinguish between the supply curve of an individual and that of the general market. The individual supply curve is a graphical representation of the individual supply schedule. The market supply curve is the graphical representation of the market supply schedule. It is obtained by adding together the amount that each individual supplier will offer for sale at each price. The supply curve may be normal or abnormal.

Normal supply curve

A normal supply curve is one which slopes upwards, from left to right, showing that the quantity supplied increases as the price increases. Fig. 2.8 shows a typical normal supply curve.

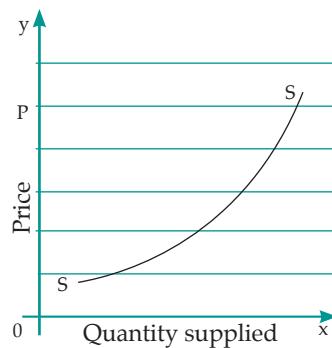


Fig. 2.8 A normal supply curve

Abnormal supply curve

The abnormal supply curve, also called regressive or backward sloping supply curve, is one which does not slope upwards continuously from left to right, thus showing that at higher prices, less quantities will be supplied. That is, a negative situation in which a fall in the price of the commodity leads to an expansion of its supply. Fig. 2.9 shows a typical abnormal supply curve.

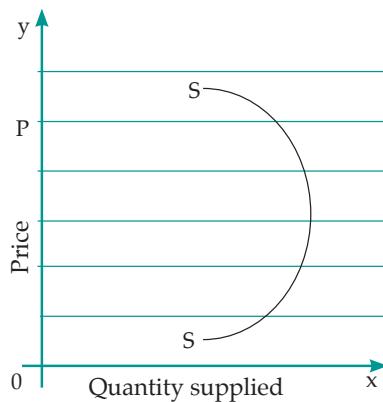


Fig. 2.9 Regressive (backward sloping) supply curve

Abnormal supply curves occur because of the following:

- 1 Rising incomes
- 2 Target incomes
- 3 Monopolistic practices

Rising incomes

If wages per hour go on increasing, the supply curve of labour could become regressive or backward sloping. This is because, when wages reach a certain high level, leisure becomes attractive to workers. They are no more willing to work extra hours but want to have some time to enjoy themselves, thereby reducing the total supply of labour.

Target incomes

This situation is more common with agricultural products. A farmer who aims at a

particular income target may go on supplying the market even when prices fall. Also when prices rise so high that he can quickly attain his target income, he can cut back on supplies, even at higher prices.

Monopolistic practices

The sole supplier of a product to a market may hold back supplies even when prices are rising, to push prices still higher up.

Change in quantity supplied (expansion and contraction of supply)

Change in quantity supplied refers to the normal situation in which quantity supplied reacts to price movements in such a way that an increase in price causes a rise in supply while a fall in price causes a fall in the quantity supplied. When the quantity supplied rises owing to a price rise, we refer to this as an expansion of supply. When the quantity supplied falls owing to a reduction in price, we call this a contraction of supply. Therefore, 'expansion' and 'contraction' of supply are terms used to describe changes which occur in supply solely because of changes in the price of the commodity. Expansion and contraction of supply refer to movements along the same supply curve.

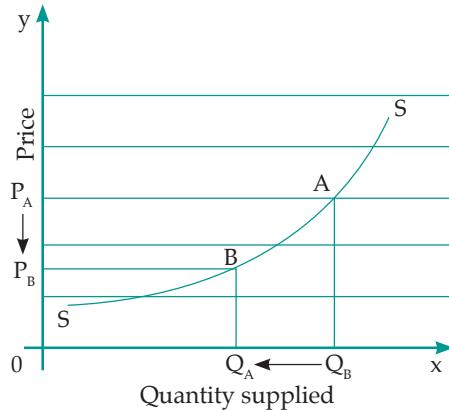


Fig. 2.10 Change in quantity supplied (expansion and contraction of supply)

Fig. 2.10 illustrates the expansion and contraction of supply. At price P_A , the quantity supplied is Q_A , but at P_B , the price has fallen. The quantity supplied therefore contracts to Q_B . If prices should rise again to P_A , supply would also expand to Q_A . It can therefore be clearly seen that changes in quantity supplied are mere movements along the supply curve, in obedience to the second law of demand and supply (i.e., *the higher the price, the higher the quantity supplied*). Observe in this case that at any given price, the quantity supplied remains constant since only one supply curve is involved.

Changes in supply

Change in supply refers to a complete alteration in the condition of supply. We use the term *change in supply* to describe a situation in which a greater or lesser quantity is being supplied to the market without any change in the price of the good. Here, the change in the quantity supplied is not a reaction to price change. When a change in supply occurs, there is a shift of the supply curve to another position. If the supply curve shifts to the left, this means a fall in the quantity supplied at the old price. When this happens, we say there is a decrease in supply. If the supply curve shifts to the right, this is interpreted to mean that the quantity supplied at the old price has increased. We call this an increase in supply.

Therefore, the terms *increase or decrease in supply* are reserved for *changes in supply owing to changes in the state of supply*. This is illustrated diagrammatically in Fig. 2.11.

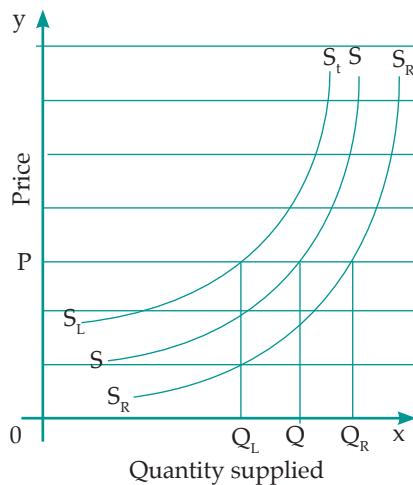


Fig. 2.11 Changes in supply

The price is fixed at P. Along the original supply curve, SS, the quantity supplied is Q. Later, at the same price, the quantity supplied increases to Q_R , causing a new supply curve to be drawn to the right of SS, at $S_R S_R'$. Finally, with the price still at P, the quantity supplied decreases to Q_L , so that the supply curve shifts to the left at $S_L S_L'$. These shifts are known as changes in supply. Observe in this case that at any given price, fewer or more goods are being supplied than at the former stage. For instance, at any given price, the supply along $S_R S_R'$ is greater than that along SS.

Factors affecting changes in supply

The supply curve may shift to the left, or to the right, for a number of possible reasons:

- 1 Production costs
- 2 Prices of other goods
- 3 Climatic changes
- 4 Changes in producer population

Production costs

If the cost of producing a commodity rises,

market price will rise and demand will fall; the supply will thus decrease. Increases in cost of production may be brought about by increases in the costs of the factors of production. For example, if wages increase substantially, the production costs of a labour-intense industry will increase too. However, if production cost falls, perhaps owing to technical progress, supply will increase in reaction to increasing demand.

Prices of other goods

An increase in the price of a good whose demand is inelastic could make producers leave their former product for the one whose price has increased. The supply of the former good will therefore decrease. For example, a rise in the price of black ball-point pens, the demand for which is elastic, could cause the manufacturers to shift away from the former product to the production of black ball-point pens, the price of which has risen. Consequently the supply of black ball-point pens would increase and the supply of the former product would fall.

Climatic changes

Changes in climatic condition affect the supply of agricultural products. For example, irregular rainfall patterns cause a shortfall in the expected agricultural output, especially with regard to crops.

Changes in producer population

If the number of producers of a particular commodity increases, there will be a general rise in the supply of the commodity. This has been the case in the soap and detergent industry in Nigeria in recent times. If, however, the producer population falls, supply will also fall.

Laws of demand and supply

The laws of demand and supply are a summary of the main points contained in the theory that the price of a good or service is determined by the interaction of supply and demand. These general tendencies, referred to as laws, give a fair description of what happens in most market situations. There are, of course, exceptions to every law, including the laws of demand and supply, which are summarised as follows:

- 1 The higher the price of a commodity, the lower the quantity demanded; the lower the price, the higher the quantity demanded.
- 2 The higher the price of a commodity, the higher the quantity supplied; the lower the price, the lower the quantity supplied.
- 3 Prices tend to an equilibrium level at which the quantity demanded is equal to the quantity supplied.
- 4 An increase in supply over demand lowers the market price and causes demand to expand.
- 5 A decrease in supply raises the market price and causes demand to contract.
- 6 A decrease in demand results in lower prices and causes supply to contract.
- 7 When demand increases, price rises and supply expands.

Determination of market prices

All along, we have been speaking of prices, without giving it any particular definition. We shall now define price as the value of a good or service expressed in units of money. It is the amount of money which must be

given up to obtain one unit of a good or service. Thus, price is a term used when talking of the ratio at which a commodity or service will be exchanged for money. Again, price may be used in a broader sense to refer to anything which must be paid for an exchange to take place. In a tribal economy, for instance, the bride price may consist of days of labour, or so many tubers of yam. It should be noted that, in talking of human services, the price paid is commonly referred to as wage, salary, fee or commission. The price for borrowed money is called the interest while the price paid for use of land or landed property is called the rent.

How price is determined by supply and demand

By definition, a market is a situation in which the buyer and seller can come into a contract, in order to conduct transactions. Every market is dominated by two categories of persons—the buyers and sellers. These two must agree before any purchases or sales could take place. While buyers are the force behind demand, sellers are the force behind supply. This, therefore, is to say that demand and supply have to interact in the market for any transaction to take place.

Now, we have seen that as prices increase, the quantity demanded falls. This is because buyers want to pay as little as possible to satisfy their wants. On the other hand, as the price of goods increases the quantity supplied rises. This is because sellers want the highest possible prices for their products in order to make as much profit as possible.

With supply and demand going in opposite directions, there comes a point at which the two must meet. *This point at which supply and demand are equal is*

called the equilibrium. The quantity supplied and demanded at equilibrium is called the equilibrium quantity. The price at which this takes place is called the equilibrium price. At this point, there is said to exist a market equilibrium.

We thus define market equilibrium as a situation in which the quantities of the product which buyers are willing to buy at the prevailing price are exactly equal to the quantities which sellers are willing to sell. At market equilibrium, the forces of supply and demand are perfectly balanced. Price is stable as there is nothing forcing it to rise or to fall. The price at this point, called the equilibrium price, is the market price of the commodity. At market equilibrium, the market is completely cleared. Sellers sell all they want to sell and buyers buy all they want to buy, the price being satisfactory to both groups.

Table 2.6 Composite demand and supply schedules for rice

Price per kg (₦)	Demand per week (kg)	Supply per week (kg)
5	28	12
10	20	20
15	16	24
20	13	26½
25	12	28

The demand and supply schedules shown in Table 2.6 are translated into demand and supply curves in Fig. 2.12. Notice how demand and supply interact in the market to determine the equilibrium price at E, where the price is ₦10 per kilogram of rice. At this point, the quantity demanded is exactly equal to the quantity supplied, i.e., 20 kilo-

grams of rice. At the equilibrium price, there is neither shortage nor surplus. Every consumer obtains as much of the commodity as he requires, while every seller is able to sell off all commodities brought to the market. The information contained in Table 2.6 and Fig. 2.12 illustrates the third law of demand and supply, which states that *prices tend to an equilibrium level at which the quantity demanded is equal to the quantity supplied*. Observe from these also how, in sloping downwards from left to right, with quantity expanding as price falls, the demand curve finally intersects the supply curve (which slopes upwards with quantity contracting as price falls) at E, the equilibrium price at which the market is cleared.

Changes in market (equilibrium) price

The market price or equilibrium price is determined by the interaction of the forces of supply and demand. It occurs at the point where the demand curve and the supply curve intersect (see Fig. 2.12).

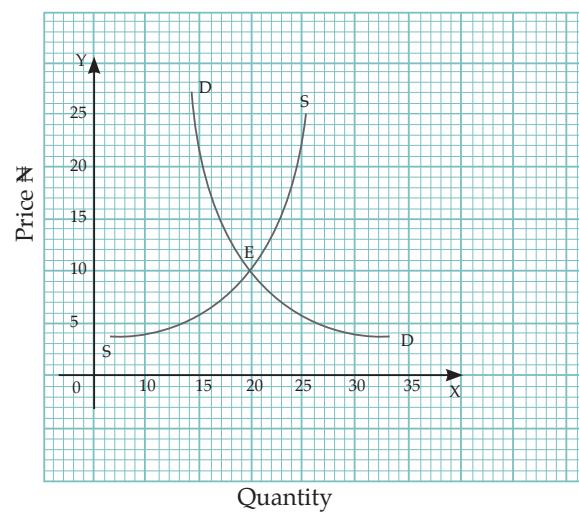


Fig. 2.12 Composite demand and supply curves showing market equilibrium

But the demand curve and the supply curve do shift to the right or left for reasons we have earlier explained. Therefore, anything which depends on them must shift or change also. The market or equilibrium price does change for this reason.

Let us now see how the equilibrium price and quantity change as demand increases or decreases while supply is constant.

Effect of an increase in demand, with supply constant

An increase in demand means a shift of the demand curve to the right. The effects of such a shift are illustrated in Fig. 2.13.

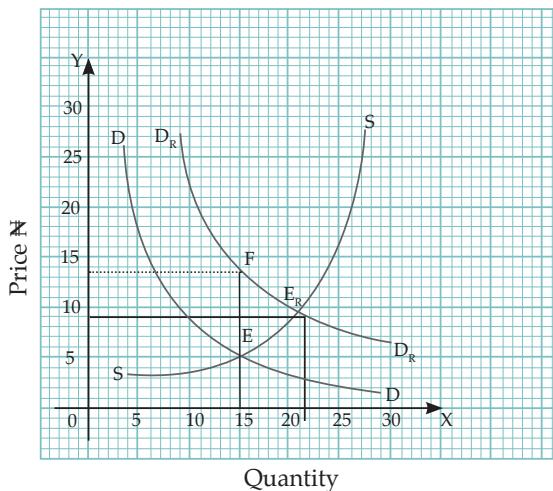


Fig. 2.13 Effect of increased demand on equilibrium price

Along the original demand curve, DD market equilibrium is at E, where equilibrium price is ₦5 and equilibrium quantity is 15. However, the demand curve shifts to the right at D_R . D_R for some reason. Supply cannot immediately expand. Therefore, prices shoot up to ₦13.50 at F, as a result of the shortage of supply. Profits being very high now, producers expand supply to $21\frac{1}{2}$. Therefore, at E_R , equilibrium price and quantity are ₦9 and $21\frac{1}{2}$ respectively.

From this we conclude that an increase in demand, whilst supply remains constant, will lead to increase in both the price and quantity at market equilibrium.

Effect of a decrease in demand, with supply constant

A decrease in supply is represented by a shift of the demand curve to the left. The effects are shown in Fig. 2.14.

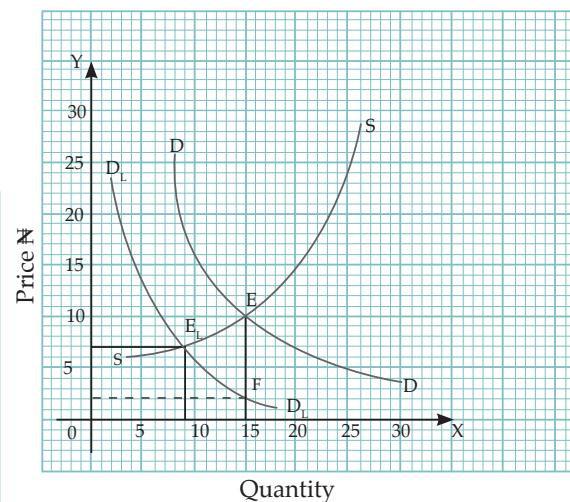


Fig. 2.14 Effect of decreased demand on equilibrium price

The original demand curve, DD, intersects the supply curve SS, at E, giving the equilibrium price as ₦10 and the equilibrium quantity as 15. Suddenly, demand decreases and the demand curve shifts leftwards to D_L . Supply cannot be reduced immediately. Therefore, quantity supplied is greater than quantity demanded. This excess supply causes price to fall drastically, to ₦2.50, at F. With price so low, it is no longer profitable to go on supplying. Therefore, supply contracts to the point E_L , which is the new equilibrium at which the new demand curve D_L cuts the supply curve. At this point, the new equilibrium price is ₦7 and

the quantity 10, both of which are lower than former equilibrium price and quantity.

We therefore see that there is a fall in both the price and quantity while supply remains unchanged, and demand decreases.

Effect of an increase in supply, with demand constant

This is a situation in which the supply curve shifts to the right while the demand curve stays in its original position. The results for equilibrium price and quantity are illustrated in Fig. 2.15.

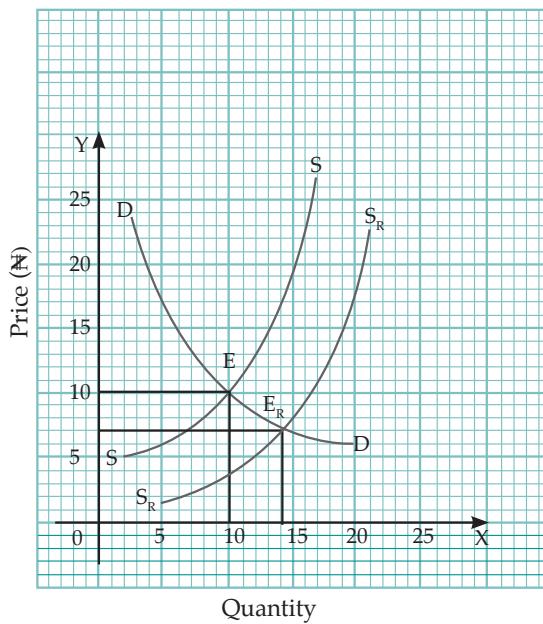


Fig. 2.15 Effect of increased supply on equilibrium price

Observe that the original equilibrium is at the point E, where the price is ₦10, and quantity 10. There is then an increase in supply and the supply curve shifts to the right at $S_R S_R$. This causes a surplus supply in the market, so that price immediately falls. As price falls, demand expands and a new equi-

librium is created at E_R , where they meet. At this point, the price is ₦7 and quantity 14, instead of ₦10 and 10 respectively.

It is thus clear that when supply increases without any change in demand, the equilibrium price falls and the equilibrium quantity expands.

Effect of a decrease in supply, with demand constant

In this case, the supply curve shifts to the left while the demand curve retains its original position. Reactions of the equilibrium position are shown in Fig. 2.16.

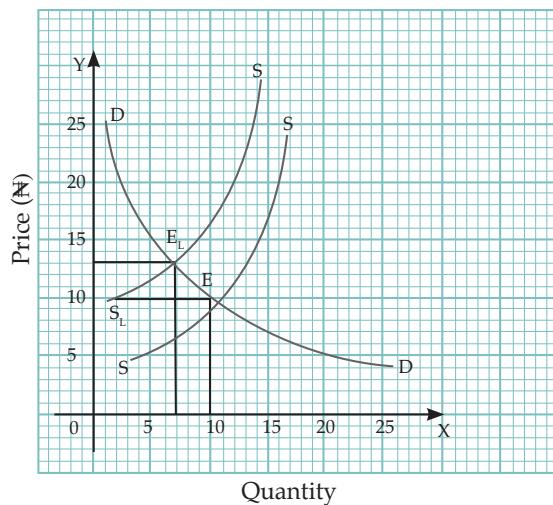


Fig. 2.16 Effect of decreased supply on equilibrium price

The demand and supply curves intersect at E, at which point the equilibrium price and quantity are ₦10 and 10 respectively. For some reason, however, supply decreases and the supply curve shifts to $S_L S_L$. The result is that price rises to ₦13, quantity falls to 7. A new equilibrium is consequently created at EL. Decreased supply thus brings about an increased price and a fall in equilibrium quantity.

Summary

- Demand is the quantity of a good consumers are willing to purchase at a given price and time.
- Demand schedule is a table showing the quantity of a good that will be bought at various price levels. From it we derive the demand curve, which normally slopes downwards from left to right.
- An abnormal demand curve does not slope downwards. It occurs due to quality related price, articles of ostentation, inferior or giffen goods, and speculation.
- Change in quantity demanded occurs as an expansion or contraction in demand. The former occurs when quantity increases as a result of a price fall and the latter when quantity decreases as a result of a price rise. In both cases, movement is along the same demand curve.
- Change in quantity demanded is due to the income and substitution effects, and diminishing marginal utility.
- Change in demand, also known as a shift in demand, occurs as increase or decrease in demand. The former occurs when quantity increases, with price constant. In both cases there is a movement to a new demand curve.
- Changes in demand are due to changes in the following:
 - Income distribution
 - Tax policy
 - Prices of other commodities
 - Taste and fashion
 - Seasons
 - Consumer population

- Supply is the amount of an economic good which sellers are willing to sell at a particular price and time.
- A normal supply curve slopes upwards from left to right while an abnormal one does not. Abnormal supply occurs as a result of rising incomes, target incomes, and monopolistic practices.
- Market equilibrium occurs when the quantities demanded and supplied are equal.

Review questions

Multiple-choice questions

- 1 Demand is not _____.
 - related to price
 - a fixed quantity
 - a flow because it depends on time
 - any of the above
- 2 The demand for a good falls from 5 to 3 when unit price rises from ₦8 to ₦10. This is a case of _____.
 - contraction in demand
 - decrease in demand
 - change in demand
 - expansion in price
- 3 Which of the following is *not* true of supply?
 - It is related to economic goods only.
 - It is a flow.
 - It is always equal to total output.
 - None of the above.
- 4 At market equilibrium _____.
 - buyers and sellers are agreed on price
 - quantities demanded and supplied are equal
 - there is no excess demand or supply

- D all of the above
- 5 A fall in equilibrium price and an increase in equilibrium quantity will occur due to _____.
- A a decrease in demand, with supply constant
 - B an increase in demand, with supply constant
 - C an increase in supply, with demand constant
 - D a decrease in supply, with demand constant

Essay questions

- 1 With the aid of diagrams, distinguish between a contraction and a decrease in demand.
- 2 Analyse the implications for market equilibrium of a decrease in supply when demand is constant.
- 3 Describe the process by which an equilibrium condition is created in the market.
- 4 Explain five of the factors affecting change in demand.
- 5 What are the factors responsible for expansion and contraction of demand?

Performance objectives

By the end of this chapter, you will be able to:

- 1 define the production possibility curve.
- 2 show how to plot the curve from given data.

Introduction

Book 1 has already introduced us to the concept of production. Further topics under this heading are treated in this chapter.

Production possibility curve

Production possibility curve is a graphical presentation which shows how one good, say x , can be transformed into another good, say y , by cutting down on the output of x and transferring the resources thus saved to the production of y .

Production possibility curve may also be referred to as the production possibility frontier, production possibility boundary, production indifference curve, or the product transformation curve.

The production possibility curve shows the possible combinations of two goods x and y which can be achieved by an economy, given all the necessary factors of production. The production possibility curve is a device used to solve the economic problem

arising from allocating resources between two competing and alternative needs.

Assumptions in the production possibility curve

In using the production possibility curve as a tool of analysis, there are a number of assumptions and these include:

- 1 fixity of resources
- 2 full employment of resources

Fixity of resources and full employment of resources

Resources are fixed and are never available in unlimited supplies. Production possibility curve assumes that all available resources are fully employed. In other words, all resources have been put to optimal use and there is no idle capacity in the economy.

Construction of production possibility curve

Figure 3.1 illustrates a possible production possibility curve. On y axis, measure the quantity of commodity y produced. On x axis, measure the quantity of commodity x . Next, plot all those combinations of commodities x and y possible to be produced using all available resources in conditions of full employment. Joining all these points smoothly, we obtain a line called the *production possibility curve*.

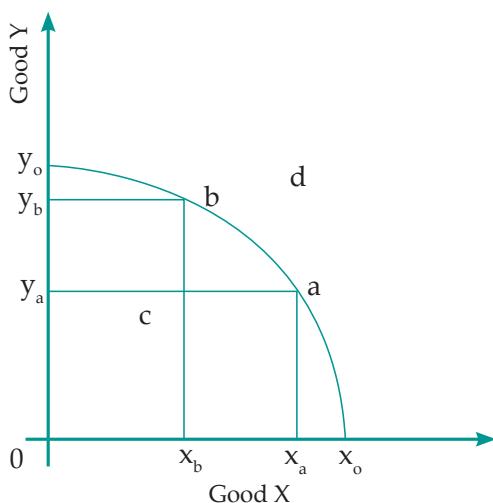


Fig. 3.1 Production possibility curve

If all resources in the economy are spent producing good y only, total output would be y_o . If x only, total output would x_o . Therefore, $y_o x_o$ shows all possible combinations of x and y which can be produced in the economy, if all resources are fully employed. On the curve, a and b are combinations of x and y which can be achieved. At a , the combination of the two commodities is $x_o y_o$. At b , the combination of the two commodities is $x_b y_b$. There is the possibility that c can also be produced. But, at any point within the curve, that is, to the left of $y_o x_o$, including c , the resources of the economy are not being fully or efficiently employed. Some wastage is taking place and this ought not to be. You can establish that, at any such point, more of both commodities x and y can be produced without incurring any sacrifice. It is therefore not efficient to operate at that point.

At d , being outside the curve, that is, to the right of $y_o x_o$, the combination cannot be achieved because of dearth of resources within the economy. Therefore, combinations which fall squarely on the $y_o x_o$ curve

are the best for the economy because, at them, resources are optimally employed.

The downward slope of the curve is explained by the law of diminishing returns. The shape of the curve shows that we can only increase the production of one commodity by reducing the output of the other, if the resources available are fully employed. This cannot be otherwise. Fig. 3.1 for example, shows that the output of y can only be increased from y_a to y_b if that of x falls from x_a to x_b . The slope of the product transformation curve is called the *Marginal Rate of Transformation* (MRT). It measures, as the name indicates, the rate at which one commodity can be transformed into the other. In other words. It measures the opportunity cost of one commodity in terms of the other.

Concept of productivity

Productivity simply means the productivity of a factor of production. It is defined as the efficiency with which the productive resources of land, labour, and capital are used as measured by the amount produced by each in a given period. Productivity, therefore, is a measure of efficiency in resource use. In discussing productivity, it is usual to refer to the concepts of:

- 1 total productivity
- 2 average productivity
- 3 marginal productivity

Total productivity

The total product of a factor refers to the overall amount of goods and services produced by that factor within a particular period. For example, if four men farm a piece of land for one year and produce 100 kilograms of maize, then the total product of labour is simply 100 kilograms.

Normally, production requires the combination of all the factors of production. So, if the input of one factor is allowed to vary, while others are held constant, total product will also vary along with the varying factor. For better appreciation of this joint variation of total product and the variable factor, refer to Table 3.1; Fig. 3.2 reproduces the same idea graphically.

Average productivity

Average productivity is the total product given in terms of a unit of a particular factor of production. That is, it is the total product per unit of a particular factor. It is usual to measure average productivity by taking the average product if labour is calculated by dividing total output by the number of workers employed or the man-hours worked. Expressed as a formula:

$$AP = \frac{TP}{L}, \text{ where}$$

AP = average product

TP = total production

L = labour

Although average productivity is used to gauge efficiency in production, it has a deficiency in the sense that it can be misleading if used to compare the productivity of one firm and another. This is so because one firm may be labour-intensive while the other is capital-intensive. In other words, the firms have different capital and labour intensities.

The behaviour of the average product can be seen both from Table 3.1 and Fig. 3.2. A study of column (4) in Table 3.1 reveals that, as the input of the variable factor, in this case labour, is increased, average product begins by rising and then falls after attaining a maximum. The point at which average productivity is highest is called the point of *diminishing average productivity*.

Marginal productivity

The term, *marginal*, describes a condition at the borderline or edge. The term draws attention to what is happening at the very limit of any situation. In ordinary language, the term *marginal* means being *close to the limit of acceptability*.

The marginal product, which may also be referred to as the *incremental product*, is the change in total product as a result of a unit change in the variable factor of production. In this sense, change could be any of increase or decrease. Therefore, the total product may increase or decrease as a result of varying the factor by just one unit. Such decrease or increase in the total product is what is referred to as the *marginal product*. Therefore, the marginal product measures the rate at which total product is changing as one factor changes. Marginal product can be expressed mathematically as:

$$MP = \frac{\Delta TP}{\Delta L}, \text{ where}$$

MP = marginal product

ΔTP = change in total product

ΔL = change in labour input

Table 3.1 shows that the marginal product, at any level of labour input, is calculated by subtracting the immediate preceding total product from the total product at that level of labour input. For example, the marginal product when labour is 4 is given by $32 - 24 = 8$; 32 being the total product at labour input of 4 while 24 is the immediate preceding total product. Like the average product, the marginal product increases as the input of labour increases, but it soon begins to fall after attaining a maximum. The level of output, at which marginal product is highest, is called the point of *diminishing marginal returns*.

Table 3.1 Concept of productivity

Variable factor: labour	Fixed factor: land	Total product	Average product TP/L	Marginal product ATP/AL
1	3	3	3	3
2	3	12	6	9
3	3	24	8	12
4	3	32	8	8
5	3	37.5	7.5	5.5
6	3	42	7	4.5
7	3	42	6	0
8	3	40	5	-2

Note

MP shows how TP reacts as the variable input varies from one level to another. It therefore actually occurs between the two

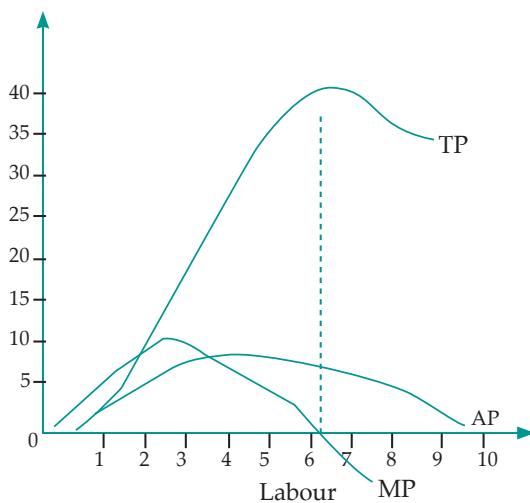


Fig. 3.2 Total average and marginal products curves

levels. This is why, in Fig. 3.1, it is plotted in-between these levels. For instance, on the graph, MP of 12 occurs as labour varies from 2 to 3 units. That is, 2.5 corresponds to 12 on the MP curve.

Relationship between total product, average product, and marginal product

- 1 The *total product* at any given level of labour input is equal to the sum of all the marginal products up to that level. For example, in Table 3.1 the total product at a labour input of 4 is 32. The sum of all the marginal products up to that level is $3 + 9 + 12 + 8 = 32$.
- 2 The *marginal product* reaches its peak at a lower level of labour input than that at which average product reaches its own maximum. Study Fig. 3.2 to confirm that *MP* reached its maximum at a labour input of 2.5 while at a labour input of 4 the *AP* reached its maximum.
- 3 The marginal product equals the *average product* when the average product is at a maximum. This explains why, in Fig. 3.2, the *MP* curve cuts the *AP* curve at the maximum point of the *AP* curve.
- 4 When the *AP* is increasing, the *MP* is greater than it, although *MP* may even be falling while *AP* is rising. Verify this from Fig. 3.2. Between labour inputs of 2.5 and 3.5, the *MP* curve was falling, while *AP* curve was still rising. Yet, *MP* was greater than *AP*. The point we are making is that, whether the *MP* curve is rising or falling, as long as it stays above the *AP* curve, the *AP* curve will keep rising.
- 5 The *MP* is less than the *AP* once the *AP* is decreasing. Thus, from (4) and (5), we can conclude that *MP* both increases and decreases more rapidly than the *AP*. Establish this by reference to Table 3.1.
- 6 The *MP* is unaffected by the addition, or subtraction of a constant from all the total products. Check for yourself

by adding 2 to or subtracting 2 from all the total products in Table 3.1. Did any marginal product change from its present value?

- 7 The MP is zero at the point where TP is maximum. When the TP begins to decrease, MP becomes negative.

Law of variable proportions

The law of variable proportions is also called the law of diminishing marginal productivity or the law of diminishing returns. The law states that, if one factor of production is continuously increased by a constant amount, while other factors are held fixed in quantity, then, after a certain point, the resulting increases in output will begin to diminish.

Stated in different words, the law of variable proportions holds that if increasing

quantities of one factor are combined with a fixed supply of others in production, a point is reached from which each extra variable factor added yields less and less addition to the total output. That is, as more and more of the variable factor is combined with a fixed quantity of other factors, ultimately, its average product and marginal product will begin to decrease. This can be explained by stating that the fall-off in extra dose of the variable factor must now work with decreasing proportions of the fixed factors. It must be understood that this fall-off does not happen abruptly. As the variable input is increased, the more natural outcome is that the increments to product will initially increase, then remain constant, and finally, begin to decrease, thereby giving rise to:

- 1 increasing returns
- 2 constant returns
- 3 diminishing returns

Table 3. 2 Law of variable proportions

Variable factor (labour)	Fixed factor (land)	TP	AP TP/L	MP	Types of returns
1	10	30	30	30	Increasing
2	10	120	60	90	
3	10	240	80	120	
4	10	320	80	80	Constant
5	10	400	80	80	
6	10	420	70	20	Decreasing or diminishing
7	10	420	60	0	
8	10	420	50	-20	

Increasing returns

From Table 3.2, increasing returns are experienced at stage 1. As more units of the variable factor (labour in this case) are used, total product begins to increase: the average product increases to its maximum, while the marginal product attains a maximum and then decreases.

Constant returns

From Table 3.2, constant returns are experienced in stage 2. The total product rises to its peak, the average product begins to fall, and the marginal product reduces towards zero.

Diminishing returns

From Table 3.2, diminishing returns are experienced in stage 3. At this stage, both the total product and average product fall towards zero while the marginal product becomes negative, having fallen below the horizontal axis, if shown graphically. From Table 3.2, it becomes clear that constant returns are merely a transitory stage being encountered as output shifts from the still highly temporary stage of increasing returns to the more dominant and inexorable diminishing returns.

Importance of the law of variable proportions

- 1 As business houses are assumed to be out to raise their profits to a maximum, it helps the entrepreneur to determine the optimal combination of factors to achieve these objectives.
- 2 It becomes very useful in fixing a worker's wages, since a worker ought to be paid according to his marginal productivity.

- 3 A firm grasp of the law of variable proportions is essential to understanding short-run cost curves and hence, the short-run theory of the firm.
- 4 It helps to explain why there is a low standard of living in some parts of the world.

Summary

- The production possibility curve is variously referred to as production indifference curve, production, possibility frontier, production possibility boundary, and the product transformation.
- It is a device used in allocating resources in the national economy on the assumption that resources are fixed in the short-run and are fully employed.
- Outside the curve, production is not possible. Inside it, resource-use is inefficient. On it, resources are optimally employed.
- The total average and marginal products are related in a definite way which can be proved both arithmetically and geometrically.
- The law of variable proportions states that marginal product will eventually begin to diminish if one factor is continually increased in combination with a constant amount of other factors.

Review questions

Multiple-choice questions

- 1 Outside the production possibility curve, production is not feasible because _____.
A resources are underemployed

- B resources are over employed
C resources are fixed in supply
D resources are subject to embezzlement
- 2 The slope of the production possibility curve is called _____.
A the marginal productivity theory (MPT)
B the marginal rate of transformation (MRT)
C the marginal rate of substitution (MRS)
D none of the above
- 3 The marginal and average products are equal when the average product is _____.
A falling
B rising
C minimum
D maximum
- 4 When the marginal product is zero, total product must be _____.
A maximum
B positive
C negative
D increasing
- 5 At constant returns to scale _____.
A total product is maximum
B average product is beginning to fall
C marginal product is zero
D all of the above obtain

Essay questions

- 1 With the aid of diagrams, explain the state of the total, average, and marginal products at the onset of diminishing returns.
- 2 Under what circumstances could an economy find itself inside the product transformation curve?
- 3 Discuss the importance of the law of variable proportions.

- 4 Discuss the following concepts:
a) total productivity
b) average productivity
c) marginal productivity

Chapter 4 Theory of cost

Performance objectives

By the end of this chapter, you will be able to:

- 1 distinguish between the different concepts of cost (variable, fixed, total, average, marginal, short run, long run).
- 2 draw different cost curves.
- 3 explain the relationship between cost and production.
- 4 define revenue.
- 5 differentiate between the different revenue concepts (total, average, marginal).
- 6 draw different revenue curves.
- 7 explain the relationship between revenue and production.

Introduction

In this chapter, we shall deal with some basic concepts of cost. It is necessary that you master these concepts because they will help you to easily understand the chapter which deals with other concepts relating to cost.

Concept of cost

The word *cost* has many definitions. For instance, cost may be defined as what has to be given up in order to achieve or obtain something else. Two groups of professionals—the economists and accountants—have their own views about cost. Indeed, the economists and the accountants do not

agree on the meaning of cost because their areas of concern vary. Whereas the economist is concerned with how to arrive at the best possible decisions with respect to the best possible use of scarce resources, the accountant's interest is in the mere recording and presentation of actual money—flows.

Distinction between economists' and accountants' views of cost

To the accountant, cost is the total amount of money spent to obtain something and he is concerned with the actual amount of money expended to bring this about. Because the accountant concentrates so much on total monetary expenditures, his concept of cost is called the *outlays* or *money cost*.

It will be noted that this is the meaning commonly associated with the word cost in everyday language. The ordinary man understands the cost of a commodity to be the amount of money paid to take possession of it. For instance, if you pay ₦100 to obtain this book from the bookshop, then to the accountant, as well as the ordinary man, the cost of the book would be ₦100.

To the economist, however, cost refers to the value of the lost opportunity, or the value of the alternative that one now has to forego. The economist is not concerned merely with the amount of money given up to obtain a commodity. Rather, his concern is in the value of the alternative which had to

be foregone to obtain it. Thus, to the economist, cost is not expressed in units of money, but in terms of the opportunity foregone. For this reason, the economist's concept of cost is called the *real or opportunity cost*.

It is clear that this is not the meaning of the word to the man in the street. For example, suppose you purchased this book from your bookseller at ₦100. Suppose also that, with same amount you could have bought 1 kg of beef. Then, to the economist, the real cost of this book is the 1 kg of beef which you had to forego and not the ₦100 actually paid for the book. To the accountant, however, the cost of the book would simply be ₦100.

Further distinction of cost between a business enterprise and a nation

Having explained the meaning of cost to an accountant, an economist and an individual, it is also quite pertinent to explain what cost entails to a business enterprise and to a nation.

To a large extent, cost to a business unit or organisation can mean the value of a project or production that has been sacrificed for another purpose. The cost to a business unit is explained in terms of opportunity cost. Thus in order to produce goods and services, firms have to incur expenditure (cost) on inputs, such as land, building, raw materials, machinery, tools and equipment, labour and transportation. All these expenses incurred in production constitute the cost of production to the business unit (firm). To a nation or government, in precise terms, cost would mean expenditure on various items and commitments, such as administration,

the economy, social infrastructure, defence and security, maintenance of law and order, servicing of national debt and education. All these constitute the cost of administration on the part of government.

Relationship between cost and production

Cost is related to output or the level of production. All things being equal (*Ceterus paribus*), the higher the level of output, the lower the cost of producing a unit of the commodity. Inversely speaking, the lower the level of output, the higher the cost of producing a unit of a commodity. For instance, a notebook printer who printed 5 000 copies of notebooks will have his unit cost of production reduced, than another notebook printer who printed about 1 000 copies of such notebook, bearing in mind, the limited constraint (resources) of both printer. However, as output increases, the total cost of production increases. This is because as unit cost is decreasing with large production, total cost of production is increasing. Hence unit cost of production and total cost of production exhibit an inverse relationship.

Kinds of costs

It has already been pointed out that in everyday language, the word cost is used in the accounting sense; that is, to mean the amount of money expended in obtaining something. For the purpose of our study, this is the meaning that will be applied.

In producing goods and services, business organisations incur different kinds of costs. These include the following:

- 1 Fixed cost
- 2 Variable cost
- 3 Total cost

- 4 Average cost
- 5 Marginal cost

Fixed cost (FC)

These are the costs of production which stay constant in amount, regardless of the scale of production. Fixed costs are those costs not affected by the level of output and which therefore do not change, whether the number of units produced increases or decreases.

Fixed costs are also known as *supplementary costs or overhead costs*. Examples are the cost of building a warehouse and the cost of installing a machine. In the case of the warehouse, whether or not it is filled with goods, the cost has been incurred and must be taken into consideration. Similarly, whether the installed machine is used to produce 10 or 100 units of the commodity each day, the installation expenses have been made and stay unchanged.

Represented diagrammatically, the fixed cost curve is a straight line parallel to the x-axis.

Variable cost (VC)

These are those costs of production which have a direct relationship with the level of production so that they rise or fall in sympathy with it. Variable costs fluctuate with the level of output.

Variable costs are also known as *prime costs, operating costs, on costs, or direct costs*. Examples include the cost of labour, raw materials and fuel. For instance, the longer an electricity generating plant is allowed to run, the greater the fuel it consumes. Similarly, to double the output of house furniture, more timber and nails will be required.

Total cost (TC)

As the name implies, total cost (TC) is the sum of all costs incurred in the production of a good or service. It is obtained by adding the variable costs to the fixed costs. In the short run, total cost increases as output increases. It is shown diagrammatically (see Fig. 4.1) as a curve rising upwards from left to right. Note that total cost can never be less than fixed cost.

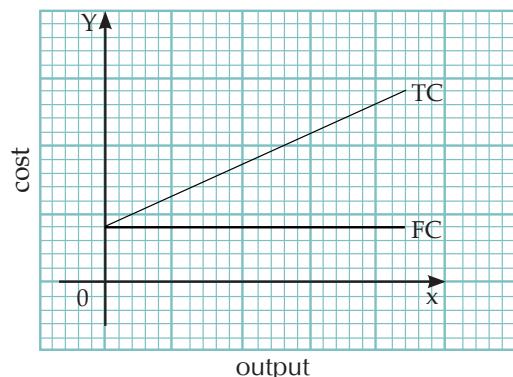


Fig. 4.1 Fixed and total cost curves

Average cost (AC)

This is the cost of producing one unit of output. To find it, the total cost of producing a given number of units of output is divided by that number of units. For example, if the total cost of producing 8 units of a commodity is ₦72, then, the average cost per unit will be $\text{₦}72 \div 8 = \text{₦}9$.

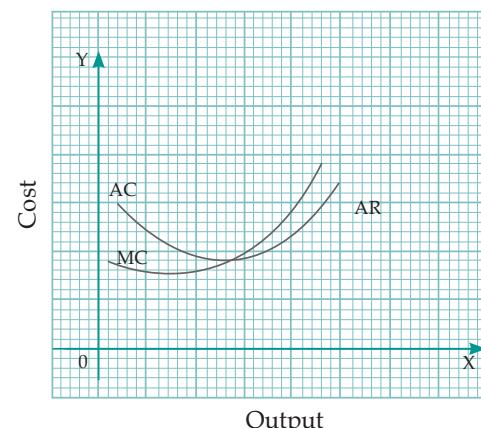


Fig. 4.2 Average and marginal cost curves

Table 4.1: Costs incurred by a firm

Total output	Fixed cost	Variable cost	Total cost	Average cost	Marginal cost
1	16	8	24	24	-
2	16	14	30	15	6
3	16	35	51	17	21
4	16	64	80	20	29
5	16	104	120	24	40

Marginal cost (MC)

This is the cost of producing one more unit of output. It is the increase in total cost arising from the production of one unit more of the commodity. That is, it is the cost of producing the last unit of the total output. For example, if the total cost of producing 8 units of a commodity is ₦72 and ₦90 when 9 units are produced, then, the marginal cost of the last unit produced is ₦90 - ₦72 = ₦18. Diagrammatically, the marginal cost curve is shown in Fig. 4.2.

How marginal cost and the average cost are related

Marginal cost and average cost are related in a number of ways. It is very important that the economist should understand these relationships.

- 1 The marginal cost and the average cost are equal when the average cost is at its lowest level. This is why, diagrammatically, the marginal cost curve cuts the average cost curve at its lowest point. In practice, this is always the case.
- 2 As long as the marginal cost is less than the average cost, the latter will continue to fall. Again this is why,

diagrammatically, provided that the marginal cost curve is under the average cost curve, the average cost curve will continue to slope downwards, regardless of which way the marginal cost curve is sloping.

- 3 Once the marginal cost becomes higher than the average cost, the average cost will start rising. This is shown diagrammatically by the fact that the average cost curve slopes upwards for as long as the marginal cost curve is above it.
- 4 The marginal cost always rises or falls faster than the average cost. Diagrammatically, this is explained by the fact that the marginal cost curve always slopes downwards or upwards more steeply than the average cost curve. In conclusion, the marginal cost curve has a powerful influence on the average cost curve; in fact, the shape of the average cost curve is determined by the marginal cost curve.

The short run and the long run

In economics, we use the term short run to describe the period in which, at least, one of the factors of production employed by a firm

cannot be changed in supply. It is the period over which one or more, but not all factors of production in a firm, can vary. Many of the concepts we have to deal with in economics vary with time. All that has been discussed in the preceding sections on the theory of costs are true only in the short run. For the long run, some more modifications of the short run are required.

It must be noted that the short run does not correspond to any fixed period. Although it can vary from one industry to another, it will be less than two years on the average. For example, in the road transport industry, more buses can be acquired within three weeks and the number of drivers employed can be increased substantially in six months. But in the aviation (air transport) industry, planes are far more expensive and may not be easily bought in weeks. Also, the number of pilots employed cannot just be increased in six months because of the lengthy and rigorous training they have to pass through. Therefore, the short run in the aviation industry is longer than the short run in the road transport industry.

For most firms, generally, the stock of capital goods is fixed in supply in the short run while labour can more easily be varied. The long run is the period during which a firm can vary all of its factors of production. A period long enough to allow a firm to increase or decrease its labour force, capital equipment and raw materials in order to achieve the best production method, is called the long run.

Again, it must be noted that the long run is not a fixed period and that it varies from firm to firm.

Meaning of revenue

Ordinarily speaking, revenue is the amount or volume of income that accrues to an individual, firm or producer and even government from a productive venture or from business activities. Revenue is usually, more often than not, measured or spoken about in monetary terms.

Revenue can accrue to firms or producers from the sales of their products or from services rendered to their customers or clients as the case may be. In the case of government, its bulk of revenue comes from various taxes and levies collected from the citizens. Government can also collect revenue from its other establishments like the government parastatals, e.g., NTA, NNPC, hotels, airports and stadia. Revenue is directly related and proportional to sales.

Types of revenue

For the purpose of this study, we hereby classify our revenue under three headings: average revenue, marginal revenue and total revenue.

Average revenue

Average revenue is the type of revenue that accrues from the sales of a unit of a commodity in relation to the total revenue, simply illustrated as:

$$\text{Average revenue (AR)} = \frac{\text{Total revenue (TR)}}{\text{Output (O)}}$$

Average revenue falls as output increases.

Marginal revenue

This is the position of the revenue, as output or production increases or as sales increase. This can be seen to be constantly decreasing

as sales increase. This will be shown in the later revenue schedule of a firm. Marginal revenue formula can be shown as

$$MR = \frac{\Delta TR}{\Delta Q}$$

Where,

A, represents changes

TR, represents total revenue

O, represents output or quantity of sales

MR, represents marginal revenue.

Total revenue

This is the total income that accrues to a firm or a producer from the sale of its product or commodity. This is often realised in proportion to the total sales and as output increases, total revenue also increases. This shall be seen from the following revenue schedule of a firm.

Table 4.2: Hypothetical revenue schedule of a firm

Output/quantity	Total revenue	Average revenue	Marginal revenue
0	-	-	-
1	100	100	100
2	130	65	30
3	150	50	20
4	160	40	10
5	165	33	05

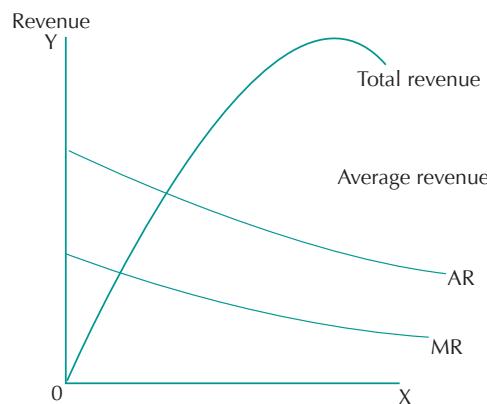


Fig. 4.3 Revenue schedule of a firm

Relationship between revenue and production

Revenue in every direction is rigidly related to the level of sales of a commodity; although the magnitude of relationship of each type of revenue to the sales level differs. As the output or quantity of sales increases, total revenue increases in direct proportion. However, average revenue accruing to a firm or producer continues to fall as sales level or output level increases. In the same vein, the marginal revenue accruing from each successive output sales continues to fall. The rate at which marginal revenue falls is faster than that of the average revenue.

Summary

- Cost is what has to be given up to obtain another.
- Accountants view cost as monetary expenditures. They are associated with outlays or money cost.
- Economists are more concerned with optimal use of resources with real or opportunity cost.
- Firms incur fixed, variable, total, average, and marginal costs in production.
- The average cost curve depends on the marginal cost for its shape. $MC = AC$ when AC is at its minimum level.
- $MC = O$ when TC is maximum.
- The short run is a period in which one or more but not all factors employed by a firm can vary in supply.
- The long run is a period in which all factors employed by a firm can vary in supply.
- Revenue is the amount of money that accrues to an individual, firms, producers or government from productive ventures.

- Taxes and levies are typical examples of government revenue.
- Total, average and marginal revenues are types of revenues that take different forms.

Average revenue $AR = \frac{R}{O}$

Marginal revenue $MR = \frac{AR}{O}$

Revenue is directly proportional and related to sales.

Revision questions

Multiple-choice questions

- Fixed costs are _____.
 A constant, regardless of output level
 B also known as supplementary cost
 C diagrammatically, a straight line parallel to x-axis
 D all of the above
- When MC and AC are equal, then _____.
 A MC is maximised
 B AC is maximised
 C AC is minimised
 D MC is minimised
- To the economist, cost has to do with _____.
 A optional allocation of scarce resources
 B actual monetary flows
 C a record of transactions in naira and kobo
 D none of the above
- Let TC, FC and VC stand for total, fixed and variable cost respectively. Which of A – D is correct?
 A $TC = FC - VC$
 B $FC = TC + VC$
 C $TC \geq FC$
 D $TC > FC + VC$

- 5 Taxes and levies are examples of _____.

- A grants
- B loans
- C revenue
- D penalties

- 6 Marginal revenue is denoted by

- A $MR = \frac{AR}{O}$
- B $MR = FR + AR$
- C $MR = A + AR$
- D $MR = \frac{RA}{O}$

- 7 Revenue is simply measured in monetary terms and directly proportional to sales.

- A False
- B True

- 8 Which of the following represents the average revenue formula?

- A $AR = \frac{TR}{MR}$
- B $AR = \frac{TR}{O}$
- C $AR = R + MR$
- D $AR = \frac{MR}{O}$

- 9 When total revenue increases, AR and MR continue to fall.

- A True
- B False

Essay questions

- What costs are incurred by a manufacturer?

- 2 How do economists and accountants differ on the concept of cost?
- 3 Explain the relationship between marginal and total costs, using an appropriate diagram to illustrate your answer.
- 4 Explain the meaning of cost to a business firm and to a nation.
- 5 How does cost behave in relation to a unit cost of production and total cost of production of a commodity?
- 6 Define revenue.
- 7 With the aid of a diagram, explain:
 - a) Marginal revenue
 - b) Total revenue
- 8 Generate a simple revenue schedule for Johnson Fruits Enterprises, emphasising its average, marginal, and total revenue.
- 9 Differentiate between marginal revenue and average revenue.

Performance objectives

By the end of this chapter, you will be able to:

- 1 identify the functions that influence the supply and demand for labour.
- 2 distinguish between factors that shift the supply and demand curves for labour and those that affect their slopes.

Introduction

As we saw in Book 1, a market is a situation in which buyers and sellers are in sufficiently close contact with each other to communicate in order to conduct transactions. Defined like this, it must be understood that a market is not necessarily limited to a particular geographical location. A market is created once it is possible for buyers to exchange money for the goods and services which they need. A market, therefore, is defined in relation to the forces of supply and demand. It does not matter whether it is confined to a village or town, or whether it is international in scope. There are markets for all kinds of goods and services, including labour. In this chapter, we shall discuss the labour market.

Basic features of the labour market

The labour market is one in which wages, (i.e., the reward for labour) and conditions of employment are determined by the forces of supply and demand. It is the market in which workers sell their labour in order to earn wages and salaries, in the same way that one may sell products to obtain profit. However, certain characteristics of the labour market make it stand out from other kinds of market.

These features are as follows:

- 1 Joint seller-commodity
- 2 Partial monetisation
- 3 Limited control by the buyer

Joint seller-commodity

In the labour market, the commodity offered for sale is labour, but the seller cannot easily be distinguished from his commodity, as in other commodity markets. Labour is embodied in its seller, such that the two cannot stand apart.

Partial monetisation

The seller of labour might not be as interested in monetary income as in social and other non-monetary benefits. In other words, the conditions of work, more than the prevailing wages and salaries, may make him sell his

labour to one buyer instead of another; for this reason we say that the labour market is not fully monetised.

Limited control by the buyer

Another important characteristic of the labour market is that the buyer of labour, or any investor in it, does not have absolute control over it. At all times, labour continues to be the property of the seller. This is not the case in other commodity markets where, as soon as the commodity is paid for, the buyer gains total ownership and control over it.

Concept of the labour force

The labour force of a country is the proportion of the country's population which is available for employment in economic activities. It describes the number of people who are allowed by law to present themselves for employment, whether these are already employed or still unemployed. The labour force of a country is calculated as all persons who fall into the working-age group, plus those in the school and pension-age groups who are currently working, minus the working-age people who are either still in school or cannot, for one reason or the other, participate in production.

The factors affecting the size of the labour force are as follows:

- 1 Age distribution of the population
- 2 Sex distribution of the population
- 3 School leaving age
- 4 Retirement age

Age distribution of the population

The overall size of the population determines the overall size of a country's labour force. However, the age distribution plays a special part because it determines the actual pro-

portion of the total population available for absorption into productive activities. If the population is dominated by persons who fall within the school and retirement age groups, then the labour force will be small in size. On the other hand, if the age-distribution is biased in favour of working-age people, the labour force will be large in size.

Sex distribution of the population

The size of the labour force is also affected by the sex distribution of the population. In an economy where the sex ratio is very low, i.e. one which has very high proportion of females, the size of the labour force in respect of occupations like carpentry, masonry and the armed forces, will be small. However, in relation to education and medicine, it will be large. Women were traditionally regarded as having their place in the home. If this kind of view is still widely held in a country mainly peopled by women, then the labour force of such country, by definition, will be small in size.

School leaving age

This has to do with the education situation in the country. In some countries, there is no length of time for which people must stay in formal education. In such countries, the school-leaving age will be low. So also will be the age of entry into the labour market. The effect, therefore, will be that the size of the labour force will be large. In other countries, where formal education is compulsory up to, say, the secondary level, both the school-leaving age as well as the age of entry into the labour market will be high. The effect of this will be to keep the size of the labour force small.

Retirement age

The official retirement age varies from one country to another. While in some countries it is sixty, in others it may be higher or lower. It could even vary in different regions of a country. In Nigeria, for example, it is 60 years. Where the retirement age is higher, people stay longer in employment, and so the labour force remains large. Where the opposite is the case, i.e. the retirement age is lower, then the labour force is smaller.

It must be recognised that the labour force is not a constant proportion of the total population. It changes as the birth-rate and other population factors fluctuate. Table 6.1 makes this clear in the case of Nigeria. From this table it can be seen that while the total population increased steadily all through the period from 1960 to 2011, the working-age population declined steadily, up to 1970 when it increased again.

Table 6.1 The working population of Nigeria (1960, 1963, 1970, 1983, 1990, 1995, 2000, 2005, 2010 2011) *(millions)

Year	Total population	Working age population	Percentage total population
1960	55	32	58
1963	56	31	55
1970	58	30	52
1983	92	51	55
1990	95	34	35
1995	108	30	27
2000	122	39	32
2005	139	43	31
2010	159	50	31
2011	164	51	31

Source: International Labour Organisation, using World Bank population estimate, www.indexmundi.com

Efficiency of the labour force

Efficiency of labour is the ability of a worker to achieve desired results with the lowest possible quantity of resources and time. At a broader level, efficiency of the labour force has to do with the ease with which the working population is organised to achieve stipulated economic targets.

The efficiency of the labour force is directly related to the quality of the country's working population. Individual workers who make up the labour force vary in quality. In terms of physical ability, some individuals are expertly skilled while some others are completely unable to perform. Mentally, some are geniuses while others at the other extreme are morons. Persons belonging to these extremes of physical and mental ability may be found in the same labour force, thus determining its overall efficiency.

Generally, however, the more able are usually employed before the less able, although this is not to suggest that all unemployed persons are less able than those employed. At times of high unemployment,

such as we have in Nigeria today, many talented and able persons are out of work. Efficiency of labour, normally gauged by labour productivity, is affected by the following factors:

- 1 Education
- 2 Work environment
- 3 Provision of welfare services
- 4 On-the-job training
- 5 Quality of cooperant factors
- 6 Geographical distribution of the labour force
- 7 Longevity
- 8 Malnutrition
- 9 Climatic condition

Education

Education is an important factor affecting the efficiency of the labour force. A good general educational background is essential if the labour force is to be capable of training to acquire technical skills. In this 'computer age', the labour force must be educated in order to cope with the sophisticated production equipment now in use, e.g., computers and robots.

Work environment

The nature of the environment under which the labour force works affects its efficiency and productivity. For workers to achieve desired results, the environment in which they work should be a pleasant and friendly one. Productivity will be low where workers are overcrowded, or where they relate poorly to one another.

Provision of welfare services

Welfare services may take the form of old age pensions, housing allowance, and health care for the worker and their families, and so on. Where these exist, the workers la-

bour with a more relaxed mind and sense of belonging. Overall efficiency is therefore bound to be high.

On-the-job training

This is skill improvement which takes place whilst one is still working. For example, a messenger using a bicycle may be trained on job to ride a motorcycle. This will certainly improve his efficiency at work.

Quality of cooperant factors

Labour does not work unaided in the production process. So, the worker's efficiency will be affected by the general efficiency of the factors cooperating with him in production. For example, a messenger using a motorcycle will be more efficient than one who merely runs errands on foot.

Geographical distribution of the labour force

When the labour force is thinly scattered, it is more difficult to organise it for productive work than a more concentrated one. Labour efficiency suffers due to problems in the supply of food, water, electricity, and so on. Very high population density will also bring about inefficiency of the labour force due to poor sanitation and inadequate supply of social amenities.

Longevity

Where life-expectancy is generally high, the worker can live long enough to contribute his best to production. Labour efficiency will therefore be high. On the other hand, productivity will be negatively affected where life-expectancy is low.

Malnutrition

If the labour force lacks a well-balanced diet,

its efficiency will be low. Malnutrition in the early years of life reduces a person's energy throughout life. The quality and quantity of available food thus affects labour efficiency.

Climatic conditions

The climate could hinder the efficiency of labour. A climate in which either temperatures or humidity is high at any given time is likely to be more energy-sapping than the one where these conditions are moderate.

Mobility of labour

Mobility of labour is the ease with which labour, as a factor of production, can be moved from one use or place, to another. It is a description of the ease with which workers can move between different geographical areas and occupations to obtain employment.

Mobility of labour has two aspects:

- 1 Geographical mobility of labour
- 2 Occupational or vertical mobility of labour

Geographical mobility of labour

Geographical mobility of labour, also known as real, spatial, or lateral mobility, is the movement of labour from one place to another in response to differences in wages, job availability or other factors. Geographical mobility is also called lateral mobility because it normally takes place within the same occupation or profession, although it involves an actual change in geographical residence.

A graduate teacher who leaves India on account of low wages, and comes to pick up a teaching appointment in Nigeria, exemplifies geographical mobility. He is still within the teaching profession, but has had

to travel thousands of kilometres to obtain suitable employment.

The rate of geographical mobility is higher among skilled workers than among the unskilled. This is because a skilled worker is more marketable over a wider geographical area than an unskilled one.

Occupational mobility of labour

Occupational mobility of labour, also known as vertical mobility of labour, refers to the movement of workers from one occupation or skill to another, as a result of differences in wages, job availability, or other factors. Occupational mobility may take place within the same geographical location.

To illustrate this, consider a carpenter who undergoes some training and ends up as a mason. This is a case of occupational mobility. He need not leave his present place of domicile for this to take place.

The rate of occupational mobility is higher among unskilled than skilled workers. This is because an unskilled worker has no specific training for any particular job, whereas the skilled worker does. The unskilled worker can easily leave his present employment for another one.

Importance of labour mobility

Mobility of labour brings about:

- 1 labour market equilibrium
- 2 sustained economic growth

Labour market equilibrium

The labour market is said to be in equilibrium when the demand for labour is equal to the supply of labour, other things being equal. If the mobility of labour is easy, both geographically and occupationally, then the labour market will always be in equilibrium. If, however, labour mobility is low, then the

demand for and supply of labour will hardly ever match. For example, suppose there are only two towns, *x* and *y*, in a country, with a labour market equilibrium. If the demand for labour increases in town *x* and falls in town *y*, there is a disequilibrium because there are unfilled vacancies in *x* and unemployed persons in *y*. Now, if the geographical and occupational mobility of labour is high, then this imbalance will quickly be corrected as the unemployed persons in *y* move over to *x*.

Sustained economic growth

To ensure the sustained growth of any economy, there should be a reasonable degree of mobility of labour. For labour to be supplied, its owner must be physically present where the labour is to be used. In a growing economy, conditions change rapidly as some industries decline and others grow. In order to sustain the speed of growth, labour has to be highly mobile, to be available where and when it is required.

Obstacles to mobility of labour

Obstacles to mobility of labour include the following:

- 1 Cost of movement
- 2 Family and social relations
- 3 Ignorance of job opportunities
- 4 Cost of retraining
- 5 Trade union restrictions

Cost of movement

Transporting oneself, family, and belongings over a long geographical distance can be very expensive. In addition to this, housing cost may be quite high at the new location, rendering the total cost of movement so high as to hinder geographical mobility.

Family and social relations

A worker may decide not to go from one place to another or from one job to another, simply to please family members and friends. A married man may become 'immobile' because he does not want to disturb the education of his children. In such instances, mobility of labour would have been hindered on account of family and social relations. This obstacle is particularly effective against geographical mobility of labour.

Ignorance of job opportunities

Due to a poor information dissemination system, unemployed persons in one area may not be aware of job opportunities existing elsewhere. Such lack of information would have hindered the geographical mobility of labour. Again, even where people are aware of the job-openings in other places, they may still be reluctant to seek one, because they prefer their known environment to a new unknown one.

Cost of retraining

Occupational mobility may result from the fact that it is too expensive to retrain a worker. Modern division of labour has given rise to an advanced degree of labour specialisation, so that to give a second training to such a worker entails high costs in time and money. This is a major explanation for the high occupational immobility usually found among skilled and professional workers.

Trade union restrictions

Trade union restrictions are another source of occupational immobility. Some trade unions impose a rigorous procedure on those wishing to become members. It may be that the training period is too long, or

membership fees are too high, or both. These can discourage prospective entrants from other professions.

Demand for labour

The labour market, it must be admitted, is generally non-competitive. In other words, it is often dominated, either by one major seller, in which case it is said to be *monopolistic*, or by one major buyer, in which case it is said to be *monopsonistic*. The demand for labour, like the demand for any other factor of production, whether it is capital or land, is a derived demand. It is derived from the demand for the final goods and services that it can help produce. Both the intensity of the demand for (as measured by the height of the demand curve) and the relationship between wages on the one hand, and the quantity of labour

on the other, are determined by the demand for the final product. Thus the greater the demand for the final product, the greater the demand for labour. Labour is therefore not being demanded for its own sake, but for its contribution to the manufacture of another commodity.

For example, if an industrialist decides to satisfy the demand for leather bags, he will surely demand various classes of labour, including the labour of the craftsmen who flay the animals and the labour of leather technologists who tan the hides and skins. Since under the *capitalist* or *mixed economy* system of production, the *profit-motive* is at work, the industrialist works towards making a profit from this venture.

In order to make profit, the industrialist will demand labour at economical wage levels, so that the difference between the

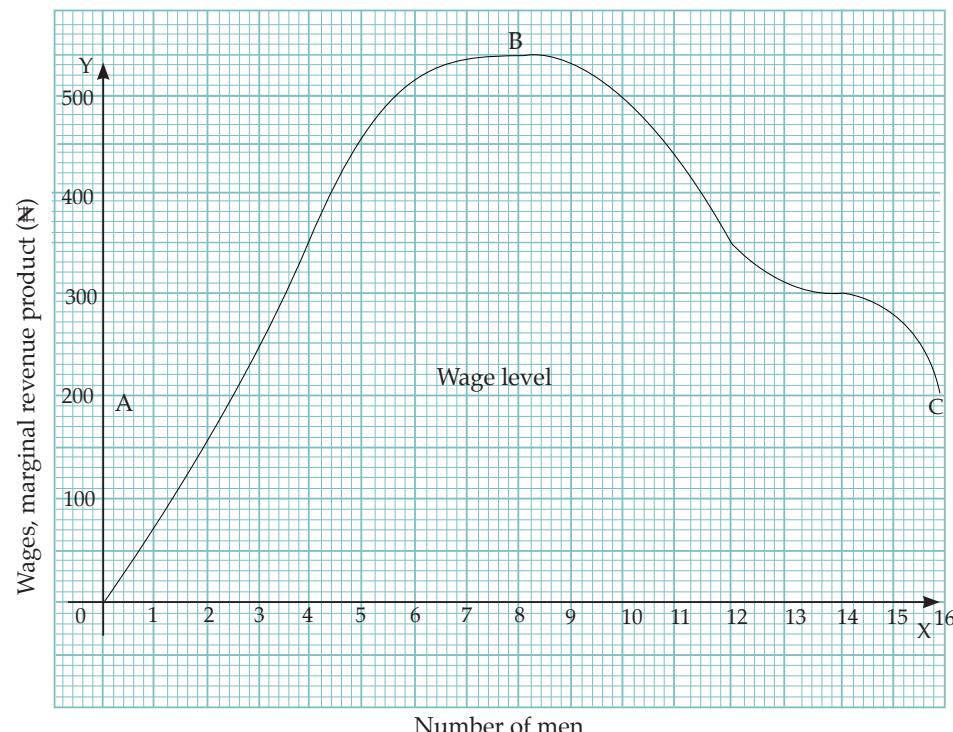


Fig. 6.1: Demand for labour on the basis of the marginal revenue product

cost price and selling price of the leather bag is as large as possible. His profits will be at a maximum when, for each leather bag produced, the *marginal cost* (MC) is equal to the *marginal revenue* (MR), i.e., MC=MR.

Since labour is required for the production of the leather bags, the production and profit levels will be at a maximum when the *marginal revenue product* (MRP) of the last worker employed is equal to the wages paid to him. To employ more labour beyond this point will cause the marginal revenue product to fall below the wage payable, which will bring about falling profits. Fig. 6.1 can be used to further illustrate the demand for labour.

The vertical axis measures the level of wages payable and the marginal revenue product, in naira. Along the horizontal axis, we measure the number of men employed, giving the demand for labour.

The marginal revenue product (MRP), as the name implies, is arrived at by multiplying the marginal product of the worker and the marginal revenue of that product when sold. The marginal product of labour, or any other factor for that matter, is also known as the *marginal physical product* (MPP) because it is measured in terms of physical units of output. For example, suppose the marginal product of the sixth worker is 10 leather bags and the marginal revenue of that product is ₦50. Then, the marginal revenue product of the sixth worker is $10 \times ₦50 = ₦500$.

In Fig. 6.1, the wage payable to a worker is ₦150. The marginal revenue product increases steadily until it reaches its highest value of ₦550 (B) when eight men are employed. Beyond this point, it begins to fall. The industrialist may, however, continue to employ because although the marginal revenue product curve is now downward

sloping, it is still above the wage level, i.e., line AC. The industrialist can continue to employ men as long as the marginal revenue product is higher than the wages he has to pay to the last worker employed. However, as soon as the marginal revenue product curve falls below line AC, the wages level, it becomes uneconomical to employ more men. This, in Fig. 6.1, will happen from about the seventeenth worker.

Supply of labour

The supply of labour, also known as the supply of effort, is the total number of man-hours that a population is willing to work at a particular wage level. The supply of labour, like the supply of other factors, is made available by the labour owner.

Here, labour stands out again as a unique factor of production. In respect of land and capital, supply depends almost solely on the rewards offered, i.e., rent and interest respectively, but this is not the case with labour. Non-monetary factors are much more important in the supply of labour unlike that of other factors, which require the physical presence of the owner of the source of the service. For instance, a landlord could be resident in Lagos, Nigeria, while collecting rent from property located in Riyadh, Saudi Arabia. Again, an investor could move his capital from a firm in Maiduguri to another firm in Port Harcourt, whilst living in Kaduna. This does not happen with labour. If an accountant in Monguno, Borno State, wishes to work in Potiskum, Yobe State, both in Nigeria, he must physically travel down there. It is impossible for him to supply his labour in Potiskum while residing in Monguno.

The special influence of non-monetary factors on the supply of labour, as distinct from the supply of other factors, may be illustrated with the following example. Suppose the oil companies paid the highest prevailing wages to petroleum engineers deployed to off-shore oil wells. Suppose also that merchant banks paid higher interest rates on fixed deposits than commercial banks. In the latter case, it is evident that funds would almost automatically flow away from the commercial banks to the merchant banks. In the former case, however, the same rush would not necessarily be expected to occur; petroleum engineers could keep away from the oil companies in spite of the high wages because the risks of slipping into and drowning in the oil wells was considered too great.

Nevertheless, the general tendency is that the labour owner will seek for himself the maximum net advantage from the provision of his labour. Thus, if he is tempted by the availability of fringe benefits, such as car loans to go and work in Borno State from Anambra State, he would deduct from the monetary rewards the cost of separation from his home.

Labour supply curve

Ordinarily, there is a direct relationship between the price of a commodity and the quantity of it offered for sale, such that the higher the level of prices payable, the higher the quantity supplied. For this reason, the normal supply curve slopes upwards from left to right.

In the case of labour, however, the supply curve does not always slope upwards in the manner described above. Labour, as a commodity, is said to have an abnormal

backward-sloping supply curve. This is so for many reasons. We shall discuss two of these reasons.

First, human beings want leisure. As the wage rate increases, more labour will be supplied to the market. Beyond a certain point, however, labour supply will begin to fall, as people abstain from work, in order to have some time for leisure. For example, a man and his wife could both remain employed workers until the man's income rises to a level at which he can now single-handedly cater for the family. Thereafter, the wife could withdraw from the labour force.

Secondly, we have already pointed out that non-monetary factors play a major role in the supply of labour. Wages may be high in an industry, but labour supply still stays low on account of the risks posed to life.

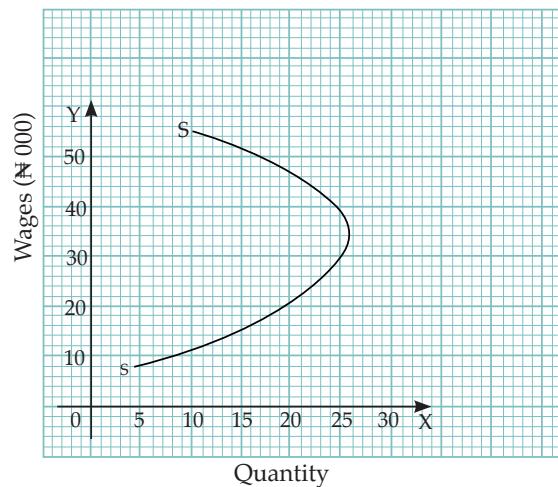


Fig. 6.2 A possible shape of the supply curve of labour

Factors affecting the supply of labour

The following factors affect the supply of labour:

- 1 Attitude to work

- 2 Level of wages
- 3 Total population
- 4 Working-age population
- 5 Length of working day
- 6 Participation rate

Attitude to work

The attitude of the population to work, which depends on the prevailing laws and customs, affects the overall supply of labour. In some countries, religious observances exclude women from presenting themselves for employment. This could limit the supply of labour.

Level of wages

In countries with a generally low income level, a rise in the prevailing wages, other things being equal, will cause an increase in the supply of labour. This will hold true up to a point, beyond which a further increase in wages will cause a drop in the labour supply as people keep out of employment to enjoy some leisure.

Total population

The total size of a country's population is the most important single factor affecting the supply of labour in it. It is the human beings, after all, that supply the labour. Therefore, the larger the population, the larger the supply of labour, and vice-versa.

Working-age population

The working-age population of a country is that proportion of population available for use in production activities. Surely then, the larger this is, the greater the labour supply will be, and vice versa.

Working day

The average number of hours officially allowed for work in a day may vary between

countries, and between periods within the same country. Currently in Nigeria, the length of a working day for civil servants is eight hours. With five working days a week, the total length of a working week for an individual is thus forty hours. The overall supply of labour will be higher where the official working day is longer.

Participation rate

The participation rate refers to the economically active parts of the working population of a country. In other words, the participation rate measures the proportion of the population who fall within the official working age and who are neither schooling, retired, nor idle, but are actually engaged in a productive activity. Where the participation rate is higher, the supply of labour will also be higher. Where the reverse is the case, labour supply will be low.

Determination of wages

'Wages' is a comprehensive term used to describe all the different kinds of earnings paid to labour as a factor of production. In everyday language in contemporary times, it is used interchangeably with the word 'salaries'. The word 'salaries' is derived from the Latin word *salarium*, meaning salt money.

As a commodity, the price paid for labour is wages. We have seen that the labour market differs from other commodity markets in a number of ways.

Another special feature of the labour market is that it is often non-competitive. For this reason, there is no one way in which wages payable to various categories of labour can be precisely determined.

Theories of wage determination

Many economists have propounded theories on the subject of wage determination which has been a problem for very many years. Let us examine some of these theories before looking at the determination of wages in practice:

- 1 Subsistence theory of wages
- 2 Wage-fund theory of wages
- 3 Bargaining theory of wages
- 4 Marginal productivity theory of wages

Subsistence theory of wages

This theory originated in France. According to it, the best level of wages should be that at which wages are simply equal to the requirements for subsistence. The theory holds further that if wages rise higher than the subsistence level, there will be a population increase which will catch up with it and force it down to subsistence level again. Therefore, wages must necessarily be equal to or lower than the subsistence level.

Although the subsistence theory of wages has failed in advanced countries of the world where, clearly, wages have been rising without corresponding population growth, it has been found to apply in many third-world countries today.

Wage-fund theory of wages

The wage-fund theory of wages is an early nineteenth century theory which held that the amount of funds available for wages was directly related to the amount of capital available, so that wages could not be increased unless the amount of capital was also increased. According to this theory, capital depended on savings just as wages depended on capital.

Since savings are a definite sum in the economy there also exists a definite fund

from which wages are paid. As a result, only a given amount of workers can be paid at any time. If the wages of some were increased, then others would surely get less than the average wage, the average wage being determined by the given amount of savings and the given number of workers. Wages therefore should be based on the amount of capital available.

Although the wage-fund theory of wages is wrong in talking of fixed wage fund, it holds true in pointing out that the proportion between labour and capital ultimately determines the level of real wages since it has a direct influence on labour productivity.

Bargaining theory of wages

This is a theory of wage determination which holds that payable wages are the outcome of a process of bargaining between labour and the representatives of management. Equilibrium wages therefore, according to this theory, should be arrived at by bargaining between labour and management, within the context of the prevailing situation in the labour market.

The bargaining theory of wages has found more acceptance in advanced countries like Britain, where bargaining is used to settle a whole lot of labour and industrial matters, than in developing countries, where wages are still arbitrarily frozen or increased by government legislation.

Marginal productivity theory of wages

This is one of the current theories of wage determination. It holds that the wages payable to labour tend to be equal to the marginal product of labour in value. To bring this about, the firm should continue to employ extra units of labour until such a point is reached at which the extra income gained

by employing one more worker is equal to the wages paid to him. Therefore, in the labour market, wages are determined by their interaction with the marginal productivity of labour on one hand and the supply of labour on the other. Beyond the point where the two are equal, any wage increase will cause a fall in the marginal product of labour. Firms will then tend to retrench workers until the two are parallel again.

While this theory is quite sophisticated and scientific, it has not altogether held true in the economies of advanced Western Europe and America where prices do not determine, but are determined by wages.

Wage determination in practice in the absence of trade unions

In the absence of powerful unions, wages in the labour market are determined simply like any other equilibrium price, i.e. by the forces of supply and demand interacting freely. Also, like any other market, the labour market at any time is either perfectly competitive or not. Let us now see how wages are determined in both situations, in the absence of trade unions.

Determination of wages in a competitive labour market

In this market, there are so many individual suppliers of labour that no single one of them can do anything to control the prevailing wage rates.

There are also so many buyers of labour that no one of them can influence the prevailing wage rate. Given this situation, the equilibrium wage rate will be that at which the supply and demand curves of labour intersect. At this point, the wages payable will be equal to the marginal product of labour,

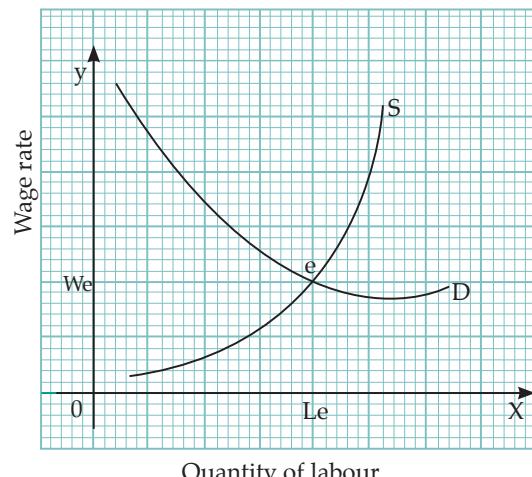


Fig. 6.3 Wage determination under competition

as recommended by the marginal productivity theory of wages. In reality, this could occur in a market for clerical and unskilled workers, for instance.

Fig. 6.3 illustrates this situation. The supply and demand curves intersect at E, giving equilibrium wage rate and labour quantity as We and Le respectively.

Wage determination in a non-competitive labour market

In this market, the supply of labour is still competitive, since there are many individuals capable of supplying labour of the required calibre. The buyers of the labour, i.e., the employers of the particular type of labour, however, are so few that each is individually capable of influencing the wage rate by varying his demand for labour.

Let us suppose that these few buyers come together and form an employers' association, in order that they can now operate as one body. Since labour will now be bought monopolistically (i.e., by a monopolistic purchaser in a competitive demand situation), the workers, being price-takers, must accept the wage rate offered by the

monopolist, or reject it. The purchaser, on the other hand, not being a price-taker, can freely alter the wage rate.

As the monopolist is maximising profit, and he has nobody to compete with, he will employ fewer workers than under competition, to enable him to pay lower wages as well. In this situation, the supply curve of labour is still sloping upwards, so that the more he employs the higher the wages he has to pay. To succeed in lowering wages, the monopolist will employ workers at the level where the marginal cost and the marginal revenue product of labour are equal. This is diagrammatically illustrated in Fig. 6.4.

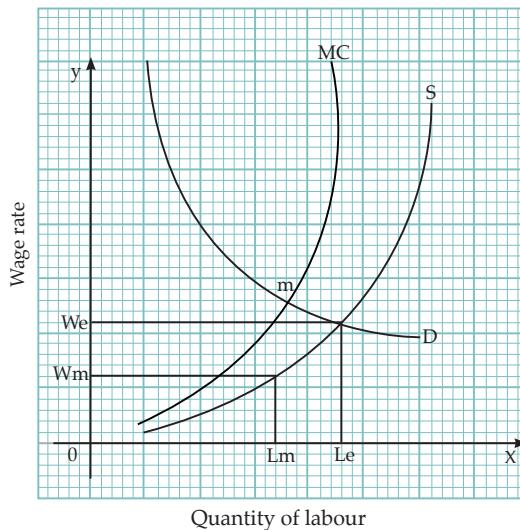


Fig. 6.4 Wage determination in a non-competitive market

The supply curve represents the average cost curve of the monopolist. The demand curve shows the marginal revenue product of labour. The marginal cost curve (MC) is drawn above the average cost or supply curve because, as long as the supply curve is upward-sloping, the marginal cost will be higher than the wages payable.

We and L_e are still the respective equilib-

rium levels of wages and employment under competition. The monopolist employs at L_m which is lower than L_e , and then goes ahead to pay the lower wages, W_m , prevailing at that low level of employment. This is because the monopolist will go on employing workers until the last worker adds the same amount to total revenue as to total cost.

The marginal cost of the monopolist is thus higher than wages. Since he hires labour at the point at which marginal cost is equal to marginal revenue product (M in the diagram) and then pays wages corresponding to that level, it means that the wages paid by the profit-seeking monopolist are lower than the marginal revenue product. Also, for this same reason, the volume of employment is lower than it would be under competition.

Wage determination in practice in the presence of trade unions

In the next section, we shall study trade unions in some detail. First, however, let us see how they feature in the labour market especially with regard to the determination of wages and level of employment.

Wage determination under monopolistic supply and competitive demand for labour

Fig. 6.5a represents a situation in which, under perfect competition and without a trade union, the equilibrium wage rate and level of employment were fixed by the forces of supply and demand at W_e and L_e respectively.

Let us suppose that a union monopolising the supply of labour entered into this situation. Fig. 6.5b illustrates the implications that this would have for the levels of wages and employment.

The monopolistic trade union in Fig. 6.5b

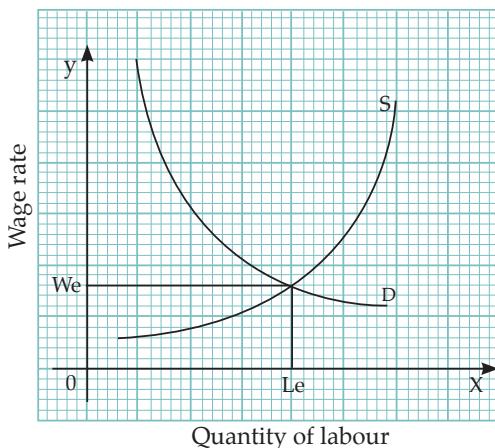


Fig. 6.5a Wage determination before the entry of unions

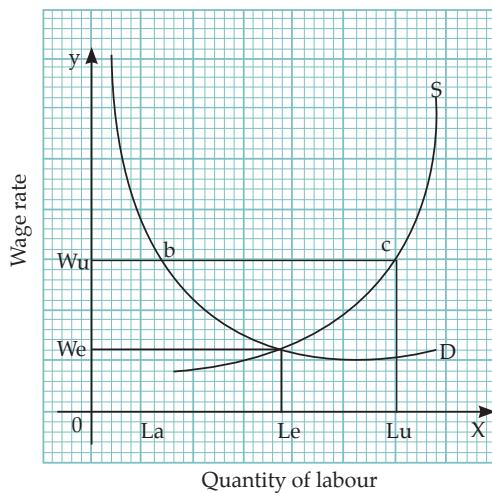


Fig. 6.5b Wage determination after the entry of unions

can do one of two things—either change (i.e., increase or decrease) in the level of wages, or the level of labour supply. It cannot do both at the same time.

Let us further suppose that the union decides to increase the wage rate for its members to We , either by negotiation or unilateral action. Since the demand for labour is still, employers are at liberty to employ only as much as they want at the wage rate Wu , at which the supply of labour is Lu . Observe

that, by pushing wages as high as Wu , the monopolistic trade union has caused the supply of labour to become perfectly elastic up to Lu , since the new supply curve is now $Wubcs$.

Note what is happening to the level of employment at the new wage rate, Wu . The supply of labour increases from Le to Lu , but the quantity demanded falls from Le to La , a new equilibrium having been created at b , where the demand curve cuts the new supply curve. Thus, when a monopolistic trade union enters into a previously competitive labour market, it can force wages higher than the competitive level, but the level of employment will also reduce as competitive purchasers cut back on their use of labour.

Government wages and labour policy in Nigeria

Right from the days of British colonialists, governments in Nigeria have attended to problems concerning the administration of wages and labour. This has been so, largely because, government remains the largest employer of labour in the country.

Although government policies on labour and wages principally apply to the public sector, their effects are also felt in the private sector. Before 1964, there was no uniform minimum wage for any class of workers throughout the country. In that year, however, the government rose to the challenge and fixed the lowest wages that could be paid to unskilled workers in the country's public service.

Even then, the minimum daily wage was not uniform across the country. It varied from region to region. For example, it was fixed at 78 kobo in the then Federal Capital Territory of Lagos, and 63 kobo in the urban areas of

the Mid-west, Western, and Eastern regions, whilst it was to vary from 50 to 55 kobo in the urban areas of the Northern Region.

Since then, there have been several upward revisions of salaries, including the Udoji Awards of 1974. At the beginning of the Second Republic in 1979–80, the Nigeria Labour Congress mounted strong pressure on the government, resulting in the raising of the minimum wage to one hundred and twenty-five naira per month throughout the country.

Other important aspects of government policies on wages and labour in Nigeria include the creation of a unified salary scale structure for the whole country which abolished the regional disparities that had existed, the creation of a Universities System Scale (USS) of salaries for all universities in the country, and the stipulation of an eight-hour working day for civil servants.

Why wages differ

Although we have studied how wages may be determined under different labour market conditions using economic theories; in reality, wage levels differ between occupations and within the same occupation. The following are some of the possible explanations for this state of affairs:

- 1 Labour market conditions
- 2 Length and cost of training
- 3 Rate of productivity
- 4 Trade union power

Labour market conditions

By labour market conditions, we mean the state of supply and demand with respect to a particular type of labour. Where demand is greater than supply, wage levels will be very high, as employers offer competitive salaries

to attract and retain workers. This is the case with chartered accountants and seasoned economists in high demand by merchant and commercial banks. Where, however, the supply of labour exceeds the demand for it, wage rates will be low, as workers will be prepared to accept lower wages, just to be in employment. This is the case with unskilled workers such as house-helps and gardeners.

Length and cost of training

To become licensed as a practitioner in some professions, the length and cost of training required are relatively high. Upon qualification, such professionals usually earn higher wages than others. In Nigeria, for example, it takes six years' training after a normal secondary school career to become a medical doctor. Where the training is more rigorous, even within the same profession, wages differ. For example, in the teaching profession, teachers with professional teaching qualifications in addition to their other degrees are usually placed on a higher salary than those without professional teaching qualifications.

Rate of productivity

It is in keeping with economic theory, especially the marginal productivity theory of wages, that the higher the productivity of a worker, the higher the wages he should earn. The differences in the wages of the various workers of the same industry could be the result of differences in productivity.

Trade union power

The strength of a trade union influences the level of wages payable to its members. The more powerful a trade union is, the higher the wages paid to its members. It is on account of its strength that the Academic Staff Union of Universities (ASUU) in Nigeria

achieved the introduction of the University System Scale (USS) of salaries to the university staff salary structure of Nigerian universities in 1981.

Trade unions

A trade union is an association of workers formed to enable the members to take collective, rather than individual action against their employers in matters relating to their welfare and conditions of work. Most trade unions also offer their members the services of a 'friendly society', thereby giving them insurance and protection against unforeseen mishaps, such as accidents, sickness or death. Trade unions are basically of two types:

- 1 Craft unions
- 2 Industrial unions

Craft unions draw their members from one or more closely associated occupations. In Nigeria, examples of a craft union include the Nigeria Union of Journalists (NUJ), the Nigerian Civil Service Technical Workers' Union (NCSTWU), and the National Union of Road Transport Workers (NURTW).

Industrial unions draw their membership from a wider field. Members of an industrial union come from various branches of the same industry. Examples in Nigeria include the National Union of Banks, Insurance, and Financial Institutions Employees (NUBIFIE); National Union of Petroleum and Natural Gas Workers (NUPENG).

History of trade unions

Before the industrial revolution in Britain, there existed friendly societies. These were mainly made up of *journeymen* who came

together every week and contributed money into a common pool, for mutual assistance in time of trouble.

However, with the coming of the industrial revolution and the development of capitalism as an economic system, the minority began to control most of the wealth of society. As a result, a conflict of interest began to emerge between various groups of people, notably employers and employees.

The first group of people to form trade unions were the skilled artisans and craftsmen whose livelihood was being threatened by the mass production of industrial capitalism. Later, factory workers began to come together in unions to strengthen their bargaining position against their employers with respect to wages, job security and other conditions of work. The government continued to oppose the formation and existence of these unions until 1824 when, for the first time, trade unions in Great Britain won legal recognition. Thereafter, trade unions grew in both number and size of membership. Also, with improvements in transport and communications, national and regional unions were formed to replace local unions.

In West Africa, trade unions came into existence as urban centres grew and salaried employment increased in importance, during the colonial era. In Ghana, legal recognition for trade unions was enhanced by the Industrial Relations Act of 1958, which listed twenty-four trade unions recognised by the government and entitled to conduct bargaining on behalf of the workers. All twenty-four unions came together under a national body called Trade Union Congress (TUC). Apart from this group of twenty-four trade unions, others were also in existence. However, since they were not explicitly mentioned in the Act of 1958, they had to

become affiliated to one or the other of the recognised twenty-four.

In Nigeria, many unions also existed. Up to the time of the First Republic in the years immediately after independence, these came together under two central labour organisations – the Nigerian Trade Union Congress and the United Labour Congress. Today, the country has several trade unions, all of which are organised under two central labour organisations – the Nigeria Labour Congress (NLC) and the Trade Union Congress (TUC). Virtually all regular employees of both the public and private sectors are members of the NLC or TUC. At the continental level, there exists the Organisation of African Trade Unions Unity (OATUU) to which national central labour unions of individual African countries are affiliated.

Objectives of trade unions

The objectives of trade unions are as follows:

- 1 Good wages for members
- 2 Employment for members
- 3 Job security for members
- 4 Regulation of entry qualifications into the various professions

Good wages for members

A major reason for which trade unions are formed is to secure good wages for their members. Trade unions act to protect their members from exploitation by their employers and, by so doing, ensure that their members get their appropriate share of the overall national income.

Employment for members

Another objective of trade unions is to secure employment for those members who have no jobs. This is carried out by disseminating information on job opportunities to members

and informing prospective employers of the quality and quantity of personnel available for recruitment. In 1987, for example, the Nigerian Medical Association sought to reserve vacancies for its members when it protested against the recruitment of doctors from Cuba for deployment to Nigeria's rural areas.

Job security for members

Trade unions also make it their responsibility to safeguard the employment of their members. They protect the legal rights of their members by coming to their aid when unfairly treated by their employers.

Regulation of entry qualifications into the various professions

It is another objective of trade unions to regulate the qualifications for entry into the various professional groups. This is to ensure a high standard of professional practice. For instance, the Architects' Registration Council of Nigeria will only license an architect who has obtained a Master's degree in Architecture.

Weapons of trade unions

Trade unions insist on achieving their objectives by using the following methods:

- 1 Strike
- 2 Work-to-rule
- 3 Closed-shop policy
- 4 Bargaining

Strike

'Strike' is a term used to describe the voluntary and collective action of a group of employees in which they withdraw their labour at the same time and refuse to carry out the duties for which they are employed.

This is the weapon most often and most effectively used by trade unions to compel employers to grant their demands, for fear of loss of profits owing to the shortage of work. Strikes are based on the fact that workers are free individuals who are therefore free to withhold their labour. Striking workers are generally guaranteed their continued employment when the dispute has been settled. The ability of Nigerian trade unions to organise strike actions was clearly demonstrated by the petroleum subsidy removal strike of January 2012.

Work-to-rule

Another method adopted by trade unions to achieve their purpose is working to rule. Using this weapon, workers deliberately pay extra attention to all the rules and regulations governing the job for which they are employed, in such a way that work is slowed down and productivity reduced. In general, working to rule means that workers deliberately 'go slow' at work, in order to reduce productivity.

Closed-shop policy

This is also another effective weapon in the hands of trade unions against employers. A closed-shop policy is a condition imposed by a trade union that only its members will be employed in a particular firm. That is, the trade union makes it compulsory for the employer to employ only members of the union. In other words, no non-member of that trade union can work in the firm. This method is ordinarily used by professional trade unions, such as those of lawyers and dentists. It is generally not as popular among workers as strikes and work-to-rule.

Bargaining

This method is being increasingly used by trade unions. It involves the coming together of representatives of management and employees to discuss matters and arrive at mutual agreements. Usually, only when bargaining has failed do trade unions resort to strikes.

Economic importance of trade unions

Trade unions are important because of the following:

- 1 Labour mobility
- 2 Income redistribution
- 3 Economic stability
- 4 High quality goods and services

Labour mobility

Trade unions often adopt policies which make the mobility of labour difficult. For example, trade unions negotiate seniority rights for their members, thereby securing their jobs in the event of a cut-back in production, and thus making it necessary for them to seek alternative employment. Unions also hinder occupational mobility by the practice of licensing new entrants. This, like the closed-shop policy, has the effect of limiting the supply of labour. In general, obstacles to the mobility of labour adversely affect economic growth.

Income redistribution

The activities of labour unions affect income distribution. When there is too much inequality of incomes in an economy (i.e., with so much wealth concentrated in the hands of a few), trade unions can force a more equitable redistribution of income by resorting to strike actions.

Economic stability

Employers and employees often differ on a wide range of economic issues. With the existence of trade unions, these differences are brought out into the open and satisfactorily settled, thereby avoiding strikes by employees and lock-outs by employers, both of which result in great losses to the economy.

High quality goods and services

By ensuring that members are well-trained, and by supervising them at work to maintain a good public image, trade unions make sure that goods and services produced are of a sufficiently high quality.

Employers' associations

Just as employees come together and form unions to protect the economic and social welfare of members, employers also form their own associations to enable them to adopt a common policy in labour negotiations.

In Nigeria, governments have been interested in trade unions as well as employers' associations. The Nigerian Employers' Consultative Association (NECA), formed in 1957, was partly as a result of the efforts of the then Federal Minister of Labour. While trade unions are normally interested in negotiations about wage increases and improvement of working conditions, employers' associations are usually anxious to discuss ways of increasing productivity. By collective bargaining on these matters, mutual agreements are reached for the overall benefit of the economy.

Concept of unemployment

Unemployment refers to a situation in which labour is idle, instead of being engaged in productive activity, i.e., a situation in which labour is not being utilised. Unemployment may be voluntary or involuntary.

Voluntary unemployment is a situation in which the unemployed person deliberately refuses to work at the going wage rate; for example, a young male graduate from a rich family can choose to reject any job offered to him, preferring to stay idle and live on the wealth of his parents. A young female school-leaver may choose to get married and raise children rather than go into the labour market. These are cases of voluntary unemployment.

Involuntary unemployment occurs when an individual is ready to do a job at the present wage-rate, but cannot find any such job. In other words, the unemployed person is ready to work, but nobody wants to use his services.

In general, the term unemployment is used to describe involuntary unemployment, since this is the kind of unemployment in which the labour factor has no land and capital to combine with for production. This is the kind of unemployment that the economist is concerned with. All through the rest of this text, the term unemployment will be used in reference to involuntary unemployment only.

Most developing countries, including Nigeria, are passing through a period of high unemployment rates. The unemployment situation in Nigeria is so high.

Unemployment rate

Unemployment rate is the number of unemployed persons, expressed as a percentage of the total number of persons available for employment at any time. It may be calculated using the formula:

$$u = \frac{x}{x+y} \times 100, \text{ where}$$

u is the unemployment rate,
 x is the number of unemployed persons,
 y is the number of employed person, and
 $x + y$ is equal to the *labour force*.

For example, if the labour force of a country is 3.5 million, of which 3 million are in employment while 500 000 are unemployed, the unemployment rate is calculated as follows:

$$x + y = 3\ 500\ 000$$

$$x = 500\ 000$$

$$y = 3\ 000\ 000$$

$$\begin{aligned}\text{therefore, } u &= \frac{500\ 000}{3\ 500\ 000} \times 100 \\ &= 14.3\%\end{aligned}$$

Table 6.2: Unemployment rates for various age groups in Nigeria in 2010.

Age group	Unemployment		
	Male	Female	Total
15 – 24	35.6	24.4	35.9
25 – 34	19.5	26.7	23.3
35 – 44	12.3	21.8	16.8
45 – 54	11.8	18.2	14.4
55 – 64	14.6	18.4	16.0
Total	17.7	24.9	21.1

Source: National Manpower Stock and Employment Generation Survey: National Bureau of Statistics, Abuja

Types of unemployment

Economists identify the following types of unemployment:

- 1 Hidden unemployment
- 2 Underemployment
- 3 Disguised unemployment
- 4 Frictional unemployment
- 5 Structural unemployment
- 6 Mass unemployment or cyclical unemployment
- 7 Seasonal unemployment

Hidden unemployment

This occurs when a person takes up a job which is not his first preference, and which he is prepared to leave as soon as another job opportunity appears. Such a person is working just not to be idle. The teaching profession in Nigeria is currently suffering from hidden unemployment. Many of the graduate teachers vacate their present job as soon as they find vacancy in another field where they can equally fit in.

Underemployment

Underemployment occurs when an individual works at less than his full capacity, such that his productivity is below maximum. An example is the case of a doctor who is capable of attending to forty patients a day, but actually attends to no more than thirty patients every day.

Disguised unemployment

Disguised unemployment occurs when a worker is laid off or retrenched without any fall in total output. In other words, a worker is said to be in disguised unemployment when he is adding nothing to the total product, i.e., his marginal productivity is zero. For example, suppose five men working with two boats produced sixty kilograms of fish

a day. If six men could be made to produce the same sixty kilograms of fish with the same two boats, then the sixth man would be in disguised unemployment because, if he were removed, the total product would remain the same. The problem of disguised unemployment is common in agriculture in underdeveloped countries. It occurs as a result of high population pressure on the land. In a manufacturing company, disguised unemployment can occur when a company puts its workers on 'short time'.

Frictional unemployment

Frictional unemployment occurs when labour is unemployed, not because there are no job vacancies, but because the skill available is not the required one. For example, an accountant may remain unemployed whilst at the same time, there is an unsatisfied demand for doctors. This would be a case of frictional unemployment.

Structural unemployment

This is unemployment which occurs in an industry as a result of a relatively permanent fall in demand for its products. Declining industries are those that normally suffer from structural unemployment. For example, if the automobile industry were to face a serious and persistent decline in demand for its products, automobile and mechanical engineers would face structural unemployment.

Mass unemployment or cyclical unemployment

Mass unemployment is unemployment which affects many occupations and industries as a result of a decline in total effective demand throughout the economy. It is also called *cyclical unemployment* because it results from the trade cycle. When the general

level of economic activity falls progressively, mass unemployment results. This is the kind of unemployment currently prevailing in Nigeria.

Seasonal unemployment

This is a situation in which members of the labour force are unable to find employment due to the seasonal nature of economic activities in their occupations. For instance, during the rainy season, road construction workers suffer unemployment. Farming is another industry that faces seasonal unemployment.

Causes of unemployment

Unemployment is caused by the following:

- 1 Immobility of labour
- 2 Deficiency of demand
- 3 Labour-saving devices
- 4 Deliberate policy
- 5 Seasonal variations

Immobility of labour

Difficulties in occupational and geographical mobility can cause frictional unemployment. An experienced, long-serving worker may face frictional unemployment because if his skills are no longer required, it may be difficult to retain him for any available job on account of old age and slowness of learning. Geographical immobility may give rise to a situation in which there is unemployment in one region and unfilled vacancies in another.

Deficiency of demand

An overall fall in demand results in sluggish sales for firms. This will cause a reduction in profits and make further production unnecessary. When this happens, structural and mass unemployment will result.

Labour-saving devices

The introduction of automated equipment, such as machinery and robots, which cut down the labour requirements in firms, also causes workers to become displaced and unemployed.

Deliberate policy

A company may deliberately retain some of its workers in disguised unemployment. For example, during a recession expected to be temporary, the company may retain more workers than it actually needs, so as to hold its work team together and have sufficient labour of the right quality when demand increases again.

Seasonal variations

As the season changes, the change tends to cause seasonal unemployment in industries such as agriculture and construction.

Effects of unemployment

Here are some of the effects of unemployment in any society.

- 1 There will be a high rate of crime in the society. Idleness, it is said, is the devil's workshop.
- 2 The level of economic productivity will be very low, more importantly where the larger section of the population is unemployed.
- 3 There is the possibility of high brain drain, especially on the part of the professionals and technocrats. There is every tendency for these classes of people to travel to overseas countries in search of better opportunities and where their services will be more valuable. For instance, we have a lot of Nigerian medical doctors doing well in the United Kingdom, United States of

America and Canada. Our university professors and other academics are also examples.

- 4 Another negative effect of unemployment is increased poverty and low standard of living. Social status will fall generally where people are not gainfully employed.
- 5 Human capital development of a nation will be retrogressive, leading to retarded national growth and development.
- 6 Investment level in the economy will be reduced, leading to poor capital for the nation.
- 7 There will be likelihood of over-dependency on the working class by the non-working class for their survival and well-being.
- 8 Unemployment, more importantly at a greater magnitude, will lead to poor performance of the economy. The gross domestic product will fall and the net national product will be insignificant in measuring general performance of the economy.

Solving the problem of unemployment

The problem of unemployment, which if unchecked, could have such serious consequences as social unrest and revolution, may be solved in the following ways:

- 1 Organised labour market
- 2 Industrial location policy
- 3 Deficit budgeting
- 4 Commercial policy

Organised labour market

A government seeking to solve the unemployment problem could begin by establishing employment or labour exchanges. This

would make it easy for employers to locate unemployed persons for recruitment.

Industrial location policy

The problem of frictional unemployment can be solved by using an industrial location policy which ensures that firms are spread as evenly as possible all over the country. Nigeria, under the Babangida administration, tried to achieve this through the Directorate of Food, Roads and Rural Infrastructure (DFRRI), as well as the Rural Banking Scheme which was established much earlier.

Deficit budgeting

A national budget is said to be in deficit when the government spends more money than it receives in revenue. When there is mass and structural unemployment which is caused by slacking demand, the government can deliberately spend more than it collects, in order to increase the level of money in circulation and raise the level of demand again.

Commercial policy

The government also can address the unemployment situation by restricting imports that compete with locally produced goods. This is stimulating the demand for home-made goods, so that industries at home can expand their output and employ more persons.

Concepts of self-employment, job creation and dignity of labour

Self-employment

Self-employment is a concept that tries to strengthen the importance and significance

of labour in society. It is meant to appeal to the ingenious and creative sense of the population, especially with respect to entrepreneurship development and acquisition. It is yet a concept that intends to change the perception of members of the job seeking population to begin to see themselves as employers of labour and resources, rather than being job seekers. The relevance of self-employment cannot be over emphasised in the economic development of a nation, for it makes an individual to be self-dependent and self-reliant and not government-dependent.

Job creation

Job creation is a relative term to the concept discussed above, in that it involves programmes that are designed and put in place by various government agencies such as the National Agency on Poverty Eradication Programme (NAPEP), National Directorate of Employment (NDE), private individuals, and corporate bodies, so as to engage and appeal to the productive sense of the population, especially the youth.

In view of the foregoing, the following are some of the relevant skills that are found to be very supportive and lucrative:

- 1 Bead making
- 2 Shoe making and repair
- 3 Mobile phone repair and maintenance
- 4 Soap making
- 5 Electronic and electrical installation and repair
- 6 Candle making
- 7 Computer installation, repair and maintenance
- 8 Recharge cards printing
- 9 Automobile apprenticeship, and a host of other technical, vocational, and trade/business acquisition skills

However, the National Directorate of Employment (NDE) has been saddled with the responsibility of job creation and tackling the problem of unemployment in Nigeria. NDE is equally to train unemployed youths and retired persons for vocational skills, and also handle acquisition of entrepreneurship/business skills as well as labour based work, rural employment promotion, and job placement guidance and counselling.

Dignity of labour

This is also an economic term that tends to emphasise the importance of labour and the value attached to one's profession and means of livelihood. Every work, no matter how menial or sophisticated, has its own potential and relevance, in contributing to societal development and economic progress.

Labour is therefore viewed as a human productive engagement that is seen as an antidote to poverty and a panacea for wealth accumulation. Dignity of labour, sometimes pose such questions as, how often do individuals develop in their chosen career? Are people actually developing or stagnated? These and many more questions are demanding answers and direction for individual growth and development.

Summary

- The labour market is characterised by the inseparability of the seller from the commodity, its partial monetisation, and the limited control over the commodity by the buyer.
- The size of the labour force depends on the age and sex distribution of population, and the school-leaving and retirement ages.
- Labour efficiency is affected by education, work environment, provision of welfare services, on-the-job training, geographical distribution of the labour force, longevity, malnutrition, and climatic conditions.
- Geographical or lateral mobility of labour involves actual change in geographical location. It is higher among skilled than unskilled workers.
- Occupational or vertical mobility involves change of occupation. It is higher among unskilled workers than skilled workers.
- Obstacles to labour mobility include costs of movement and retraining, family relations, trade union restrictions, and ignorance of job opportunities.
- The demand for labour depends on the relationship between wages and the marginal revenue product.
- Labour supply is affected by attitude to work, wage levels, population size, working-age population, length of work day, and the participation rate.
- Wages differ due to labour market conditions, duration and cost of training, productivity, and trade union power.
- Trade unions use strikes, work-to-rule, closed shop policy, and bargaining as weapons.
- Unemployment may be hidden, disguised, frictional, structural, seasonal, and mass or cyclical in type.
- The concepts of self employment, job creation and dignity of labour are relative labour terms that emphasise the importance of individual productiveness and contribution to economic growth of a nation.

Review questions

Multiple-choice questions

- 1 Which of A–D is *not* a main characteristic of the labour market?
 - A The embodiment of the commodity in its seller
 - B Lack of full monetisation
 - C Total ownership by the buyer
 - D Lack of total ownership by the buyer
- 2 Identify the *incorrect* statement.
 - A Geographical mobility is also known as vertical mobility.
 - B Geographical mobility is higher among skilled than unskilled workers.
 - C Occupational mobility is higher among unskilled workers than skilled workers.
 - D Labour mobility is hindered by the payment of inconvenience allowance to transferring staff.
- 3 The supply of labour is _____.
 - A also known as the supply of effort
 - B the number of man-hours the population is willing to work
 - C the number of working age persons available
 - D A and B only
- 4 Which of the following is *not* an aspect of general government policy on wages and labour in Nigeria?
 - A The unified salary scale structure
 - B Cancellation of NLC 1988 elections
 - C Stipulation of an 8-hour workday
 - D Minimum wage legislation
- 5 When the marginal physical product of a worker is zero, his condition is one of
 - A hidden unemployment.
 - B underemployment.

- C disguised unemployment.
- D frictional unemployment.

Essay questions

- 1 Outline the characteristics of the labour market.
- 2 What factors interfere with the mobility of labour?
- 3 Describe the tools commonly used by trade unions to achieve their objectives.
- 4 Differentiate between:
 - a) Labour efficiency and labour effectiveness.
 - b) Underemployment and disguised unemployment.
 - c) The wages fund and the marginal productivity theory of wages.
- 5 Explain the following labour concepts:
 - a) Self employment
 - b) Job creation
 - c) Dignity of labour

Performance objectives

By the end of this chapter, you will be able to:

- 1 explain the concept of utility.
- 2 discuss total utility, average utility and marginal utility.
- 3 discuss the principles of utility maximisation and diminishing marginal utility.
- 4 explain why the curve is downward sloping.

Introduction

In everyday language, the word consumption (or to consume) is associated with the act of eating something; that is, the introduction of a food item into the digestive system, beginning in the mouth. This is completely different from the sense in which the concepts of consumer and consumption are used in Economics.

In Economics, the consumer is defined as an individual or firm who puts a particular commodity or service to use for the satisfaction of particular wants. Thus, consumption is simply the act of using goods and services to satisfy human wants. The use of goods and services to satisfy human wants is not limited

to eating and drinking only. It includes getting satisfaction from, say, reading a novel or watching a drama performance.

Consumer theory is an aspect of economic analysis in which we give detailed attention to the behaviour of the consumer within a given set of assumptions.

Concept of utility

Utility is the capacity of a good or service to satisfy human want. It is a concept used to describe the ability or power of a good or service to meet some specific needs of a human being. In this sense, utility refers to the particular satisfaction, pleasure, or fulfilment which an individual derives from the consumption of a particular quantity of a commodity or service.

Since two individuals can get different levels of satisfaction from consuming the same quantity of a particular good, it becomes clear that utility is essentially psychological, i.e., it is in the mind of the individual consumer. Therefore, it is not possible to measure utility in particular quantitative terms. However, for a particular consumer, the order of utility can be known. This means that a consumer can always say that commodity A has a greater utility than

commodity B, which simply means that the consumer prefers commodity A to commodity B.

In discussing the behaviour of the consumer, it is usual to distinguish among the following.

- 1 Total utility
- 2 Average utility
- 3 Marginal utility

Total utility (TU)

Total utility is the total satisfaction which an individual consumer derives from using a commodity or service to satisfy his wants. Since the concept of utility is itself subjective, i.e., depending on the individual, total utility is also subjective. It cannot be measured in any definite way, how much satisfaction an individual gets from consuming, say, three loaves of bread a day; the consumer must judge that for himself.

Average utility (AU)

Average utility is the satisfaction which a consumer derives per unit of the commodity consumed. If utility could be measured in some way, average utility would be given by total utility divided by the number of commodities consumed.

Marginal utility (MU)

Marginal utility is the satisfaction obtained from consuming one more unit of a commodity. It measures the extent to which the consumer's total satisfaction would be increased if he went ahead to consume one additional unit of the commodity.

The law of diminishing marginal utility

Although in reality, utility, being a subjective concept, cannot be measured in any definite

quantitative form, it is always useful, when studying consumer behaviour, to assume that such quantitative measurement is possible.

The law of diminishing marginal utility states that, *other things being equal, the marginal utility of a commodity to an individual decreases with every extra unit of that commodity he consumes*. In other words, the law states that if a consumer goes on consuming successive equal increments in the quantity of a commodity, then the increase in the total utility resulting will become smaller and smaller; that is, satisfaction per extra unit will start falling.

This is actually true in practice. Let us take the example of a very thirsty athlete. The first cup of chilled water will give him a lot of satisfaction. The second one will surely add to his total satisfaction, but not as much as the first. The third cup will add to his satisfaction, but still less than the second. By the time he receives the fifth cupful, he may have overcome his thirst completely and may choose to pour the cold water over his head instead of drinking it. This is because his marginal utility at the fifth cup had diminished so much so that he would rather pour it over his head than drink it. However, even though his marginal utility was diminished,

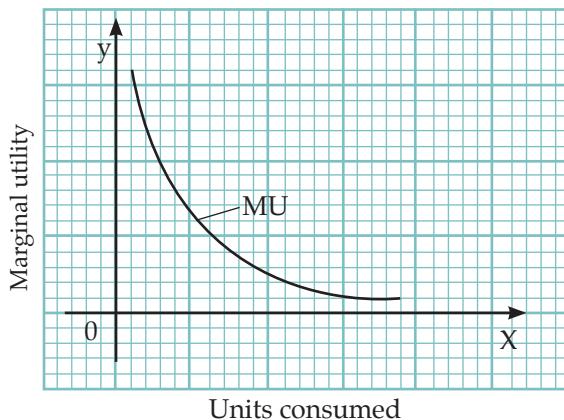


Fig. 7.1 The law of diminishing marginal utility

his total utility was enhanced by the act of pouring the water over his head rather than throw it away completely.

Diagrammatically, the law of diminishing marginal utility would appear as shown in Fig. 7.1

Marginal utility and total utility

We have just seen that marginal utility begins to fall right after the first unit of the commodity has been consumed and continues to diminish until it reaches zero and below. In contrast, however, total utility increases right from the first unit consumed, although the increase is smaller for every extra unit consumed.

At the point where marginal utility reaches zero, i.e., where the MU curve cuts the x-axis, total utility reaches its maximum point. It should be noted that when marginal utility becomes negative, total utility begins to fall. Diagrammatically, when the MU curve descends below the x-axis, the TU curve begins to slope downwards. This is explained in Table 7.1 and illustrated in Fig. 7.2.

Table 7.1 Relationship between marginal utility and total utility

Units consumed	Total utility	Marginal utility
1	10	10
2	16	6
3	20	4
4	23	3
5	25	2
6	22	-3
7	17	-5

Note in Fig. 7.2, that the marginal utility does not correspond directly to any unit consumed. Rather, it occurs, and is plotted in-between units. For example, MU is on the graph between units consumed of 1 and 2. 6 does not correspond directly to 2, as the table would imply. In Fig. 7.2, the marginal utility curve cuts the x-axis when 5 units are consumed. That is, marginal utility is zero at the fifth unit of the commodity consumed. At this level also, it should be observed that the TU curve reaches its highest point, i.e., 25. Thus, total utility is highest when the fifth unit is consumed and marginal utility at this point is zero. After the fifth unit, marginal utility becomes negative and total utility begins to fall.

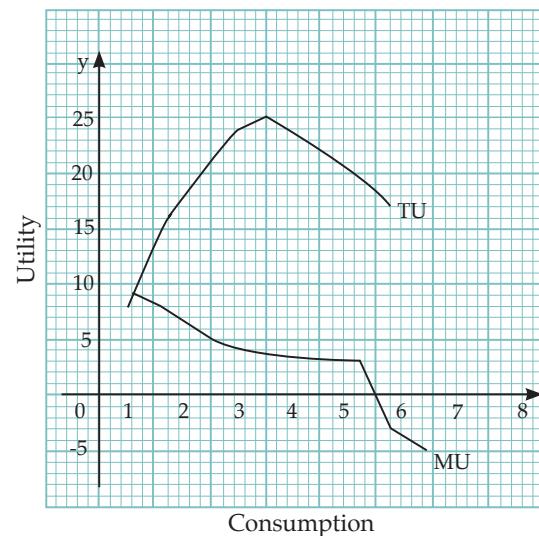


Fig. 7.2 Marginal utility and total utility

The relationship between marginal utility and total utility is very important. A commodity may have a very low marginal utility but a high total utility. This will affect its price, of course, since in reality, the factors which determine the price of a commodity are its marginal utility and its supply. An example can be taken from everyday life.

Consider water and air. They each have an extremely high total utility, but very low marginal utility. This explains why they command little or no price. On the other hand, gold, with a very high marginal utility and low total utility (since people can easily do without it), commands very high prices.

Principles governing the behaviour of the consumer

Since the consumer is concerned with using goods and services in order to satisfy his wants, it is natural that he should distribute his limited income among the many goods and services that he needs so as to derive the highest possible satisfaction from so doing. The principles which are assumed to govern the consumer in doing this are as follows:

- 1 Equal marginal utility to price ratios
- 2 Effect of price change
- 3 Positive income-elasticity of consumption

Equal marginal utility to price ratios

In allocating his limited income to the various commodities he consumes, the individual consumer tries hard to arrange his spending in such a way that the ratio of the marginal utility of one commodity to its price is equal to the ratio of the marginal utility of another commodity to its own price. This should be so for all the commodities that he consumes.

Let us assume an individual consumer allocates his limited income to only three commodities: A, B, and C. Suppose that the marginal utilities of A, B and C are given by MU_A , MU_B , and MU_C respectively. Suppose also that the prices of A, B and C are P_A , P_B and P_C respectively, the consumer will try to ensure that the ratio of the marginal utility

of A to the price of A, is equal to the ratio of the marginal utility of B to the price of B, and similarly for C. In other words, the consumer will make sure that:

$$\frac{MU_A}{P_A} = \frac{MU_B}{P_B} = \frac{MU_C}{P_C}$$

Effect of price change

In analysing the consumer's behaviour, we assume that if the price of a commodity falls, the consumer will react by increasing his consumption of it, other things being equal.

In the same way, when the price of the commodity rises, other things being equal, the consumer's reaction will be to reduce the quantity of the commodity consumed by him.

Positive income-elasticity of consumption

If the real income of the consumer increases, we assume that his normal reaction will be to increase his consumption of goods and services. Conversely, a fall in real income will cause the consumer to reduce his level of consumption of goods and services. These assumptions will become clearer and better understood in the following sections.

The concept of indifference curve

An indifference curve is one which shows the possible combinations of two commodities, each combination yielding the same satisfaction or utility to the consumer. All the combinations of two commodities represented on the indifference curve give the consumer the same amount of utility, so that he is 'indifferent' as to which particular set of them he gets. Combination A will not give him more or less satisfaction than combination B, as long as both combinations A and B are on the same indifference curve.

In other words, it does not matter to the consumer which combination he gets. If he gets combination A instead of combination B, he will not feel any better off.

Suppose, for example, that the two commodities are textbooks and notebooks for different subjects taught in school, and we have confronted a student with many combinations of these, each combination being made up of a number of textbooks and notebooks. Suppose also that he says that whether he is given combination A or combination B, or combination C, his satisfaction would be the same. He would then be said to be indifferent between combinations A, B and C. He would derive the same utility from whichever combination he was given, although they contained different numbers of textbooks and notebooks as shown in Table 7.2.

Table 7.2 Student's indifference schedule

Combination	Textbooks	Notebooks
A	3	17
B	15	5
C	8	10

Now, from the student's own information, we could proceed to find other combinations of textbooks and notebooks which would give him the same level of satisfaction. All of these could then be represented on a graph and joined by a smooth curve to get his indifference curve, as shown in Fig. 7.3.

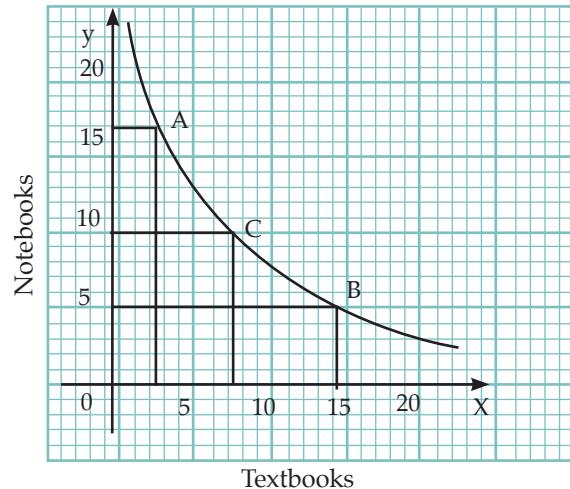


Fig. 7.3 Indifference curve

The indifference curve can thus be used to show that a particular level of utility or satisfaction can be derived from many different combinations of two commodities.

Two more points must be noted about indifference curves. First, they indicate higher and higher levels of satisfaction as

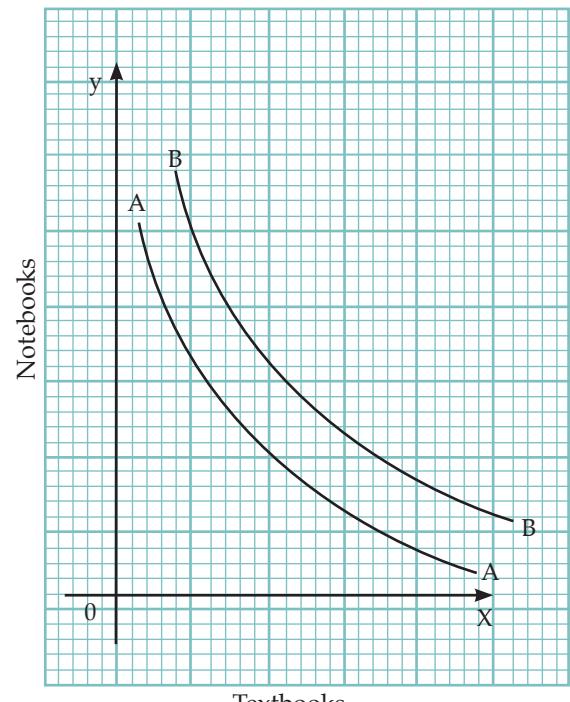


Fig. 7.4 Indifference curves

one moves rightwards, i.e., an indifference curve on the right hand side represents a higher level of satisfaction or utility than the one to the left of it.

In Fig. 7.4, for example, indifference curve BB corresponds to a higher level of satisfaction than indifference curve AA. Secondly, indifference curves cannot intersect, as shown in Fig. 7.5. This is impossible, since two indifference curves represent two different levels of satisfaction, which can never be equal.

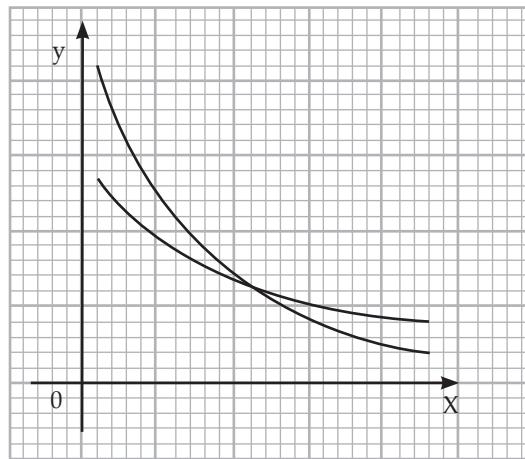


Figure 7.5 Indifference curves cannot intersect

Marginal rate of substitution (MRS) and rate of commodity substitution (RCS)

The indifference curve, as can be seen from Figs. 7.3, 7.4, and 7.5 is always sloping downwards, and from left to right. This means that as one commodity increases, the other decreases. Both cannot increase or decrease at the same time. Therefore, as the consumer moves along his indifference curve, he is giving up more of one commodity and gaining more of the other. He is substituting one commodity for the other in order to retain the same level of satisfaction.

The rate at which one commodity must

be substituted for another as one moves along the indifference curve is called the marginal rate of substitution (MRS). It gives the amount of one commodity required to make up for the loss of one unit of the other commodity. The marginal rate of substitution is given by the slope of the indifference curve. The negative slope of the indifference curve is called the rate of commodity substitution (RCS), i.e., $RCS = -MRS$.

Utility maximisation

The consumer, whose behaviour is governed by the principles mentioned earlier, will seek to buy the combination of commodities from which he will derive the highest possible level of satisfaction. We say that his problem is one of utility maximisation. Let us assume that a consumer's real income is limited and that he spends his income on only two commodities A and B. If he spends all his income on A, then he cannot have any unit of B. If he spends all his income on B, then he will have none of A. In order to have both, he must distribute his income between them.

How much of A and B he buys will depend on the marginal utility of A and B to him. To have both A and B, therefore, he will have to compare their respective marginal utilities.

In consideration of all this, all that he is really aiming at is to maximise his utility, i.e., to get the highest possible satisfaction from any combination of A and B he buys.

Conditions for utility maximisation

With a limited income, two conditions must be fulfilled for the consumer's utility to be maximised:

- 1 Equality of the ratio of marginal utilities and the ratio of prices

2 Equality of the marginal utility to price ratio for both commodities

The first condition for the maximisation of utility is that the ratio of the marginal utilities of the two commodities must be equal to the ratio of their prices. For example, let MU_A be the marginal utility of commodity A and MU_B the marginal utility of commodity B. Then this condition is satisfied when:

$$\frac{MU_A}{MU_B} = \frac{P_A}{P_B}$$

Expressed in words, the ratio of the marginal utility of commodity A to the marginal utility of commodity B is equal to the ratio of the price of commodity A to the price of commodity B.

The second condition for the maximisation of utility is that the ratio of the marginal utility of commodity A to its price must be equal to the ratio of the marginal utility of commodity B to its price. This condition is satisfied when:

$$\frac{MU_A}{P_A} = \frac{M_B}{P_B}$$

Expressed in words, the ratio of the marginal utility of commodity A to the price of commodity A is equal to the ratio of the marginal utility of commodity B to the price of B.

Actually, both conditions are satisfied at the same time. To prove this, let $MU_A = 8$, $MU_B = 6$, $P_A = ₦4.00$ and $P_B = ₦3.00$.

The first condition is:

$$\frac{MU_A}{MU_B} = \frac{P_A}{P_B}$$

Substituting figures, we obtain

$$\frac{8}{6} = \frac{4}{3}$$

The second condition is:

$$\frac{MU_A}{P_A} = \frac{M_B}{P_B}$$

Substituting figures, we obtain:

$$\frac{8}{4} = \frac{6}{3} = 2$$

Thus we see that once the first condition for utility maximisation is satisfied, the second is automatically also satisfied.

Graphical presentation of utility maximisation

Suppose a consumer has an income of ₦120 only and has only two goods X and Y, to spend it on. Suppose also that X costs ₦6 per unit and Y costs ₦8 per unit. If the consumer spends all his income on X, he will obtain 20 units of it and none of Y.

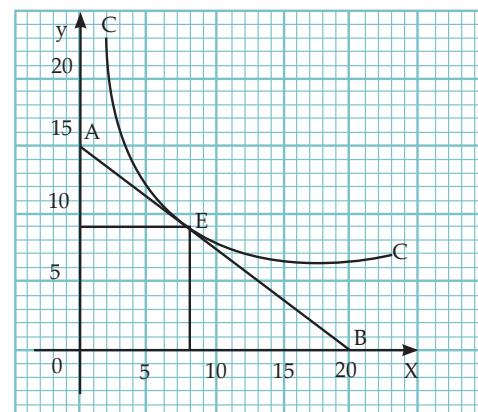


Fig. 7.6 Maximisation of utility

In Fig. 7.6, this is shown at point B. If he spends all of his income on Y, he will buy 15 units of it and none of X. This is shown at point A. The line AB is the consumer's price line. It shows all possible combinations of X and Y that the consumer can purchase. Of all the combinations represented on the price line AB, the consumer will only have

one. He will go for the combination which gives him the greatest satisfaction, i.e., the one at which his utility is maximised.

In Fig. 7.6, the consumer's indifference curve is CC, showing all the combinations of X and Y which give him the same amount of satisfaction or utility. The consumer will maximise his utility at the point where his indifference curve touches the price line. i.e., at point E. Thus, our consumer's utility is maximised at E, where the combination of goods is 8 units of X and 9 units of Y.

Derivation of demand curve from utility theory

Later, we shall see that the normal demand curve slopes downwards from left to right, indicating that at a lower price, more will be demanded and at a higher price, less will be demanded. The explanation for this tendency lies in the law of diminishing marginal utility. According to this law, successive equal increments of a commodity will yield less and less satisfaction to the consumer. Now, at the initial state, when the consumer has very little of the commodity, his marginal utility for it is very high.

He is therefore ready to pay a high price to obtain it. Thus, the higher the price, the lower the quantity demanded. However, as the consumer gets more and more of the commodity, his marginal utility for it begins to fall. Therefore, he is no longer prepared to pay a high price for it. For him to have more of the commodity whose marginal utility is now falling, the price must be reduced. Thus, the lower the price, the higher the quantity demanded.

Summary

- Utility is the capacity of a good or service to satisfy a human want.
- The law of diminishing marginal utility states that each successive equal increment in the quantity of a good consumed yields the consumer smaller and smaller satisfaction.
- An indifference curve shows all possible combinations of two commodities from which the consumer derives the same level of satisfaction.
- The slope of the indifference curve is called the marginal rate of substitution. It measures the rate at which one commodity is substituted for another as one moves along the indifference curve.
- The consumer's equilibrium (utility maximisation) occurs when the ratio of marginal utilities and the ratio of prices are equal for all commodities consumed.
- On a graph, the consumer is at equilibrium where the price line and the indifference curve are tangent (just touch each other).

Review questions

Multiple-choice questions

- Which of the following is untrue? Along an indifference curve _____.
 - total utility does not change
 - marginal utility is zero
 - the slope is called the marginal rate of substitution
 - none of the above
- If MU_A and MU_B are the marginal utilities of commodities A_A and B_B while P_A and P_B are their unit prices

respectively, utility maximisation occurs when _____.

A $MU_A / MU_B = P_A / P_B$

B $MU_A / P_A = MU_B / P_B$

C both of the above occurs

D neither one of the above occurs

3 The theory of consumer behaviour assumes that income-elasticity of consumption is _____.

A negative

B positive

C unitary

D zero

4 If a commodity has very high marginal utility and very low total utility, its market price will _____.

A be high

B be low

C always be falling

D always be rising

5 When marginal utility is zero, total utility is _____.

A zero

B maximum

C minimum

D negative

Essay questions

1 Why does a normal demand curve always slope downwards?

2 Briefly explain

a) utility

b) indifference curve

c) rate of commodity substitution

3 Describe the conditions required for the maximisation of utility.

4 Utility can be measured with mathematical precision. True or false? Defend your position.

Performance objectives

By the end of this chapter, you will be able to:

- 1 identify and explain the interaction between the forces of demand and supply in determining the market price.
- 2 explain the effects of changes in demand/supply with the use of curves and mathematical expressions.
- 3 explain elasticity of demand and supply with the use of curves and mathematical expressions.
- 4 explain and use the concept of elasticity to analyse price policy of firms as maximum and minimum price control.

Introduction

The concepts of demand, supply and price have already been discussed. In this chapter, we shall study the various types of demand and supply and also examine the concept of elasticity and its application. Finally we shall discuss some simple applications of price theory.

Types of demand

Four main types of demand are commonly identified in economics on account of their interrelatedness. These are:

- 1 derived demand

- 2 joint or complementary demand
- 3 competitive demand
- 4 composite demand

Derived demand

A commodity is said to have derived demand when the demand for it arises from the desire to satisfy the demand for another commodity which it can help produce. In this case, the commodity is not demanded for its own sake, but for its contribution to the manufacture of some other commodity.

Derived demand is normally associated with factors of production. They are demanded not for their own individual sake, but to satisfy the demand for the final product. Therefore, the intensity of the demand for the factor and the relationship between the factor price and the quantity demanded depends on the demand for the final product. The demand for land, for example, may arise from the need to satisfy the demand for houses. The greater the demand for houses, the greater the demand for land. The demand for land here is called derived demand. Land is not needed for its own sake. It is only demanded as a result of the demand for houses.

Joint or complementary demand

This is a demand for two goods which occurs because the effective use of one to satisfy a want necessarily requires the use of the other also. In joint or complementary demand, the two goods are brought together because they are complementary in use, that is, one can-

not be properly and effectively used without the other. Examples of joint demand include the relationship between cars and petrol, pens and notebooks, and bricks and mortar. Here, it can be seen that cars and petrol are complementary in use. The car cannot be effectively used without petrol. Both are, therefore, demanded together, thus giving rise to a joint demand.

It must be noted further, in this instance, that the two goods in complementary demand are related in such a way that an increase in the demand for one automatically causes an increase in the demand for the other.

Competitive demand

Competitive demand is the demand for two goods in such a way that an increase in the demand for one causes a decrease in the demand for the other on account of the fact that both goods are used to satisfy the same want. When two goods can be used to satisfy the same want, they are called competitive goods. The possession of one makes the possession of the other unnecessary. Examples of competitive demand occur in the demand for black biros and blue biros, bar soap and detergents, and tea and coffee.

Note that two closely related goods like the ones just cited as examples of competitive demand can only be used to satisfy approximately, never exactly, the same want, because no two commodities are perfect substitutes.

Composite demand

This is the total demand for a product which arises because it is required for a number of different uses. That is, composite demand is the sum total of the various demands

for a commodity as a result of the different uses to which it can be put. For example, timber is in composite demand because it can be used for building, furniture-making, cooking, and producing firewood. Another example of a product in composite demand is beans, which may be eaten whole, or used for *akara* (*kose*) and *moi moi* (bean cakes and bean pudding).

Elasticity of demand

We have seen that changes in demand are controlled by a number of factors. The most influential of these factors can individually cause demand to increase or decrease.

By definition, elasticity of demand is the measure of the extent to which the quantity demanded of a commodity responds to changes in the consumer's income, the prices of other commodities, and its own price.

Since elasticity of demand is concerned with how quantity demanded reacts to three main factors, we shall deal with the following three kinds of demand elasticity:

- 1 Income elasticity of demand
- 2 Cross elasticity of demand
- 3 Price elasticity of demand

Income elasticity of demand

Income elasticity of demand is the responsiveness of the quantity demanded of a commodity to changes in the real income of the buyers. It measures the extent to which that demand will change as a result of an increase or decrease in the income of the consumers.

For example, the quantity of palm oil or salt a woman uses is not likely to vary much with changes in her income. The demand for

items like television sets and other electronic gadgets, however, changes very noticeably as the income of the buyer changes.

Coefficient of income elasticity of demand

This is a number which tells us the degree of responsiveness of quantity demanded to changes in consumer's income. The following formula is used to determine the coefficient of income elasticity of demand.

$$E_y = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in income}}$$

Example 1

When Yakaka's monthly income was ₦1000, she was demanding 12 loaves of bread per month; but when her monthly income increased to ₦1500, she began to demand 15 loaves of bread per month.

Calculate Yakaka's income elasticity of demand for bread.

Former demand = 12 loaves

Later demand = 15 loaves

Percentage change in quantity demanded

$$= \frac{(15 - 12)}{12} \times 100$$

$$= \frac{3}{12} \times \frac{100}{1}$$

$$= 25\%$$

Former income = ₦1000

Later income = ₦1500

Percentage change in income

$$= \frac{(1500 - 1000)}{1000} \times 100$$

$$= \frac{500}{1000} \times \frac{100}{1}$$

$$= 50\%$$

$$\begin{aligned}\text{Therefore, } E_y &= \frac{25}{50} \\ &= \frac{1}{2} \text{ or } 0.5\end{aligned}$$

Yakaka's income elasticity of demand for bread is $\frac{1}{2}$ or 0.5. The interpretation of the result will be explained presently.

Importance of income elasticity of demand

The elasticity of demand for a product with respect to income may be positive, negative, or zero. If the income elasticity of demand is positive, like in the example above, this means that an increase in income will cause an increase in demand. If it is negative, this means that a rise in income will lead to a fall in quantity demanded of the commodity, and when zero, increase in income causes no change in demand.

Income elasticity of demand is very useful in economics as discussed below:

- 1 It enables the government to adopt a proper policy on incomes and wages, and productivity. For example, suppose the demand for bus rides is highly income elastic, and the government wants to encourage bus owners. This can be achieved by increasing the income of the masses who have no private cars because this will cause an increase in the demand for bus services.
- 2 Suppliers also benefit from a knowledge of the income elasticity of demand for their products. For example, if the product of a manufacturer has a high positive income elasticity, he should simply increase his supply to the market to maximise his revenue when there is an increase in workers' income.
- 3 Income elasticity of demand also helps the economist to determine how to classify a commodity. For example, if

the income elasticity of demand for a commodity is highly positive, it is likely to be a luxury good. If the income elasticity is zero or moderately positive, such a commodity is a normal or essential good. If, however, a commodity has negative income elasticity, it is likely to fall into the category of goods known as inferior goods.

- 4 Income elasticity of demand is also helpful to the government in raising revenue from taxes. For instance, when there is a rise in income, the government can raise more funds by imposing taxes on those goods that have a positive income elasticity of demand.

Cross-elasticity of demand

Cross-elasticity of demand is a measure of the degree to which the quantity demanded of a particular commodity responds to changes in the price of another good altogether. It enables us to determine the effect that the changes in the price of one commodity will have on the quantity demanded of another commodity.

For example, an increase in the market price of bread will surely have an effect on the demand for butter. Similarly, an increase in the price of bar soap will affect the demand for detergents. The particular nature of such an effect is known from the cross-elasticity of demand for the two goods.

Coefficient of cross-elasticity of demand

This is the numerical value of the cross-elasticity of demand. It is calculated from the formula:

where

$$E_c = \frac{\text{Percentage change in quantity demanded of A}}{\text{Percentage change in price of B}}$$

E_c is the coefficient of cross-elasticity, and A and B are two commodities.

Example 2

Commodity B costs ₦20 when the demand for commodity A is 30. If the demand for A increases to 54 when the price of B becomes ₦28, what is the cross-elasticity of demand between commodities A and B?

Former demand for A = 30

Later demand for A = 54

Percentage change in demand for A

$$= \frac{(54 - 30)}{30} \times 100$$

$$= \frac{24}{30} \times 100$$

$$= 80 \%$$

Former demand for B = ₦20

Later demand for B = ₦28

$$= \frac{(54 - 30)}{30} \times 100$$

$$= 40\%$$

$$\text{Therefore, } E_c = \frac{80}{40} \\ = 2$$

The cross-elasticity of demand is 2.

Importance of cross-elasticity of demand

As in the case of income elasticity of demand, cross elasticity of demand can take any numerical value. It may also be positive, negative or zero. If the cross-elasticity of demand between two commodities is positive, like in our example, then the two commodities are related. They are substitute goods since a rise in the price of one causes an increase in the demand for the other. If the

cross-elasticity is negative, the two goods are also related except that in that relationship, they are complementary goods. This means that a fall in the price of one will cause an increase in the demand for both. However, when the value of the elasticity is zero, this means that the two goods are not related. They are neither complementary nor substitutes. For example, there is no relationship between the price of cocks and the demand for wristwatches.

Cross-elasticity of demand is very important to the manufacturer because it enables him to identify his competitors in the market and plan his strategies for survival in business. It also helps the producers to know other producers who supply complementary goods in case the need arises for vertical integration.

Cross-elasticity of demand is also useful to the government in determining the foreign competing goods upon which to impose discriminatory taxes, and which complementary imports to subsidise. It further assists in determining companies that are tending towards monopoly and which the government must check. The economist finds the cross-elasticity of demand very important in determining how closely related two commodities are. For example, the higher the coefficient of cross-elasticity of demand, the greater the relationship between the two commodities.

Price elasticity of demand

Price elasticity of demand is the degree of responsiveness of the quantity demanded of a particular product to changes in the price of that product. It measures the extent to which the quantity demanded will expand as price falls or contract as price increases.

In general, the elasticity of demand for commodities increases with time. This is because consumers normally do not react fully immediately there is a change in the price of the commodity. They often prefer to delay matters while watching how other prices will change.

Coefficient of price elasticity of demand

This is the numerical value of the price elasticity of demand. It is calculated from the formula:

$$E_p = \frac{\text{Percentage change in quantity supplied}}{\text{Percentage change in price}}$$

Where E_p is the price elasticity of demand.

Example 3

50 copies of a textbook were demanded when the price was ₦100 per copy. However, when the price fell to ₦80 per copy, the quantity demanded jumped to 75 copies. What is the price elasticity of demand for the book?

$$\text{Former demand} = 50$$

$$\text{Later demand} = 75$$

Percentage change in quantity demanded

$$= \frac{75 - 50}{50} \times 100$$

$$= \frac{25}{50} \times 100$$

$$= 50\%$$

$$\text{Former price} = ₦100$$

$$\text{Later price} = ₦80$$

Percentage change in price

$$= \frac{(100 - 80)}{10} \times 100$$

$$= \frac{20}{100} \times 100$$

$$= 20\%$$

$$\text{Therefore, } E_p = \frac{50}{20} = 2 \frac{1}{2} = 2 \frac{1}{2} = 2.5$$

The price elasticity of demand of the book is 2.5.

We have earlier observed, in studying the demand curve, that normally, the higher the price of a commodity, the lower the quantity demanded of it, and vice versa. This means that the price of a commodity and the quantity demanded of it are inversely related; that is as one increases, the other decreases. What effect does this have on the price elasticity of demand for a commodity?

The effect of this on the coefficient of price elasticity of demand is that it is always a negative value. The result of the kind of calculation we did above is always having a minus sign. By convention, however, the minus sign is always ignored. If the quantity demanded changes exactly in the same proportion as the price, the coefficient of price elasticity of demand is exactly 1. This situation is called unitary elasticity, or we say that price elasticity of demand is unity. If the quantity demanded changes more proportionately than the price, the coefficient of elasticity will be greater than 1, like in our example where it came to 2.5. In this case, we say that demand is elastic. However, the change in quantity demanded may turn out to be less proportionate than the price change such that the coefficient price elasticity is less than 1. Where this happens, we say that demand is inelastic.

Degrees of price elasticity of demand

The price elasticity of demand varies a great deal. Five of these cases of variation which are normally discussed in economics are:

- 1 infinitely or perfectly elastic demand
- 2 fairly elastic demand
- 3 unitary elasticity of demand
- 4 fairly inelastic demand
- 5 zero elasticity or perfectly inelastic demand

These are discussed below and illustrated with the aid of diagrams.

Infinitely or perfectly elastic demand

This is a situation in which the quantity demanded increases without end as price falls. This seldom happens in reality. In Fig. 8.1, at prices higher than P, no quantity at all is demanded. If, however, the price falls to that point, the quantity demanded increases infinitely. In this case, the percentage change in price will be zero and the coefficient of elasticity will become infinity (∞). Graphically, the demand curve is a straight line parallel to the x-axis as shown in Fig. 8.1.

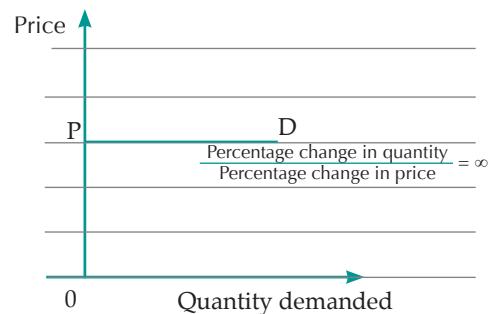


Fig. 8.1 Infinitely or perfectly elastic demand

Fairly elastic demand

Demand is said to be elastic with respect to price when a small change in price, say

10 per cent, causes more than a proportionate change in quantity demanded, say 20 per cent. In this case, the coefficient of price elasticity of demand is greater than 1. Graphically, the demand curve tends to be flat, sloping downwards very gradually from left to right.

In Fig. 8.2 observe that the change from Q_A to Q_B is far greater than the change from P_A to P_B .

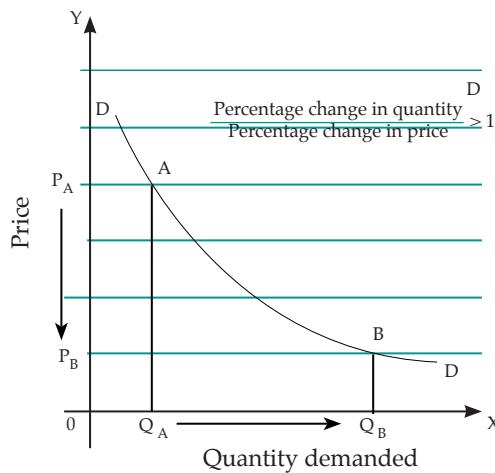


Fig. 8.2 Fairly elastic demand

Unitary elasticity of demand

Unitary elasticity of demand occurs when a small change in price causes the quantity demanded to change in exactly the same proportion. In this case, the coefficient of price elasticity of demand is exactly one. In Fig. 8.3, note that the change from Q_A to Q_B is exactly equal to the change from P_A to P_B .

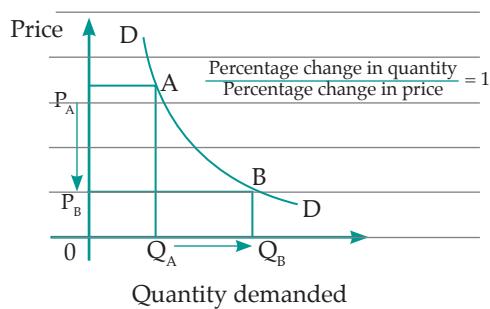


Fig. 8.3 Unitary elasticity of demand

Fairly inelastic demand

Fairly inelastic demand occurs when a small change in price brings about a less proportionate change in demand. Here, the coefficient is less than one and the demand curve slopes downwards very steeply. Observe in Fig. 8.4, that the change from Q_A to Q_B is less than the change from P_A to P_B .

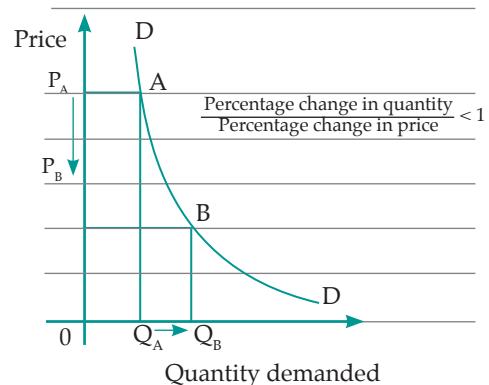


Fig. 8.4 Fairly inelastic demand

Zero elasticity or perfectly inelastic demand

Zero elasticity or perfectly inelastic demand occurs when the quantity demanded stays fixed even when the price changes endlessly. In this case, the coefficient of elasticity is zero. Graphically, the demand curve is a vertical line parallel to the y-axis as shown in Fig. 8.5.

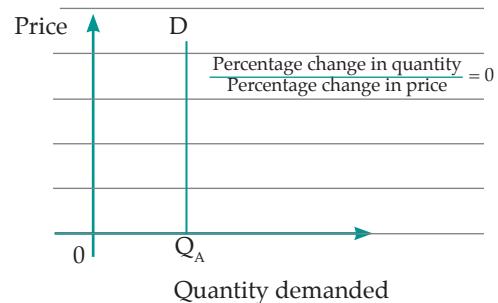


Fig. 8.5 Zero elasticity or perfectly inelastic demand

Determinants of price elasticity of demand

Determinants of price elasticity of demand include the following:

- 1 Availability of substitute goods
- 2 Type or nature of goods
- 3 Addiction and force of habit
- 4 Size of the consumer's disposable income
- 5 Effect of advertisement
- 6 Variety of uses of the goods
- 7 Goods in vogue
- 8 Durable goods

Availability of substitute goods

Suppose A is a commodity. If there are other goods that can easily be substituted for it, the demand for A will be elastic. This is so because when its price falls, more of it will be demanded, assuming in both cases that the prices of the substitute goods remain constant. Conversely, if commodity A has no close substitute, the demand for it will be inelastic because consumers have no choice but to buy it at its reduced or increased price. For example, the demand for bus rides is elastic because there are substitutes in the form of train and taxi rides. Salt and tobacco are inelastic in demand because they have no close substitutes. Therefore, the closer the substitute, the greater the price elasticity of demand.

Type or nature of goods

The fact that a commodity is considered as either a necessity or a luxury affects the price elasticity of demand for it. Necessary goods, like foodstuffs and kerosene have inelastic demand because people must buy them for survival regardless of a fall or rise in price.

On the contrary, the demand for goods like video sets and cameras are elastic because they are considered to be luxury items and if their prices rise, the quantity demanded falls.

Addiction and force of habit

Those commodities that are required to sustain habit exhibit price inelasticity of demand because habitual consumers will demand them irrespective of changes in prices. Examples are alcohol, tobacco and hard drugs like cocaine.

Size of the consumer's disposable income

If the consumer's disposable income is relatively large so that only an insignificant proportion of it is spent on a particular item, the consumer's demand for that commodity will be inelastic. A rise in price of the commodity will not matter so much to him. Conversely, if the disposable income is low, the consumer will exhibit a high elasticity of demand because a small increase in price will reduce his real income substantially.

Effect of advertisement

Producers normally advertise their products in the mass media. This has the effect of tying some consumers to particular brands of goods. This kind of loyalty to brands ultimately makes the consumer insensitive to price changes, thereby rendering the demand for the commodity inelastic.

Variety of uses of the goods

Some commodities are such that they can be put to many uses. Although such goods have a composite demand, they are also usually elastic in demand with respect to price. This is because a small increase in their prices will make consumers forego their less important uses, thereby causing a contraction

of the quantities demanded. Examples of such commodities include timber and flour.

Goods in vogue

Items in vogue often turn out to be inelastic in demand as long as they stay fashionable. For example, if the fashion in vogue is white beret, the demand for it will go on expanding, even if the price is rising.

Durable goods

The durability of a commodity is one of the factors that determine its price elasticity of demand. If the commodity is a durable one, as cars and cooking pots, the demand would be elastic because the need for replacement is not urgent; it can be deferred. Therefore, when prices rise, quantity demanded falls sharply and when prices fall, demand expands sharply also.

Importance of price elasticity of demand

Producers should know the price elasticity of demand for their products before fixing prices. If the demand is elastic, the producer will lose by increasing prices, for this will drive his customers away. On the contrary, if demand is inelastic, he can raise his prices without losing sales, in which case, his total revenue will rise.

One way by which government raises revenue is by the imposition of taxes on goods. If the demand for the commodity is price inelastic, the government will raise a lot of money by taxing it. Conversely, if the demand for it is elastic, it will not profit the government to impose taxes on it. Price elasticity of demand is very important for a government that is considering the devaluation of its currency. Devaluation of a cur-

rency makes it cheaper in relation to other currencies. If the demand for a country's exports is price elastic, devaluation will be profitable because foreigners will demand the exports more and the country's foreign reserves will thus increase. If the demand for the country's export is inelastic, it will not be economically wise to devalue the national currency.

Elasticity and revenue

When the price elasticity of demand for a commodity is elastic, an increase in its price will reduce the demand for it. As a result, the seller will realise less revenue. Conversely, if the price falls and demand is still elastic, there will be a sharp expansion of quantity demanded. In this case, there will be a rise in the seller's revenue.

On the other hand, if the demand for a product is inelastic with respect to price, an increase in its price will not affect the quantity purchased so much. Therefore, revenue will increase. However, if there is a fall in price where demand is inelastic, there will be a corresponding fall in the seller's revenue. In-between these extremes is a situation in which price elasticity of demand is unitary. In such a case, a rise or fall in price will leave total revenue unaffected.

Types of supply

Supply may be divided into three main types. These are as follows:

- 1 Joint supply
- 2 Competitive supply
- 3 Composite supply

Joint supply

This is the supply of two or more products which result from the same production process in such a way that the supply of one inevitably results in the supply of the other or others. In this case, one commodity cannot be produced without the other being produced automatically. An increase in the supply of one directly results in a corresponding increase in the supply of the other. Examples include the production of palm oil, which unavoidably results in the production of palm kernels also; and the supply of beef which cannot but result in the supply of hides and skin too.

Competitive supply

The supply of a commodity is said to be competitive when the commodity is capable of being put to alternative uses. This is usually the case with factors of production. Land, for example, may be supplied for purposes of arable farming or building residential houses. The supply here is competitive in the sense that an increase in land used for arable farming automatically results in a decrease of the supply of land for residential buildings.

Composite supply

Composite supply is the supply of a number of different products all of which can be used to satisfy a particular demand. The demand for food, for example, can be satisfied by the supply of protein such as fish and meat, or carbohydrates such as bread and rice. Another example can be drawn from the composite supply of beverages from tea, coffee and malted drinks.

Elasticity of supply

We have earlier seen that a number of factors jointly determine the quantity of a commodity supplied per unit time. We have also seen that, normally, an increase in price will lead to an increase in quantity supplied while a fall in price will lead to a contraction in the quantity supplied. Thus, the price of the commodity is the most important single factor to which the quantity supplied responds. For this reason, elasticity of supply is usually discussed in terms of the reaction of quantity supplied to price. Other factors include *time, availability of factors of production and versatility*.

Price elasticity of supply

Price elasticity of supply is the degree of responsiveness of quantity supplied to changes in the price of the commodity. It measures with precision the extent to which quantity supplied will expand following a rise in price and the extent to which the quantity supplied of the commodity will contract in response to a fall in its price.

Coefficient of price elasticity of supply

This is the numerical value of the price elasticity of supply. It is found from the formula:

$$E_s = \frac{\text{Percentage change in quantity supplied}}{\text{Percentage change in price}}$$

Where E_s is the price elasticity of supply.

Example 4

The price of a commodity changes from ₦10 to ₦16 and the quantity supplied increases from 60 to 78. What is the price elasticity of supply?

Solution

Original quantity supplied = 60

Later quantity supplied = 78

Percentage change in quantity supplied

$$= \frac{(78 - 60)}{60} \times 100$$

$$= \frac{18}{60} \times 100$$

$$= 30\%$$

Original price = ₦10

Later price = ₦6

Percentage change in price

$$= \frac{(16 - 10)}{10} \times 100$$

$$= \frac{6}{10} \times 100$$

$$= 60\%$$

Therefore, $E_s = \frac{30}{60}$

$$= \frac{1}{2} \times \text{or } 50\%$$

The coefficient, so calculated, tells us much concerning the exact nature of the elasticity of supply with respect to price. If the coefficient is less than one, as in the example above, supply is said to be inelastic. A rise in prices causes a less than proportionate rise in quantity supplied and a fall in price gives rise to a less than proportionate fall in supply. If the coefficient of supply elasticity is exactly equal to one, supply is said to be unitary. If it is greater than one, supply is said to be elastic.

Degrees of price elasticity of supply

As in the case of demand, five degrees of price elasticity of supply can be distinguished. These are:

- 1 infinitely or perfectly elastic supply
- 2 fairly elastic supply
- 3 unitary elasticity of supply
- 4 fairly inelastic supply
- 5 perfectly inelastic supply

Infinitely or perfectly elastic supply

This is a situation in which, at a certain price, quantity supplied increases endlessly so that calculation yields infinity. As shown in Fig. 8.6, the supply curve is a straight line parallel to the horizontal axis.

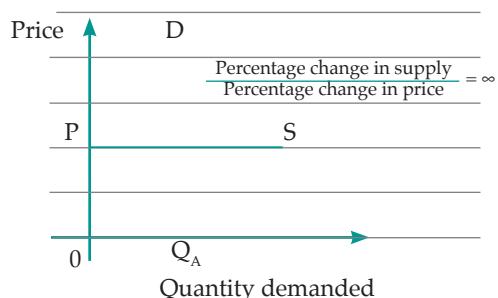


Fig. 8.6 Infinitely or perfectly elastic supply

A situation in which supply is perfectly elastic is not likely in real life. In Fig. 8.6, for instance, perfect elasticity of supply implies that at prices below P, nothing will be supplied; but at P, any quantity required will be supplied. Can it ever happen?

Fairly elastic supply

Supply is said to be fairly elastic when the percentage change in quantity supplied is greater than the percentage change in price so that the result of the calculation from the formula will be greater than one. As shown in Fig. 8.7, the supply curve slopes upwards very gradually.

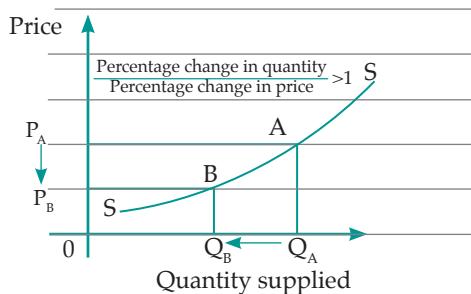


Fig. 8.7 Fairly elastic supply

Observe, in Fig. 8.7, that the change in quantity supplied from Q_A to Q_B is proportionately greater than price change (P_A to P_B).

Unitary elasticity of supply

Supply elasticity is unitary when a small change in price results in an equal, proportionate change in quantity supplied. In this case, calculation from the formula will yield a result of one exactly. Observe in Fig. 8.8 that the change in quantity from Q_A to Q_B is proportionately equal to the change in price from P_A to P_B .

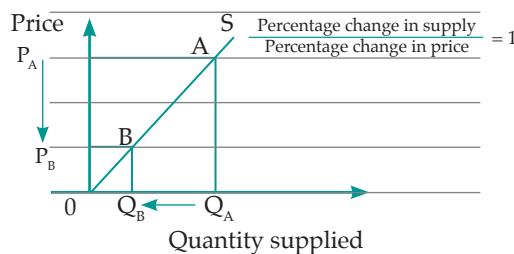


Fig. 8.8 Unitary elasticity of supply

Fairly inelastic supply

Supply is fairly inelastic when a small change in price results in a less than proportionate change in supply. Calculation in this case will yield a number less than one. As adopted in Fig. 8.9, the supply curve slopes upwards very rapidly.

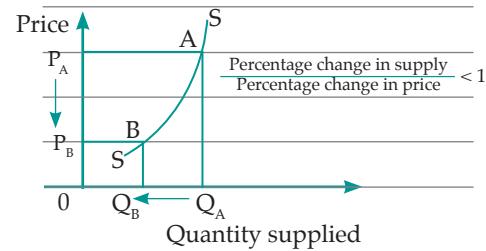


Fig. 8.9 Fairly inelastic supply

Note in Fig. 8.9 that the change in quantity supplied from Q_A to Q_B is proportionately less than the price change (P_A to P_B).

Perfectly inelastic supply

Supply is perfectly inelastic when there is no change at all in the quantity supplied, whether prices rise or fall. Calculation will yield zero and the supply curve will be a straight line parallel to the y-axis. It does not touch the x-axis because at prices of zero, nothing is supplied (see Fig. 8.10).

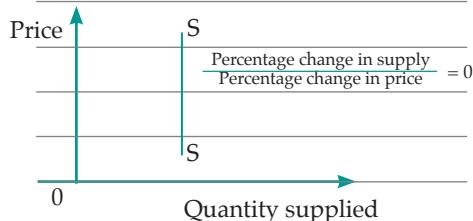


Fig. 8.10 Perfectly inelastic supply

Determinants of price elasticity of supply

Six determinants of price elasticity of supply are known. These are as follows:

- 1 Time lag
- 2 Cost of production
- 3 Product durability
- 4 Availability of markets
- 5 Contracts
- 6 Versatility

Time lag

If the period required in increasing or decreasing the quantity supplied, depending on price change, is long, supply will be inelastic. This is the case with agricultural goods. If the price increases suddenly, agricultural products cannot quickly be increased in supply because the period required for this is usually long. For example, it takes many years for the coconut tree to mature.

Manufactured goods are more elastic in supply because, the producer, attracted by rising prices, can hire more workers or make his present workers work longer hours. If prices begin to fall, the manufacturer can also quickly retrench some of his employees and cut down the level of production. The supply of an agricultural product cannot suddenly be curtailed like that.

Cost of production

In order to expand production and take advantage of rising prices, it will be necessary to engage more labour, land and capital. Rent has to be paid for land, wages for labour, and interest for capital. These are the costs of production. If it is too expensive to produce more goods, supply will be inelastic. On the other hand, if the cost of production is not very high, producers can quickly adjust the level of production. In this case, supply will be elastic.

Product durability

The durability of a product affects the elasticity of supply for it. Durable products can be withdrawn from the market if prices fall too low and supplied again when the prices pick up because they can be stored over a long period. They are, therefore, more elastic in supply than non-durable goods which cannot be stored over a long period. This is part

of the reason why agricultural products are inelastic in supply.

Availability of markets

The supply of a commodity will be elastic where the producer has alternative markets in which to sell his products. If prices fall too low in one, he turns his products over to the other market, and vice versa. This is part of the explanation why multinational corporations are so powerful. If the supplier has only one market, like many indigenous producers, supply will be elastic.

Contracts

If the producer has entered into a long term contract to supply particular consumers with his products, he cannot suddenly withhold supplies when prices fall too low or increase supplies when prices increase. Contractual agreements, therefore, make supply inelastic.

Versatility

When we refer to versatility as influencing supply elasticity, we mean how quickly the factors of production can be switched from one use to another; for example, how quickly a block-making factory can be switched to a furniture factory or how quickly a furniture factory can be switched from making chairs to making school desks. The former example tends to result in elastic supply while the latter results in inelastic supply because it is much easier to switch factors from chair making to desk making than to switch factors from block-making to furniture-making.

Price control/Price legislation

There are times the price mechanisms, by their functioning, result in prices of com-

modities being so high that the majority of consumers have to go without them. At other times, prices may become so low that excess demand tends to give rise to *demand-pull inflation*. The government often intervenes in the market to forestall this and other failures of the system. One way by which the government achieves this is through price control.

Price control, otherwise called physical control, may be defined as a temporary measure by which the government intervenes in the free market in order to regulate prices. The government does this by making laws which state the highest or lowest levels beyond which prices cannot rise or fall. When the purpose of price control is to prevent prices from rising beyond a fixed maximum, it is called *maximum price legislation*. When it is meant to prevent the falling of prices below a certain minimum, it is called *minimum price legislation*.

Maximum-price legislation or control

This refers to laws or legislation made by governments which fix the highest (or maximum) possible prices that sellers can ever exchange for their commodities. The maximum-price permitted is called a *price ceiling*. The price ceiling is usually less than what the market price would have been.

Aims of maximum-price legislation

The main purpose of maximum-price control is to keep prices low in times of severe scarcity and shortage so that low-income earners can have access to basic commodities. For example, if as a result of bad weather there is a shortfall in expected output of foodstuffs, the government can use maximum-price legislation to hold prices down so that poor people can still buy them. If such physical

control is not used, the rich will buy up all the available foodstuff, leaving the poor to starve! In towns and cities too, local authorities often impose ceiling prices for houses by means of rent control, so that housing facilities will be available to people at affordable prices.

Maximum-price legislation is also used as a measure to check the overall rate of inflation. Inflation involves rising prices. This is why governments may impose ceiling prices to stop further increases in prices.

Effects of maximum-price legislation

1 The imposed ceiling price is usually lower than the market equilibrium price. This means, in effect, that prices have fallen. The quantity supplied will, therefore, result in excess demand.

In Fig. 8.11, market equilibrium is at A while price and quantity are P_A and Q_A respectively, but, the government

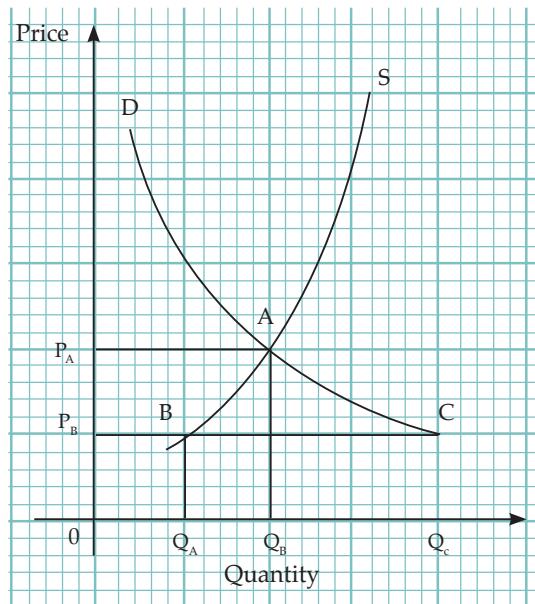


Fig. 8.11 Effects of maximum-price control

- fixes the ceiling price at P_B' , which is below P_A . Therefore, quantity supplied contracts to Q_B while demand expands to Q_C . The excess demand is $Q_C - Q_B$.
- 2 Since there is a shortage of supply, consumers are willing to pay higher than the maximum price just to obtain the commodity if it can be seen at all. Suppliers, therefore, hoard their products and secretly sell at higher than maximum prices to buyers, thereby creating a *black market*. In a black market there is secret buying and selling of goods at higher prices than the ceiling price. This is a consequence of maximum-price legislation.

Solving the black market problem by rationing

If a black market is allowed to operate, the whole aim of maximum-price control will be defeated because, in the black market, prices are usually very high and only the rich can buy things. To check the black market problem, the government normally uses rationing.

Rationing is the method by which, in times of acute shortage, the government limits the right of individuals to purchase essential commodities so as to ensure that everybody gets something. Maximum-price legislation and rationing often go hand in hand. It, however, entails a lot of administrative work, time, and expenses.

Minimum-price legislation or control

This is government legislation by which the minimum or lowest price is fixed, below which people are not allowed to sell or buy. The lowest price permitted is called the

floor price. The floor price is usually higher than the market equilibrium price. Once a minimum-price has been pronounced and backed up with law, it is illegal for anybody to sell commodities at lower prices. A good example of minimum-price legislation in Nigeria is the minimum wages.

Aims of minimum price legislation

The main purpose of minimum-price legislation is to guarantee a minimum income for the suppliers to avoid a fall in their living standards. For example, the government may fix minimum prices for cash crops through the marketing boards so as to protect the farmers from very low market prices.

Minimum-price legislation is also used to protect local firms. By fixing minimum prices for home-made goods, the government is strengthening them against competitors from abroad. A good example here is the Common Agricultural Policy of the European Union (EU) by which target prices are set for agricultural goods, imported ones being taxed until they attain the target price levels.

Effect of minimum price legislation

The floor price, being higher than equilibrium or market prices, will cause the quantity demanded to contract, while the quantity supplied will expand. This will result in excess supply—a situation in which quantity supplied is greater than quantity demanded. In Fig. 8.12, A is the intersection of the demand and supply at P_A and Q_A respectively. The imposed floor price is P_B . At this higher price, quantity supplied expands to Q_C , while quantity demanded and actually sold is at Q_B to which demand has fallen. This creates an excess supply given by $Q_C - Q_B$.

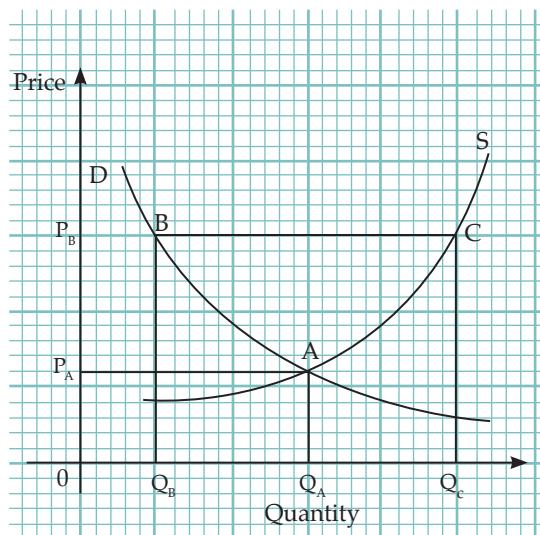


Fig. 8.12 Effect of minimum price control

Summary

- There are four types of demand. Derived demand exists when a good is demanded not for itself, but because of what it can help produce. Joint or complementary demand exists when two commodities are demanded together to satisfy a particular want. Competitive demand exists when increases in the demand for one good decreases the demand for another. Composite demand is that which arises because the product is capable of many uses.
- Income elasticity of demand is the responsiveness of demand to small changes in consumer's income. Cross-elasticity of demand is the responsiveness of the demand for a commodity to small changes in the price of another. Price-elasticity of demand is the responsiveness of the demand for a commodity to small changes in its own price.
- Price-elasticity of demand is affected by availability of substitute goods, nature

of the goods, force of habit, consumers' income, advertisement, uses of the goods, vogue and the durability of the goods.

- The types of supply are joint supply, competitive supply, and composite supply. Joint supply is the supply of two or more products which result invariably from one production process. Supply is competitive when the commodity is capable of competing for alternative uses. Composite supply is the supply of a number of different products all of which can be used to satisfy a particular want.
- Elasticity of supply is the responsiveness of supply to changes in the price of the commodity. It is affected by the time lag, cost of production, product durability, market availability, and contracts.
- Price controls refers to government intervention in the free market, to regulate prices.
- Maximum-price legislation is a law by which highest permissible prices, known as ceiling prices, are fixed.
- Minimum-price legislation is a law by which the lowest permissible prices, known as floor prices, are fixed.

Review questions

Multiple-choice questions

- If the demand for X decreases when the demand for Y increases, the demand is characterised as _____.
 A complementary
 B competitive
 C derived
 D composite
- 'A' exhibits a high income elasticity of demand. It is likely to be

- A a luxury good.
B an inferior good.
C a normal good.
D a giffen good.
- 3 The supply of two or more products which results from one production process is called _____.
A competitive supply
B joint supply
C alternative supply
D composite supply
- 4 If the coefficient of supply elasticity is greater than unity, supply is
A inelastic.
B perfectly elastic.
C fairly elastic.
D infinitely inelastic.
- 5 Which of the following is *not* true of a 'floor price'?
A It is fixed by a minimum-price legislation.
B It is higher than the equilibrium price.
C It has an example in minimum wages.
D It is fixed by maximum-price legislation.

Essay questions

- 1 Distinguish between cross- and income-elasticities of demand.
- 2 If $P_A > P_B$, where P_A is the floor price and P_B is equilibrium price, explain, with the aid of diagrams, what happens in the market place.
- 3 Discuss the factors affecting price-elasticity of supply.
- 4 What effect does an increase in price have on revenue when demand is (a) elastic, (b) inelastic?

- 5 How useful is the concept of price elasticity to the government in raising tax revenues?

Chapter 8 Market structures

Performance objectives

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

- 1 explain the concept of market and distinguish it from the market place.
- 2 distinguish between perfect and imperfect markets by identifying their features.
- 3 draw graphs to illustrate price and quantity determination under
 - a) perfect competition
 - b) monopoly
 - c) oligopoly.

Introduction

In Book 1, we described the market as a particular geographical location where sellers come and display their wares for sale and buyers come to inspect and buy things. This corresponds to the layman's notion of the market. An attempt was also made to give a brief definition of a market.

In this chapter, we shall among other things examine the concept of market from the economist's view point.

Concept of market

To the economist, market means any arrangement whereby buyers and sellers can communicate in order to conduct transactions. It does not matter what the arrangement is. All that is required is that buyers and sellers are in sufficiently close contact

with one another to permit transactions to take place. Once buyers wishing to give up money in exchange for goods and services are able to interact with sellers who, themselves, want to exchange goods and services for money, we say that a market exists.

It thus becomes clear that it is not enough to think of market simply in terms of a particular geographical location. Rather, market is defined with respect to the forces of supply and demand which we are already familiar with.

There are markets for all kinds of goods, services, and factors of production. Some of these are the labour market which was discussed in Book 1, money, and capital markets. In the next section, we shall concentrate on the structure a market may take.

Market structure

Market structure refers to the significant features of a market which determine the competitive relations between sellers and also affect the behaviour of the firms in the industry or market supplying that market.

The chief types of market structures are:

- 1 perfect competition
- 2 monopoly
- 3 oligopoly
- 4 monopolistic competition

We shall begin from perfect competition, for all our studies on demand and supply and price determination are based on it. Where

perfect competition exists, the market is said to be perfect. Where this is not the case, the market is imperfect. Therefore, monopoly, oligopoly, and monopolistic competition are cases of market imperfection.

Perfect market

As pointed out before, a perfect market is one in which there is perfect competition. A perfect market assumes that cost is incurred in transferring goods from one place to another. Therefore, prices are the same everywhere. It assumes also that all buyers are in contact with all sellers. The ruling force in a perfect market is perfect competition. The nearest example of a perfect market in Nigeria is the Nigerian Stock Exchange, Lagos.

Perfect competition

This is a market situation in which no one seller is capable of influencing prices, all suppliers being price takers. Prices are fixed solely by the forces of supply and demand.

There are so many sellers that no single one of them can cause the equilibrium price to change, since the output of a supplier is only a fraction of the total market supply. All suppliers in a perfect market are called price takers because they take the price as fixed by supply and demand. They cannot help it.

Assumption of perfect competition

The existence of perfect competition makes some important assumptions on the supply and demand. These assumptions or conditions are discussed here, beginning with those on supply.

Supply conditions for a perfect market

- 1 There must be many firms competing among themselves. The supply of each is so small a proportion of the market supply that it cannot influence prices by changing output. Each supplier, therefore, is a price-taker, and not a price-maker.
- 2 The supply of factors of production must be perfectly elastic so that, any increase in output by a firm will not result in an increase in factor rewards, e.g., wages.
- 3 All firms must be completely mobile, so that any of them can freely enter or leave the industry. There must be no artificial hindrances whatsoever.
- 4 There should be a perfect supply of information in the market, so that each firm has complete knowledge of the activities of other firms in the industry.

Demand conditions for a perfect market

- 1 The demand sector of the market must have so many buyers that no single one of them can influence the market price by increasing or decreasing the quantity purchased.
- 2 Information must be so completely and freely available that every buyer has perfect knowledge of the prices being asked and offered in all other parts of the market for a particular commodity.
- 3 All economic frictions, including transport costs and difficulties, must be completely absent, so that there is absolutely nothing to prevent a buyer from taking full advantage of the slightest drop in prices in any part of the market for the same commodity.

The buyer should at all times be able to move from one part of the market to another unhindered.

- 4 All units of the commodity from different sellers must be exactly identical, so that one can be accepted as a perfect substitute for the other.

It is obvious that no market situation in real life can ever satisfy all the conditions listed above concerning demand and supply. They are, therefore, unrealistic. This is why there is no single perfect market all over the world.

Table 9.1: Revenue schedule of a firm in perfect competition

Quantity sold	Price per unit ₦	Total revenue ₦	Average revenue ₦	Marginal revenue ₦
1	5	5	5	-
2	5	10	5	5
3	5	15	5	5
4	5	20	5	5
5	5	25	5	5

Price and quantity determination under perfect competition

Under perfect competition, all suppliers, as we have observed earlier, are price-takers. The market price is fixed by the forces of supply and demand and no individual seller can do anything about it. In Table 9.1, we illustrate how this fixity of price affects the relationship between average revenue (AR) and marginal revenue (MR).

With price fixed at ₦5 per unit, observe how total revenue (TR) increases indefinitely as quantity sold increases, while average and marginal revenues are equal and unchanging.

We see from Table 9.1 that, under perfect competition, all firms being price-takers, price, average revenue, and marginal revenue, are both equal and fixed, regardless of quantity sold (all are ₦5, in our table). That is, for the firm in perfect competition,

$$P = AR = MR$$

This is why the individual producer in a perfect market faces a perfectly elastic demand curve as shown in Fig. 9.1.

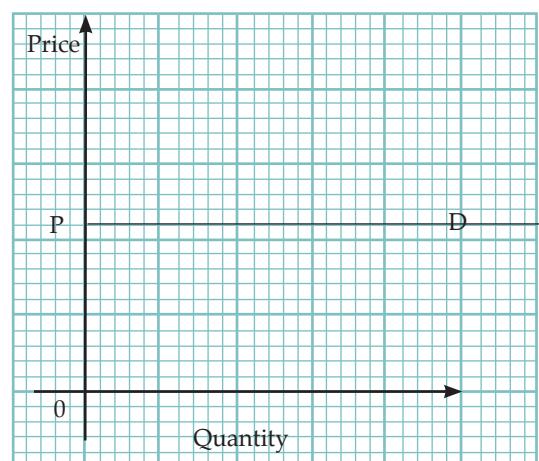


Fig. 9.1 Demand curve of a firm in perfect competition

At the ruling price P , all individual firms engaged in perfect competition can supply any quantity they please. A price cut will not increase sales. It will only result in falling total revenue. A price increase will cause demand and total revenue to fall to zero immediately. Therefore, the price stays as it is fixed by demand and supply.

However, although the price is fixed in the market, the firm's costs are not. They are either rising or falling. For this reason, the price and quantity in the short-run differ from those of the long-run.

Price and quantity determination: The short-run situation

In the short run, the firm is enjoying increasing returns to scale. That is, as output is increasing, average cost (AC) is falling. Since marginal revenue is fixed, profits must be expanding. Therefore, abnormal or super-profits can be reaped at this stage. Super profits are excess profits over and above what is left to the entrepreneur after payment has been made to all factors employed.

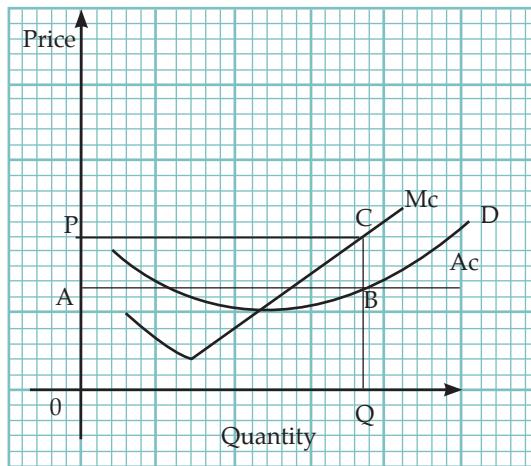


Fig. 9.2 Short-run super profit in perfect competition

We explain this diagrammatically in Fig. 9.2. PC is the price line, at which $P = AR = MR$. Under perfect competition, profit is at its highest (maximum) where $P = AR = MR$.

In Fig. 9.2, the marginal cost curve cuts the price line at C . The output at this point is Q and the price is P . It is clear from the diagram that, if output should be more than Q , the marginal cost curve will be above the price line, meaning that marginal cost will become greater than price. This will mean dwindling profits, and no firm will ever want to do that. Otherwise, it will soon be out of business. Profit, therefore, is maximised at C , at which $P = AR = MR = MC$; but his average cost is at B , where the quantity line QC cuts the average cost curve. Observe that this being the short run, the average cost (line AB) is well below the market price (line PC).

In this situation, the total revenue of the supplier is given by the area $OQCP$. His total cost is given by the area $OQBA$. The difference between the two is the rectangle $ABCP$. Therefore, $ABCP$ is the abnormal or super profit in the short run. It arises from the fact that, at this time, average cost is less than the ruling market price. Thus in the short run, price and quantity are where $P = AR = MR = MC$ and $AC < AR$.

Price and quantity determination: The long-run situation

In the long run, super normal profits will be competed away. Since one of the conditions for a perfect market is that firms should be completely free to enter or leave any industry, the presence of short-run abnormal profits will attract many firms into the industry. This will cause output to increase, and price will tend to fall until market price and average cost are equal. This situation is

explained diagrammatically in Fig. 9.3. PC is the price line, at which $P = AR = MR$. The entry of many firms, attracted in by short-run abnormal profits, has resulted in the long-run average cost and marginal cost being equal. It can be seen that the average cost is at C, where the quantity line QC cuts the average cost curve AC. At C also, note that $MC = AC$. The price and quantity, therefore, are P and Q respectively. There is no abnormal profit. Total cost is given by OQCP. Total revenue is given by OQCP. The difference between the two is zero. This is the situation in the long run, with the understanding that normal profit is included in the total cost.

Thus, in the long run, under perfect competition, price and quantity are where $P = AR = MR = MC$ and $AC = AR$; that is, $P = AR = MR = MC = AC$.

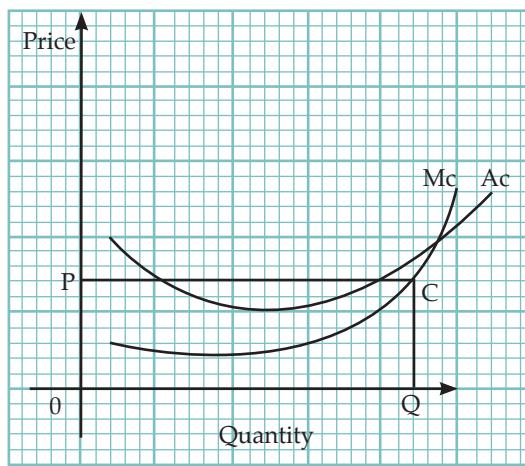


Fig. 9.3 Long-run price and quantity in perfect competition (no super profits)

Imperfect market

An imperfect market is a market in which the conditions required for a perfect market are absent. Once any of the conditions cited for a perfect market is not fulfilled, the mar-

ket becomes an imperfect one. Therefore, market imperfection may result from the fact that buyers and suppliers are not many, commodities are not perfectly identical, or there are man-made obstacles to entering or leaving the industry.

It is clear, therefore, that in real life, all markets are actually imperfect, for, as we pointed out earlier, it is a physical impossibility to satisfy all the requirements for a perfect market. Although we have just pointed out that practically all markets are imperfect, it is important to note that there are various degrees of market imperfection.

The most extreme case of an imperfect market is monopoly. Imperfect markets also exist in the form of oligopoly and monopolistic competition.

Monopoly

In absolute terms, monopoly is a market situation in which there is only one producer or seller of a commodity which has no close substitute. The producer, called a monopolist, is then said to have a monopoly in that commodity. Of course, there is never such a market situation in real life. Therefore, in practice, monopoly is defined less strictly. For example, the Monopolies Commission of Britain regards a monopolist as a supplier who controls up to one quarter of the total output of a commodity. In Nigeria, a good example of a monopolist is the Nigerian Railways Corporation (NRC).

Types of monopolistic market

Monopoly is of three types. These are:

- 1 absolute or pure monopoly
- 2 bilateral monopoly
- 3 discriminating monopoly

Absolute or pure monopoly

This is a market situation in which the entire supply of a commodity or service for which there is no close substitute is wholly concentrated in the hands of one producer.

Bilateral monopoly

Bilateral monopoly is a market situation in which there is one supplier faced by one buyer. An example in Nigeria is the Defence Industries Corporation (DIC), Kaduna, which supplies mainly the Nigerian Army.

Discriminating monopoly

Discriminating monopoly refers to a situation in which a monopolist imposes different prices for the same commodity in different parts of the market. It also refers to the selling of the same commodity to different buyers at different prices without any apparent justification for the variation in price. In practice, many monopolies are discriminating because of the desire to maximise profits.

Conditions favourable for discriminating monopoly

It is not all the time that a monopolist can charge different prices for the same commodity. For the successful operation of a discriminating monopoly, the following two conditions must be fulfilled:

- 1 Separation of markets
- 2 Different demand elasticities

Separation of markets

For the successful practice of price discrimination by a monopolist, it must not be possible for a customer to buy at the lower price and re-sell at the higher price. Thus, this requires that the markets in which different prices are charged be separated from one another. If there is no separation of the mar-

kets, it will be impossible in the long run to practise price discrimination, for a customer would buy in the low price market and sell in the high price market, thereby competing with the monopolist and ultimately resulting in price equalisation.

Different demand elasticities

A discriminating monopoly can only succeed in markets where the price elasticities of demand for the commodity are different. If the markets in which the monopolist charges discriminating prices have the same elasticity of demand for the commodity, the most profitable price must also be the same in the markets, which will make nonsense of the concept of a discriminating monopoly.

Making of a monopolistic market

A monopoly may arise on account of one or more of the following factors:

- 1 Nature
- 2 Law
- 3 State ownership
- 4 High efficiency
- 5 Professionalism
- 6 Economies of scale

Nature

By distributing resources unevenly over the earth's surface, nature can give rise to a monopoly. For example, if a particular mineral is located somewhere, the people in that place will have a monopoly of it. There is nothing people elsewhere can do to compete in the supply of it. For instance, in the West African sub-region, Nigeria may be said to have a monopoly in the production of columbite and tin.

Law

Upon discovering a new technique of production or a new product, the government may grant the firm a patent for many years. By this act, it becomes illegal for other firms or persons to use that technique or produce that commodity until the patent expires, during which time the original investor enjoys monopoly power over the production of the product.

State ownership

Some services and commodities are required by the rich and poor alike. The government may monopolise the supply of such commodities to make sure that people consume them at affordable prices. This explains why the Nigerian Railways Corporation and the Power Holding Company of Nigeria have been monopolists in Nigeria.

High efficiency

A firm may attain a high level of efficiency in production thereby bringing its prices so low that other competitors are unable to cope. This could happen as a result of technological development and innovation.

Professionalism

Some services can be rendered only by professionals who have had very extended training. The strict regulations governing entry into such professions finally succeed in reserving the supply of such services to the professionals only. Examples are legal and medical services in which the Nigerian Bar Association and the Nigerian Medical Association respectively have monopolies.

Economies of scale

By coming together in mergers and takeovers, firms can achieve large scale produc-

tion and enjoy the benefits of economies of scale. Thus, they can eliminate other competitors.

Price and quantity determination under monopoly

By definition, an absolute or pure monopolist is one seller in whose hand is concentrated the entire supply of a commodity. Such a monopolist can only do one of two things—first, he can unilaterally fix the price at which he will sell his product and leave consumers to determine the quantity they will pay for; or second, he can decide all alone the quantity of the commodity he will offer for sale and leave the consumers to decide the price to be paid for a unit. He cannot fix both price and quantity. He can only decide one at a time.

For this reason, the monopolist faces a downward sloping demand curve. Recall that with a straight line parallel to the x-axis, because at the ruling market price the output of an individual firm is an insignificant proportion of the total market supply. This is not the case with the monopolist. He is the only supplier. If he increases the quantity supplied, he must reduce the prices, since the lower the price, the higher the demand. Since the monopolist faces a downward sloping demand curve, his marginal revenue (MR) is always less than the price. We illustrate this in Table 9.2. Note that, as quantity sold increases, price falls. This is in keeping with the downward sloping demand curve. How does this affect marginal revenue?

Table 9.2 Revenue schedule of a monopolist

Quantity sold	Price per unit	Total revenue	Average revenue	Marginal revenue
1	₦8	₦8	₦8	—
2	₦7	₦14	₦7	₦6
3	₦6	₦18	₦6	₦4
4	₦5	₦20	₦5	₦2

It affects marginal revenue by keeping it always below price. Hence, with 2 units sold, price is ₦7, but marginal revenue is ₦6 only. At 3 units, prices reduce to ₦6, but marginal revenue reduces even more to ₦4 only. Observe also that, for the monopolist, price is always equal to average revenue, that is, $P = AR$. But, $MR < AR$.

Diagrammatically, we show the monopolist's average and marginal revenue curves in Fig. 9.4. Note again that the average revenue curve of a monopolist is his downward sloping demand curve.

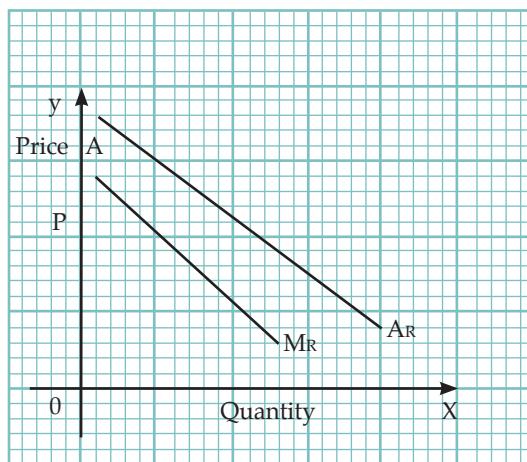


Fig. 9.4 A monopolist's average and marginal revenue curves

Merits of monopoly

- 1 In a monopolistic market, there is no problem of excess supply. The monopolist can gradually increase his output as he deems fit, since he is the only producer, to avoid oversupplying the market thereby wasting resources, as happens under perfect competition.
- 2 Under perfect competition, firms spend a lot of money on advertisements to win and retain customers. This is unnecessary under monopoly.
- 3 The monopolist more or less has a safe market. He can therefore use his machinery to its full capacity in order to supply the market fully. This amounts to efficient use of resources. The perfectly competitive firm, having only a small portion of the market, cannot stretch its resources to the full like the monopolist.
- 4 Small, inefficient firms that characterise perfect competition are unable to finance expensive research projects. The monopolist, having control over large markets, does not have this handicap. He has enough profits to undertake research and development projects.

Demerits of monopoly

- 1 The monopolist, anxious to maintain his abnormal profits, charges consumers exploitative prices since he is a price-maker, rather than a price-taker.
- 2 As firms merge and take over other firms, in order to become monopolies, many able-bodied persons are exposed to the risk of unemployment.
- 3 Naturally, monopoly involves commodities which have no close substitutes. In the absence of alternatives, the consumer is forced to accept what the

monopolist offers. Under monopoly, therefore, the consumer has little or no choice.

- 4 In order to force up prices, the monopolist can withhold supplies to give the impression that the good is going out of stock. This can cause speculative purchasing which will result in abnormal demand curves.

Oligopoly

Oligopoly is a market structure in which the supply of a commodity is totally or substantially concentrated in the hands of a few firms, none of which is so powerful that it can individually influence the market and price without taking into consideration the reactions of the others. Under oligopoly, the few firms which dominate the market are engaged in a competition through product differentiation, but they are so interdependent that none of them can change its prices without considering how the others will react to it. Oligopolies are becoming very common in real life market situations. In Nigeria, for example, domestic air transportation is an oligopolistic market. Other examples are the cement industry and the motor assembly industry.

Concerning the oligopolistic market structure, it is important to note that each of the few competing firms produces a sizeable and major proportion of the total supply of the commodity. Thus, by restricting production, an oligopolistic firm can cause an upward shift of prices. However, oligopolistic firms often reach agreements on price, and they compete mainly by product differentiation and advertisement. This is because the action of one firm, especially on price,

greatly influences the action of the others. This is why the most important characteristic of an oligopoly is the high interdependence of the few firms.

Price and quantity determination under oligopoly

The point has been made before that under oligopoly, firms are highly dependent on one another. For example, under duopoly, a special case of oligopoly in which there are only two suppliers, the action of one firm immediately visibly affects the action of the other. For this reason, it is difficult to draw demand and supply curves for an individual firm under oligopoly.

In any case, oligopolistic firms are aware of this themselves. Thus they tend to resort to collusion on price and quantity. That is, price and quantity under oligopoly are generally on agreement by the competing firms. If one supplier lowers his price, others will surely react by lowering their own prices too. They must do this so as not to lose their customers. If one supplier goes ahead to increase his prices, others will not do the same. He will be the loser. Thus, in oligopoly, while price cuts will be followed, price increases will not be emulated. How does this pattern of behaviour affect the oligopolist's demand curve?

In Fig. 9.6, the agreed price is B and the agreed quantity is F. The price-quantity combination is given by point H on the demand curve DD. At this point, all the oligopolistic firms are making some abnormal profits, depending on their individual cost curves. Suppose that one supplier cuts his prices to A, all others will also come down to that price in order to retain their customers. We thus see that, while price has fallen drasti-

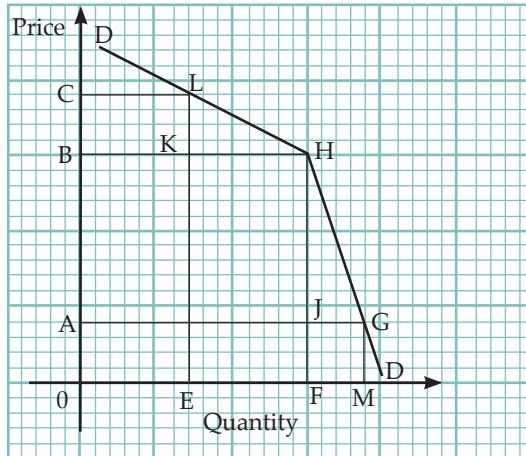


Fig. 9.6 A demand curve under oligopoly

cally from B and A, quantity sold has only increased slightly from F to M. Therefore, we conclude that, below the agreed price, demand is elastic with respect to price. This is why the portion of the demand curve from H to G slopes downwards very steeply. The cut in price has only resulted in loss of revenue, given by the area ABHJ, which is greater than the revenue gained, given by the area FJGM. Thus, the final effect of a price cut below the agreed price in oligopoly is a net loss of revenue.

Again, suppose one of the oligopolistic firms chooses to raise his prices to C, he will only lose his customers and other suppliers will not imitate his action. By increasing prices a little from B to C, his sales will fall significantly from F to E. Therefore, we conclude that above the agreed price, demand is highly elastic with respect to price. This is why the portion of the demand curve from L to H slopes downwards only very gradually, tending to be flat. The increase in price has only resulted in loss of revenue by the supplier who increased prices. By raising prices to C, he has gained extra revenue given by the area BCLK; but, his loss, given by the area

EKHF, is greater. Thus again, the final effect of increasing prices beyond the agreed level in oligopoly is a net loss of revenue.

Since price increases and price decreases both result in net loss of revenue under oligopoly, price and quantity often do not change. This is the very point made earlier. Because the demand curve is so irregular in shape under oligopoly, we say it is *kinked*. The kink occurs at the agreed price-quantity combination, H.

Monopolistic competition

Monopolistic competition, also known as imperfect competition, is a market situation in which there is a competition among a large number of firms whose products are close, but not perfect substitutes. The commodities under monopolistic competition are differentiated on the basis of different brand names, difference in preparation and presentation, and also by advertising.

The concept, 'monopolistic competition' is from the fact that this market situation combines elements of both monopoly and perfect competition. It resembles perfect competition in the same sense that the number of sellers is so large that the action of one has no visible effect on the others. It resembles pure monopoly in the sense that, since the products are not exactly alike, an individual producer can change his prices or quantity independently, so that his demand curve is downward sloping like that of the monopolist. Monopolistic competition exists in the print media where there are myriads of newspaper and magazine publishers, and the soap industry, where we have many manufacturers of all sizes.

Price and quantity determination under monopolistic competition

Under monopolistic competition, the firm's output of its differentiated product is only an insignificant proportion of the total market supply, since there are many other suppliers of close substitutes. Abnormal profits can, therefore, be reaped only in the short run.

In the long run, the firm under monopolistic competition will still maximise profits where marginal revenue equals marginal cost. Its output will be fixed at this point, but its price is at the point where the average cost curve is tangent to the price line. In Fig. 9.7, marginal revenue and marginal cost are equal at U. At this point, the firm's output is C. Actually, the firm can expand its output to R, where average cost is at its lowest level. It will, however, not do so because it will be unprofitable, since marginal revenue will fall further.

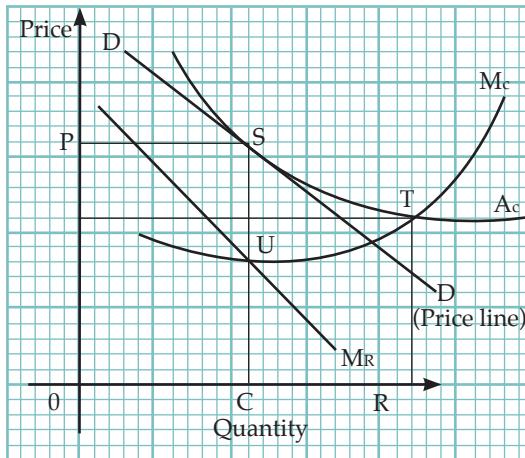


Fig. 9.7 Long-run price and quantity in monopolistic competition

The market price is fixed at the point S. At S, the quantity line cuts the price line, given by the demand curve DD. At S also,

note how the average cost curve just touches the price line. Thus, in our diagram, the equilibrium price in the long run is P while the corresponding quantity is Q. That is, under monopolistic competition, long-run equilibrium price and quantity is where $MR = MC$ but $MR < AR$ and $AR = AC$.

Summary

- The main types of market structure are perfect competition, monopoly, oligopoly, and monopolistic competition.
- Perfect competition is one in which there are so many sellers that no one seller can influence prices, all suppliers being price takers. Monopoly is a market situation in which there is only one producer of a commodity which has no close substitute.
- Oligopoly is a market structure in which the supply of a product is totally or substantially in the hands of a few firms none of which can singly alter prices, without considering the reactions of others.
- Monopolistic competition features a large number of firms whose products are close, but not perfect substitutes.
- In all market structures, equilibrium quantity is achieved when price and marginal cost are equal, while price always equals average revenue, so that, the average revenue curve becomes synonymous with the demand curve.

Review questions

Multiple-choice questions

- 1 Which of these is true for a perfect competitor? _____.
 - A Price = AR, but AR < MR
 - B Price = AR = MR
 - C Price = MR, but MR < AR
 - D None of the above
- 2 For a monopolist, the demand curve is _____.
 - A downward sloping
 - B perfectly elastic
 - C perfectly inelastic
 - D upward sloping
- 3 Monopolistic competition is a market structure _____.
 - A that has features of monopoly but not perfect competition
 - B that has features of perfect competition but not monopoly
 - C characterised by long-run abnormal profits.
 - D characterised by features both of monopoly and perfect competition
- 4 Oligopoly _____.
 - A does not include cases of duopoly
 - B features many firms with equal market control
 - C is characterised by competition
 - D does not exist in reality
- 5 Abnormal profits are _____.
 - A experienced only under monopoly
 - B reaped under perfect competition in the short run only
 - C available under oligopoly also
 - D all of the above

Essay questions

- 1 Discuss the short run and long run equilibrium under perfect competition.

- 2 Monopolistic competition is midway between monopoly and perfect competition: (a) Do you agree? (b) Why or why not?
- 3 What benefits accrue from a monopolistic market?

Chapter 9**Industry and industrialisation in Nigeria****Performance objectives**

By the end of this chapter, you will be able to:

- 1 differentiate among
 - a) plant,
 - b) factory,
 - c) firm,
 - d) industry, and
 - e) industrial estate.
- 2 explain the factors that influence the location of industries.
- 3 explain the advantages and disadvantages of localisation of industry.

Introduction

The word industry refers to all the many economic activities which provide employment to labour. Industry may also be used to describe all those economic activities which give rise to the production of goods rather than services. More commonly, however, industry *is a collective term for a group of activities directed to the production of a given class of commodities*. In this sense, industry refers to a group of firms engaged in the same area of production.

Industrialisation *is the process by which an economy based on agriculture is transformed into one based on industries*.

Here, we are using 'industries' to mean production activities which result in the output of goods and services. Industrialisation involves the establishment of as many industries as possible, which requires a shift away from an agricultural economy to an industrial one. An economy may be said to be industrial when most of the goods and services produced in it, measured in units of money, are manufactured products. On the other hand, we talk of an agricultural economy when more than half the total money value of all goods and services produced is from agricultural practice; that is, produced from the soil.

Definition of industrial concepts

Attempts will be made to define and explain some key concepts that are very crucial to the subject of discussion, such as plant, factory, firm, industry and industrial estate.

Plant

A plant can be described as a series of machinery, equipment and apparatus that are put in place for the purpose of productive activities. They are used to process the raw materials and other input into finished goods.

Factory

A factory is the building that houses all productive resources, plant, equipment and the like. 'Factory' in precise terms can mean a distinct productive outfit. In most cases, the factory, in a modern industry set up is often separated from the administrative building for obvious reasons.

Firm

A firm is a productive or business establishment engaged in the production of goods or delivery of services. It is a business unit of an industry that has a distinct and autonomous management.

Industry

An industry is a conglomerate of firms or business units that produce similar or identical goods or services, but each under an independent management. For instance, in the banking industry, we have banks such as First Bank Nigeria Plc, Zenith Bank Plc, Union Bank Plc and EcoBank Plc.

Industrial estate

Industrial estate refers to a special environment where there are many industries involved in different productive activities. An industrial estate is specifically set aside for business activities, with attendant modern infrastructure, like active electricity, pipe borne water, toilets, a good network of roads, and warehouses, to aid conducive business activities. Opportunities for residential housing are often not allowed in such an area.

Location of industry

Before an industry is located in a place, the entrepreneurs have to take into account a number of factors. Some of these are:

- 1 availability of raw materials
- 2 transportation and communication
- 3 availability of labour
- 4 proximity to markets
- 5 nearness to power supply
- 6 capital
- 7 availability of social amenities
- 8 atmospheric pollution
- 9 political considerations
- 10 government policy
- 11 attraction of other industries

Availability of raw materials

In establishing an industry in any given place, the entrepreneur must consider the availability of raw materials needed in the industry. Goods are produced only after raw materials have been worked on, so that, in the absence of the right quality and quantity of raw materials, there cannot be any industrial production.

An industry is therefore often sited where the raw materials it requires can be found. In instances where the raw materials are of a bulky and heavy nature, the industry may be located very close to where they are found to minimise the cost of transportation. For example, the Nigerian Cement Company in Enugu State is located at Nkalagu due to the presence there of deposits of limestone, a heavy and bulky raw material for cement production.

Similarly, the tanneries set up in Sokoto and Maiduguri have been sited there because the hides and skin, the major raw materials used in the industry, can be easily obtained in the locality.

Transportation and communication

Another major factor considered in locating an industry is the availability of good means of transport and communication. Since every

industry is concerned with making profit, effort is made to locate the business where there are good means of transport and communication. This facilitates communication with different parts of the country and the outside world, as well as the movement of products to markets far and near.

Good means of transport and communication are also necessary to make it easy for spare parts to be easily brought in for the repair and maintenance of industrial machinery. This factor is a major explanation for the concentration of industries in such Nigerian towns as Port Harcourt, Lagos, and Kano, all of which are served by road, rail and air transport systems, in addition to the availability of seaports at the first two.

Availability of labour

Production cannot take place in the absence of human labour to supervise the combination of other factors. The availability of labour, therefore, is a factor which cannot be neglected in the decision to locate an industry in a particular place. There must be a reliable supply of all categories of labour, skilled, semi-skilled and unskilled, for the industry to operate profitably.

This, again, partly explains why many industries are located in urban areas where there is usually a large concentration of people. Rural areas, on the other hand, lack industries because labour, especially skilled labour, is not easy to come by in such areas.

Proximity to markets

Some industries are market-oriented. They are located very close to the consumers of their products, the major consideration being that what is produced must also be sold. To some entrepreneurs, this becomes an

overriding consideration, since profits come from revenue, and revenue is income from the sale of products. For example, plastic mat factories are found in northern Nigerian towns like Maiduguri and Sokoto where there is a large population of Muslims who need mats for their daily prayers.

Nearness to power supply

Modern industries have a lot of machinery powered by electricity, gas or diesel and other petroleum products. Therefore, before locating an industry, it must be ensured that there will be a regular supply of the fuel required. This explains why the first industries in Nigeria were sited in towns where electric power supply was available, rather than in rural areas where there was no electricity. Today, this factor is dwindling in importance because of the extension of the national grid of electric power as well as the many rural electrification programmes of the federal and state governments.

Capital

An industry requires a lot of capital for its take-off and continued operation and expansion. Availability of capital thus becomes a very important factor influencing the location of industries.

Availability of social amenities

The concentration of industries brings along with it the concentration of human beings. This can lead to the overcrowding of available schools, and undue pressure on health and other services. It would result in an excess demand for residential houses, thereby pushing up rents and provoking social vices, such as prostitution and armed robbery.

Atmospheric pollution

A common sight in industrial areas is thick billows of dark smoke belching out continuously from the chimneys of many industries. These impurities react with normal atmospheric elements to pollute the air. This threatens to endanger human lives on a large scale.

Political considerations

At times, economic considerations are made subordinate to political considerations in the siting of an industry. For instance, a government may, for political reasons, site an industry in a certain constituency without due consideration for its commercial viability.

Government policy

For the purpose of dispersing industries all over the state, the government can influence the location of industries through its policy. For example, to discourage the concentration of industries in the capital city, the government may impose very high rates of company taxation.

Attraction of other industries

The location of an industry in a place may also result from the fact that there are already many similar industries in the place. The entrepreneur's reckoning could be that there must be something good attracting others there.

It should be remarked, of course, that one single factor can hardly explain the location of an industry anywhere. It is more usual for the entrepreneur to weigh several of these factors before actually locating the industry.

Localisation of industry

Localisation of industries refers to the establishment of many related firms at a particular location, thus causing a concentration of industries there. Localisation of industries results from industries being located where there are already many industries in existence.

In Nigeria, many examples of localisation of industries can easily be found. For instance, the finance industry is localised on Broad Street, Lagos. Another localisation of industries occurs in Kaduna, where there are many textile firms. Localisation of industries has a number of advantages and disadvantages, known respectively as *external economies* and *external diseconomies*.

Advantages of localisation (External economies) of industries

Localisation of industries has the following advantages:

- 1 Growth of subsidiary firms
- 2 Development of organised markets
- 3 Common pool of skilled labour
- 4 Joint ventures
- 5 Provision of social amenities
- 6 Sufficient supply of raw materials

Growth of subsidiary firms

The activities of the major industries localised in a place soon attract many other smaller ones which spring up to provide them with support services. The smaller industries which come into existence solely to furnish the needs of the bigger firms are called subsidiary industries. For example, if there is localisation of the fishing industry at a place, net-making and boat-repairing industries are two possible subsidiaries that may emerge within the locality.

Development of organised markets

Localisation of industries causes the area concerned to become reputed for the good or service produced. Thus, traders dealing in such a product can organise themselves into associations and cooperative societies, to buy in bulk from the localised industries. In this way, the localised industries succeed in saving a lot of money on publicity and advertisement.

Common pool of skilled labour

Localisation of industries results in the coming together of people with skills and experiences appropriate to the needs of the industries concerned. A new and up-coming industry can thus benefit from the available common pool of labour.

Joint ventures

The localised industries can always come together to finance research projects and sales campaigns, from which they will individually benefit.

Social amenities

When industries are concentrated in a place, job-seekers flock down there. Gradually, large, settled communities develop as men bring down their wives, children and relations. The build-up of human population makes it both necessary and relatively cheaper for the government to provide schools, hospitals and other social amenities there.

Sufficient supply of raw materials

Industries localised in a place benefit from a steady and regular supply of raw materials. Producers of raw materials look upon the industries as a ready market for their

products. Thus, the industries benefit from the regular supply of raw materials.

Disadvantages of localisation (External diseconomies) of industries

The following are the disadvantages of localisation of industries:

- 1 Exposure to enemy attack
- 2 Frictional unemployment
- 3 Overcrowding of social amenities
- 4 Atmospheric pollution

Exposure to enemy attack

A place in which industries are heavily localised will naturally be a target for enemy attack during a war. An effective enemy attack is capable of immediately paralysing economic activities in the whole country. Thus, a major disadvantage of localisation of industries is that it exposes life and property to a lot of danger.

Frictional unemployment

Localisation of industries gives rise to a highly specialised pool of labour. Should these workers lose their jobs for any reason, they cannot find alternative employment because their skills and kind of experience are not useful elsewhere. This is called *frictional unemployment*.

Overcrowding of social amenities

The concentration of industries brings along with it the concentration of human beings. This can lead to the overcrowding of available schools, and undue pressure on health and postal services. It will result in an excess demand for residential houses, thereby pushing up rents and provoking social vices, such as prostitution and armed robbery.

Atmospheric pollution

A common sight in an area having a localisation of industries is a thick envelope of dark smoke belched out continuously from the chimneys of many industries. These impurities react with normal atmospheric elements to pollute the air. This threatens to extinguish human life on a large scale.

Summary

- Industrialisation is the process of transforming an economy based on extractive (agricultural) activities into one based on manufacturing.
- Industries are located on consideration of the following factors:
 - availability of raw materials
 - labour
 - transport and communication
 - nearness to markets, power supply and source of capital
 - political and natural factors
 - accident of history
 - government policy
 - the attraction of other industries,
- Localisation of industry is the concentration in a place, of many firms whose products are related.
- The advantages of localisation include:
 - the growth of subsidiary firms
 - development of organised markets,
 - common pool of skilled labour
 - possibility of joint ventures
 - provision of social amenities
 - the reliable supply of raw materials
- Localisation has the following disadvantages:
 - exposure to enemy attack
 - frictional unemployment
 - overcrowding of social amenities
 - atmospheric pollution

Review questions

Multiple-choice questions

- 1 Iseyin, in Osun State, has a large concentration of textile workers while Monguno in Borno State is a leather-working enclave. This locational pattern is best explained by _____.
 - A accident of history
 - B government policy
 - C political considerations
 - D nearness to sources of capital
- 2 Broad Street, Lagos, has a localisation of the _____.
 - A textile industry
 - B publishing industry
 - C auto industry
 - D finance industry
- 3 A firm enjoys external economies when _____.
 - A it achieves cost reduction as a result of the presence of many related firms
 - B it is multinational
 - C its contracts are to external countries
 - D all of the above obtain
- 4 Which is *not* an advantage of localising industries?
 - A Establishment of an Industrial Arbitration Panel
 - B Growth of organised markets
 - C Development of a pool of skilled labour
 - D Emergence of subsidiary firms
- 5 Localisation of industry means
 - A creating industries using locally sourced raw materials.
 - B siting industries in rural areas.
 - C concentration of related firms in a place.

D government take-over of foreign owned firms.

Essay questions

- 1 What factors determine location of industries? Give specific examples from your country.
- 2 What is meant by industrialisation? Discuss the advantages of localising industries.
- 3 Does localisation of industries attract any disadvantage? Discuss.
- 4 Write short notes on the following:
 - a) Plant
 - b) Firm
 - c) Industry
 - d) Industrial estate
- 5 List and explain about six factors to be considered when citing an industry.

Chapter 10 Agriculture

Performance objectives

By the end of this chapter, you will be able to:

- 1 identify the main components of agriculture.
- 2 explain the main features of various systems of agriculture.
- 3 explain the importance of agricultural products to economic development using Nigeria as an example.
- 4 explain the process and challenges of marketing livestock, and food and cash crops in Nigeria.

Introduction

We use the word, agriculture, to describe all the activities involved in the cultivation of the soil and production of crops, in the feeding and management of animals, as well as in the preparation of plant and animal products, for the use of man. In Book 1 we discussed the importance of agriculture in the economy of West Africa. We also discussed various systems of agriculture, among other topics.

Components of agriculture

In this section, we shall treat the four main components of agriculture.

These are:

- 1 crop production
- 2 livestock production

- 3 forestry
- 4 fishing

Crop production

Crop production is the planting, tending and growing of different crops for the use of man. In recent times, there has been an improvement in the production of crops, especially owing to the discovery and use of such techniques as crop rotation, transplanting, monocropping, and mixed cropping. Yields from crop production also have continued to increase, on account of the use of fertilisers and other agricultural chemicals. Finally, the use of pesticides, fumigants, nematocides and fungicides has also helped to raise the standard of crop production.

Crop production may be carried on at a subsistence level when the entire yield from the crop is intended for the direct use of the farmer and members of his family. Subsistence crop production is carried out on a small scale and it is the most common component of agriculture in the rural areas of Nigeria and other developing countries.

Crop production at a commercial level involves the growing and tending of plants for the purpose of generating cash profits. Peasant farmers are usually unable to cope with the requirements of commercial crop production. Commercial crop production is therefore usually practised by collections of persons in cooperatives; by business establishments, or by government agencies. Crops may be classified into trees, roots and

grains. Some tree crops are oil palm, banana, plantain, kolanut and coconut. Tree crops are the dominant types of crops found in commercial crop production. Examples of root crops are cassava, yam, cocoyam and sweet potato. Grains include millet, sorghum or guinea corn, maize and rice. Crops in the form of roots and grains constitute the mainstay of crop production at a subsistence level as carried on by peasant, rural farmers.

Livestock production

Livestock production is the rearing and keeping of animals both for direct consumption and for sale for profits. Many kinds of animals can fall under this category. Common examples include sheep, goats, cattle, swine, poultry and rabbits. There are several reasons for the production of livestock.

First, livestock production is undertaken for economic reasons. Farmers operating at a subsistence level may keep some animals as a means of urgently raising finances to meet sudden needs for cash. Even wealthy and skilled persons often resort to livestock production in such forms as piggery, poultry and cattle ranching, purely for profits.

Livestock production is also carried on because it supplies food. Animals and their products provide some of the richest protein foods available to human beings.

Another reason why farmers may take to animal breeding and rearing is the social respect and prestige it confers on the owner. In northern Nigeria and some parts of other West African countries, a man's wealth and social importance are determined by the number of herds of cattle he owns. This is most widely pronounced among the cattle Fulani.

Religious practices also provide a basis

for production of livestock. Muslim communities put a lot of spiritual value on rams, which are in very high demand and attract high prices during Islamic festivals. Among the Yoruba of southwest Nigeria, dogs occupy a significant position in the worship of *Ogun*, the god of iron. Also, metaphysicians and witchdoctors among the Yoruba commonly prescribe the keeping of specified animals by women in order to pacify certain guardian ancestral spirits, if they must continue their work.

Finally, livestock production may be undertaken for miscellaneous reasons. Some people keep dogs both as pets and house guards. Horses are kept by some, not only for racing and polo playing, but also for the sheer joy of possession.

In Nigeria, a large percentage of the livestock production is carried out in the northern parts of the country. The reason for such skewed geographical distribution is the infestation of the southern areas with tsetse flies, which spread the deadly disease known as *trypanosomiasis* (*sleeping sickness*).

Forestry

Forestry has to do with the development and exploitation of forest resources for the use of man. Some forest products which are very useful to man are palm oil, raffia palm and rubber. Forestry serves a number of very important purposes:

- 1 Forestry provides us with timber and pulp for papermaking. These products are derived from trees found in the forest, such as iroko, obeche, and abura.
- 2 Forest resources include wild animals such as antelopes, monkeys, elephants and snakes. When tracked down by hunters, these provide an invaluable source of protein.

- 3 Forestry is an important source of government revenue. Hunters and lumberjacks have to obtain licences from the government to extract the resources in forest reserves.
 - 4 Forests are useful in the control of wind and water erosion. In the savanna areas where winds can be violent with consequent sheet erosion, forest reserves are encouraged to serve as windbreaks. In areas susceptible to heavy flooding, trees also serve to slow down currents of flood water, thereby minimising the damage done by erosion.
 - 5 Forestry is important because of the effect of forests on climate. Forests influence *precipitation* by thrusting up moisture-laden winds which first condense and then fall as rain.
- 2 Use of traditional agricultural implements
 - 3 Unfriendly climatic conditions
 - 4 Resistance to agricultural innovation
 - 5 Inefficient farming systems
 - 6 Inadequate marketing facilities
 - 7 Lack of credit facilities
 - 8 Natural disasters

Land fragmentation

In West African countries, the land available to a farmer is usually a narrow strip. In this situation, the farmer hardly does receive any encouragement to produce a surplus beyond his own needs. Even if he wants to, it remains uneconomical for him to bring in mechanical agricultural equipment, for instance.

Use of traditional agricultural implements

As observed earlier, most of the farming done in West African countries is peasant, subsistence farming. Peasants in the rural areas who dominate West African farming make use of primitive implements such as hoes, cutlasses and axes. The use of these traditional farming tools is very energy-sapping. As a result, farmers get tired quickly and their efficiency is affected, resulting in low output per head.

Unfriendly climatic conditions

Another serious constraint facing agriculture in West Africa is the uncharitable climatic condition prevailing here. In Nigeria, for example, daily temperatures in the far northern towns like Monguno and Kukawa, which border the desert, are always at extremes, i.e. either too hot or too cold. Farmers are human beings and this kind of situation tends to keep them away from work for

Fishing

Fishing, like forestry, is an extractive activity. It is the catching and processing of fish and other amphibious animals for the benefit of mankind. In West Africa, there are five main sources of fish, namely coastal and offshore water, lagoons, rivers, lakes and fish farms.

The importance of fishing derives from the occupation it provides to riverine dwellers and the protein provided by fish, shrimps, prawns and other seafood.

Problems of agriculture in West Africa

The main problem of agriculture in West Africa is the low productivity per unit area of land, as well as per labourer. This can be explained by reference to certain specific factors:

- 1 Land fragmentation

many hours a day. In addition, these Sahelian areas experience scanty, irregular rainfall and violent winds from the desert, while irrigation facilities lie beyond the reach of the peasant farmers.

Resistance to agricultural innovation

Peasant farmers are generally unexposed to formal education. The illiterate farmers hold on to some traditional beliefs and ideas, which make them view modern agricultural practices with suspicion. For this reason, they resist change and frustrate attempts to make them adopt modern farming techniques for improved productivity.

Inefficient farming systems

Another good explanation for the low productivity of agriculture in West Africa is the system of farming employed by peasant farmers. The most common system of farming is *shifting cultivation*: a system in which a piece of land is farmed for one or two years and then abandoned to lie fallow, in order to recover by natural means all the fertility lost. In the meantime, the farmer shifts his operation to another piece of land. This system of farming leaves much of the available employed land under-utilised, resulting in low productivity.

Inadequate marketing facilities

Agricultural products, especially food crops, suffer lack of adequate marketing facilities. To begin with, these crops are produced in the rural areas. Their evacuation to the urban centres where a large demand exists is often hampered by the dearth of good access roads. This results in a surplus in the rural areas and very low prices overall. Thus, the farmers are discouraged from seeking to

increase their productivity. Related to this is the almost total lack of storage facilities, which means that produce cannot be kept until a market is found for them.

Lack of credit facilities

With the spread of educational facilities, many farmers are becoming enlightened. Some now seek to improve their farming by taking loans from credit institutions. Unfortunately, these credit facilities are still not easily available, because of the insistence of the lenders on collateral which farmers are often unable to provide.

Natural disasters

Natural disasters also add to the problem of low agricultural productivity in West Africa. Long periods of droughts result in the loss of large numbers of livestock and crops. On the other hand, heavy flooding and erosion often render whole farming efforts fruitless. Sometimes, farmers and their families are forced to vacate their homes on account of earth tremors which could result in volcanic eruptions.

The combined effect of all these problems on agriculture is to hamper productivity.

Solving the problems of agriculture in West Africa

We have enumerated the major problems facing agriculture in West Africa. The following are suggestions on how to remedy the situation:

- 1 Reform of the land tenure system
- 2 Provision of good networks of extension services
- 3 Formation of farmers' cooperatives
- 4 Price stabilisation and market creation

- 5 Provision of good networks of feeder roads
- 6 Provision of planned residential areas
- 7 Establishment of natural disaster relief funds
- 8 Setting up anti-erosion and anti-desertification schemes

lack of credit facilities. The credit worthiness of the individual farmer may often be questionable, but when farmers come together and form cooperatives, they achieve greater credit worthiness. Thus, they can easily obtain loans from lenders with which to buy farm machinery which they would have been unable to purchase as individuals.

Reform of the land tenure system

To increase the level of productivity in agriculture in the West African sub-region, there is a need to reform the system of land use and ownership. This will require decisive action by the governments in the sub-region. The land reforms should make it possible for a farmer to acquire a large expanse of land for relatively long-term use, as against fragmentation, which impedes mechanisation. The land reform should also address the wasteful practice of shifting cultivation, with a view to making more land available for agriculture.

Provision of good networks of extension services

The problem of peasant resistance to modern farming techniques can be minimised or completely overcome by the provision of a large network of extension services. Extension workers should be equipped with good means of transportation and dispatch right into the rural areas where the peasants are. The extension agents should be trained to interact with the local farmers in the local languages, in order to eliminate their suspicions and win their confidence. In this way, modern farming techniques can be introduced to the rural peasants whose productivity will then increase.

Formation of farmers' cooperatives

One of the problems earlier identified is the

Price stabilisation and market creation

Part of the reason why agricultural productivity is low in West Africa is the low morale of the farmers because of the very low and fluctuating market prices of their products. To arrest this situation, government agents could be made to buy up the produce from the farmers and resell to consumers. This will assure the farmers of a ready market for their output and a stable, predictable income from sales.

Provision of good networks of feeder roads

This is closely related to the creation of markets. Provision of good networks of access roads connecting the urban centres to the rural areas eases the evacuation of agricultural products from the producers to the urban markets. Such networks of feeder roads make it easier for the peasants to find markets for their products outside their villages.

Provision of planned residential areas

The special planning of residential areas by government authorities will also help to solve part of the problems of agriculture in West Africa. At least, it will put a stop to the haphazard location of residential houses which encroach on farmlands, thereby causing a shortage of land for agricultural activities.

Establishment of natural disaster relief funds

A fund, from which emergency aid can be disbursed to farmers who suffer crop failures on account of natural disasters like locust or bird invasion, drought or erosion, should be created at the central government level. This will serve to assuage the uncertainty of farmers about the future and thus spur them on to greater productivity.

Setting up anti-erosion and anti-desertification schemes

West African governments should carry out more schemes to check water and wind erosion as well as desert encroachment. This will assure the farmers in the sub-region that their governments are concerned about their welfare and productivity.

Agricultural policies in Nigeria

We shall define agricultural policy as a body of laws, instruments and statements of commitment made by the government of a country in order to promote the growth and development of agriculture. These various agricultural policies have different objectives. To achieve these objectives, different policy instruments are used. Policy instruments are the means and methods used to achieve an objective.

Broad aims of agricultural policies in Nigeria

In this section we shall examine the broad aims of agricultural policies in Nigeria. These broad aims are as follows:

- 1 Change of motive
- 2 Use of new techniques

- 3 Optimum use of resources
- 4 Efficient production and distribution

Change of motive

Agricultural policy in Nigeria is aimed at changing the motive of peasant farmers in agriculture. The motive of the average peasant in his farm enterprise is simply to produce enough for the feeding of himself and members of his immediate household. Agricultural policy aims at making the peasant able to produce, not just enough for his private use, but also a surplus which he can sell to others for money. Thus, the aim of agricultural policy in this regard is to change the aim of farm enterprise to commercial production.

Use of new techniques

Agriculture in Nigeria is not largely mechanised. Nigerian agriculture is basically a cutlass-and-hoe affair. This use of low-level technology makes agriculture uninteresting and unrewarding by the drudgery it brings and the low productivity it causes. Agricultural policy in the country aims at doing away with old techniques and introducing innovative techniques which lead to maximum yield and productivity.

Optimum use of resources

Another broad goal of agricultural policy is to ensure the allocation of farm resources in the best possible way in order to increase efficiency. For example, shifting cultivation is commonly practised among Nigerian farmers. This leads to wastage and under-utilisation of available arable land. Again, the seasonal nature of farming activities results in temporary unemployment of farmers during the off season. Agricultural policy aims at reversing these by bringing about

all year-round utilisation of farm resources, including labour, as one way to deal with the problem of unemployment and under-employment.

Efficient production and distribution

Poor distribution and marketing of agricultural produce make it difficult for farmers to get good returns for their hard work and investment. Hence, it is part of the aims of Nigerian agricultural policy to manage production of agricultural commodities and their distribution to ensure that both producers and consumers get the highest satisfaction.

Types of agricultural policies in Nigeria

We shall now examine ten different types of agricultural policies, their specific objectives and policy instruments. The ten different types of agricultural policies in Nigeria are:

- 1 Developmental policy
- 2 Compensatory policy
- 3 Remedial policy
- 4 Regulatory policy
- 5 Punitive policy
- 6 Educational policy
- 7 Demonstrative policy
- 8 Supervisory policy
- 9 Supportive policy
- 10 Organisational policy

Developmental policy

Developmental agricultural policy aims at increasing food supply and reducing the real prices of foodstuffs. The policy instruments are the irrigation of arid areas, the reclamation of swampy or marshy lands and large-scale processing and storage of agricultural output.

Compensatory policy

The aims of this policy are to make up for possible or actual losses incurred by farmers due to natural hazards such as inadequate rainfall, erosion, or drought. Policy instruments include the subsidisation of farm machinery and fertilisers purchase, as well as the insurance of livestock and crops by the government.

Remedial policy

Remedial policy aims at correcting anomalies existing in the present practice of agriculture while preventing future unfavourable situations. Policy instruments usually employed include pest and diseases control measures, as well as erosion control.

Regulatory policy

Regulatory agricultural policy has the aim of regulating and improving standards and quality of crops produced. It is pursued through the instruments of produce inspection and quarantine laws.

Punitive policy

The policy is aimed at discouraging the disobedience of regulatory policies and enforcing regulatory schemes. Policy instruments include imposition of fines and sentences on offenders, confiscation or destruction of produce, and the setting up of control posts.

Educational policy

An agricultural policy is educational when it aims at educating and informing producers and consumers and at producing administrative and extension staff. Policy instruments for this include the use of extension services and the establishment of farm institutes and schools and colleges of agriculture.

Demonstrative policy

Demonstrative policy aims at collecting and collating information through research and demonstrating the practicability of various agricultural projects. The instruments for carrying out this policy are pilot and experimental schemes, farm settlements, as well as agricultural shows and exhibitions.

Supervisory policy

The aims are to ensure that people make full use of subsidised inputs and adopt certain recommended practices. Livestock management and health schemes, as well as biological and mechanical input schemes, are among the policy instruments used to execute this policy.

Supportive policy

The aims of a supportive agricultural policy are to provide infrastructure, ensure the attractiveness of rural communities, and provide inputs beyond the means of peasant farmers. Policy instruments include the provision of rural roads, water, electricity, dykes, irrigation pumps, as well as the establishment of agro-industries.

Organisational policy

Organisational agricultural policy aims at speedy structural transformation and modernisation of agriculture, stimulation of cooperative farming and boosting of a business approach to modern agriculture. Schemes of agro-business, socialised farming and corporate farming are among the policy instruments used in this policy.

Achievements of agricultural policies in Nigeria

Agricultural policies adopted in Nigeria, especially since 1970, have recorded some

achievements, the most important of which are the:

- 1 revival of abandoned projects
- 2 use of extension services
- 3 creation of agro-service stations
- 4 commercialisation of agriculture

Revival of abandoned projects

During the Nigerian Civil War of 1967-70, for example, many farms and plantations in Biafra-held areas were abandoned. This caused both unemployment and a fall in total agricultural output. However, during the second National Development Plan period of 1970-74, the adopted agricultural policies led to the rehabilitation of such abandoned farms.

Use of extension services

Agricultural policies in Nigeria also have led to the creation of a wide network of extension services. Extension workers can now be sent to various parts of the country where they ensure that peasant farmers get adequate supply of farm inputs such as fertilisers and put these to good use. In this way, achievement of optimum resource-use and allocation in agriculture is made.

Creation of agro-service stations

A noteworthy achievement of agricultural policies in Nigeria is the creation of many farm service centres all over the country. These centres supply farmers with expert advice, inputs (fertilisers and pesticides), mechanical services (tractor hire and repairs) and technical aid in the form of on-the-spot advice to farmers by experts.

Commercialisation of agriculture

Another major achievement of the agricultural policies adopted in Nigeria since 1970 is the commercialisation of agriculture. Prior

to 1970, agriculture was more or less a rural occupation for peasants, but the situation has since changed. Nigerians are now aware that agriculture can be a well-paying occupation. This explains why retiring public officers in the country today often take to agriculture.

Failure of agricultural policies in Nigeria

Agricultural policies in Nigeria also have had a record of failures. Some of these failures are:

- 1 creation of 'emergency contractors'
- 2 slow growth rate
- 3 confusing policy statements
- 4 contradiction of policies
- 5 negation of policy

Creation of 'emergency contractors'

Some agricultural policies in the country have only resulted in fraudulent enrichment of those in the contract business. When such policies come into effect, a whole set of new contractors also come into existence only to fritter away the funds allocated by government for agricultural projects. This failure, however, is mainly due to inadequate supervision of contractors handling the projects.

Slow growth rate

The agricultural policies have not resulted in rapid growth in the output of food crops and other agricultural products, as expected. The rates of growth of population and demand for food are still higher than the rate of food production.

Confusing policy statements

Some of the agricultural policies are stated in such a way that they confuse the public. Where policy statements are ambiguous, the

policies themselves are bound to fail. For example, the Operation Feed the Nation (OFN) and Green Revolution campaigns failed to achieve their objectives because they were each seen as a political programmes of the government of the day.

Contradiction of policies

Some agricultural policies in Nigeria are found to be opposed to one another. For instance, the Policy on Credit (1970-74) encouraged small, individual unit agricultural practice, while another policy was encouraging group and cooperative approach to agriculture. Such conflicting policies often fail to achieve their objectives.

Negation of policy

Sometimes, government action is commonly found to be in opposition to stated policies thereby negating the policy in question. For example, the period 1970-80 witnessed a massive importation of food into the country by the government, yet agricultural policies of the period emphasised self-sufficiency in food production. Again, while some policies encouraged agricultural cooperative movements, in which private individuals' contributions are hardly recognised, government made the economy more and more *capitalistic*, such that the greatest reward and pride came from individual achievement.

Marketing of agricultural commodities

Marketing of agricultural commodities especially food crops meant for use within the country is not done under any formal organisation. Instead, it is done by the peasant farmers themselves, especially in the rural economy. In the urban areas, however,

agricultural commodities for sale in the domestic economy are marketed through myriads of middlemen and women who operate on a small scale from stalls in the market, or at roadsides, or along the streets. However, for agricultural commodities to be sent abroad, the situation has to be different. Marketing of these commodities is usually highly organised, by the marketing boards which have well-established channels for the purchase and sale of these commodities. In this section, we shall examine, among other things, the role of marketing boards in the marketing of agricultural commodities.

What is a marketing board?

A marketing board is a statutory body established by the government for the procurement and sale, internally and externally, of specified commodities.

As its name implies, a marketing board is set up as an organisation to help the producers in the marketing of their products. Marketing boards are found in both developed and developing countries.

Historical development of marketing boards in Nigeria

Between 1929 and the mid-1930s, a great depression occurred in the major capitalist countries of the world, as well as in their colonies. The effect of the depression on Nigeria was a drastic fall in the prices of agricultural commodities on which Nigerian farmers depended for their livelihood.

The British Colonial Office reacted to the depression by enacting the Colonial Development Act of 1929 which, among other things, sought to stimulate agricultural activities in the colonies. In 1940, the second Colonial Development Act came into effect with the aim of boosting agricultural

development in West Africa. Under this Act, the West African Cocoa Control Board was established. This board, later in 1942, became responsible for the purchase and sale of palm produce and groundnuts, and was renamed the West African Produce Control Board (WAPCB). The activities of the WAPCB resulted in a great improvement of the situation of farmers. In 1947, the WAPCB was split up and two separate cocoa marketing boards were created, one for Ghana and the other for Nigeria. To bring the number of marketing boards in Nigeria to four, three more were created on 5 April 1949 for groundnuts, palm produce, and cotton. These boards were to operate all over the country.

These commodity boards were replaced in 1954 by three regional marketing boards:

- 1 the Eastern Regional Marketing Board
- 2 the Northern Regional Marketing Board
- 3 the Western Regional Marketing Board

These regional marketing boards dealt with commodities produced in their respective regions. The Eastern Regional Marketing Board dealt in copra, palm produce and soya beans. The Northern Regional Marketing Board was a dealer in beniseed, cotton, groundnuts and soya beans, while the Western Regional Marketing Board dealt with cocoa, palm produce and coffee.

A separate body was responsible for the export of these commodities, although it ceased to exist in 1958 when the Nigerian Produce Marketing Company was established. In 1963, following the creation of the Mid-west Region, another regional marketing company was established to take care of products from the region, dominated by rubber and timber. It was not until 1974 that commodity boards were again created. This time, there were seven of them, namely:

- 1 the Nigerian Groundnut Board
- 2 the Nigerian Cotton Board
- 3 the Nigerian Grains Board
- 4 the Nigerian Roots and Tubers Board
- 5 the Nigerian Palm Produce Board
- 6 the Nigerian Cocoa Board
- 7 the Nigerian Rubber Board

The seven commodity boards created in 1974 were abolished in 1986 as part of the Structural Adjustment Programme (SAP) of the Ibrahim Babangida administration.

Functions of the marketing boards

Marketing boards, where they are established, perform the following functions:

- 1 Price stabilisation
- 2 Sponsorship of agricultural research
- 3 Evacuation of products
- 4 Raw material supplies

Price stabilisation

Marketing boards prevent prices of agricultural commodities from wild fluctuations. The boards achieve this by fixing the prices to be paid to farmers for their crops and by creating price stabilisation funds.

Sponsorship of agricultural research

The marketing boards make some of their surplus funds available for research in agriculture, although they themselves establish no research centres.

Evacuation of products

The marketing boards, through their agents, collect produce directly from the farmers, thereby relieving them of the problems of storage and transportation. The marketing boards also evacuate the produce to the seaports, from where they are exported. Some of the collected produce sometimes undergoes some local processing at the expense of the boards, whenever necessary.

Raw material supplies

The marketing boards, as major dealers in agricultural commodities, supply raw materials to local and foreign industries. For example, textile firms are supplied with cotton while manufacturers of pomade and food drinks are supplied with palm kernels and cocoa beans respectively.

Mode of operation of the marketing boards

The marketing boards appoint agents who are issued with licences to buy agricultural produce from the local farmers at locations determined by the produce inspection department of the government. The local sellers and the licensed buyers meet at these buying points, at which grading of the commodities could also be done. Prices are fixed and announced in advance by the commodity boards, to avoid exploitation of the farmers by greedy agents.

For their work, the licensed agents are paid on a commission basis. Before payment, the agents are made to submit all documents relating to the purchase to the department of marketing and export. When they are for export, these commodities are sold abroad by the Nigeria Marketing Company Limited on behalf of the various marketing boards.

Prospects of agriculture in Nigeria

Although agricultural practices and policies in Nigeria are full of failures, agriculture is still regarded as an extremely important sector of the economy. For this reason, the prospects of agriculture in the country are bright.

Apart from great campaigns to boost agriculture, such as the Operation Feed the

Nation and the Green Revolution, other efforts have been made by the government to ensure that agriculture retains a bright prospect in the country.

- 1 In 1977, an Agricultural Credit Guarantee Scheme was introduced to make it easier for farmers to obtain loans with which to expand and modernise their activities.
- 2 In 1978, the National Land Use Decree was promulgated to make land easily available for large-scale and mechanised farming.
- 3 Also in 1978, the government created 11 River Basin Development Authorities covering the whole country in their operations, to help with irrigation, reclamation, erosion and desertification control, among other functions.
- 4 A number of other steps have been taken to ensure a bright prospect for agriculture in Nigeria. For instance, agro-allied industries which use locally produced raw materials are allowed a period of five years during which they are totally or partially exempted from company taxation.
- 5 In 1984, the Buhari government abolished import duties on animal feed.
- 6 In addition, a number of universities of agriculture and research institutes have been established in the country to boost agricultural practice. The Research Institute, Umudike, Abia State now a university of agriculture and the Forestry Research Institute, Ibadan, Oyo State are examples.
- 7 The Nigerian Agricultural and Cooperative Bank (NACB) was established to place more funds at the disposal of agriculturists.
- 8 The agro-service centres established

country-wide under the Green Revolution of 1980 were also meant to mechanise agriculture in Nigeria.

Other efforts by the government to encourage agriculture include:

- 9 The Rural Banking Scheme, enforced by the Central Bank of Nigeria throughout the country's banking system.
- 10 The sectoral allocation of bank loans in favour of agriculture.
- 11 The establishment of the Directorate of Foods, Roads, and Rural Infrastructure (DFRRI) and the Nigerian Agricultural Insurance Company (NAIC).

Summary

- The components of agriculture are crop production, livestock production, forestry and fishing.
- West African agriculture suffers a setback due to land fragmentation, use of traditional implements, bad climate, resistance to agricultural innovation, inefficient farming systems, inadequate marketing facilities, lack of credit facilities and natural disasters.
- Measures by which these problems of agriculture can be solved include:
 - reform of the land tenure system
 - provision of more extension services
 - formation of farmers' cooperatives;
 - price stabilisation
 - provision of more feeder roads
 - planning of residential areas
 - creating a natural disasters relief fund
 - schemes to check erosion and desertification
- Agricultural policy is a set of committal statements used by government to

promote agricultural development.

- Agricultural policy broadly aims at a change of motive by farmers, use of new techniques, optimum use of resources, and efficient production and distribution of agricultural products.
- Agricultural policies are of the following types:
 - Developmental
 - Regulatory
 - Punitive
 - Educational
 - Demonstrative
 - Supervisory
 - Supportive
 - Organisational
 - Compensatory and
 - Remedial
- In Nigeria, agricultural policies have achieved the revival of projects abandoned during the civil war, the use of extension services, the creation of agro-service stations nationwide, and the growth of agro-business.
- Nigerian agricultural policies fail by the creation of emergency contractors and the slow growth rate of agriculture. They also fail through confusing statements, contradictory policies, and negation of policies by government action.
- A marketing board is a statutory body set up to procure and market agricultural commodities.
- Marketing boards function to stabilise prices, sponsor agricultural research, evacuate products, and supply raw materials.

Review questions

Multiple-choice questions

- 1 Which of these is *not* an agricultural problem in your country? _____.
 - A Peasant farmers' resistance to innovations
 - B Much fragmentation of land
 - C Lack of storage facilities
 - D Availability of advanced agricultural technology
- 2 When an agricultural policy aims at increasing food supply and reducing real prices, it is called a _____.
 - A remedial policy
 - B compensatory policy
 - C developmental policy
 - D demonstrative policy
- 3 To solve agricultural problems in West Africa, the government should avoid the _____.
 - A formation of farmers' cooperatives
 - B intensification of shifting cultivation
 - C stabilisation of agricultural prices
 - D construction of feeder roads
- 4 When low agricultural output is due to drought and erosion, it is blamed on _____.
 - A lack of credit facilities
 - B inadequate marketing facilities
 - C backward agricultural technology
 - D natural disasters
- 5 The DFRRI typifies government effort under
 - A supportive agricultural policy.
 - B supervisory agricultural policy.
 - C educational agricultural policy.
 - D punitive agricultural policy.

Essay questions

- 1 Describe five types of agricultural policy you know.
- 2 Enumerate government efforts to develop agriculture since 1970.
- 3 Recommend six measures to solve known agricultural problems in your country.
- 4 Discuss the failure of agricultural policies in Nigeria.
- 5 Discuss three functions of marketing boards in your country.

Performance objectives

By the end of this chapter, you will be able to:

- 1 define public finance, explain its objectives and discuss the structure of government revenue and public expenditure, by given illustrations with Nigerian data.
- 2 distinguish between direct and indirect taxation and recurrent and capital expenditure, and analyse the effects and incidence of taxes.
- 3 explain the concept of budget deficit, budget surplus, balanced budget and the components of the national debt.
- 4 explain the concept and criteria for revenue allocation (including resource control) in Nigeria, and associated problems.

Introduction

This chapter examines the meaning and objectives of public finance and fiscal policy. It shall also focus on taxation and taxes, sources of government revenue, budget and public debt.

Meaning of public finance

Public finance refers to the financial operations of the government by which it spends on projects and schemes of social benefit, the money provided by the community through taxes and rates. As a branch of economics, public finance is concerned with identifying and determining the effects of government financial policies. The theory of public finance also deals with the best way of distributing resources between the government and the private sector, the ideal way of imposing taxes so that sufficient funds can be put at the disposal of the government, and the impact of government financial policies on incomes, prices and employment.

The main objectives of public finance include the provision of essential services like water, electricity, health and education; the encouragement or control of particular sectors of the economy; and the encouragement of the growth of the economy as a whole.

It must be understood that public finance is basically an analysis of the income and expenditure of the government of a country, the most important element of which is taxation.

Meaning of fiscal policy

In the ancient Roman Empire, all publicly collected money was deposited in the treasury. The emperor and his cohorts in public office financed all public expenditure by drawing from the treasury. Thus, the treasury was an indispensable institution in matters concerning public revenue. It was referred to as the 'Fisc', from which the word 'fiscal' has been derived. Thus, anything fiscal must have to do with public revenue.

Fiscal policy refers to a set of measures adopted by the government to influence the level of business activity in the country and to raise the revenue required for public expenditure. The fiscal policy of the government is basically expressed in the budget, because it is through the level of budgetary surpluses and the methods used to finance them that the government controls the level of demand in the economy. Defined in this manner, fiscal policy can be seen as that part of government policy by which the objectives of public finance are pursued. There is thus a close relationship between public finance and fiscal policy.

Taxation and taxes

A tax is a compulsory financial contribution made by private individuals, groups and institutions towards the expenditure of the government. Taxation is effected by the compulsory transfer of money by individuals and institutions of a country to the government. Tax may also be imposed on goods to defray government expenses. Taxation should not be regarded as direct payment for goods and services provided by the government. It is

rather the contribution which the individual is required, compulsorily, to make towards the expenses of the government.

Concepts of taxation

In the theory and practice of taxation, a number of concepts are frequently encountered.

These are:

- 1 Tax base
- 2 Tax rate
- 3 Tax burden
- 4 Tax allowance
- 5 Tax rebate
- 6 Tax year
- 7 Tax farming
- 8 Tax avoidance
- 9 Tax evasion

Tax base

The tax base is the object on which the tax is imposed. The tax base may be the personal income of the individual, revenue from the sale of some property, or the value of exports or imports. It is the total amount of money from which a particular proportion must be transferred to the government as tax, i.e., the amount on which tax is paid.

Tax rate

The tax rate is that proportion of the tax base which must be paid in taxation to the government. The tax rate is normally expressed as a percentage, e.g. 10 per cent of the first ₦1 000 of income. It also may be given as a flat rate, e.g. the tax rate is for every sale of ₦200.

Tax burden

The tax burden is the absolute amount of money which must be paid in tax. It includes all the costs incurred by the taxpayers in compulsory transfer of money to the

government. To illustrate, suppose the tax base of an individual is ₦100 and the tax rate is 10 per cent. If he paid somebody ₦5 to help him fill in the tax form, then the tax burden is the ₦10 paid to the government, plus the ₦5 paid to the person who filled in the tax form.

Tax allowance

This is an allowance made to an individual on which he does not have to pay tax. The total tax allowance is subtracted from the gross income of the person before arriving at his tax base, upon which the tax rate may then be applied. In Nigeria, tax-free allowances are granted for a man's wife, a maximum of four children, dependent relatives, and so on. All these are deducted from the income. The remainder becomes the tax base.

Tax rebate

Tax rebate is that part of the tax paid by an individual which is refunded to him under certain circumstances. For example, if such an individual had paid a tax of ₦12 but it was later discovered that he should have paid only ₦10, the excess of ₦2 will be refunded to him as a tax rebate.

Tax year

This is the period over which the tax payable is calculated. In Nigeria, it is the period from 1 January to 31 December of the same year.

Tax farming

This is the process by which the government transfers the right to collect taxes to a private individual on behalf of the government.

Tax avoidance

Tax avoidance means the use of legally permitted methods to minimise, or even eliminate, the tax payable on one's property

or income. This can be achieved by the careful arrangement of one's financial affairs and the skilful completion of the tax form. Tax avoidance is not punishable by law.

Tax evasion

Tax evasion is the use of illegal methods to avoid the payment of tax. By this means, the individual deliberately fails to meet his tax liabilities, thereby robbing the government of revenue. Tax evasion methods include the falsification of records or non-declaration of incomes or profits. It is a serious offence punishable by law.

Systems of taxation

Taxes may be put into classes, depending on the relationship between the tax base and the tax rate. These classes are:

- 1 proportional tax
- 2 progressive tax
- 3 regressive tax

Proportional tax

This is a system of taxation in which the tax rate payable is the same, regardless of the size of the tax base. Under this system, every individual is made to pay the same proportion of his income as tax. Proportional tax means that at all levels of income a fixed percentage must be paid as tax. For example if 10 per cent is the tax rate, then everybody will pay 10 per cent of their incomes as tax. The individual who earns ₦350 will pay ₦35 as tax, while the one who earns ₦4 500 will pay ₦450 as tax. The effect of taxing everybody at the same rate, as in proportional tax system, therefore, is to reduce the burden of low-income earners more than that of high-income earners. A schedule and a graph illustrating proportional taxation are given in Table 12.1 and Fig. 12.1 respectively.

Table 12.1 Schedule of proportional tax

Taxpayer	Tax rate	Tax base	Tax paid
A	10%	₦350	₦35
B	10%	₦3500	₦350
C	10%	₦35 000	₦3 500

Tax base (₦)

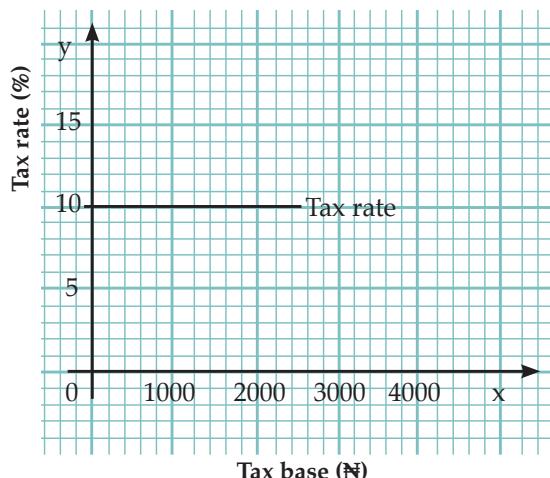


Fig. 12.1 Graph of proportional tax

Progressive tax

This is a system of taxation in which the tax rate increases more proportionately than the size of the tax base. Under a system of progressive taxation, the tax claims an increasing proportion of the income, as the latter increases. For example, when the income is ₦350, the tax rate is 5 per cent. When income increases to ₦1 000, the tax rate rises to 15 per cent and when the income rises to ₦2 000 the tax rate becomes 35 per cent.

Thus, it can be seen that a progressive tax system is in keeping with the 'ability to pay' principle. The higher the income, the more the tax and the lower the income, the lesser the tax. This is the fairest system of taxation. It is based on the fact that the marginal utility of income diminishes as income increases.

Since the marginal utility of one naira is lesser at high income levels, high-income earners will more easily part with more of it as tax than low-income earners. This results in a redistribution of income in favour of the poor.

A schedule and a graph of progressive taxation are given in Table 12.2 and Fig.12.2 respectively.

Table 12.2 Schedule of progressive tax

Tax payer	Tax rate	Tax base	Tax paid
A	5%	₦350	₦17.50
B	15%	₦1 000	₦150
C	35%	₦2 000	₦700

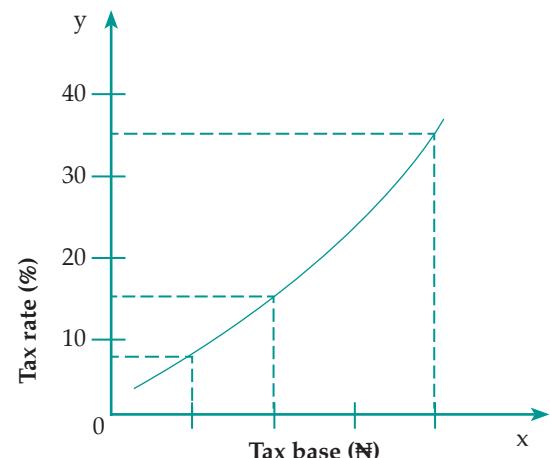


Fig. 12.2 Graph of progressive tax

Regressive tax

This is a system of taxation in which the tax rate is a decreasing proportion of the tax base as income increases, i.e. the higher the tax base, the lower the tax rate. This is an unfair system of taxation because high-income earners are made to pay a lower proportion of their earnings as tax than low-income

earners. For example, at an income level of ₦350, the tax rate is 15 per cent. When income rises to ₦1 000, the tax rate falls to 10 per cent and when income increases further to ₦2 000, the tax rate decreases more to 7.5 per cent. A schedule and graph of regressive tax are given in Table 12.3 and Fig. 12.3 respectively.

Table 12.3 Schedule of regressive tax

Tax payer	Tax rate	Tax base	Tax paid
A	15%	₦350	₦52.50
B	10%	₦1 000	₦100
C	7.5%	₦2 000	₦150

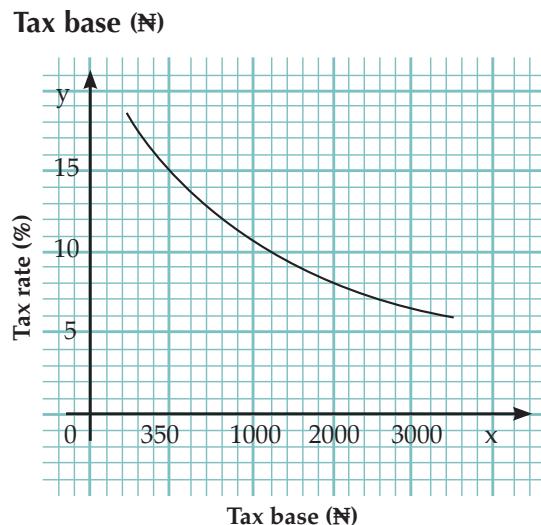


Fig. 12.3 Graph of regressive tax

Types of taxes

Taxes are classified into two main kinds:

- 1 Direct taxes
- 2 Indirect taxes

The classification depends on the tax incidence and the method of collection.

Direct taxes

Direct taxes are taxes levied on individuals and organisations, the burden of which cannot be easily passed on to others. Direct taxes are so-called because they involve a direct personal relationship between the taxpayer and the tax-levying authority. The amount paid as direct taxes can easily be determined. Direct taxes are imposed in the following different forms:

- 1 Income tax
- 2 Company tax
- 3 Poll tax
- 4 Capital transfer tax
- 5 Capital gains tax

Income tax: An income tax is a tax on individual earnings (income) that is paid to the national government. Various income tax systems exist, with varying degrees of tax incidence. Income tax can be progressive, proportional, or regressive. Various systems define income differently and often allow national reductions of income (such as the reduction based on a number of children supported).

Company tax: This is the tax levied on the profits of all incorporated business establishments. It is worked out such that the higher the profit level, the higher the proportion of it to be paid out as tax. Company tax is calculated after the deduction of accrued interests and all revenue allowances, but before the distribution of dividends.

Poll tax: This is a tax levied equally on each person resident in a country, regardless of the level of income. In Nigeria, it is imposed on peasants whose tax base cannot be precisely determined due to the fact that they are neither employed in the public sector nor in the organised private sector.

Poll taxation is a typical example of a regressive tax system. Suppose, for example, that a flat poll tax of ₦10 is imposed. For an individual on an income of ₦100, this would mean a tax rate of 10 per cent. For another on a ₦200 income, the tax rate would be 5 per cent. The rate thus decreases as the income increases.

Capital transfer tax: This is tax paid on the value of all property or wealth received from another person, whether such person is dead or alive.

Capital gains tax: This is a tax imposed on the gains made from the sale of capital assets.

Indirect taxes

These are taxes levied on expenditure. They are levied initially on the producer, wholesaler, or importer, but ultimately paid wholly by either the final consumers, or the producers; or alternatively shared proportionately according to the degree of elasticity of demand for the taxed product. Thus, the consumer can only avoid an indirect tax by refraining from making a purchase.

They are called indirect taxes because the tax assessment was not in respect of the final payer. The amount paid as indirect tax is not known to the consumers who ultimately pay it because there is no direct relationship between these consumers and the levying authority. Indirect taxes may be broadly divided into two classes:

- 1 Specific tax
- 2 Ad valorem tax

Specific tax

A tax is specific if the amount of tax is a specific amount of money. For example, the

amount of tax on a commodity may be stated as ₦1, irrespective of its total sales value.

An ad valorem tax

An ad valorem tax is one in which the amount of tax paid varies according to the value of the item purchased or sold. For example, if a 10 per cent ad valorem tax were to be imposed on shoes, the tax payable on shoes valued at ₦1000 would be ₦100, while shoes valued at ₦2000 would attract a ₦200 tax.

Just as direct taxes take a variety of forms, indirect taxes are encountered in several forms:

- 1 Import duty
- 2 Export duty
- 3 Customs duty
- 4 Excise duty

Import duty is tax paid on goods from outside the country.

Export duty is the tax paid on account of goods and services sent to foreign countries. Import and export duties together make up what is known as customs duty.

Customs duty is the dues paid to government on imported and exported goods.

Excise duties are taxes paid on goods manufactured and used within the country.

Merits and demerits of taxes

Direct and indirect taxes have both advantages and disadvantages. We shall discuss these separately.

Merits of direct taxes

The following are the merits of direct taxes:

- 1 Cheapness of collection

- 2 Facilitation of planning
- 3 Equitability

Cheapness of collection

The cost of collection of direct taxes relative to the total direct tax revenue is very low. Usually, it does not involve any 'hunting and hounding' of taxpayers by tax collectors. A good example is the PAYE system.

Facilitation of planning

Direct taxes are liable to easy calculation. Revenues from them can therefore be easily estimated. This makes planning less difficult and more accurate.

Equitability

Direct taxes, especially personal income and company taxes, are progressive taxes. Thus, they are equitable by descending more heavily on higher income earners. Moreover, they can be used to redistribute income in favour of low-income earners.

Demerits of direct taxes

The following are the demerits of direct taxes:

- 1 Discouragement of zeal
- 2 Reduction of capital formation

Discouragement of zeal

High rates of income taxation can discourage a man's zeal for work. Hard work ought to be rewarded by high pay. However, if the high pay is earned only to be taxed away, then it is better to refrain from working so long and so hard.

Reduction of capital formation

High rates of direct taxation will ultimately reduce the rate of capital formation in an

economy by depressing corporate and individual savings and investments.

Merits of indirect taxes

The merits of indirect taxes include the following:

- 1 Minimum evasion
- 2 Protection of home industries
- 3 Less social discontent

Minimum evasion

Indirect taxes can hardly be evaded. The final payers are scarcely aware that they are paying any taxes. Thus, indirect taxes yield revenue quickly and are easily collected.

Protection of home industries

Indirect taxes can be imposed in a manner which discriminates against imports, thereby affording a protective cover to infant industries at home.

Less social discontent

Indirect taxes are imposed and collected without the publicity that normally goes with direct taxes. They therefore cause little or no social resentment against the government.

Demerits of indirect taxes

Indirect taxes have the following demerits:

- 1 Inexactitude of revenue
- 2 Inflationary tendency
- 3 Regressive nature

Inexactitude of revenue

The volume of revenue expected from indirect taxes cannot be easily predicted. Indirect taxes could push prices so high as to keep purchasers away. The instability of indirect tax revenue makes them unreliable for planning purposes.

Inflationary tendency

By raising prices, indirect taxes are capable of inducing cost-push inflation.

Rgregative nature

Indirect taxes are regressive in nature. They have a more adverse effect on low-income than high-income earners.

Objectives of taxation

The main explanations for the imposition of taxes are to:

- 1 defray public expenditure
- 2 curtail harmful consumption
- 3 reduce income inequalities
- 4 protect infant industries
- 5 combat inflation

Defray public expenditure

Of necessity, the government must provide its citizens with certain essential services. These include the maintenance of law and order, the administration of justice, as well as the provision of transport, health and educational services. These are financed from tax revenues.

Curtail harmful consumption

The excessive consumption of certain commodities is dangerous to the health of the consumer. Examples of such commodities are tobacco and alcoholic drinks. To reduce their consumption by the public, the government imposes heavy taxes on them. The revenue to be derived from such taxation is thus not the prime consideration. Rather, the objective is to discourage consumers whose real income is reduced by the resulting increase in prices.

Reduce income inequalities

It is a well known fact in economics that the reduction of the wide differences between

the incomes of the rich and those of the poor will result in an overall increase in the welfare of the community. Taxation may be used to pursue this aim. A system of progressive taxation removes more of the income of the rich than of the poor. The revenue from heavy taxation of high-income earners is then used to provide social amenities from which the poor will benefit more than the rich.

Protect infant industries

Infant industries are firms that are just beginning to turn goods and services into the market. They are unable to compete with established foreign industries. In order to protect them from unfair competition, the government may impose high rates of duty on imports, so that products from infant industries are cheaper in the domestic market.

Combat inflation

Taxation can be used as fiscal policy to combat inflation. When inflation arises from excess demand, the government can impose high income taxes to reduce the amounts that consumers have for spending, thereby checking inflation. Similarly, in deflationary times, income taxes can be lowered to boost the level of demand again.

Economic effects of taxation

Taxation has a number of important economic effects. Some of these are as follows:

- 1 Very high tax rates may lead to avoidance of tax
- 2 Disincentive to labour
- 3 Disincentive to the entrepreneur
- 4 Disincentive to saving
- 5 Alteration of the production structure

Very high tax rates may lead to avoidance of tax

Where the level of taxation is very high, the burden on taxpayers is correspondingly high. The pressure of high tax rates compels people to seek ways of avoiding tax. For instance, the citizens may begin to press for the provision, by the government, of more essential services and higher subsidies on various consumer items. A situation like this could be politically explosive.

Disincentive to labour

Progressive income taxation raises the marginal tax rate much higher than the average rate of tax, especially at the point where the tax rate increases. This is because the tax-free allowances granted for the wife, children, dependent relatives and self, have the effect of reducing the average tax rate.

If the marginal tax rate is much higher than the average tax rate, then the daily paid worker may be encouraged to stay away from work, since absenting for one day will only have a very slight effect on take-home pay.

Disincentive to the entrepreneur

High tax rates can also discourage the entrepreneur. The entrepreneur works hard to succeed in business. Just when he begins to make profits, the government comes in to claim a part of it as tax. If, on the other hand, he fails, the government leaves him alone without direct help. This can be a serious discouragement.

Disincentive to saving

By reducing the disposable income of a person, taxation clearly acts as a disincentive to savings. Also, if the system of progressive taxation is very steep, then, income will only be transferred from high-income earn-

ers, who save, to low-income earners, who will embark on spending to satisfy their long standing wants.

Alteration of the production structure

Imposition of taxes on goods and services ultimately reduces the demand for them. In the long run, this causes a change in the overall structure of production.

Incidence of taxation

The incidence of taxation refers to the point at which the burden of taxation finally rests. Thus, the incidence of taxation is on the person who finally pays it. Suppose a specific tax was imposed on a commodity, and the producers of that commodity increased its price by the full amount of the tax. If the consumers were to make no reduction in their purchases, the whole incidence of taxation would be on them. In general, however, the incidence of taxation depends on the elasticity of demand for the commodity. We shall consider incidence of taxation when

- 1 demand is perfectly inelastic
- 2 demand is perfectly elastic
- 3 demand is fairly elastic or fairly inelastic

Incidence of taxation when demand is perfectly inelastic

When demand is perfectly inelastic, there is no change in the quantity demanded, whether the price increases or decreases. Therefore, if a tax is imposed, prices will increase by the full amount of the tax. Consumers will, however, still buy the same quantity as before, thereby bearing the whole burden and incidence of taxation.

In Fig. 12.4, QD is the perfectly inelastic demand curve. S_B and P_B are the original supply curve and price respectively. A tax,

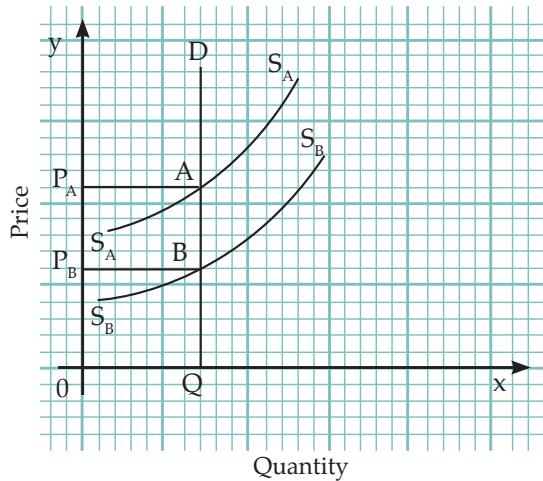


Fig. 12.4 Tax incidence with demand perfectly inelastic

AB, was then imposed. Since the quantity Q , demanded did not change, the price increased by the full amount of the tax, to $P_{A'}$ at which the new supply curve is $S_A S_{A'}$. Thus, when demand is perfectly inelastic, the whole tax incidence is on the buyer.

Incidence of taxation when demand is perfectly elastic

In this case, the slightest increase in price will cause the quantity demanded to fall to zero. Therefore, if a tax is imposed, the incidence will be completely on the seller, who dares not increase prices at all! In Fig. 12.5, the perfectly elastic demand curve is PD. The imposition of a tax causes the supply curve to shift from $S_B S_B$ to $S_A S_{A'}$, bringing supply down from Q_B to $Q_{A'}$.

Incidence of taxation when demand is fairly elastic or fairly inelastic

In such cases, the incidence of taxation is shared between the buyer and the seller. If the demand is fairly elastic then the seller bears a greater burden of taxation than the buyer. If, however, the demand is fairly

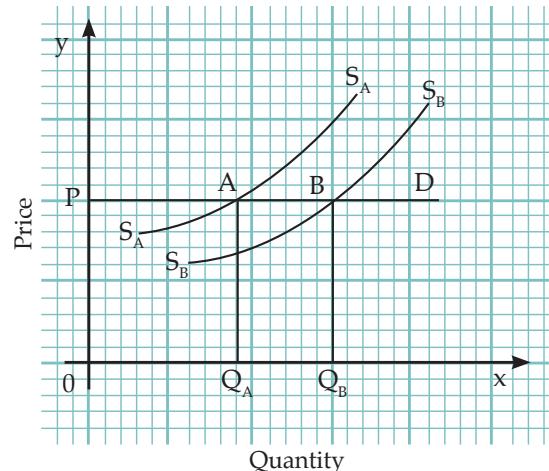


Fig. 12.5 Tax incidence with demand perfectly elastic

inelastic, then a greater share of the tax incidence is on the buyer. In both cases, however, there is still a price increase by an amount less than the taxation.

Principles of taxation

Credit for the first attempt to lay down a set of principles of taxation is usually given to Adam Smith. In his book, *The Wealth of Nations*, published in 1776, Smith set out what became known as the four canons of taxation. These canons of taxation have since become incorporated into modern principles of taxation. These are as follows:

- 1 Equity principle
- 2 Certainty principle
- 3 Convenience principle
- 4 Economy principle
- 5 Adaptability principle
- 6 Non-interference principle

Equity principle

This means that as much as possible, the tax system should treat every taxpayer with equality. Since people do not all earn equal

incomes, everybody should not be made to surrender the same absolute amount of money as tax. Rather, tax should be levied on people according to their ability to pay. In practice, this principle allows for the taxpayer's family responsibilities.

Certainty principle

This principle requires that the taxpayer should not be left in any doubt regarding the amount of tax he should pay. He should be able to work out the rate and amount of his tax liability.

Convenience principle

This principle requires that taxes be paid and collected at a time convenient to the taxpayers. This will eliminate, or at least minimise, the problem of tax avoidance and evasion. The PAYE tax system properly satisfies this principle since tax is collected directly from the employer, even before the pay reaches the employee.

Economy principle

The economy principle requires that the cost of collecting the tax be as low as possible. The cost of collection should not take up virtually all the revenue yielded by the tax. This would defeat the whole purpose of taxation.

Adaptability principle

The tax system should be of such a character that it can be made to fit into changing times and situations. If the tax system is rigid, then the government will be choked in the event of an emergency need for additional funds.

Non-interference principle

A good tax system should have minimal disincentive effects on labour, enterprises and the demand and supply of goods and

services. If this principle is satisfied, then the tax system will not interfere with the normal conduct of economic activity.

It should be noted that although these six principles are all important, they need not all be present in a tax system before it can be successfully operated.

Sources of government revenue

We have earlier noted that the government performs a number of useful roles for which it needs finances. Let us now examine some of the sources of government revenue. These are:

- 1 direct taxes
- 2 indirect taxes
- 3 borrowing
- 4 grants-in-aid
- 5 fees and licences
- 6 rents and royalties
- 7 interest and profits

Direct taxes

Direct taxes are an important source of government revenue in all countries. In Nigeria, direct taxes are imposed as personal income tax, company income tax, petroleum profits tax, etc, at the Federal level. Since 1970, direct taxes have continued to increase in importance as a source of government revenue. Under direct taxes, the greatest contribution to the Federal Government of Nigeria comes from the petroleum profits tax.

Indirect taxes

These are taxes levied on expenditure in the economy. Indirect taxes include export, import and excise duties. Since Nigeria is a net importer, the greatest contribution to her indirect taxes comes from import duty.

Indirect taxes have generally not yielded as much revenue to the Federal Government of Nigeria as direct taxes have done.

Borrowing

Government also raises finances by borrowing money through the Central Bank of Nigeria. The loans may be obtained internally from financial institutions and individuals, or externally from international financial institutions like the World Bank and the International Monetary Fund (IMF).

Grants-in-aid

These are free gifts made by institutions or external governments and bodies to a government to enable it to pay its expenses. Grant-in-aid are important sources of revenue to the Federal and State governments of Nigeria.

Fees and licences

There are a number of goods and services marketed by the government, for which users have to pay. Examples include vehicle licences, liquor licences and market fees. Government also obtains revenue from fines and costs imposed by the law courts.

Rents and royalties

These are payments made to the government for the use of public land and for the rights to prospect for and exploit minerals. They also yield revenue to the government.

Interest and profits

Government lends money and owns shares in business. Returns from these, in the form of interest and profits, also form a part of government revenue.

Budget

The budget is an estimate of income and expenditure planned by the government for a specified future period, usually one year. The budget is an essential instrument in the planning and control of the financial affairs of a country. It is normally prepared by the Ministry of Finance and presented to the legislature for approval.

The budget normally contains a review of the economic conditions that prevailed in the year just concluded, as well as government expenditure during the same period. The budget also makes forecasts for the year ahead, and announces the proposed fiscal policy. The budget is a kind of balance sheet consisting of two sides:

- 1 Revenue
- 2 Expenditure

Structure of public revenue

Public revenue is a term used to describe all the income expected by the government within the budget period. Public revenue consists of recurrent and capital revenue.

Recurrent revenue is the money received regularly every year by way of taxes, fees, fines, etc. Capital revenue consists of all the bulk loans and grants received by the government from within the economy, or from abroad.

Structure of public expenditure

Public expenditure is the total spending on goods and services, subsidies, grants, and debt-servicing undertaken by the government of a country and its public enterprises. It is made up of recurrent and capital expenditure. Recurrent expenditure comprises all the money on running costs, such as the

wages and salaries of public servants and interest due on the public debt. Capital expenditure is the money spent on major projects which do not form part of routine government spending; an example is road construction expenditure.

Effects of public expenditure

The effects of public expenditure on economic activities depend on the relationship between the revenue and expenditure sides of the budget. These may either balance out or be in disparity. Whichever is the case, there will be a distinct effect on the economy. In this section, we shall discuss the effects of:

- 1 balanced budget
- 2 budget deficit
- 3 budget surplus

Balanced budget

This is a situation in which the stream of revenue expected by the government within a given period is matched by the expected stream of government expenditure. In other words, the expected revenue is equal to the expected expenditure. A balanced budget will not have any noticeable effect on the economy. The amount of money pumped into circulation is equivalent to the amount of money withdrawn. Therefore, the level of economic activities stays as before.

Budget deficit

This is a condition in which the stream of revenue expected by the government within a given period (usually one year) falls short of intended government expenditure. In other words, the expected revenue is less than the expected expenditure. This shows up as a disproportionality between the revenue and expenditure sides of the budget. Deficit

budgets have become quite common all over the world in recent years. The government can deliberately pursue a policy of deficit budgeting in order to achieve some economic objectives.

The main effect of a deficit budget on the economy is a noticeable increase in the pace and level of economic activity. A budget deficit means that more money is pumped into circulation than is withdrawn. There is thus a net increase in the volume of money in circulation. The effects of such an increase are magnified by the operation of the 'multiplier principle'. Overall purchasing power increases, leading to a boost of economic activities.

However, a budget deficit can cause inflation in the economy. If the net addition to the volume of money in circulation is not matched by a corresponding rise in the output of goods and services, too much money will be left to chase too few goods, which is inflationary.

Deficit budgeting should, therefore, only be used with caution. It can only be advantageous when the economy is depressed, since by it the government can reflate the economy.

Budget surplus

A budget surplus occurs when there is an excess of expected public revenue over intended public expenditure. Again, this is a situation of disproportionality between the revenue and the expenditure sides of the budget. This time, however, expected revenue is greater than expected expenditure. A government may sometimes deliberately pursue a policy of surplus budgeting as an instrument for achieving its economic policy.

The main effect of a budget surplus on the economy is to contract and reduce the

pace and level of economic activity. In particular, a budget surplus reduces the level of demand by withdrawing more money from circulation than is pumped in.

The budget surplus is thus useful as a measure against inflation. Inflation results from an excess supply of money. A budget surplus in such a situation will serve to mop up all such excess money supply. The supply of money is thereby balanced by the output of goods and services, thus putting off inflation. A budget surplus should be operated with great care, otherwise, the country could be plunged into economic chaos by the resultant deflation.

Reasons for expanding public expenditure

Nigeria has witnessed increasing public expenditure, especially at the level of the federal government. Several factors are responsible for this development.

These include the following:

- 1 Education
- 2 Health
- 3 Housing
- 4 Subsidies
- 5 Defence
- 6 Infrastructural development
- 7 Inflationary trends

Education

The population of the country has been increasing rapidly. With such rapid growth, there has emerged a need to expand educational facilities to cope with the rise in demand for education. This situation gave rise to enormous increases in government expenditure on education.

Health

Growth in population also led to an increase

in the demand for and supply of health facilities. This situation resulted in increased government spending on health.

Housing

Since 1970, the Federal Government of Nigeria has been participating actively in the provision of shelter for the population. This was particularly so during the 'second republic', when the civilian government made it one of its cardinal programmes to develop a housing estate in every state of the federation. This helped to push up overall public expenditure.

Subsidies

With increasing revenue flowing in from the sales of petroleum products in the 1970s, the federal government felt that it should help to lighten the burden of costs being borne by Nigerian citizens. This it did by introducing a number of subsidies, notable among which were the subsidies on petroleum products, fertilisers and agricultural products. The maintenance of such a heavy network of subsidies resulted in a substantial increase in public expenditure.

Defence

Defence has been one sector in which government spending has continued to show an upward trend. Nigeria has adopted some foreign policy positions which make it necessary for her to have a strong defence backing. A good example is the country's stand on apartheid. Moreover, relations with neighbouring countries like Chad and Cameroun have featured occasional border skirmishes. To be ready for any external aggression, therefore, the country has had to fully equip and modernise her armed forces. This has further increased public expenditure.

Infrastructural development

There has been a tremendous expansion of the country's social infrastructure, the main cost of which has been borne by the federal government. Road construction seems to have contributed disproportionately to the increase in public expenditure. Apart from the multiple-lane expressways now connecting various Nigerian cities, the network of flyovers and overhead bridges in Lagos and other cities cost the government a lot of money.

Inflationary trends

Inflation also played a major part in the huge increase in the total outlay of public expenditure. Prices have been rising continuously in Nigeria sequel to the inflow of oil money, the Udoji Awards, and the various wage and salary reviews.

Public debt/National debt

Public debt refers to all the money borrowed by the federal, state and local governments, as well as the debts incurred by their agents and industries.

Types of debt

- 1 Internal debt
- 2 External debt
- 3 Deadweight debt
- 4 Reproductive debt

The public debt is *internal* when it arises from borrowing within the country, i.e., from individuals and firms in the country. It is *external* when it is owed to persons and individuals outside the country who, therefore, have to be paid in foreign currencies.

If the debt incurred does not lead to the

creation of any assets to counterbalance it, it is called a *deadweight debt*. Most borrowing done by the government to finance such emergencies as wars results in dead-weight debts.

If the public debts give rise to physical investments and assets to counterbalance it, then the debt is said to be *reproductive*. Debts incurred by public authorities for the development of schools, houses, waterworks, etc, are all reproductive debts.

Reasons for national debt

- 1 To finance a deficit budget
- 2 To finance capital projects
- 3 To handle emergencies like natural disasters and war
- 4 To service existing loans.

There are many reasons why a government borrows money. In the event of a budget deficit, the revenue of the government is less than its expenditure. There will therefore be a need to raise loans to make up for the shortfall in revenue. The government may need to borrow money to finance a major capital project which, on completion, will yield enough revenue for the repayment of the debt incurred. In the face of emergencies such as wars, and natural disasters like floods and earthquakes, the government may again find it necessary to borrow, in order to contain the situation. Finally, the government may resort to funding operations by which short-term loans are translated into long-term ones. This can be regarded as borrowing, since no actual repayment takes place in the process.

Revenue allocation in Nigeria

Revenue allocation refers to the way in which the centrally-collected revenue is

distributed among the various governments of the country at the federal, state, and local government levels. Revenue allocation is often a delicate issue capable of splitting up any political union, if not carefully handled. It is one of the most important socioeconomic issues relating to the well-being of a federation.

In the Nigerian federation, there exist a number of fiscal units, each of which is constitutionally vested with some powers. Although each of these units, using its fiscal power, can collect and appropriate some revenue, revenue allocation problems have continued to plague Nigeria. In fact, it is often said that the two most potent threats to Nigerian national unity are religious disharmony and problems of revenue allocation.

Historical development of revenue allocation problems in Nigeria

Nigeria has one federal government, 36 state governments, and the Federal Capital Territory, Abuja (which is run like a state in its own right), and 774 local governments. Revenue allocation problems in the country seem to worsen as the number of governments competing for centrally-collected revenue in the country increases.

The problems actually began in 1914 when the Northern and Southern protectorates of Nigeria were amalgamated. Before then, the South was fiscally self-reliant from duties on spirits while the North received imperial grants annually. Fiscal union became necessary for two main reasons. First, both protectorates had fiscal years beginning at different times of the year. Secondly, trade between them was not free.

The amalgamation immediately introduced a problem by transferring customs duties to the central government, thereby

causing a lot of suffering to the Southern Provinces that relied almost completely on such duties for their revenue. However, the problem was not a serious one. To ensure a balance in the aggregate budget of the Central, Northern, and Southern governments, all expenditures were met from a general revenue fund into which all revenue was collected.

Between 1926/27 and 1948/49 fiscal years, the estimate of revenue and expenditure by all the governments was fully unified. More serious revenue allocation problems arose as from 1939, when the South was divided into the Eastern and Western provinces. The North and West felt irked that the East contributed the least to the central pool but claimed the most from it. In 1949, separate budgets were again introduced for the four governments, causing further problems. A revenue allocation commission had to be appointed to resolve the situation.

The commission recommended that allocation to each region should be based on that region's contribution to the central pool, but that backward areas be given special attention. This did not help the situation, as the East and West felt that both factors unduly favoured the North. Meanwhile, customs duties were distributed according to contribution to the central pool. Dissatisfied with all this, the East introduced a personal income tax in 1955/56 to boost its revenue.

In 1963, the Mid-west was created as the fourth region of Nigeria and a twelve-state structure came into effect in 1967. In 1976, the number of states was increased to nineteen and, in 1987, to twenty-one and to thirty in 1991. These further divisions only complicated the revenue allocation problem even more.

Revenue allocation commissions and panels in Nigeria

A number of ad hoc revenue allocation commissions and panels were set up to look into the problems arising from revenue allocation in Nigeria. We shall now briefly examine these commissions:

- 1 The Philipson Commission
- 2 Hicks-Phillipson Commission
- 3 Chick Commission
- 4 Raisman Commission
- 5 Binns Commission
- 6 Dina Committee
- 7 Aboyade Committee
- 8 Okigbo Commission

The Philipson Commission (1946)

This was the first of the fiscal commissions in Nigeria. It divided regional revenue into declared and non-declared revenue.

Declared revenue was raised and kept by the regions. Non-declared revenue, solely determined by the central government, was from the central pool. Although the non-declared revenue of a region was to depend on the three factors of population, even progress and derivation, only derivation was actually used, due to lack of statistics. On the basis of this derivation principle, the distribution of total non-declared revenues was found to be as follows: East 38 per cent, North 36 per cent, and West 26 per cent.

Hicks-Phillipson Commission (1951)

The Philipson formula of 1946 was found inadequate when the Macpherson constitution of 1951 was introduced. The Hicks-Phillipson Commission was therefore appointed. The commission proposed a revenue allocation formula based on need, derivation, and national interest. This soon broke down because the West favoured the

derivation principle, the North the principle of need, while the East preferred the national interest. No two of the regions ever agreed on which principles to be applied.

Chick Commission (1953)

This commission recommended the splitting of the central marketing board into regional marketing boards, which was done in 1954. Its report also led to the allocation of 50 per cent of customs and excise duties, 100 per cent of import duties on motor spirits and 100 per cent of personal income tax, mining rents and royalties to their regions of origin.

Raisman Commission (1958)

The most important recommendation of this commission was the creation of a Distributable Pool Account for sharing among all the regions on a given set of principles. Payment into this account was from 30 per cent of mining rents and royalties and 30 per cent of all import duties except those on tobacco, wine, beer, spirits, motor spirits and diesel oil. Allocation from federal revenue to the regions, under this commission's recommendations, was based on need and derivation.

Binns Commission (1964)

The major achievement of this commission was to raise the Distributable Pool Account to 35 per cent of revenue from mining rents and royalties and 35 per cent of import duties. Secondly, the commission shared the account in the ratio: North 42 per cent, East 30 per cent, West 20 per cent, and Mid-west 8 per cent. The military came to power in 1966 and suspended the recommendations of this committee. Decree No. 15 of 1967 was concerned, however, with revenue allocation.

Dina Committee (1968)

This committee recommended the change of the Distributable Pool Account into the States' Joint Account, established a grants account, and reduced the importance of the derivation principle. The federal military government rejected all the recommendations of this committee. Up to 1977, three main decrees were used to allocate revenue.

Aboyade Committee (1977)

This committee recommended a federation account into which all centrally collected revenue would be paid. It was to be distributed among the federal, state and local governments in the ratio 60:30:10. The committee also created a special grants account for mineral producing states and areas struck by natural disasters and emergencies. These proposals were submitted to the Constituent Assembly which rejected them outright, after a series of politically biased debates.

Okigbo Commission (1979)

This commission recommended that the federal account be shared between the federal, state and local governments in the ratio 53:30:10, and that 7 per cent of the total revenue be set aside for special funds. It also recommended the creation of a states' joint account. These recommendations were amended or rejected by the Federal Cabinet, the House of Representatives, and the Senate, in turns. In the end, however, the Senate's formula of 58.5 per cent to the federal government, 31.5 per cent to the state governments, and 10 per cent to the local governments was adopted. This was the formula used until the military returned to power on 31 December 1983.

Thus we see that revenue allocation problems in Nigeria have not been easy to solve. Indeed, a number of them still remain unresolved.

Revenue allocation practice in Nigeria

In practice, Nigeria has seen a number of administrations, and adopted various formulae to allocate the centrally-collected revenue among its various governments. During the *first republic*, when there were the Northern, Eastern, Western and Mid-west regions, the centrally-collected revenue was distributed to the regions respectively in the ratio 42:30:20:8. These figures were arrived at on the basis of the factors of population, financial need, contribution to revenue, and balanced development. This formula was still maintained immediately after the creation of a twelve-state federation in 1967, the allocation to a region simply being shared out among the states carved out of it.

The Gowon administration soon got dissatisfied with this arrangement and appointed the Dina Committee of 1968, whose recommendations were rejected. In 1970, a decree (No. 13) was promulgated which took retrospective effect from April 1969. This decree altered the revenue allocations formula by toning down the all-powerful derivation principle and introducing measures of fiscal equalisation among the states. On 29 July 1975, Gowon was overthrown and Brigadier Murtala Mohammed came to power. The Murtala government rejected the formula in use under Gowon and introduced a new one. The Murtala formula reserved 75 per cent of all centrally-collected revenue for the federal government, while the twelve states were to share 22 per cent. The remaining 3 per cent was shared by the country's local governments.

On 13 February 1976, General Murtala Mohammed was assassinated in an abortive coup d'état and the mantle of government

fell on Lt General Olusegun Obasanjo. In 1977, the Obasanjo government, pursuing its programme of transition to civil rule in the country, again appointed a technical revenue allocation committee headed by Ojetunji Aboyade, a distinguished professor of economics. The report of the committee was submitted to the then Constituent Assembly, where it suffered extreme politicisation and finally outright rejection.

On 1 October 1979, Obasanjo handed over the reins of government to Alhaji Shehu Shagari who became the first executive president of Nigeria. It was to the Shagari administration that the Okigbo Revenue Allocation Committee of 1979 submitted its report in 1980. The formula prescribed by the committee was altered by the executive arm of government before it was presented to the National Assembly. At the National Assembly, the House of Representatives amended it further.

Later, the Senate rejected the formula recommended by the House of Representatives and recommended its own, which became very controversial. In the end, a joint committee of the House of Representatives and Senate approved the Senate's formula by 13 to 11 votes. The Senate's formula, which was therefore in use all through the Shagari era reserved 58.5 per cent of centrally-collected revenue for the Federal government, 31.5 per cent for the state governments and 10 per cent for the local governments.

On 31 December 1983, the military intervened again. This time, the new government was led by Major General Muhammadu Buhari. As was to be expected, the Buhari government threw out the Shagari formula and introduced its own, under which the allocations to the federal government, the state governments, and the local governments

were to be 55 per cent, 32.5 per cent and 10 per cent respectively. 2.5 per cent of all centrally-collected revenue was reserved for ecological problems and mineral producing areas. The Buhari era ended on 27 August 1985 and Major General Ibrahim Badamasi Babangida emerged as the new president of the country. Under him, the Buhari formula of revenue allocation was retained. However, the Political Bureau, appointed in 1986 and headed by Dr S. J. Cookey, submitted its report to the Babangida government in 1987. It recommended a new revenue allocation formula under which the federal, state and local governments would share the centrally-collected revenue in the ratio 40:40:20

This recommendation was not rejected. However, in 1992 a revenue allocation formula came into existence. The sharing of the federation account was as follows:

Federal government 48.5%
State governments 24%
Local governments 20%
Special fund 7.5%
Total = 100%

The formula used under President Goodluck Jonathan (2010) was as follows:

Federal government 52.68%
State government 26.72%
Local government 20.6%
Total = 100%

Obstacles to effective revenue allocation in Nigeria

Two major obstacles confront effective revenue allocation in Nigeria. These factors are:

- 1 politicisation of the problem
- 2 lack of statistical information

Politicisation of the problem

We have seen that many commissions on

revenue allocation have come and gone in Nigeria since 1946. They often made useful and workable recommendations. Yet, these were either totally rejected or grudgingly accepted. The main reason for this is the undue attention given to political considerations. Each section of the country wants the largest share of the ‘national cake’ and will take every conceivable measure to bring this about.

This explains why during the debates on the Okigbo Committee’s recommendations in the National Assembly, for instance, legislators from the northern states argued vehemently that land mass should be used as a revenue allocation factor while their counterparts from the southern states, especially the eastern states, insisted on the derivation principle. Worse still, two governors from the eastern states were soon in a heated argument over which of their states ranked higher in mineral production. Such is the obstacle of politicisation to successful revenue allocation in the country.

Lack of statistical information

This is another problem on account of which revenue allocation in Nigeria continues to suffer. Every now and again population, primary school enrolment, number of children of primary school age, etc are used or recommended as factors to be considered in allocating revenue to a state. Such revenue allocation can hardly be effective when the population figures are not even known.

Another national census, fixed for 2015, should provide reliable statistical details for problem-free revenue allocation in the following years.

Objectives of public finance

1 Stabilisation of prices

- 2 Equitable allocation of resources among various sectors of the economy
- 3 Provision of employment for the masses
- 4 Meeting the collective needs of the citizens
- 5 Maintenance of internal peace and security of the country
- 6 Equitable redistribution of income or wealth among citizens
- 7 Improvement of balance of payment problem
- 8 Improvement of the level of production

Stabilisation of prices

Public finance is used to stabilise price through the use of either monetary policy or fiscal policy to control prices during inflation or deflation.

Equitable allocation of resources among various sectors of the economy

Public finance ensures that resources are effectively and efficiently shared among competing sectors of the economy.

Provision of employment for the masses

This is done to reduce unemployment to the barest.

Meeting the collective needs of the citizens

This is in the form of providing social infrastructure like schools, good roads, hospital, pipe borne water, at reduced prices.

Maintenance of peace and internal security of the country

This is done by paying the police and armed forces, buying military equipments, building and maintenance of barracks.

Equitable re-distribution of income or wealth among citizen

This is done so that wealth will not be con-

centrated in a particular class, and also to reduce the gap between the rich and the poor.

Improvement of balance of payment problem

Public finance seeks to formulate fiscal policies that will solve the problem of balance of payment, and for the country to have a favourable balance of payment in its international trade relations.

Improvement of the level of production

This is done by reducing tax, granting subsidies and increasing the size of government investment in productive activities in order to stimulate the level of productivity in the country.

Summary

- Tax is a compulsory financial contribution made by private individuals and groups towards government expenditure.
- Proportional tax is one in which the tax rate is the same for all levels of income. Progressive tax is one in which the tax rate increases more proportionately with increases in income level. In regressive tax, the tax rate decreases as income increases.
- Taxes are either direct or indirect. Direct taxes include income, company, poll, capital transfer, and capital gains taxes. Indirect taxes include import, exports, and excise duties.
- The merits of direct taxes are cheapness of collection, facilitation of planning and equitability. Their demerits are discouragement of zeal and reduction of capital formation.
- Indirect taxes have the following merits: minimum evasion, protection of home industries, and less social discontent. Their demerits are inexactitude of revenues, inflationary tendency, and their regressive nature.
- The objectives of taxation are to defray public expenditure, curtail harmful consumption, reduce income inequalities, protect infant industries and combat inflation.
- Very high taxation has the effect of disincentive to labour, entrepreneurship, and savings. In addition it alters the production structure and induces tax evasion.
- Tax incidence refers to the final resting point of the tax burden. It is fully on the buyer when demand is perfectly inelastic, fully on the seller when demand is perfectly elastic, and shared between them when demand is fairly elastic.
- The principles of taxation are equality, certainty, convenience, economy, adaptability, and non-interference.
- Government revenue is sourced from direct and indirect taxes, borrowing, grants-in-aid, fees and licences, rates and royalties, and interest and profits.
- A budget is a statement of expected income and expenditure for a period, usually one year.
- A budget deficit occurs when expenditure exceeds income. This has an expansionary effect on the economy. A budget surplus is when revenue exceeds expenditure.
- Revenue allocation in Nigeria remains a problem because of lack of reliable data and politicisation.

Review questions

Multiple-choice questions

- 1 Taxation is _____.
 - A a compulsory financial contribution to the government
 - B a voluntary financial donation to the government
 - C all money income accruing to governments
 - D all internal recurrent revenue of the government
- 2 If the tax rate is 20 per cent for 3 individuals on highly different salaries, the tax system is said to be _____.
 - A progressive
 - B proportional
 - C regressive
 - D ad valorem
- 3 Capital gains tax is _____.
 - A a direct tax
 - B equal to declared dividends
 - C an indirect tax
 - D also called capital transfer tax
- 4 Compared with direct taxes, indirect taxes tend to be _____.
 - A progressive
 - B proportional
 - C regressive
 - D equitable
- 5 Credit for the first principles of taxation goes to _____.
 - A Abdu Bulama
 - B Francola Quesay
 - C John Maynard Keynes
 - D Adam Smith

Essay questions

- 1 Distinguish between public finance and fiscal policy.

- 2 What are the main sources of government revenue?
- 3 Explain
 - a) Tax evasion
 - b) Tax avoidance
 - c) Proportional tax
 - d) Ad valorem tax
- 4 How can budgets be used to influence economic activity in the country?

Performance objectives

By the end of this chapter, you will be able to:

- 1 explain the meaning of different national income components.
- 2 discuss different ways of measuring national income components.
- 3 explain the shortcomings of currently used national income components.

Introduction

All along, we have been coming across the word ‘income’ without making any conscious effort to assign a particular meaning to it. While we have been taking it for granted all this while, and hopefully without any loss of understanding, we have come to a stage at which we must pause briefly to dwell on the concept of income.

In this chapter, we shall examine the concept of income and national income and discuss the various ways of measuring national income, and their problems. We shall also study the use and limitations of income estimates, the trend and structure of Nigeria’s national income.

Concept of income

Income may be defined from three points of view:

- 1 that of the individual
- 2 that of business enterprises

- 3 that of the government

Income: Point of view of the individual

From the point of view of an individual, income may be defined as any receipts which he can spend or give away over a period of time without becoming poorer than he was at the beginning.

The receipts may be in money like the salaries and wages paid to individuals, or in kind, like litres of kerosene given free to a refinery worker. Income may not always come from others. It could come from the individual himself. For example, when a civil servant converts his garage to a poultry farm, the chicken and eggs from it which are used on the family table also form part of his income.

When we say ‘without becoming poorer’ all we mean is that the possessions of the individual must not be less in value at the end of the period than they were at the beginning. For instance, a man is said not to have become poorer, if his money, goods and other belongings are worth ₦10 000, after his debts have been deducted. Thus, this means that what is called income must come from his labour and the use of his property. Income could also come from transfers. Transfer means all payments made to him for which he gave out nothing in exchange.

Income from an individual’s labour may take the form of wages, salaries, fees or commissions. If his property is in the

form of securities like bonds or shares, then income from them is in the form of interest and dividends. Property in physical form like houses earn income as rents or profits. Examples of 'transfers' are pensions, private gifts, and social security benefits.

Income: Point of view of business enterprises

For business enterprises, income may be defined along the same lines. It is the sum which a company may spend without a reduction in the size of its net assets. The income of business houses is normally distributed among three main uses: as dividends to shareholders, as corporation tax to the government, and as in the building up of assets and reduction of liabilities.

The main sources of company incomes are profit (total sales revenue minus total cost of production), rent on company land and building, interest and dividends on securities held, fees for the use of patents, and so on.

Income: Point of view of the government

From the point of view of the government, income may be defined similarly to mean the amount of money which the public authorities can spend without causing the public debt to increase. However, while individual income is mainly made up of wages and salaries and those of business profits, government incomes consist almost totally of transfer payments in the form of tax revenues, although a minor proportion of public revenues also comes from rents on public land and buildings, profits on certain trading activities, and interest on loans.

Apart from individuals, business enterprises and the government, there are others

who receive incomes in a country. These include charitable organisations, churches, trade unions, and nationalised industries.

With all income recipients in a country thus mentioned, we are now set to take a closer examination of what is meant by 'national income'.

Concept of national income

The national income is the income received by the residents of a country in a given period as payments for services to production. Alfred Marshal, the neo-classical economist, defined national income as 'the aggregate net product of, and the sole source of payment for, all the agents of production. 'On his own part, Sir John Hicks defined national income as being made up of 'a collection of goods and services reduced to a common basis by being measured in terms of money.'

The definitions given by Alfred Marshall and Sir John Hicks are very important in national income accounting because they create a connection between national income and the total output of goods and services in the economy. That is, their definitions make it clear that national income and production are closely related. In the next two sections, we shall see the truth of this.

Meaning of major national income concepts

In treating national income accounting in economics, a number of concepts are encountered. These concepts are so inter-related that, except one gets the meaning of each very clearly, one would get confused. To avoid such confusion, we shall in this section, assign specific meanings to

the major national income concepts. These concepts are:

- 1 gross domestic product (GDP) at market prices
- 2 gross domestic product (GDP) at factor cost
- 3 gross domestic product (GDP) at constant prices
- 4 gross national product (GNP) at market prices
- 5 gross national product (GNP) at factor cost
- 6 net national product (NNP) at market prices
- 7 net national product (NNP) at factor cost

Gross domestic product (GDP) at market prices

The gross domestic product at market prices is the total market value of all the final goods and services produced in a country over a period, normally a year. It measures the total flow of goods and services produced by the economy. The word 'gross' is used to indicate that the amount spent on the repairs and replacement of worn-out capital equipment, called depreciation, has not been deducted.

The word 'domestic' indicates that only the value of goods and services produced within the geographical area of the country in the period is included. The GDP neither excludes the value of goods and services produced at home which are used up by resident expatriates, nor does it include the value of goods and services produced and used up abroad by nationals of the country. Finally, we call this GDP at 'market prices' because market prices include indirect taxes and subsidies which have not been adjusted for.

Gross domestic product (GDP) at factor cost

This is the total money value of all goods and services produced in a country over a period calculated at factor cost. The GDP at factor cost yields the same result as the total value of all incomes paid to the factors of production. The GDP at market prices and the GDP at factor cost are related by the formula:

$\text{GDP at factor cost} = \text{GDP at market prices} - \text{indirect taxes} + \text{subsidies}$. Indirect taxes are subtracted because they push up prices while subsidies are added because they lower prices.

Gross domestic product (GDP) at constant prices

This is the GDP, whether at market prices or factor costs, collected for several years, and adjusted to eliminate the effect of changes in the value of money. That is, the GDP at constant prices is the GDP at market prices or the GDP at factor costs, collected for a number of years, and adjusted statistically to eliminate the influences of inflation. For example, the GDP up to 2010 may be adjusted back to 1999 prices to measure the real change in gross domestic product.

Gross national product (GNP) at market prices

The gross national product at market prices is the same as the GDP at market prices plus net property income from abroad. Thus, the GNP at market prices is equal to the GDP at market prices plus all income earned by nationals of the country abroad minus all income from the domestic economy aid to foreigners. The relationship can simply be stated as follows:

$\text{GNP at market prices} = \text{GDP at market prices} - \text{imports} + \text{exports}$.

Net property income from abroad is given by the difference between the value of exports and the value of imports. As imports represent payment to foreigners, they are subtracted while exports are added because they represent income from abroad earned by the indigenes.

Gross national product (GNP) at factor cost

The GNP at factor cost is equivalent to the GDP at factor cost plus net property income from abroad. That is, $\text{GNP at factor cost} = \text{GDP at factor cost} - \text{imports} + \text{exports}$. Also, $\text{GNP at factor cost} = \text{GNP at market prices} - \text{indirect taxes} + \text{subsidies}$.

It is important to note that the GNP at factor cost is commonly referred to as the national income (NI).

Net national product (NNP) at market prices

This is the total market value of all goods and services produced in an economy during a given period, plus net property income from abroad (export – imports) minus all allowances for capital repairs and replacements (depreciation). It is easily calculated from the formula:

$$\text{NNP at market prices} = \text{GNP at market prices} - \text{depreciation.}$$

Net national product (NNP) at factor cost

This is equal to the GNP at factor cost minus depreciation.

Measurement of national income

There are three different ways in which the national income of a country can be measured. First, it can be measured as the total money value of all output of goods and

services in a country in a year. This method is known as the *output method*. Second, the national income can also be measured as the sum of all incomes earned from economic activities in the country in a year. This is known as the *income method*. Finally, there is the *expenditure method* in which the national income is measured as the sum of all consumption spending by individuals, firms, and governments in a country, together with the capital formation or investment during the year.

All three methods will result in the same total. Recall that the value of a commodity is the sum of the wages paid to labour, the interest paid to capital, the rent paid to the land, which were used in its production, plus the entrepreneur's profits. These payments become incomes to the suppliers of the factors. Therefore, total income equals the total money value of all goods and services. How about expenditures? All income is either spent, saved, or taxed away. Thus, total expenditure is equal to total spending, saving, and taxation. These three taken together also equal total income. Thus, $\text{total income} = \text{total expenditure} = \text{total output}$.

From this, we derive the national income identity that $\text{NI}=\text{NE}=\text{NO}$ where NI, NE and NO are national income, national expenditure, and national output respectively. The sign $=$ means 'is identical to'.

Now, we shall examine these methods more closely together with their problems.

Output approach to national income measurement

This approach to the measurement of the national income involves estimating the national income as the sum of the market values of all goods and services produced

in the economy. To this we add subsidies, and subtract the values of indirect taxes. To avoid double-counting, only the value of the final product is used. To get the market value of the final product, the values added at the different stages of its production are summed together. We use Table 13:1 to illustrate this.

Table 13.1 Using value added in the output method

Production stage	Purchase value ₦	Sales value ₦	Value added ₦
Farmer	–	1.00	1.00
Flour mill	1	1.50	0.50
Baker	1.50	2.50	1.00
Bread seller	2.50	4.00	1.50
Total	5.00	9.00	4.00

In Table 13.1, the final product is a loaf of bread. The production of it started from the farmer who harvested and sold the wheat to the flour mill at ₦1. The mill processed the wheat into flour and sold it to the baker at ₦1.50, the value added here being the difference between the sales and the purchase prices; that is $\text{₦}1.50 - \text{₦}1 = \text{₦}0.50$. The baker converted the flour to bread and sold it at ₦2.50, having added a value of $\text{₦}2.50 - \text{₦}1.50 = \text{₦}1$. Lastly, the bread seller disposes of the loaf of bread at ₦4, the final value added being $\text{₦}4 - \text{₦}2.50 = \text{₦}1.50$. Now, the sum of all the values added at the different stages of production is $\text{₦}1 + \text{₦}0.50 + \text{₦}1 + \text{₦}1.50 = \text{₦}4$. Under the output method, it is this ₦4 that is used in calculating the national income.

Problems of the output approach to national income

The problems of the output method of estimating the national income are:

- 1 risk of double-counting and
- 2 omission of unpaid services

Risk of double-counting

Although the value added is used to minimise this problem, yet the risk of counting raw materials and their final products exists. A single case of double-counting will result in an over-estimation of the national income.

Omission of unpaid services

In developing economies like Nigeria, there is a large non-monetised sector where economic services are not paid for in money, e.g. men who work for their in-laws, without having to be paid. These will be omitted under the output method, thus resulting in misleading national income figures.

Income approach to national income measurement

Under this approach, we estimate the national income as the sum of all income paid to households for their services to production. These include all wages and salaries, incomes earned by professionals, farmers, and armed forces personnel, as well as undistributed business profits and incomes earned by the citizens from abroad. From this total, we deduct incomes paid to expatriates from the economy, as well as all transfer payments like interest paid on the national debt, pensions, sickness and family allowances, and students' scholarship and bursary awards.

To illustrate the identity of the output and income approaches, let us again refer to

Table 13.1. From it, we see that the income of the farmer is ₦1, that of the flour mill is ₦0.50, and those of the baker and the bread seller are ₦1 and ₦1.50 respectively. All these incomes again total up at ₦4, the same result as we got under the output method.

Problems of the income approach to national income

The income approach also has its own problems as laid out below:

- 1 A house occupied by its owner attracts no rent. Yet, if the owner is living elsewhere, he would pay rent. If the rent payable on such a house is not taken into account, the income method will underestimate the national income.
- 2 Individuals who are self-employed do not claim any definite wages or salaries. Therefore, it is difficult to include their salaries in the income approach to national accounting.

Expenditure approach to national income measurement

With this approach, national income is estimated as the sum of all expenditures on consumers' goods and investment goods, government expenditure, and expenditure by foreigners on our exports. To these are added the value of all unsold final goods and subsidies. Finally, imports and indirect taxes are deducted.

We now show by a real example that all three approaches to measuring the national income will give the same result. Compare Tables 13.2 and 13.3 and see the sameness of the results reached.

Table 13.2 Nigeria: GDP at market prices (₦ million) 1984. The expenditure approach

Heading	Amount
Govt. final expenditure	5 607 05
Private consumption expenditure	40 129 4
Increase in stocks	330.0
Gross fixed capital formation	6 974 12
Exports of goods, services	9 425 18
Less imports	5 749 48
GDP at market prices	56 716 27

Table 13.3 Nigeria: GDP at market prices (₦ million) 1984. The income approach

What are its limitations, if any? First, we shall treat the uses.

Heading	Amount
Compensation of employee	15 243 96
Operating surplus	39 238 11
Fixed capital consumption	767 15
Indirect taxes	1 724 22
Less subsidies	257 17
GDP at market prices	56 716 27

Uses of the national income estimate

The estimate of the national income is used in the following ways:

- 1 The gross national product is used to indicate the overall economic performance of a country. It tells whether production is declining or growing.
- 2 The national income estimate helps us to know the contribution made by each

sector of the economy to the national output. This is particularly true of the output method. For example, between 1973 and 1983, the contribution of the manufacturing sector to Nigeria's GDP increased steadily while that of agriculture was fluctuating.

- 3 As the national income sums up all the different forms of income in a country, it helps us to determine the standard of living through the *per capita* income (PCI) where $PCI = \frac{GNP}{\text{population}}$.
- 4 The national income estimate is used to compare the standard of living in different countries through the per capita income.
- 5 For research purposes, national income estimates provide data for professionals who want to carry out researches to move the nation forward.
- 6 It serves as a basis for economic planning; data from national income statistics are used to formulate economic policies of government, and different sectors of the economy are well catered for.
- 7 National income statistics serve as a basis for a nation's contribution to international organisations, as rich and developed countries are expected to contribute more than developing countries.

Limitations of the national income estimate

Despite all its usefulness as just outlined above, the estimate of the national income should be used with great care for the following reasons:

- 1 The per capita income, which is calculated from the national income estimate, is only an average. Although it gives the flow of goods and services

per person, it does not tell us how the goods and services are distributed. In reality, one person can have ten times as much as another. The per capita income simply glosses over this kind of inequality.

- 2 The national income estimate fails to tell us the kinds of goods and services produced. If most of the GDP is made up of military weapons, although the economy may be said to have grown, the welfare of the people may actually have diminished. For example, a massive build-up of armament could lead to a high GDP while the number of deaths has increased in the course of testing the weapons.
- 3 The national income neglects some important factors which influence the standard of living. For instance, it does not consider life expectancy and working conditions.
- 4 There may be different approaches used for the measurement of national income from country to country as what is termed to be income in a country may not be so in another country. Therefore using it as a basis of comparison is uncalled for.

Factors affecting the size of national income

The main factors which determine the size of the national income of a country may be enumerated as follows:

- 1 Size of the economically active population
- 2 State of technical progress
- 3 Quantity and quality of co-operant factors

- 4 International creditworthiness of the country
- 5 Rate of inflation

Size of the economically active population

By definition, the national income has to do with the incomes of different persons living in a country. Since transfer payments like pensions and students' busaries are omitted, only earned income is counted. Therefore, the greatest influence on the size of the national income is the size of the economically active population of a country, for only persons in this category actually earn incomes. The larger this population is, the larger the national income, and vice versa.

State of technical progress

It has been found that the productivity of workers in technologically advanced countries is higher than that of workers in countries that are technologically backward. It thus follows that where the state of technical progress is advanced, productivity per worker will be high, and so will be the size of the national income.

Quantity and quality of cooperant factors

In the process of production, labour must have other factors, especially land and capital, to cooperate with any output to be produced. If the quantity of cooperant factors available is small, then productivity and national income will both be low. In Third World countries, for example, there is a general dearth of capital goods. Where these are available (like hoes and cutlasses used in farming) they are of a backward technology. Thus, the productivity and national income in these countries are low.

International creditworthiness of the country

No economy in the world today is a closed one, in the sense that all countries carry on some trade with other countries. In international trading, countries may become indebted to one another. Where a country has a good international creditworthiness, she can always raise loans to quicken her domestic production and get out of the balance of payments problem. This will be impossible if the international creditworthiness of the country is low. In these circumstances of low creditworthiness, the country's domestic production, and national income will fall lower and lower.

Rate of inflation

The size of the national income of a country could increase, even though there is no corresponding increase in the standard of living. This is likely to be the case where there is a high rate of inflation. A high rate of inflation means that prices and, therefore, incomes will rise rapidly. This will reflect in a higher level of the national income. Thus, the rate of inflation in the economy must be noted as a factor influencing the size of the national income.

Trend and structure of Nigeria's national income

In Nigeria, national income accounting can be said to have begun in 1950, when all three approaches to measuring the national income were used. Since then, national income accounting has become regular, with the Central Bank and the Federal Office of Statistics working to update the figures available.

Structure of Nigeria's national income

The structure of Nigeria's national income has been going through a variety of changes. In 1973/74, of the sixteen sectors listed as having contributed to the GDP at current factor costs, agriculture made the greatest contribution, followed by wholesale and retail trades, mining and quarrying, and building and construction, in that order. By 1978/79, this order of sectoral contributions had altered. Mining and quarrying now came topmost, followed by wholesale and retail trades, while agriculture now came third. Although all sixteen sectors grew from 1973/74 to 1978/79, it is clear that agriculture was now making diminishing marginal contributions to the country's GDP. However, by 1984, agriculture had again overtaken wholesale and retail trades, coming second after mining and quarrying that had since settled down as the unchallenged greatest sectoral contributor to Nigeria's GDP.

Trend of Nigeria's national income

The trend of Nigeria's national income is altogether unpredictable. No two years have had the same figure. However, one clear thing about the trend of Nigeria's national income is that it has been falling more often than it has been rising.

The explanation for this general trend cannot be removed from the political instability that has characterised the country. As one regime toppled another, falling agricultural productivity and output; falling oil revenues; increasing unemployment and underemployment; falling capacity utilisation; and the rapidly increasing population weigh down on output per head.

Summary

- National income is the income received by the residents of a country in a given period as payments for services to production.
- GDP at market prices is the total market value of all the final goods and services produced in a country over a given period, normally a year.
- GDP at factor cost is the total money value of all goods and services produced in a country over a period, minus indirect taxes, plus subsidies.
- GDP at constant prices is the GDP at market prices, collected for a series of years, and statistically adjusted to eliminate the influences of inflation.
- $\text{GNP at market prices} = \text{GDP at market prices} - \text{imports} + \text{exports}$.
- $\text{GNP at factor cost} = \text{GDP at factor cost} - \text{imports} + \text{exports}$.
- $\text{NNP at market prices} = \text{GNP at market prices} - \text{depreciation}$.
- The national income is measured by the output, income, and expenditure approaches, each of which has peculiar problems, although all three yield the same results.
- The national income is affected by the following factors: size of the economically active population, state of technical progress, quantity and quality of cooperant factors, international creditworthiness of the country, and the rate of inflation.

Review questions

Multiple-choice questions

- 1 GDP at factor cost is equal to _____.
A GDP at market prices + indirect taxes – subsidies
B GDP at market prices – indirect taxes + subsidies
C GDP at market prices – indirect taxes – subsidies
D GDP at market prices + direct taxes – indirect taxes
- 2 The GNP at factor cost is *not* equal to _____.
A GDP at factor cost – imports + exports
B GNP at market prices – indirect taxes + subsidies
C GDP at market prices- imports + export
D any of the above
- 3 Which of the following involves measuring national income as the total money value of all final goods and services? _____.
A The output method
B The expenditure approach
C The income method
D The summative approach
- 4 The per capita income (PCI) is calculated as _____.
A GNP + Working Age Population
B GNP + The Sex Ratio
C GNP + Total Capital Expenditure
D GNP + Population
- 5 National income accounting using the three approaches is believed to have started in Nigeria in _____.
A 1940
B 1950

C 1960

D 1970

Essay questions

- 1 What problems emanate from measuring the national income by the output and expenditure methods?
- 2 Why must we use the national income estimate with caution?
- 3 Discuss three uses of the national income estimate.

Types of financial institutions and their functions

Performance objectives

By the end of this chapter, you will be able to:

- 1 identify types of financial institutions and their functions.
- 2 define money market.
- 3 explain types and features of securities.
- 4 explain the process of and requirements for accessing the capital market.
- 5 list the benefits of the capital market.
- 6 demonstrate an understanding of the meaning, transaction and trading methods in the secondary market.

Introduction

Financial institutions are business organisations which keep money for individuals and institutions who also may borrow from them in form of loans or other investments. Financial institutions are very important in any economy. They are the main channel by which funds can flow from lenders to borrowers.

Types of financial institutions

Financial institutions may be divided into two broad groups: *banking* and *non-banking*. The main difference between the

banking and the non-banking financial institutions is that the liabilities of the banking institutions are counted as part of the total supply of the money while those of the non-banking institutions are excluded from the money supply.

Banking financial institutions include commercial, merchant, development, savings and central banks while the non-banking institutions include the insurance companies, hire purchase companies and building societies.

Banking financial institutions

A bank may be defined as a business house where money is received or prepaid and where loans or general financial business may be negotiated and transacted. The origin of banks can be traced back to the activities of the goldsmiths of London who had safes in which valuable items could be stored. People therefore brought their gold to them for safekeeping.

Anyone who took gold to the goldsmith for safekeeping was issued with a receipt for purposes of identification. Such a person could use the goldsmiths' receipt to transact business. People freely exchanged goods for goldsmiths' receipts because they were confident that the goldsmith would always

repay gold to anyone who took the receipt to him. For this reason it was virtually unnecessary to collect the actual gold since the mere receipt gave one command over goods and services of equivalent worth.

In the course of time, the goldsmiths discovered that they always had more gold in stock than their customers collected. They therefore began to lend the gold to some customers at some interest. As this turned out to be profitable business, the goldsmiths soon began to pay interest on the gold deposited to them so as to encourage more persons to deposit their gold. The more gold they held in deposit, the more they had to lend and the more the interest they could earn. The modern bank as a financial institution developed from this arrangement.

Commercial banks

A commercial bank is a joint-stock company engaged in the banking business to receive all kinds of deposits and make loans of generally short-term nature. Such short-term loans are usually required by businesses to meet their working capital requirements.

Development of commercial banks in Nigeria

Commercial banks began to operate in Nigeria from the late nineteenth century, and their growth since then has been quite impressive. The first commercial bank to set foot on Nigerian soil was the African Bank Corporation established in 1891. This was followed in 1894 by the Bank of British West Africa, and in 1899 by the Bank of Nigeria Limited. In 1912, the Bank of Nigeria Limited was taken over by the Bank of British West Africa which later became The Standard Bank of Nigeria Limited in 1965 after merging with the Chase Manhattan Bank.

Following the indigenisation exercises of 1972 and 1977, the Standard Bank became the First Bank of Nigeria Limited, and Barclays Bank, which came to Nigeria in 1917, became the Union Bank of Nigeria Limited.

These banks had one thing in common: they were all owned by expatriates. In 1929, the first indigenous Nigerian bank was established under the name, Industrial and Commercial Bank. In 1931, another indigenous bank, the Nigerian Mercantile Bank, was established. Sadly, however, both banks soon wound up. In 1933, National Bank of Nigeria was established. Four other Nigerian banks were established between 1945 and 1947, but two of these wound up, leaving the African Continental Bank and the Agbonmagbe Bank, which later became known as Wema Bank.

Thus, in 1948, there were two foreign and three indigenous banks in Nigeria, with forty branches on the whole. By 1960, however, the number of commercial banks in the country had grown to thirteen. The number increased to eighteen in 1976, with four hundred and fifty-six branches in all. By December 1987, the number of commercial banks had increased to about thirty-eight, with well over a thousand branches. The spread of branches was aided by the Rural Banking Scheme which started in 1977. Under this scheme it was mandatory for commercial banks to establish branches in rural areas so that banking services could be extended to 70 per cent of the country's population living in the rural areas.

The first banking laws of the country was passed in 1952. This was rather belated, as many bank failures had already occurred, inflicting heavy losses on depositors. For example, between 1947 and 1952, one hundred and eighty-five banks were registered,

of which only two survived. One of these, The Merchant Bank, had to wind up in 1960 when, as a penalty for misuse of public funds, the government withdrew its licence.

On account of these failures, there was an outcry later for the establishment of some kind of a deposit insurance scheme, to strengthen public confidence in the financial system. In 1988, the Babangida administration heeded such a call with the establishment of the Nigerian Deposit Insurance Corporation (NDIC).

It must be remarked that all banks in the country are either wholly or largely Nigerian owned.

Functions of commercial banks

Commercial banks make up the bulk of banking institutions in any economy. Their main functions are as follows:

- 1 Accepting deposits
- 2 Risk reduction
- 3 Acting as agents of payments
- 4 Provision of document security services
- 5 Provision of loans
- 6 Helping foreign trade
- 7 Provision of referee services
- 8 Technical counselling
- 9 Acting as stock exchange agents

Accepting deposits

Commercial banks accept all kinds of deposits from their customers. This was in fact the original function of commercial banks. Individuals and firms lodge money with these banks for safekeeping.

Risk reduction

Commercial banks operate current accounts for their customers, on which cheques can be drawn. Thus, by making it possible to use cheques in transactions, commercial banks minimise the risk of carrying large amounts

of money around, which exposes the carrier to the danger of robbery. The current use of modern devices like the ATM, mobile money, and POS, has also reduced the risk of carrying cash about.

Acting as agents of payments

Commercial banks help their customers to make payments. For instance, if A bought items worth ₦700 from B, A could give his bankers a standing order to pay ₦100 to B every month for seven months. The bank would carry out this instruction, thereby acting as an agent of payment.

Provision of document security services

Commercial banks do not stop at accepting deposits of money; they also accept important documents like academic certificates and items like jewellery from their customers for safekeeping.

Provision of loans

Banks provide loans for their customers for a variety of purposes. The loan could be in the form of an overdraft, a loan account or a personal account. By lending money to their customers, commercial banks succeed in creating more money in circulation. Later in this book, we shall see how this is achieved.

Helping foreign trade

Commercial banks play a very important role in one country's trade with another. They help their customers to obtain foreign exchange. They also accept the discount bills of exchange which is the means by which international payments are made.

Provision of referee services

Commercial banks help their customers to establish and maintain overseas business contacts by acting as their referees and also, by introducing them to their foreign partners.

Technical counselling

Commercial banks provide their customers with financial advice in such areas as mergers and takeovers, as well as managerial advice in running a business.

Acting as stock exchange agents

Commercial banks also act as agents for their customers on the stock exchange. A customer who wants to obtain or dispose of shares can do so through his commercial bank.

Types of bank accounts

Commercial banks allow their customers to operate four different kinds of accounts. These are:

- 1 savings account
- 2 current account
- 3 fixed or time-deposit account
- 4 special account.

Savings account

This is a kind of account used to encourage low-income earners to develop the habit of saving. To open it, a customer needs a minimum amount of deposit which may vary among banks. The customer is then issued with a small booklet. The small booklet called a *passbook*, may bear a passport-size photograph of the customer and has columns showing the amount paid in, withdrawn and left as balance. Each time a withdrawal is to be made, the passbook must be taken along. Although a proxy can deposit money in a savings account but only the owner of the account can withdraw from it by personal appearance.

Deposits in a savings account earn interest. For this reason, the customer is encouraged to lodge money frequently.

Current account

This kind of account is usually kept by firms and high-income earners. The bank does not need any advance notice before withdrawals can be made from it, and there is no discouragement to frequent withdrawals here. Deposits in a current account do not usually earn any interest. Rather, it is the customer who pays a commission to the bank for services rendered. The more frequent the withdrawals made, the higher the total commission paid to the bank. Today, small interest is paid on current accounts, to encourage savings by big firms and high-income earners.

To open a current account, a minimum amount of between ₦20 000 to ₦50 000 is required. The intending customer must be introduced by two other persons, each already operating a current account with the bank, i.e., the referees.

The customer is then issued with a cheque in the form of a booklet. It is by means of these cheques that withdrawals can be made from a current account. The customer need not to be present before a withdrawal can be made. All he has to do is issue a signed cheque to anyone who can go to the bank to cash it. If the cheque is an open one, it can be cashed directly over the counter, but if crossed, it will be paid into the account of the payee. Therefore crossed cheques are safer than open ones.

Fixed or time deposit account

This is a kind of account normally used by rich investors only. The minimum opening deposit is always large and the deposit must be left with the bank for a specific period of time, say, 1, 3, or 6 months, during which no withdrawal can be made from it, whereas the

customer can increase the deposit. Deposits in this kind of account earn a rate of interest higher than that on savings accounts. The longer the period for which the deposit is fixed, the higher the rate of interest.

Special account

This is a special account into which money is deposited with a defined purpose in view. The defined purpose for which the account is being run may be marriage, a building project, children's education or festival expenses. It is not permissible to withdraw from this account until the fixed time expires. Special accounts also earn interest.

Money creation by banks

In carrying out their function of giving loans to customers, banks are said to *create money*. Since commercial banks are not allowed to mint money, one may wonder how banks can create money.

Banks succeed in creating money by continuous lending and re-lending of borrowed money, provided that all such borrowed money is deposited in banks. The

amount of money that banks can create depends on the *cash-deposit ratio*. This ratio specifies that a proportion of its total deposit a bank can retain in cash while lending the rest. The lower the cash deposit ratio, the higher the amount of money banks can create. That is, the smaller the amount of deposits banks can keep in cash (meaning the more they have to lend), the more the money they create.

Suppose the cash-deposit ratio is 50 per cent, that is, banks can hold 50 per cent of the total deposit in cash and lend the rest. Suppose also that the initial deposit in the banks is ₦100. (Table 14.1 shows how banks can create money under these conditions.) The first deposit of ₦100 was put in a bank A, which can keep 50 per cent of it and lend 50 per cent, i.e., it lends ₦50. Suppose the borrower of the ₦50 deposits is in bank B. Bank B can then lend 50 per cent of it, i.e., ₦25. The borrower from bank B may deposit the ₦25 in bank C. This process of borrowing, depositing and re-lending continues until there is nothing left to lend. By this time, the total amount of money created from the first deposit of ₦100 is ₦200.

Table 14.1 Money creation by banks

Name of bank	Amount deposited (₦)	Amount kept (₦)	Amount lent out (₦)
A	100	50	50
B	50	25	25
C	25	12.5	12.5
D	12.5	6.25	6.25
E	6.6	3.125	3.125
F	3.125	1.563	1.563
G	1.563	0.782	0.782
H	0.782	0.391	0.391
Others	0.78	0.39	0.39
Total	200.00	100.00	100.00

There is a definite relationship between the initial deposit, the cash-deposit ratio, and the amount of money created. This relationship is given by the formula:

Amount created =

$$\text{Initial deposit} \times \frac{1}{\text{cash-deposit ratio}}$$

For example, initial deposit was ₦5 000.00 and the cash-deposit ratio was 20 per cent, the amount created could be obtained by applying the formula and substituting figures. Thus

$$\begin{aligned}\text{Amount created} &= ₦5\,000 \times \frac{1}{\frac{20}{100}} \\&= ₦5\,000 \times \frac{1}{\frac{1}{5}} \\&= ₦5\,000 \times \frac{1}{1} \times \frac{5}{1} \\&= ₦25\,000\,00\end{aligned}$$

Merchant banks

A merchant bank is a financial organisation which accepts large deposits, often fixed for a particular time period, while giving out equally large loans on short or long-term basis. In the United States of America, the merchant banks are referred to as investment banks. Merchant banks are also called acceptance and issuing houses when they play the function of accepting and discounting bills of exchange.

The development of merchant banks in Nigeria

Merchant banks developed in London from the activities of merchants who were engaged in overseas trading. The merchants

used their knowledge of traders to accept bills of exchange and, with time, developed other banking services connected with overseas trading, such as dealing in gold and foreign currencies. Later, they became specialised in giving long and short-term loans. They helped to give London an international reputation as a world financial centre.

In Nigeria, merchant banking activities started in earnest in 1960, with the establishment of Phillip Hill (Nigeria) Limited. This was later followed by the Nigerian Acceptances Limited which, in 1967, took over the activities of Phillip Hill (Nig) Limited. It was in the 1970s that the number of merchant banks in the country began to increase, although these were either partly or wholly owned by non-Nigerians.

The first indigenous merchant bank in the country was established in 1983. It was called First City Merchant Bank of Nigeria Limited. By October 1987, there were 15 merchant banks on the whole in Nigeria. Merchant banks have made a remarkable impact on the economy of Nigeria.

The functions of merchant banks

Merchant banks play many important roles in an economy. Their main functions are:

- 1 underwriting shares
- 2 dealing in securities
- 3 floating government loan stocks
- 4 equipment leasing
- 5 financial counselling
- 6 accepting and discounting bills of exchange
- 7 carrying out feasibility studies

Underwriting shares

Merchant banks underwrite the shares of their industrial customers. The function is performed by the merchant bank guarantee-

ing that all new securities issued will be sold off. The bank advertises the prospectus and any shares not bought up by the public are taken up by it.

Dealing in securities

Merchant banks deal in stocks, shares or bonds at the stock exchange. By so doing, they help business houses to arrange and obtain long-term loans and debentures.

Floating government loan stocks

Where the government wants short-term finances, merchant banks come in useful by taking up treasury bills and helping the government to find other buyers.

Equipment leasing

Merchant banks are helpful to companies in arranging for and hiring or leasing the capital equipment which they need. They also finance hire-purchase transactions for companies.

Financial counselling

Merchant banks give expert, seasoned financial advisory services to their industrial customers, especially in the areas of mergers and take-overs.

Accepting and discounting bills of exchange

Bills of exchange are means by which payments are made in the course of international trade. Merchant banks accept and also discount these, thus making international trade easier.

Carrying out feasibility studies

A feasibility study is an examination of a proposed project in its technical and economic details, to determine the prospects of its commercial viability. Feasibility studies

are often required by lenders and prospective partners before any commitment is made. Merchant banks are experts in the preparation of such feasibility studies for their customers.

Development banks

These are specialised financial organisations which may not accept deposits but are rather financed by the government or its agents to give medium or long-term loans for the promotion and development of industrial projects in various fields in the country.

History of development banks in Nigeria

Like the merchant banks, development banks arrived on the Nigerian banking scene later than the commercial banks. Development banking in Nigeria began in 1960. However, it began to make real economic impact from the year 1964, when the Nigerian Industrial Development Bank (NIDB) was established to foster the industrial development of Nigeria through the provision of financial and technical assistance to viable enterprises in the country.

While the Nigerian Industrial Development Bank concentrated more or less on the promotion and development of medium or large-scale industrial ventures, other development banks were established in the country between 1973 and 1977, to cater for other important spheres of the country's economy. These include the Nigerian Bank of Commerce and Industry (NBCI) to cater for commercial and smaller-scale industrial activities, and the Nigerian Agricultural and Cooperative Bank (NACB) for the promotion and development of agricultural products in Nigeria.

Functions of development banks

Development banks perform the following functions in an economy:

- 1 Equity participation
- 2 Provision of low interest loans
- 3 Provision of loans without security
- 4 Carrying out economic surveys
- 5 Provision of supervision and technical aid

Equity participation

Development banks often become part owners of any venture they finance, in order to ensure the commercial survival of such a venture.

Provision of low interest loans

While development banks make loans available on medium and long-term basis, they still charge rates of interest which are lower than those obtained in commercial and merchant banks.

Provision of loans without security

Development banks, since they were established not purely for profit-making, give out a lot of loans without demanding security in the manner of commercial and merchant banks. For example, up to 1989, the Nigerian Agricultural and Cooperative Bank gave out small-holder loans (not more than ₦5 000 00) without any collateral.

Carrying out economic surveys

Development banks also play the role of conducting economic surveys of the country in their various fields of specialisation. In the process, they help to identify viable projects in the economy.

Provision of supervision and technical aid

When development banks give out a loan,

they help the borrower to supervise the project to ensure that it succeeds. They also supply, periodically, qualified personnel who the borrower, unaided, may not be able to employ.

Savings banks

Savings banks are special banking institutions established to encourage the development of the habit of savings among low-income earners. A savings bank provides savings facilities for small depositors. Money deposited with the savings bank earns a low interest rate compared to interest rates obtainable in commercial banks. The savings bank does not offer current account facilities.

Development of savings banks in Nigeria

The savings bank was the first kind of banking institution to emerge on the Nigerian financial scene. Savings banking in the country started with the establishment of the Post Office Savings Bank under Ordinance No. 3 of 1886. It was owned solely by the Federal Government of Nigeria until its privatisation as part of the Structural Adjustment Programme, started in mid-1986.

Under Decree No. 38 of 1974, which took retrospective effect from 1972, the bank became known as the Federal Savings Bank (FSB). In 1977, it became a full-fledged parastatal with its own board of directors independently running its affairs, although with subventions from the public treasury.

Mortgage banks

Mortgage banks constitute another type of savings bank. These are financial banking

institutions which are in business to accept deposits and give out loans for the express purpose of developing residential buildings and other landed property. The mortgage bank only accepts the mortgage of the project financed by it as security. If the borrower fails to pay back, the bank takes over the land or building.

Functions of savings banks

Savings banks also have a part to play in the economic development of a country. Their main functions are:

- 1 promotion of the saving habit
- 2 grassroots banking
- 3 mobile banking services
- 4 accessibility of banking outlets

Promotion of the saving habit

Savings banks mainly play a developmental role. They help to promote the development of the saving habit in people, which is very essential, for, in the absence of savings in a country, capital formation is strictly hampered.

Grassroots banking

The role of savings banks include bringing banking services to the level of everybody, rich or poor, young or old. For example, part of the special savings scheme introduced by the several savings banks in 1985, was a deposit scheme for school children from ages 6 to 17. Minimum initial deposit was as low as ₦5.00. Thus, savings banks play a role which commercial banks are too sophisticated to play. Savings banks make it possible for all categories of persons to save money.

Mobile banking services

The savings bank also offers mobile banking services. For example, most savings banks in

Nigeria have vans which move about from place to place, thus mobilising quite some savings and disseminating modern banking facilities even to remote rural areas. The other types of banks could not perform this function, for, until the introduction of the Rural Banking Scheme in 1977, they had concentrated their activities in the urban areas.

Accessibility of banking outlets

A savings account with the post office savings bank could be withdrawn from or paid into at any General Post Office in the country; this means that a customer had easy access to banking outlets.

Problems of banking in Nigeria

Banks operating in Nigeria and other developing countries are faced with a lot of problems. Some of these are the following:

- 1 Low savings funds
- 2 Ignorance and conservative attitude
- 3 Low monetisation
- 4 Lack of collateral
- 5 Frequent defaults
- 6 Staff-assisted frauds
- 7 Competition from local thrift associations

Low savings funds

Many banks operating in Nigeria find it difficult to mobilise savings. This is because the income-per-head of the population is very low. With income so low, people spend all or most of it on subsistence, with little or nothing left to save.

Ignorance and conservative attitude

Another problem faced by banks operating in Nigeria is the ignorance and conserva-

tive attitude of the populace. With a high rate of illiteracy, many of the people do not appreciate the services of banks. They suspect the motives of banking institutions and therefore shy away from using facilities offered by banks.

Low monetisation

A substantial portion of economic activities in Nigeria are still carried on without the use of money. Most of the rural population still operate at a subsistence level. People do so much for themselves, rather than engage the services of others. This results in poor monetisation of activities. Therefore people lack the money to deposit with banks.

Lack of collateral

Many indigenous businessmen who would have borrowed from the banks have no acceptable collateral to offer the banks. This is due to the land tenure system in Nigeria and the lack of deeds for privately-owned land areas.

Frequent defaults

Another serious problem faced by Nigerian banks is the high failure rate of repayment of bank loans. This happens because, many borrowers, when they obtain the loans, expend them on unproductive activities like marrying of more wives or buying of flashy, expensive cars. Unfortunately, this problem of failure to honour contractual agreements tends to be worsening.

Staff-assisted frauds

Bank frauds and robberies are another problem faced by banks in Nigeria. This creates an atmosphere of mutual mistrust and suspicion among bank staff, which inevitably affects efficiency.

Competition from local thrift associations

Banks in the rural areas face stiff competition from local, traditional thrift associations, from which members borrow and in which they deposit money. These thrift associations deprive the banks of customers because the local people have greater confidence in and often obtain better interest rates from them.

The central bank

The central bank is a 'government banker' through which the currency and monetary policy of a country is regulated. There is usually only one central bank in a country. The central bank in the United States of America is called the Federal Reserve Bank, while that of the United Kingdom is known as the Bank of England.

Development of the Central Bank of Nigeria

In the West African sub-region, four countries, Nigeria, Ghana, The Gambia and Sierra Leone which were under the colonial authority of Britain used to have one body serving all four as a sort of central bank. This body was called the *West African Currency Board*.

The West African Currency Board was established in 1912, with headquarters in London as well as Board Secretary appointed by the Secretary of State for the Colonies. It issued the West African Currency Board money to the value of the sum, in pounds sterling, deposited with it. It also gave pounds sterling in exchange for West African pounds returned to it. The exchange rate was one pound to one West African pound.

Such a common currency board had some advantages for the British West African countries. All profits made were distributed among them. The four countries had a common currency easily convertible to pound sterling which made both currencies almost the same. However, the West African Currency Board had major defects, as a result of which the West African countries concerned had to set up their own separate central banks.

The Central Bank of Nigeria came into existence in 1958, although it started banking operations in 1959. Its development has helped the development and growth of the Nigerian economy, through operations in the country's money and capital markets. Today, it has branches in all the state capitals of the country.

Functions of the central bank

- 1 Issuing of currency
- 2 Acting as government's banker
- 3 Serving as bankers' banker
- 4 Acting as lender of last resort
- 5 Facilitation of foreign transactions
- 6 Serving as data bank

Issuing of currency

The central bank, being the tool with which the government controls and regulates monetary activities, is the only financial institution authorised to issue the country's currency.

Acting as government's banker

The central bank also fulfils the role of banker to the government. It receives all government revenue raised from taxation. It also makes payments on behalf of the government and manages the public debt

of the country. When the government wants to raise loans, this is also done through the central bank, e.g., through the issue of treasury bills.

Serving as bankers' bank

The central bank is a banker not only to the government, but also a banker to all other banking financial institutions. These banks maintain accounts with the central bank through which they resolve their inter-bank debts.

Acting as a lender of last resort

When all other sources fail, the commercial banks go to the central bank to raise loans. If a commercial bank over-lends and goes to the central bank for a loan, the central bank lends to it at a penal interest rate. The penal interest rate is determined by the central bank and is always higher than the prevailing lending rates.

Facilitation of foreign transactions

All the foreign exchange transactions of a country have to pass through the central bank. All the foreign reserves of a country are also held by it. On behalf of the country, it deals with international financial organisations such as the International Monetary Fund (IMF) and the World Bank.

Serving as data bank

The central bank of a country also collects a lot of information and statistics relating to the economy of the country and publishes magazines and books based on these. Thus, the central bank serves as a store house of useful reference materials.

Control of the financial system by the central bank

Let us now see how the central bank goes about to fulfil its role of regulating the country's monetary policy and controlling its currency.

The central bank regulates the country's monetary policy and controls its currency by:

- 1 open market operation
- 2 bank or discount rate
- 3 cash ratio
- 4 liquidity ratio
- 5 special deposit
- 6 funding
- 7 physical controls
- 8 moral suasion

Open market operation

This refers to the buying or selling of treasury bills by the central bank in the open market as a means of influencing the volume of aggregate demand. When the central bank wants to stimulate economic activities by raising the consumers' purchasing power, it buys treasury bills. If it wants to reduce their purchasing power and thus slow down economic activities, it sells the treasury bills. This is a very important tool by which the central bank influences the overall supply of money in the economy.

Bank or discount rate

This is the minimum interest rate at which the central bank, acting as a lender of last resort, will give loans to financial institutions. Thus, the bank rate governs the rate of interest on commercial banks' deposits and loans. If the central bank raises the bank rate, banks will raise their lending rates also, and it might become too expensive to borrow. The effect, therefore, is that the creation of

bank money will be reduced. On the other hand, the central bank can encourage credit expansion by reducing the discount rate.

The banks will then lower their lending rates, thus making it cheaper to borrow. Generally, as an instrument of monetary policy, the discount rate is more effective when combined with open market operations.

Cash ratio

This is the ratio of the total cash held by a bank to its total deposit liabilities. All banks are required by law to keep a certain percentage of their total deposit with the central bank, while holding the rest in order to be able to pay cash on demand to their customers. This is another means by which the central bank controls the banking system. If the cash ratio is increased, the effect is to lower the cash available to commercial banks and so decrease their ability to lend. If it is reduced, this has the effect of increasing the ability of the banks to lend, as it will leave them with more loanable funds.

Suppose, for instance, that the total deposit in a bank is ₦1 000. A cash ratio of 20 per cent would mean that 20 per cent of the ₦1,000, that is, ₦200 must be deposited with the central bank while the remaining ₦800 is kept by the bank for lending. However, if the cash ratio is reduced to 10 per cent, i.e. ₦100, ₦100 would be deposited with the central bank while the remaining ₦900 would be available for loans.

Liquidity ratio

This is the amount of its asset a bank is allowed to hold in liquid form as a proportion of its total deposits. The liquid asset of a bank includes its money lent at short notice and call, as well as its treasury and commercial bills. If the central bank wants to reduce the

lending ability of the commercial banks, it increases the liquidity ratio, but if it intends to increase the lending ability, it reduces the ratio. Thus, the banks can create more money through lending.

Special deposits

Apart from the measures considered so far, the central bank can require the banks to keep special deposits with it. The central bank can use this method to reduce the volume of money which commercial banks have available for lending. The special deposits could take the form of a specified amount or a definite percentage of the total deposit of each bank.

Funding

This is the process of converting short-term loans to long-term loans. The central bank can use this instrument to hold up the funds of commercial banks for a long time, thereby making it difficult for them to lend.

Physical controls

Physical control of the financial system by the central bank is carried out by a series of directives which it issues to the banking institutions concerning what kind of lending policy to pursue. The central bank, for instance, could direct the commercial banks to advance a specific proportion of their loans to the agricultural sector. It could also direct them not to grant loans beyond certain limits without first obtaining its permission. Directives issued as physical controls are more or less binding on the financial institutions.

Moral suasion

This is a mere appeal made by the central bank to the commercial banks to follow some particular lending policy. Such appeals

are not binding on the banks but are usually complied with in their own interest.

Non-banking financial institutions

There are many non-banking financial institutions, some of which are the following:

- 1 Insurance companies
- 2 Hire-purchase companies
- 3 Acceptance houses
- 4 Discount houses

We shall discuss these separately.

Insurance companies

An insurance company is a business organisation to which an individual makes payments, called *premiums*, on the understanding that if the individual incurs losses in certain specified circumstances, e.g., fire, theft or accident, he will be paid an amount sufficient to compensate for the loss suffered. The payment from the insurer to the insured is called an *indemnity*.

An individual wanting to take up a personal insurance policy normally contacts an insurance broker. An insurance broker is an agent of an insurance company who mediates between the company and customers. The prospective customer is then given a form which he must complete in utmost good faith, disclosing all relevant facts, to enable the insurance company to decide whether or not it should enter into the contract. Upon signing the contract, the customer is given an insurance policy, which is a document showing that he has been insured by the insurance company. In the event of a loss, he is made to fill out a claims form, after which the company indemnifies him (i.e., pays him the indemnity).

The premiums paid by the insured are calculated in such a way that they are enough to offset the indemnity, while allowing a little margin to cover administrative cost and a little profit. Under the *principle of subrogation*, the insurance company takes the place of the insured after indemnifying him. This means, for example, that if a car which was insured gets stolen and the insurer indemnifies the owner, the car will now belong to the insurer if it is later recovered.

It is not possible to insure all kinds of losses. There are insurance risks whose likelihood of happening can be mathematically determined; for instance, the number of armed robberies in a place can easily be known from the records of the police. Therefore, the probability of an armed robbery can be calculated and so, one can insure one's property against armed robbery. If the loss insured is one of death, which is a certainty for the individual, then this is called life assurance.

There are many insurance and assurance companies in Nigeria today. By April 1984, there were 89 of them officially registered and licensed. The importance of insurance companies arises from the following roles which they play in an economy:

- 1 Insurance companies spread risks. They do this by making sure that the loss of an individual is made up for from the premiums paid by their many customers.
- 2 The existence of insurance companies makes it possible for entrepreneurs to eliminate the risk of loss. This is achieved by the payment of premiums from which the entrepreneur is compensated in the event of loss.

Hire-purchase companies

Hire-purchase companies are businesses which allow an individual to begin to use a good, upon payment of part of the purchase price, called a deposit, and to pay back the remaining part of the price, together with the interest charged on it, in a number of instalments. Although the hire-purchase company offers the consumer credit service since the consumer can begin to use a good which he has not fully paid for, it must be pointed out that a hire-purchase sale is different from a credit sale. In a credit sale, the ownership of the article is fully transferred to the purchaser, even though he is yet to pay fully for it.

Under hire-purchase, on the other hand, ownership does not pass from the seller to the buyer until the buyer has paid up the balance left after the initial deposit. This means that, under a hire-purchase agreement, the good does not become the property of the buyer until he has paid the last instalment of the price. If the purchaser is unable to pay up the rest of the balance, then, the good again becomes the property of the seller, i.e., the hire purchase company. The hire-purchase company charges interest on the balance left after the initial deposit has been paid. Normally, such interest is higher than the interest charged by banks for personal loans.

Hire purchase companies are still relatively few in Nigeria and their full impact on the economy is yet to be felt.

Acceptance houses

An acceptance house is a financial organisation whose business is to accept bills of exchange. To accept a bill of exchange, the accepting house simply signs across the face of the bill of exchange.

Discount houses

A discount house is a financial institution whose business is to buy accepted bills of exchange and other promissory notes from their owners at less than their face values, these being held until they are due for payment, or, sold off again. Discount houses can borrow from the central bank as a lender of last resort.

Money and capital markets

Although in everyday usage, money and capital are often used interchangeably, the market of both differ, as we shall now see by examining them in turns.

The money market

The money market is a market for short-term loans. Short-term loans are those loans which fall due for repayment in periods of less than three years. Money has a time value. For this reason, the use of it is brought and used against the repayment of some interest. It is in the money market that borrowers of money for short periods are brought into contact with lenders of such money.

While the commodities dealt in include bills of exchange, treasury bills and treasury certificates, the main business of the money market is carried out by bill brokers, discount and acceptance houses, commercial bank and the central bank. In Nigeria, the money market began to develop from 1960, sequel to the commencement of operations by the Central Bank of Nigeria in 1959.

Money market institutions

The institutions which conduct the main business of the money market include commercial and central banks, as well as

discount and acceptance houses. All of these have been discussed earlier in this chapter.

Money market commodities

The commodities dealt with at the money market include:

- 1 bills of exchange
- 2 treasury bills
- 3 treasury certificates

Bills of exchange

A bill of exchange, also known as a trade bill, a bank bill or a commercial bill, may be described as a written order from A to B, signed by A and requiring B to pay, on demand, or at a determined future time, a stated sum of money, to a named person. It is mainly a means by which payments are made in trade between two countries.

In using the bill of exchange in international trade today, three parties are normally involved. These are drawer (the importer), the drawee (a bank in the exporter's country), and the payee (the exporter). In actual use, the bill of exchange is drawn up by the drawer and addressed to the drawee, to pay the payee a named sum of money on a stated date, usually three months away. A bill of exchange only becomes valid when it has been accepted by an acceptance house.

Treasury bills

The treasury bill is an instrument, issued by the central bank, by which the government raises short-term loans which fall due for repayment after three months. The government issues a treasury bill at a discount but repays the full face value at maturity. Treasury bills were first issued in Nigeria in April 1960.

Treasury certificates

A treasury certificate is also a means by which the government raises short-term loans. Unlike a treasury bill, however, a treasury certificate falls due for repayment in twelve to twenty-four months. Because of its longer maturation, it earns a higher rate of discount than the Treasury bill. Treasury certificates were first issued in Nigeria in 1968.

The capital market

This is the market of long term funds, and the instruments traded in the market are called capital market instruments and these instruments can be categorised into three major groups, namely debt instrument, preference instrument and ordinary shares

Nigerian Stock Exchange

This is a marketplace where stock and security are bought and sold. It is also a place where private companies seek quotations. It is the centrepiece for the Nigerian capital market.

Companies seek quotations for the following reasons:

- 1 A quotation provides an immediate basis of valuation for the shares and a market they can be readily exchanged for cash.
- 2 A quotation gives access to the savings of the public when a company wishes to recruit further capital for expansion.
- 3 Amalgamation between companies is easier if part of the price to be paid is in shares quoted on the Stock Exchange.
- 4 The shareholders have a ready market for their shares after a quotation since they can exchange them for cash or use them more easily as a form of security.

The ownership of the Nigerian Stock

Exchange is vested in its members. There are two types of membership:

- 1 Ordinary membership
- 2 Dealing membership

An ordinary membership (institution or individual) of the Nigerian Stock Exchange is a member who has, in accordance with the articles of the exchange, taken up qualifying shares of the issued share capital of the exchange and has been admitted into the register of members.

A dealing member (stockbroker) is a person or institution which, in addition to being an ordinary member, is licensed to buy and sell securities on the trading floor of the exchange on behalf of the investing public.

Listing on the Nigerian Stock Exchange

A company needs to comply with the listing requirements of the Nigerian Stock Exchange before its capital or market instrument can be traded on the floor of the exchange.

There are two types of market within the Nigerian Stock Exchange: first-tier market and second-tier market. The second-tier market was established to encourage small and medium size enterprises to seek quotation without necessarily lowering the standard of listing requirements.

Listing requirements for 1st tier and 2nd tier markets

Table 14.2

First-tier market	Second-tier market
1 Company must be a public company.	Company must be a public company.
2 Application for listing must be sponsored by one of the dealing members of the exchange.	Application for listing must be sponsored by one of the dealing members of the exchange.
3 Date of the latest audited report must not be more than 9 months.	Date of the latest audited report must not be more than 9 months.
4 Not less than 25 per cent of the issued capital must be made available to the public.	Not less than 10 per cent of the issued capital must be made available to the public.
5 The company must have 5 years trading records.	The company must have 3 years trading records.
6 Annual quotation fees are based on the share capital of the company.	A flat annual charge of ₦5 000 is payable as quotation fees.
7 The amount that can be raised is limitless depending on the borrowing powers of the company.	The amount that can be raised cannot currently exceed ₦20m.
8 The number of shareholders must not be less than 300.	The number of shareholders must not be less than 100.
9 Companies are required to submit quarterly, half yearly and annual statements of account.	Companies are required to submit only half yearly and annual statements of account.

Operators of the Nigerian Stock Exchange

Stockbrokers

Stockbrokers are key operators in the stock market. They are members of the stock exchange who buy and sell securities on behalf of the investing public. They are required at all times to obey the rules and regulations set for dealing members of the stock exchange. Apart from acting as key operators in the secondary market, stockbrokers also sponsor issues to the stock exchange for listing; underwrite and handle primary distribution of securities, and provide investment/management advisory services.

Investment advisers

These are key operators in the capital market, who perform some functions similar to those of stockbrokers but are not members of recognised stock exchange for listing; they can also not deal with listed securities. They can, however, provide investment and management advisory services.

Issuing houses

An issuing house is an organisation that advises on or arranges on behalf of a company or some other organisations (e.g., government agencies) the raising of funds through issuance and sales of securities. This job is usually undertaken by the corporate finance department of a bank or a stockbroker. An

issuing house examines in detail the circumstances and financial position of the company or organisation proposing to raise funds, and advises its clients on the most suitable capital structure. An issuing house also determines the most suitable type of securities to be issued and the terms of the issue, prepares the issue or sale document, i.e., the prospectus and commissions and special duties required to be undertaken by experts (e.g., valuers, accountants and solicitors.).

If an issue is to be listed on the Stock Exchange, an issuing house files an application to that effect with the stock exchange through a sponsoring stockbroker. An issuing house also determines issues/offer price of new issues and files an application to the Securities and Exchange Commission (SEC) for the determination of timing of issue. It puts together a buying group or selling syndicate and arranges for the underwriting of the issue, and coordinates the activities of other parties to the issue.

After receiving the necessary approval from the regulatory authority (SEC), an issuing house arranges the completion board meeting where the issue documents are formally signed before the opening of application and submits an allotment proposal for the publicly offered security to the allotment committee for consideration.

Registrars

The registrars are also key operators in the stock market responsible for the administration of company shares and keeping of the register of members. They are experts responsible for the successful completion of shares acquisition/transfer and registration process. Registrars can be corporate bodies employed by their principal, i.e., compa-

nies, or can be employees of a company if an in-house share registration department is established.

The registrar assists in primary distribution of securities by handling the distribution of application forms to the public in respect of new issue of shares, collecting the application with proceeds and remitting the proceeds to the issuing house. After allotment of shares, the registrar produces the register of shareholders and forwards copies of such register to the client/company both for their records and lodgment to the registrar of companies or Corporate Affairs Commission. They also maintain the register of members of client companies, that is, update the register whenever there are changes in either the holding or personal details of the shareholders. They also perform the job of forwarding notices of meetings together with annual reports and accounts to shareholders and stock brokers; dispatching share/stock certificate and return monies to their respective owners after allotment, and issuing interest and dividend warrants to the serving shareholder/stock holders as and when due.

The registrars also handle security printing of blank dividend warrants and share certificates on behalf of their client companies, and carry out the confirmation of signatures of transferors in the case of transfer of shares.

Registrars are not dealing members of the exchange but are principal actors in the stock market since they play a vital role in the transfer of shares from the buyer to the seller of shares.

Other institutions in the stock market

Other institutions which are not direct operators but play a key role in the stock market include:

- 1 Commercial banks – which act as share distribution agents.
- 2 Insurance companies, unit trusts, investment trust companies and pension funds which act as underwriters and institution investors.
- 3 Auditors, reporting accountants, solicitors and trustees who are parties to a new issue of securities.
- 4 CSCS – (Central Securities Clearing System) – the custodian of share certificates and issuer of CSCS account numbers to the shareholders.

Regulators of the stock market

The Securities and Exchange Commission (SEC) serves as the apex regulatory body of the capital market and its main objective is the promotion of an orderly and active capital market. Its functions include the following:

- 1 Determining the amount of the price and time at which securities are to be sold to the public either through offer for sale or subscription.
- 2 Registering all securities proposed to be offered for sale or for subscription by the public or to be offered privately with the intention that the securities shall be held ultimately other than by those to whom the offers were made.
- 3 Maintaining surveillance over the capital market to ensure orderly, fair, and equitable dealings in securities.
- 4 Registering stock exchanges and their branches, registrars, investment, advisers, stockbroking houses, and controlling and supervising them.

Methods of bringing securities to the stock exchange

Securities may be brought to the stock exchange by any of the following methods:

Offer for sale

Here the company offers for sale to an issuing house which then offers shares to the public at a price set by negotiation between the company and the issuing house. The issuing house handles the administration of the issue in return for the margin between the price paid to the company and the price received from the public. The company guarantees that all the shares will be sold.

Offer for sale by tender

This is a variation of the offer for sale. The basic procedure is the same, with the exception that the price of which the shares are to be sold are not fixed. Instead, the applicant is asked to quote the price at which he is prepared to buy. A minimum price is normally given. When all the applications have been received, what is known as the 'striking price' is decided. All those investors who quote at a price lower than this will not receive any shares. All those who quoted a higher price will be allotted either all or part of their total application at the striking price.

The circumstance where a tender is appropriate mainly concerns those cases where there is significant difficulty in determining an appropriate issue price. Reasons for this include the following:

- 1 The company previously had no quotation.
- 2 The market is extremely volatile and prices are likely to change significantly between the time of selling the issue price and carrying out the issue procedure.

In such cases, a tender issue will safeguard against setting an issue price which later proves inappropriate, and it may also in a price rising market, assist in raising more capital for the issuing company than would be the case with a fixed price issue.

Public issue by prospectus

Where the company makes a direct offer of shares at a price set by the company to ensure that all the shares are taken up, it is usual, for them to employ underwriters who, for a commission, guarantee to buy any share for which the public do not subscribe. This method is normally used by well-known companies for large issues.

Placing/Placement

A placing takes place when the shares rather than being directly offered to the public, are sold privately to a limited number of shareholders (usually institutional investors, less frequently large private investors) by an issuing house or stockbroker. If the shares are to be quoted, then a proportion of the share will need to be made available to jobbers in order that the general investors can purchase shares by ordinary stock market trading. A placing does not require a prospectus and is usually less costly than other ways of raising equity. The security holders to whom the securities are issued by placing are usually few and sometimes, there is only one major holder. Placing is particularly useful when a currently non-quoted company wishes to raise equity and obtain quotation at a relatively low cost.

This is a method of listing where non-market arrangements are required because the securities to be listed are already of such an amount and so widely held that it can even be assumed that they are easily marketable on being listed.

Rights offer/Rights issue

A rights issue is a means of raising new equity capital where the existing shareholders are invited to subscribe for the new issue in proportion to their holdings. A rights issue enables a firm to raise further equity while ensuring that shareholders have the right to maintain their proportional investments in the firm.

When a firm has a stock exchange quotation, this is usually the only method of raising new equities permitted. No prospectus is required.

A rights issue is normally at a price below the normal price of the equity to provide some incentive. The price of the share in the market will theoretically fall, to provide what is sometimes called the 'theoretically ex-rights price.'

Example

The market price of a company's share is ₦2. The company is proposing a 1 for 4 rights issue at ₦1.50.

Calculate the theoretical ex-rights price of the equity:

Current holdings: 4 shares at ₦2 = ₦8.00

Rights issue: 1/5 shares at ₦1.50 = ₦1.50

Ex-rights: = ₦9.50

The ex-rights price will be = $\frac{\text{₦9.50}}{5}$

= ₦1.90

Advantages of the rights issue

- 1 Under the Stock Exchange Regulations all issues for cash, other than rights issues, must be approved by the company in a general meeting. In contrast, subject to the Memorandum and Articles of Association, a rights issue may be made at the discretion of the directors. The Stock Exchange is

therefore unlikely to accept any new issue of shares by a quoted company, unless it is a rights issue and unless the purpose of the new issue is to allow partial takeover by a large company.

- 2 A rights issue is cheaper than an issue to the general public. This is mainly because no prospectus is required; the administration is simple and the cost of underwriting will be less
- 3 It is more beneficial to existing shareholders than an issue to the general public as it avoids the expense represented by the discount for existing shareholders by ensuring that new shareholders cannot buy into the company at a price which is beneficial to them and, therefore, detrimental to the existing shareholders.
- 4 Relative voting rights are unaffected, i.e., there is no dilution in control as in issuing a new equity. It also provides a broader equity for the company.

Underwriters

A company trying to issue new equities in order to raise finance might decide to have the issue underwritten. Underwriters are financial institutions, which agree (in exchange for a fixed fee, usually 1–2 per cent of the finance to be raised), to purchase at the issue price, any securities, which are not subscribed for by the investing public.

There is always a danger that the issue price will be too high with the consequence that the issue will be under-subscribed. The stock market will be volatile and an issue price that might seem conservative when it is set will possibly be too high if general share prices on the stock market subsequently fall. The failure of a company to raise all the finance it wants might limit its own investment

plan and also the confidence of the investing public in the company's future. Underwriters remove the risk of under-subscription, but at a cost to the company issuing their shares. It is not a compulsory requirement to have an issue underwritten, but it is necessary to underwrite a placing since a purchaser for the shares is arranged in the process.

An offer for sale by tender would only need underwriting if there is a risk that there would be undersubscription, even at the minimum price. A rights issue should perhaps in theory not require underwriting since new shares are being offered to existing shareholders. However, the underwriting of rights issues is common in practice.

Advantages and disadvantages of flotation

Flotation is the process of making shares available to the general public by obtaining a quotation on the stock exchange. Flotations are sometimes referred to as 'going public'.

Advantages to existing shareholders

- 1 It brings in new funds, if flotation involves the issue of new shares.
- 2 To have a better credit standing so that it may be easier to borrow money.
- 3 The ability to buy up another company with a new issue of shares is more practicable.
- 4 It gives a company the ability to issue shares more easily at a later date. It is difficult for a company to expand beyond a certain size without getting a quotation, because of the difficulties of raising sufficient funds.
- 5 A quotation provides a ready share price which would lessen the uncertainty of

Capital Transfer Tax (CTT) by avoiding the problems of valuing unquoted shares.

- 6 There is a reduction in perceived risks and greater marketability may lead to a lower cost of the equity.

Disadvantages to the company

- 1 It is very expensive.
- 2 It creates a dilution of control arising from wider holding of the company's shares.

Convertible bond

A convertible bond is sold as a loan stock with an attached rate of interest, and the holder of the convertible bond is given the option of converting this loan stock into equity shares at a given price within a set period of time.

Circumstances under which a convertible bond issue right might be made

- 1 In a relatively new company, or one planning to undertake a new high-risk venture, the lender may find a convertible bond attractive because it offers the 'security' of given interest payments, together with repayment of the loan, while at the same time it gives lenders the opportunity to share in the new success of the company if it prospers by converting into equity shares.
- 2 In a takeover situation, a mixture of equity shares and convertible bond may be attractive to the shareholders of the company being taken over because it gives them the option of the interest payments if the new group is not very successful and also the option of

converting the bond into equity shares if the new group prospers.

- 3 If a company wishes to keep its cost of capital low in the short term, a convertible bond will help as long as it remains loan capital with the associated interest relief for tax purposes.
- 4 If earnings of the company are expected to grow in the future, the convertible bond may be self-liquidating, because the ordinary share price would reflect the company's increasing earnings and eventually the loan stocks will be converted to equity shares. This saves the company from finding the finance to redeem the loan stock.

Second-tier securities market (SSM)

The second-tier securities market is intended to introduce small-scale and medium-size companies into the quoted securities market.

Hitherto, only large-scale companies had access to the market, but it has now been realised that small-sized companies constitute an invaluable engine for economic growth in developing countries. By this second-tier market, small and medium-scale companies that have equity capital problems can now apply through the market for public placement.

However, the following conditions must be fulfilled:

- 1 All companies must be public companies in the sense that their minimum number of shareholders must be 100.
- 2 They must be quoted in the official daily list.
- 3 At least 10 per cent of the capital will go to the general public.

- 4 The chief promoter must not get more than 90 per cent of equity investment.
- 5 The authorised and fully paid capital must not be less ₦20 million.
- 6 All companies wishing to be listed must go through the stockbrokers.
- 7 The maximum amount obtainable from the stock market, under the second-tier securities market, is ₦100 million.

Advantages to be derived

- 1 It will be easy for these companies to get placement from the general public.
- 2 The prices to pay for the shares are standard.
- 3 In the event of placement becoming difficult, the stockbrokers would provide the necessary bridging fund and thereafter, offer the shares to the public in bits (known as warehousing).
- 4 There is continuity in the ownership and management of the company because when the chief promoter dies, the business does not die.
- 5 Fraud by proprietors will be checked because an audited account will be looked at by the stockbrokers, the Securities and Exchange Commission, the shareholders, and commercial banks.

Alternative securities market (ASeM)

This is a new innovation by the Nigerian Stock Exchange (NSE). The ASeM is intended to enable emerging companies with high potential for growth, but unable to be listed on the main board because of the stringent listing requirements, to be on a specialised board. This specialised or junior board is expected to accommodate mid-sized

companies to enable them raise, under less stringent rules and requirements, long term, low-cost capital. The flexible rules that will recognise growth potentials of companies, rather than size, will enhance the ability of the companies to inject long term capital into their business.

ASeM is a semblance of the Second-Tier Securities Market (SSM), which was scrapped in December 2009 by the NSE because it failed to achieve the objectives it was set up to achieve.

The name that emerged thereafter, (after the scrapping of SSM) was Alternative Securities/Private Placement Exchange (ASeM/PRIPEX). This change came about because of the dwindled performance of the Second-Tier Securities Market in profitability and return on investment. Trading activities in this sector was so low that its contribution to total market capitalisation was less than one per cent', according to reports from the exchange then.

The performance of SSM was in contrast to the Alternative Investment Market (AIM) of the London Stock Exchange, which was established in 1995. AIM allowed smaller companies to float shares under a more flexible regulatory system than was applicable to the main board.

However, there is no doubt that the ASeM will offer a lot of possibilities for Independent Power Producers (IPPs), Small and Medium Enterprises (SME's), Real Estate Companies, oil and telecommunications companies which are largely absent from the exchange in Nigeria. And it could also be a platform for companies in the West African sub-region to showcase their potentials.

Key terms used in the capital market

- 1 **Stockbroker:** This refers to a firm or a person who buys and sells securities on behalf of investors for a commission, called 'brokerage'.
- 2 **Issuing house:** It is a firm that helps to prepare prospectus and to sell shares/securities offered to the public by companies and government.
- 3 **Securities:** They are written or printed documents by which the claims of holders in specified property are secured. They could be stocks, shares, bonds or debentures.
- 4 **Stocks and shares:** Stocks and shares represent ownership interest in a business.
- 5 **Bonds and debentures:** They are other kinds of securities. They are legal documents representing a promise by the company or by government (in case of a bond) to pay back a loan, plus a certain amount of interest over a definite period of time.
- 6 **Investor:** This is a person or an institution that uses their savings or borrowings to buy securities.
- 7 **Listed/Quoted:** This refers to membership of a company in the Nigerian Stock Exchange for the purpose of trading their shares with the interested public.
- 8 **Ex-div:** It is a financial expression for 'without dividend'. A stock that is purchased during the 'without dividend' period, will not earn a dividend declared in that period for its new owner.
- 9 **Script/Bonus shares:** These are new shares made fully-paid by the capitalisation of reserves and allotted free of charge to ordinary shareholders in proportion to their existing holdings.
- 10 **Ex-sc:** This is a financial expression for 'without the scrip'. A stock that is purchased during the 'without the scrip' period will not earn a scrip or bonus declared in that period for its new owner.
- 11 **Rights issue:** This is a way of obtaining an additional fund by a company through an issue of shares or cash to ordinary shareholders in proportion to their existing holdings. Such shares are usually bought at less than the current market price. A 'rights issue', therefore, refers to the entitlement of the existing shareholders to participate in a new issue.
- 12 **Trading in rights:** This enables a shareholder who does not take up his rights issue to trade it off to another investor for cash.
- 13 **Daily official list:** This is a document that gives full information on the changes in the prices and earnings of listed securities. Other documents in this regard include the Daily Trading Summary and Weekend Reports. All are publications of the Nigerian Stock Exchange.
- 14 **Emerging market:** This was established in April 1985, to replace the second-tier securities market (SSM). The maximum amount a company can raise through the emerging market does not exceed ₦100 million.
- 15 **Initial public offer (IPO):** An IPO is an offer for subscription by a company for its own shares made to the general public, with the sale proceeds going to the seller and not the company.
- 16 **Offer for sale:** This is when an existing shareholder offers part or all of his holdings for subscription by the general

- public, with the sale proceeds going to the seller and not the company.
- 17 **Jobber:** This is also a player in the capital market who buys and sells shares in large quantities. A jobber deals with the broker and not directly with the public. The benefit accruing to a jobber for his activities is called the ‘jobber’s turn’—i.e., the difference between the buying and the selling price.
- 18 **Reverse takeover:** This is where a company that is not listed buys over a quoted, usually dormant, company and merges the operation of the two companies, while retaining the listing status of the quoted company.
- 19 **Shell company:** A shell company is one whose activity has dropped to such a level that it is considered to be dormant.
- 20 **IQG (Indigenous Quoted Group):** It was established in 1997 by indigenous quoted companies on the Nigerian Stock Exchange as a forum for indigenous quoted companies to discuss issues of common concern.
- 21 **Blue chip:** A blue chip is a company that is well managed with a consistent track record of return on investments.
- 22 **ATS (Automated Trading System)** This is a securities trading arrangement whereby transactions on the stock exchange are achieved through a network of computers. ATS has facilities for remote trading and monitoring. Dealer members can trade on line from their offices. It was launched on 27 April 1999.
- 23 **Trading:** This is the buying and selling of shares/stocks on the floor of the Nigerian Stock Exchange through the interaction of stockbrokers
- 24 **T + 5 to T + 3:** This means transaction day plus 5 working days, but later changed to T + 3 (transaction day plus 3 working days) on 1st of March 2000 when the Nigerian Stock Exchange launched the CSCS.
- 25 **CSCS (Central Securities Clearing System):** This is otherwise called the Central Securities Depository (CSD). It is the clearing house of the Nigerian Stock Exchange.
- 26 **Statement of shareholding:** This is a statement of stock position issued to a shareholder as evidence of his stock position in the CSCS system. It is a quarterly statement.
- 27 **CHN (Clearing House Number):** This is a number assigned to every shareholder at the first point of entry into CSCS system by completing CSCS Form R005 (shareholder's particulars).
- 28 **Waiver:** A waiver occurs where a shareholder who is entitled expressly or implied (by conduct) indicates that he is no longer interested in his rights. However, CSCS procedure allows shareholders who elect to waive their rights to certificate to have CSCS statements of shareholding.
- 29 **Trade Guarantee Fund (TGF):** TGF, though similar, but distinct from the investors protection fund, was put in by the stockbroking firms and is being managed by the settlement bank. It is a necessary component of the clearing house system.
- 30 **E-business platform:** This is an information outlet which enables the stakeholders to access the market on-line in real time. It also provides market information.
- 31 **Trade alert:** This was launched on 24 March 2005. It is an automated

- stockholder alert system that notifies an investor of transactions in his stocks. This is done via a mobile phone.
- 32 **Securities and Exchange Commission (SEC):** This is the apex regulatory body of the capital market.
- 33 **Cum-div:** This is a financial expression for 'with dividend'. Stock/Shares that are bought during the 'Cum-div' period will earn a dividend declared in that period for its new owner.
- 34 **Bulls:** These are stock market operators who speculate on future increases in stock prices. They buy in large quantities with the intention of reselling at a high future price. They are secondary market operators whose activities are commonly noted during a market boom.
- 35 **Bears:** They are also market operators/dealers who base their forecasts and speculations on a future fall in market prices of stocks. They therefore wait for the market to fall, so that they can sell at a good profit margin.
- 36 **Stags:** These are dealers who are often noted to be concerned with the issue of new shares. They are not spontaneous buyers. They wait till a later date in the future, when the prices of those shares will have increased with a premium before buying.
- 37 **Primary market:** This is where quoted companies offer new shares to the public for subscription, for the purpose of raising additional funds. It is otherwise called *initial public offer* (IPO).
- 39 **Secondary market:** This is the market for existing shares, which are traded on the floor of the Nigerian Stock Exchange on a daily basis.

Importance of shares/stocks to an investor

- 1 It gives the opportunity for dividend sharing to shareholders, which is part of a company's profit.
- 2 Bonus shares are also given. These are the extra shares fully paid out of the reserves which are distributed to existing shareholders in proportion to their existing equity holdings.
- 3 Capital appreciation is evident as market prices of shares increase.
- 4 There is the right to attend meetings of shareholders and participate in their deliberations as voting members.
- 5 Shares/stocks could be used by investors as collateral to obtain loans.

Summary

- A commercial bank is a finance company receiving all kinds of deposits and making short-term loans. Its functions include accepting deposits, risk reduction, serving as agents of payment, document security services, provision of loans, helping foreign trade, provision of referee services, technical counselling and stock exchange agency services.
- Merchant banks are those which accept normally large and fixed deposits and make medium and long-term loans. Their functions are underwriting of shares, dealing in securities, floating government loan stocks, equipment leasing, financial counselling, accepting and discounting bills of exchange and carrying out feasibility studies.
- Development banks are specialised,

government backed banks which give loans for the development of various projects. Their functions are equity participation, provision of low interest loans, provision of loans without security, economic surveys and provision of supervisory and technical aid.

- Mortgage banks accept all kinds of deposits and give out loans specifically for property development.
- Savings banks accept deposits of small amounts. Their functions are promotion of the saving habit, grassroots banking, mobile banking services, and accessibility of banking outlets.
- The problems of banking in Nigeria include: low saving funds, crisis of confidence, ignorance and conservative attitudes, low monetisation, lack of collateral, frequent defaults, staff-assisted frauds, and competition from local thrift associations.
- The central bank is a government banker overseeing the country's monetary policies. Its functions are to issue currency, act as banker to the government and other banks, act as lender of last resort, facilitate foreign transactions, and monitor bank services.
- The central bank controls the monetary system through open market operations, bank rate, cash and liquidity ratios, special deposits, funding, physical controls and moral suasion.
- Non-banking financial institutions include insurance and hire-purchase companies, and acceptance and discount houses.
- The money market is for short-term loans. Money market commodities include bills of exchange, treasury bills

and treasury certificates. It is operated by the various banks.

- The capital market is meant for long-term loans. Its commodities include stocks, shares and bonds. It is operated by merchant and development banks, insurance and hire-purchase companies, jobbers and brokers.
 - The capital market is a market where long term funds are sourced. The instruments traded in this market are as follows:
 - Debt instruments
 - Preference instruments
 - Ordinary shares
 - The Nigerian Stock Exchange is the regulator of the capital market with its other independent subsidiaries – like the Securities and Exchange Commission and the Central Securities Clearing System.
 - A company needs to fulfil the listing requirements of the Nigerian Stock Exchange before its stocks can be traded on the floor of the exchange.
 - Two separate markets exist in the capital market—the 1st tier and the 2nd tier markets, with different corresponding listing requirements.
 - Operators of the Nigerian Stock Exchange include:
 - Stockbrokers
 - Investment advisers
 - Issuing houses
 - Registrars
- Other institutions in the capital market are:
- Commercial banks,
 - Insurance companies (unit trusts, investment trust companies, pension funds),

- Auditors, reporting accountants, solicitors and trustees.
- The Securities and Exchange commission (SEC) is the apex regulatory body of the capital market with the main objective of promoting an orderly and active capital market operation.
- The various methods of bringing securities to the stock exchange include:
 - Offer or sale
 - Public issue by prospectus
 - Placement
 - Rights issue
 - Underwriting
- The Central Securities Clearing System (CSCS) Limited, otherwise known as Central Securities Depository (CSD), is the clearing house of the Nigerian Stock Exchange.

Review questions

Multiple-choice questions

- 1 Commercial banks are commonly known for _____.
 A long-term loans
 B medium-term loans
 C Short-term loans
 D all of the above
- 2 Assuming no leakages, and given that initial deposit = ₦400.00, cash deposit ratio = 25%, the maximum amount that banks can create is _____.
 A ₦100 000
 B ₦1 600
 C ₦160 000
 D ₦200 000
- 3 Which of the following is *not* a development bank? _____.
 A Federal Mortgage Bank of Nigeria (FMBN)
 B Nigerian Agricultural and Cooperative Bank (NACB)
 C Nigerian Bank for Commerce and Industry (NBCI)
 D Nigerian Acceptances Limited (NAL)
- 4 Capital market dealers do *not* include _____.
 A merchant banks
 B development banks
 C insurance companies
 D commercial banks
- 5 The following are the instruments traded on the stock market, except _____.
 A bank shares
 B preference instruments
 C ordinary shares
 D debt instruments
- 6 The market where long-term funds are sourced is called _____.
 A the international market
 B the Nigerian market
 C ordinary shares
 D the capital market
- 7 Which of the following is *not* a part of the operators of the Nigerian Stock Exchange? _____.
 A The stockbrokers
 B The issuing houses
 C The registrars
 D Journalists
- 8 The maximum amount that can be raised on the second-tier market does *not* exceed _____.
 A ₦20 m
 B ₦50 m

- C ₦100 m
D ₦10 m
- 9 An automated mechanical instrument that monitors the investments of a shareholder as an anti-theft device is the _____.
- A computer system
B trade alert
C waiver
D CSCS digital centre

Essay questions

- 1 Define:
 - a) Commercial banks
 - b) Merchant banks
 - c) Development banks
- 2 What role does the central bank play in your country's financial system?
- 3 Distinguish between money and capital markets.
- 4 a) What is capital market?
b) List the instruments traded in this market.
- 5 Write short essay on each of the following:
 - a) Waiver
 - b) Central Security Clearing System (CSCS)
 - c) Rights offer
- 6 Enumerate five listing requirement each for the 1st and 2nd tier markets.
- 7 Explain about five importance of stocks/shares to an investor.

Chapter 14

Money: Demand for and supply of money

Performance objectives

By the end of this chapter, you will be able to:

- 1 identify the various motives for holding money.
- 2 identify the determinants of the supply of money.
- 3 explain how changes in the price level affect the purchasing power of money.

Introduction

In Book 1, we defined money as anything that is universally accepted within a given community in payment for goods and services and for settlement of debts. We also discussed functions, characteristics and types of money.

In this chapter, we shall examine the value of money and discuss the demand for and supply of it.

Demand for money

The demand for money is the total amount of money which all individuals in the economy wish, for various reasons, to hold. Demand for money is different from demand for other commodities. Demand for other commodi-

ties is a flow, and is therefore expressed in relation to a given period of time. Money, on the other hand, is stock,

Thus, when we talk of the demand for money, we do not have to indicate a period of time. The demand for money is simply the total amount of money which individuals wish to hold in cash or bank deposits.

Motives for holding money

Holding any money entails a cost because such money could otherwise be spent on an income or interest-yielding asset. There are several reasons why people hold money. These are:

- 1 transactions motive
- 2 precautionary motive
- 3 speculative motive

Transactions motive

We have said that money is a means of exchange. This means that all, or most, transactions in the economy are carried on through the use of money. A commodity is first exchanged for other commodities. The motive for holding money, which results from the fact that money is a means of exchange, is called the transactions motive.

The transactions motive for holding money results from the fact that the income which one receives and the payments which

one makes over a given period are never exactly equal. If payments could be made at the same time as one received one's income, then the transactions motive for holding money would not arise. In real life, however, such a perfect balance of receipts and payments is never obtained. Therefore, people always need to hold some money balances in order to meet necessary expenditure.

Precautionary motive

A man can never be exactly sure of how much money he will need to spend in a given period. He cannot even be sure of the total amount of income that will accrue to him over any given period. He therefore needs to hold some money balances on account of this uncertainty of future incomes and payments. This motive for holding money, which arises from the fact that unforeseen expenditure can never be predicted, is called the precautionary motive.

We assume that if the individual does not hold money as a precaution against the unforeseen, he will have to borrow when there is an emergency expense to meet. Interest will have to be paid on the amount borrowed and such interest will be an added cost. To avoid this, therefore, and still be ready for future expenses, the individual needs to hold the money likely to be required by him during the period.

Speculative motive

This is a motive for holding money which arises from the fact that the money value of other income-yielding assets, such as shares and bonds, could increase or decrease as time goes on. Money is a store of wealth and a person may hold his wealth in the form of money or as bonds or shares. If such a person expected the money values of shares to fall

in future, he could sell off his shares and keep all his wealth in the form of money. To leave them in the form of shares would cause him a loss should the money value of shares actually fall.

In the same way, if a man expected that in future, the money values of shares would soon increase, he would prefer to hold his wealth in the form of shares. In fact, he might even reduce his money holding, in order to be able to buy more shares. The desire to hold money thus depends on one's expectations as to whether shares will increase or decrease in value. The amount of money held for this reason is determined by the speculative motive.

Of the three main reasons for holding money, the transactions and precautionary motives have to do with the primary role of money as a medium of exchange.

Supply of money

The supply of money means the total stock of money in an economy at any time. Money supply is generally recognised as consisting of metallic money, i.e., coins; paper money, i.e., bank notes; and current account deposits at the banks. Time deposits are sometimes also included. Notes and coins are the most widely accepted means of payment. They are a key part of the money supply. By the use of cheques, current accounts held at the banks are also used in the settlement of debts. Cheques are therefore recognised as part of the supply of money.

The supply of money can be determined. The central bank, which issues the currency, has the statistics of metallic and paper money issued. The banks publish their balance sheets annually, through which the

total amount of deposits held by them can be determined.

It is important to note that what has been discussed so far relates to nominal money supply.

'Demand deposits' refers to current accounts at banks; 'current accounts outside banks' refers to notes and coins in circulation; while 'quasi-money' refers to time deposits, short-term government securities and commercial bills, etc.

Value of money

In economics, we distinguish between two kinds of values: Value-in-use or use-value and value-in-exchange. Value-in-use means the worth of something to the person using it. It refers to the total utility or satisfaction derived from the use of the thing in question. Used in this sense, one cannot think of the value of money. Money has no value-in-use or use-value. For, no utility can be derived from money as an object in itself.

The other kind of value, value-in-exchange, refers to the worth of something in the market. The worth of a commodity, or item or service in the market can be defined as the quantity of some other commodity for which the item in question can be exchanged. It is in this sense that we generally use the word value in economics, i.e., to mean value in exchange. Used in this manner, one can now easily talk of the value of money.

The value of money means its worth in the market, which is given by the quantity of other commodities for which it can be exchanged. The quantity of other commodities for which money can be exchanged depends, clearly, on the price level. Nobody

ever wants money for its own sake, but rather, for the goods and services that it can buy. How much or how little a given amount of money can buy depends on the price level in the market.

It is well known that the price level is always changing. Rises and falls in the price level, have different effects on the value of money. In other words, if there is a rise in the price level, the value of money in exchange reduces because its power to acquire other goods and services is weakened. For example, suppose a man had ₦100 which he spent on books. At a price of ₦5 per book, he would buy 20 books on the whole. If, however, the price per book doubled to ₦10, he would buy only 10 books. Initially, the value of his ₦100 was 20 books, but after the doubling of the price, the value of his ₦100 fell to 10 books. Thus, an increase in the price level leads to a decrease in the value of money. Similarly, a fall in the price level results in an increase in the value of money.

Measuring changes in the value of money

The changes which take place in the value of money can be measured by the use of *index numbers*. An index number is a single figure which indicates the relative change, if any, in the prices or cost, of commodities between one period and another called the *base period*.

There are three main types of index numbers. These are:

- 1 price index number
- 2 volume index number
- 3 value index number

Since we are concerned with measuring changes in the value of money, we shall concentrate only on price index numbers.

Price index numbers

This is a number used to compare current prices to those of a base period, which is usually given the value of 100. There are different types of price index numbers, but we shall deal with only one: the retail price index.

The retail price index: This number, also known as the *cost of living index*, is used to compare the periodic average price levels of the most common range of goods and services purchased by consumers. It is constructed by choosing a set of items, finding the current prices of these items, expressing these as percentages of their prices within some base period, and then calculating a weighted average of these price relatives. The base period is the period against which current prices are to be compared. It is usually given a value of 100. If, for example, the calculation results in 110, this means that retail prices have increased by 10 per cent. If it results in 95, this means that there has been a drop of 5 per cent in average retail prices. Consider the following worked example.

Example

A consumer purchases only two commodities, rice and beans. In 1980, the prices per dish of rice and beans were ₦5 and ₦8 respectively, but, in 1987, the prices of the same quantities of both commodities became ₦8 and ₦12 respectively. If the consumer spends twice as much on rice as on beans, calculate the weighted retail price index, using 1980 as base year.

$$\text{Index number} = \frac{P_1}{P_0} \times \frac{100}{1}$$

$$\therefore \text{Index number} = \frac{8}{5} \times \frac{100}{1} \\ = 160$$

For beans, $P_0 = ₦8$ and $P_1 = 12$

$$\therefore \text{Index number} = \frac{12}{8} \times \frac{100}{1} \\ = 150$$

Since the consumer spends twice as much on rice as on beans, this means that he considers rice more important than beans. Therefore, let the weight of rice be 2 and the weight of beans 1.

$$\text{Weighted index number} = \frac{(\text{Rice price index} \times \text{Weight of rice}) + (\text{Beans price index} \times \text{Weight of beans})}{(\text{Weight of rice} \times \text{Weight of beans})}$$

Substituting figures, we obtain

$$= \frac{(160 \times 2) + (150 \times 1)}{2 + 1} \\ = \frac{(320 \times 150)}{3} \\ = \frac{470}{3} \\ = 156.67$$

Thus, the weighted price index for 1987 is 156.67. This means that retail prices were 56.67 per cent higher in 1987 than in 1980. Therefore, the cost of living has increased by 56.67 per cent since 1980.

Uses of index numbers

There are two uses of index numbers:

- 1 Efficient comparison
- 2 Facilitation of comparison

Efficient comparison

Index numbers save us time and space.

Instead of a whole lot of narrative information, index numbers summarise the entire situation into a number, from which it can immediately be told whether there has been a rise or fall in the value of money.

Facilitation of comparison

Index numbers make comparison very easy. All values are compared against one single base year only. For example, the relationship between 105 and 155 is more easily understood than that between ₦1 365 million and ₦2 015 million.

Problems of index numbers

The following are problems of index numbers:

- 1 Loss of details
- 2 Choice of weights

Loss of details

Index numbers are averages; therefore, they measure only the central tendency. This means that important details relating to people at the extremes are neglected. For instance, the index of retail prices relates to the average man, not the very rich or very poor.

Choice of weights

There is always a problem in choosing appropriate weights. This can cause the figures to become distorted.

Summary

- The demand for money is the amount of cash balances people in the economy wish to hold for various reasons.
- People hold money for transaction, precautionary, and speculative motives.

- Transactions and precautionary motives for holding money relate to the function of money as a medium of exchange.
- The speculative motive borders on the function of money as a store of value.
- Supply of money is the total stock of money in the economy at any time.
- The value of money is the amount of other commodities for which a unit of it can be exchanged. It depends, therefore, on the price level.
- The value of money is measured by the use of index numbers.

Review questions

Multiple-choice questions

- 1 The transactions motive of demand for money _____.
 - A borders on the primary role of money as a medium of exchange
 - B results from the operations of the foreign exchange market
 - C arises from the need to meet sudden expenditures
 - D relates to the value of income-yielding assets
- 2 The speculative motive for holding money is based on the function of money as a _____.
 - A store of value
 - B measure of value
 - C medium of exchange
 - D unit of account
- 3 Which of A–D is untrue? The value of money is _____.
 - A the amount of other commodities for which a unit of it can be exchanged
 - B dependent on the price level
 - C the satisfaction money yields
 - D none of the above

- 4 The most correct index for measuring change in the value of money is _____.
- A value index numbers
 - B volume index numbers
 - C factor prices index
 - D retail price or cost of living index

Essay questions

- 1 Explain the following concepts in the theory of demand for money:
 - a) Transactions motive
 - b) Precautionary motive
 - c) Speculative motive
- 2 What is the problem with index numbers as used to measure changes in the value of money?
- 3 Discuss three uses of index numbers.

Performance objectives

By the end of the chapter, you will be able to:

- 1 identify types of inflation/deflation, the alternative causes and control measures.
- 2 identify the effects of inflation/deflation.
- 3 discuss Nigeria's inflationary experiences and the various control measures adopted by government.

Introduction

In chapter 14, we briefly discussed the relationship between the value of money and the price level. We saw that an increase in the general price level will give rise to a fall in the general value of money, and vice versa. Of more common occurrence in modern economies is the trend of general increase in price level. This relates to the concept of inflation (and deflation) which constitute the main theme of this chapter.

Meaning of inflation

Inflation is an economic situation in which prices are rising rapidly and continuously, causing a corresponding fall in the value of money. The prices rise steeply because there is far greater demand for goods and services than supply of these in the economy.

Once there is an upward and sustained movement in the general price level, inflation is said to exist. However, the upward movement of the general price level must

be studied with caution. If the rising prices merely indicate a recovery from an economic recession and depression, then it cannot be correctly regarded as inflation. Again, an increase in the volume of money in circulation should not be termed inflation if it results in an increase in the general output of goods and services.

Types of inflation

Three main types of inflation can be distinguished in economics. These are:

- 1 chronic inflation
- 2 hyperinflation
- 3 suppressed inflation

Chronic or creeping inflation

This is a small, but gradual and continuous increase in the general level of prices. Under creeping inflation, the upward shift of the general price level every year is about 5 per cent. Chronic or creeping inflation generally does not give rise to any alarm. This is the kind of inflation experienced in most countries of the world. Some economists even hold that chronic or creeping inflation is good for the economy, in that it helps it to grow, year by year. The effect of chronic inflation is to gradually but continuously erode the effectiveness of money as a store of value.

Hyperinflation

Also described as galloping inflation, hyper inflation is an uncontrolled kind of inflation

in which the general price level rises very rapidly, leading to a disastrous fall in the value of money. Hyperinflation immediately undermines the role of money as a store of value and quickly threatens its function as a medium of exchange. The most spectacular case of galloping inflation in the world is that which occurred in Germany immediately after the First World War. Level of prices rose so rapidly that the value of money reduced to almost zero and, finally, people resorted to the old barter system, until the currency was changed. Another good example of hyperinflation occurred in Hungary after the Second World War.

Suppressed inflation

This is a minor part of inflation. It is a kind of inflation in which the price level is prevented, through price legislation, from rising very rapidly. In suppressed inflation, the price level is capable of rising very rapidly, but it is held down or suppressed by the use of price controls and regulations.

This means that in a situation of suppressed inflation, the supply of money is not being fully utilised on account of the price controls. The price controls and regulations succeed in rendering a part of the supply of money redundant which, if released, would cause the general price level to rise higher and more rapidly. Suppressed inflation occurred in Britain during the Second World War (1939–1945).

Other types of inflation

- 1 Cost push-inflation
- 2 Demand-pull inflation

Cost-push inflation

This type of inflation occurs as a result of an increase in the cost of production; and for

the producer to recover his cost and make profits; he pushes the cost to the consumer in the form of high prices of goods and services. This cost of production may arise from an increase in the cost of hiring labour or other productive resources. An example of an increase in cost of hiring labour may have occurred in Nigeria when the minimum wage was raised from ₦7 200 to ₦18 000.

Demand-pull inflation

Demand-pull inflation, on the other hand, occurs when aggregate demand is increasing and supply is not increasing but remains constant. This situation creates excess demand over supply and the result is increase in prices of goods and services. Demand-pull inflation is a result of an increase in the purchasing power of supply of goods and services.

Concepts related to inflation

Let us now take a look at some of the ideas or terms more commonly encountered whilst discussing inflation. These are:

- 1 inflationary gap
- 2 inflationary spiral
- 3 disinflation
- 4 deflation
- 5 reflation
- 6 slumpflation
- 7 stagflation

Inflationary gap

Inflationary gap is an economic state of affairs in which the total or aggregate demand in the economy exceeds the total or aggregate supply of goods and services coming forward to satisfy the demand. It is measured as the difference between the total amount of money available for spending and the total money value of the actual goods and

services available to meet the demand. The greater the inflationary gap, the greater the rate of inflation and, the smaller the inflationary gap, the lower the rate of inflation in the economy.

Inflationary spiral

This is brought about by the interaction of factor incomes, especially wages, and prices such that an increase in the price level causes workers to demand higher wages, which causes the price level to still rise higher, by increasing the cost of production. Thus, the inflationary spiral is a condition in which an upward shift of the price level is partly a cause and partly a result of increases in wages, rents, interests and profits.

When prices rise, workers press for higher wages, and so the wages increase. But this increases the cost of production, so prices increase again, and the situation continues in this spiraling manner.

The inflationary spiral effect is not new in Nigeria. In 1974, the Udoji Awards implied increased wages. This caused the price level to increase. Later, in 1979, minimum wages were increased. Again, price levels rose still higher. Once more, the Shagari administration increased minimum wages and prices again increased. In 1988, in order to improve the lot of Nigerian workers, the Babangida regime increased fringe benefits. Again, price levels promptly increased and have continued to do so since.

Disinflation

This refers to a set of measures by which the inflationary pressure in an economy is removed, in order to maintain the value of money. The purpose of disinflation is to control or eliminate inflation by direct control of consumer expenditure by reducing

the supply of money and increasing interest rates and so on. Disinflation is directed against inflation, but if carried too far, will result in deflation.

Disinflation was applied in Nigeria between July 1986 and December 1987. Among the disinflationary measures taken were the withdrawal of over ₦3 billion from the banking system by the Central Bank of Nigeria in August 1986, and the deregulation of interest rates in July 1987, minimum discount rate being increased from 11 to 15 per cent.

Deflation

Deflation is a situation in which there is a general fall in price levels, money supply and money incomes, resulting in an increase in the value of money. Deflation could result in lower levels of imports, employment and the national income. It is capable of having harmful effects on the economy.

Deflation and disinflation are not to be confused. Deflation has more far-reaching effects on the economy than disinflation, which is merely a set of anti-inflationary measures.

Reflation

This is an economic state of affairs in which prices, employment, output, etc are picking up again as a result of conscious government policy to that effect. When deflation has had too drastic an effect on the economy, reflation is a period of recovery from the slump. In other words, reflation is directed against deflation, just as disinflation is directed against inflation.

Slumpflation

Slumpflation is a term used to describe an economic situation in which much reduced

economic activity coexists with inflation. That is, slumpflation is characterised by the idleness and under-utilisation of resources like labour and capital, at the same time as the general price level is rising and the value of money falling.

Slumpflation has become a regular characteristic of the Nigerian economy since the Economic Stabilisation Act (Austerity Measures) of 1982 came into force. Consider this: according to the Central Bank of Nigeria, real income declined by 12 per cent in 1985 and, by 1986, the decline was 3.3 per cent. In 1987, the decline was worse still. Unemployment in 1985 was 9 per cent. By 1986, it had risen to 11 per cent and higher still in 1987, according to estimates from the Federal Office of Statistics. In 1970, the rate of inflation was 13.8 per cent, by 1975 it had climbed to 34 per cent, and 40 per cent in 1984, with no recovery in sight. Such is slumpflation.

Stagflation

This is a high rate of inflation which exists at the same time as industrial production is slowing down. It refers to high increases in the price level which are not accompanied by any increases in industrial production. Stagflation is more or less related to slumpflation. However, while stagflation is more common in developing countries, stagflation has been experienced in both the United States and the United Kingdom.

Causes of inflation

Inflation is a phenomenon which has to do with money. A rapid increase in the supply of money will almost certainly give rise to inflation. Inflation will not clearly manifest without some form of increase in the money supply. Other factors which can also cause

inflation are the following:

- 1 Excess demand
- 2 Wage-cost-push
- 3 Import-cost-push
- 4 Demand-shift
- 5 Deficit budgeting
- 6 Increase in population
- 7 War period

Excess demand

Excess demand occurs when demand outstrips supply. If aggregate demand rises higher than aggregate supply, consumers will begin to compete for available goods and services by offering higher and higher prices. Anxious to increase their output in this situation, producers will increase the demand for production factors, whose prices will also increase.

Thus, we see that increase in both the prices of consumer goods and of factors of production are caused by excess aggregate demand. The inflation that thus results is known as *demand-pull inflation*, indicating that prices were pulled up by too much demand.

Wage-cost-push

Rising prices can also be the result of high wages. Labour is rewarded by wages. Even when the demand for labour is not greater than the supply of it, powerful trade unions can coerce employers into paying higher wages. Higher wages will increase the cost of production. The higher costs of production finally lead to higher market prices. Thus inflation begins. The inflation which results is known as a *wage-cost-push inflation*. It should be noted here that wages here do not rise because of excess demand for labour but rather, due to union power.

Import-cost-push

Rising domestic price levels may be the result of high cost of imports. Nigeria, for example, depends heavily on imports (raw materials and finished goods) from the developed countries. If the price level in these countries should increase, then Nigeria's imports will become more expensive. When such imports are used as inputs for production in Nigeria, local production costs rise. Consequently, the price level in Nigeria also rises, resulting in inflation. Inflation resulting from the high costs of import is called *import-cost-push inflation*.

Demand-shift

Inflation may result from a shift in demand, from one commodity to another. In this case, there is no increase in aggregate demand. The inflation results from the fact that, while demand can shift quickly from commodity A to commodity B, resources cannot be shifted as quickly from the production of commodity A to the production of commodity B. The result is that before resources move to the production of commodity A, there will have been an excess demand for commodity B, which will cause its price to rise, thereby giving rise to inflation.

This kind of inflation, called *demand-shift or bottle neck* inflation is always short-lived, because resources will eventually move into the production of commodity B, to wipe off the excess demand and bring prices to equilibrium again.

Demand-shift inflation is sometimes referred to as *structural rigidity inflation* because both prices and resources are shown to be rigid. For example, when demand shifts to B, resources cannot quickly move to B. Excess demand for B thus results, pushing its price up. Meanwhile, the price for A does

not fall, although demand is shifting away from it. The result is that the average price level is higher than before, which is what causes the inflation.

Deficit budgeting

Deficit budgeting takes place when the government spends more money than it receives from its revenue sources. The amount spent over the income will come either from borrowing or from printing and minting more money. In either case, inflation will result from the increased supply of money without a corresponding increase in the output of goods and services.

Increase in population

When the population of a country increases without corresponding increase in productivity, it can cause inflation. Poor distribution systems can create artificial scarcity of goods and the few sellers having the product might increase its price leading to inflation.

War period

This occurs when there is war in a particular region and the government diverts most of its resources into the production of arms and ammunitions. There will be little left to maintain the demand of the citizens and price will rise.

Effects of inflation

Inflation has a number of effects on economic activities. The most important of these are the following:

- 1 Change in resources allocation
- 2 Redistribution of wealth in favour of debtors
- 3 Lowering of living standards of fixed income earners

- 4 Raising of level of output and employment
- 5 Destruction of 'store of value' function of money
- 6 Reduction in in-flow of foreign exchange

Change in resources allocation

Chronic inflation influences the allocation of resources in the economy by influencing relative prices and wages. Inflation causes the reward in some sectors to increase and the real reward in other sectors to decrease.

Resources, therefore, will tend to flow to sectors where rewards have increased and away from sectors where real rewards have fallen. For example, occupations having strong trade unions will be able to keep their wages at the same level as the inflation. This will cause labour to move into such occupations. On the other hand, wages in some other occupations will lag behind the level of inflation, so that real wages in them fall. This will discourage new entrants into such occupations. Thus, inflation will have succeeded in affecting the allocation of labour.

Redistribution of wealth in favour of debtors
In inflationary times, debtors turn out to gain while lenders are left worse off. As an illustration, consider two individuals, Garba and Ibrahim. Garba borrows ₦1 000 from Ibrahim at a 10 per cent interest rate for one year. If inflation sets in and the price level increases by 15 per cent, then Ibrahim will lose and Garba will gain. Garba will pay him back ₦1 100.

But this cannot buy as much as the ₦1 000 he lent to him because inflation has brought the value of money down by 15 per cent. Therefore his situation now is worse than before. Garba, on the other hand, gains. If he spent the ₦1 000 he borrowed to buy and maintain a car, the price of the car will

now have increased by the rate of inflation, that is 15 per cent. Therefore, he can now sell the car at ₦1 150, pay Ibrahim his ₦1 000, plus the ₦100 interest, and still end up with a gain of ₦50. Inflation thus redistributes income in favour of borrowers.

Lowering of living standards of fixed income earners

Persistently rising prices, such as there are in times of inflation, have the effect of reducing the standards of living of fixed income earners. While their income stays constant, prices are rising, so that their purchasing power is continuously being eroded. By contrast, non-fixed income earners, such as businessmen and shareholders, are favoured in inflationary times.

Raising of level of output and employment

In times of inflation, prices rise continuously and, as this happens, entrepreneurs realise more and more profits. With profits high, entrepreneurs are encouraged to increase output so as to make even profits. To raise the level of output, more labour (a factor of production) has to be employed. Thus, inflation has had the effect of increasing the level of output as well as employment.

Destruction of 'store of value' function of money

In a period of continuously rising prices, as obtains under inflation, the value of money is continuously falling. With money losing value so fast, people lose confidence in it and so, they refrain from storing their valuables in the form of money. In fact, galloping inflation can eliminate even the role of money as a medium of exchange. This happened in the German hyperinflation that took place right after World War I.

Reduction in in-flow of foreign exchange

Because inflation causes an upward movement of prices, the country's export products become highly priced in comparison with foreign products. Therefore, foreigners are discouraged from buying it, which robs the country of scarce foreign exchange. This will also make imports more attractive than domestic goods, and from there, balance of payment problems may set in.

Control of inflation

Although mild, chronic inflation is tolerable and may even be desirable for continued economic growth, inflation is always potentially dangerous. For this reason, governments all over the world work hard to keep inflation controlled. To check inflation, the following measures may be adopted:

- 1 Monetary policies
- 2 Use of fiscal policies
- 3 Maximum price legislation
- 4 Wage freeze in the labour market
- 5 Surplus budgeting
- 6 Increase in output of goods and services
- 7 Reduction of bottlenecks in the distribution channel

Monetary policies

Monetary policy is that policy of government by which the volume of money in circulation is regulated. Monetary policies are normally carried out through the central bank. Thus, to reduce the volume of money in circulation, the central bank can:

- 1 sell treasury bills and certificates
- 2 increase the legal reserve requirement for banks
- 3 increase the discount rate
- 4 increase the *liquidity ratio*

Each of these measures will make it difficult for banks to lend and for the public to bor-

row money. As a result, the volume of money available will reduce, without any reduction in the volume of goods and services. Thus, inflationary pressure in the economy will be brought under control.

The use of fiscal policies

A fiscal policy is that policy by which government raises funds through taxation and other means and influences the level and pattern of expenditure. The government can use its fiscal policy to reduce aggregate demand in the economy. For example, if the rate of personal and company income taxation is increased, individuals and firms will have less to spend, as more of their income will be paid to the government in taxation. This will reduce their purchasing power and so bring the level of demand lower than it would otherwise have been.

Maximum price legislation

This is a method by which the government controls prices by fixing the highest prices at which commodities may be sold or bought. Once the government has decreed a maximum price for a commodity, it becomes illegal for any one to sell above the price. In this way, the government can at least keep the inflation in considerable check.

Wage freeze in the labour market

In the labour market where wages can be pushed up by excess demand, the government may adopt a policy of wage freezing, to forestall inflationary wage increases. To freeze wages is to keep them from increasing. In this way, the cost of production can be kept down so that wage-cost-push and demand-pull inflation is avoided, or at least checked.

Surplus budgeting

To check inflationary pressures, the government can also resort to surplus budgeting which means deliberate reduction of expenditure so that this is less than income in a given fiscal year. This results in the government withdrawing more money from circulation than it is putting back. The effect is to diminish the supply of money, restrain purchasing power and thus stem inflation.

Increase in output of goods and services

Another way to deal with the problem of inflation is to step up the production of goods and services in the economy to match any expansion in the supply of money. This averts the classical inflationary situation in which there is too much money chasing too few goods. The government can encourage increased output of goods and services by a system of bonuses and tax rebates for producers who meet their output quota and targets.

Reduction of bottlenecks in the distribution channel

This is usually achieved through:

- 1 stabilisation of prices
- 2 equitable allocation of resources among various sectors
- 3 provision of employment for the masses
- 4 meeting the collective needs of the citizens
- 5 maintenance of internal peace and security
- 6 equitable redistribution of income or wealth among citizens
- 7 reducing the balance of payments problem
- 8 improving the level of production

In stabilisation of prices, public finance

is used to stabilise prices through the use of either monetary policy or fiscal policy to control prices during inflation or deflation.

Equitable allocation of resources among various sectors of the economy ensures that resources are effectively and efficiently shared among competing sectors of the economy.

Provision of employment for the masses is done so as to reduce unemployment to the barest minimum.

Meeting the collective needs of the citizens involves provision of social infrastructure like schools, good roads, hospitals, and pipe borne water, at reduced prices.

Maintenance of peace and internal security of the country is attempted by paying the police and armed forces, buying military equipment, building and maintenance of barracks.

Equitable re-distribution of income or wealth among citizens is done so that wealth will not be concentrated in a particular class nor will income inequality be obvious. Instead, public finance tries to redistribute income to reduce the gap between the rich and the poor.

To reduce the balance of payment problem, public finance seeks to formulate fiscal policies that will solve the problem of balance of payments so that the country would have a favourable balance of payments in her international trade relations.

Improving the level of production is done by reducing taxes, granting subsidies and increasing the size of government investment in productive activities in order to stimulate the level of productivity in the country.

Inflation in Nigeria

To understand inflation in Nigeria, let us take a close look at the monetary and fiscal policies prevailing in Nigeria since independence in 1960.

In the years just before the country's independence, the Nigerian economy was in steady growth. Export items at the time, namely groundnuts, palm produce, cocoa, cotton and other primary commodities, were doing well in the world market. This situation continued up to the time of the first military intervention in 1966. At this time, the government pursued a deliberate policy of fiscal and monetary discipline. Every effort was made to maintain a balanced budget; inflation had therefore not come into the reckoning.

As time went on, however, government responsibility increased as demands began to be made on it for more roads, schools and other types of social infrastructures. The idea of deficit budgeting gradually became acceptable to the government and inflation began to set in.

However, it was not until 1970, when it hit the 13.8 per cent mark, that inflation became a serious problem. Since then, it has remained a typical feature of the economy. The growth of inflation in the Nigerian economy has been added to by the expansionary monetary policy of the government. A lot of the recurring budget deficits were financed by printing and mining new currency. This had the effect of boosting the supply of money.

For instance, while currency in circulation in March 1960 was estimated at ₦104 million, by December 1980, it had risen to ₦3.6 billion and ₦5.4 billion in December, 1986. Consequently, inflation was also

boosted. From 13.8 per cent in 1970, the inflation rate rose to 34 per cent in 1975. The oil money earned by the country in the 1970s did not help the already existing inflationary situation. The Udoji Awards of 1974 also did not help matters. By the 1980s, import restrictions and later, a Dutch auction foreign exchange market, were some of the other factors that fuelled the inflation.

Deflation

Deflation is the persistent fall in the general price level of goods and services, money supply and money incomes, resulting in increase in the value of money.

Causes of deflation

- 1 surplus budget
- 2 excess supply over demand (increased productivity)
- 3 taxation
- 4 increase in bank lending rate

Surplus budget

This refers to when government's expenditure is reduced. This results in the reduction of the volume of money in circulation, thereby causing deflation.

Excess supply over demand

This may occur as a result of the increase in output of farmers or industrialists and if there is no corresponding increase in demand, prices will fall and deflation will set in.

Taxation

When there is an increase in taxes, the disposable income of workers will reduce and consequently their purchasing power and demand, and this would lead to a fall in prices of goods and services.

Increase in bank lending rate

Increase in bank lending rate reduces the capacity of commercial banks to lend money to the public. Therefore the money in circulation will reduce and prices will fall.

- 1 Use of monetary policy
- 2 Use of fiscal policy
- 3 Deficit budgeting
- 4 Increase in wages and salaries of workers

Effects of deflation

- 1 *Unemployment:* Surplus budgeting reduces government expenditure especially on developmental projects, and this means less labour will be employed.
- 2 A fall in the earnings/profits of businessmen. With low prices, profits are less and this would lead to low investment on the part of the businessman because of lack of funds.
- 3 *Lenders gain during deflation.* The value of money increases, so what the debtors will pay back will be more than the amount they borrowed.
- 4 *Low standard of living:* This will be due to lack of employment and less money in circulation.
- 5 Export is encouraged during deflation. This is because there is excess supply over demand in the local markets so producers would like to export their goods to other countries where they expect to make more revenue. Imports, on the other hand, are discouraged as goods are already surplus within the country.
- 6 Real income for fixed income earners would increase and this is because the value of money is increased and they need less money to buy all that they may need.

Control of deflation

Deflation can be controlled in the following ways:

Use of monetary policy

This is done by reducing the bank lending rate, thereby encouraging people to borrow and spend money. This would increase demand and producers would produce more.

Use of fiscal policy

Taxation would be reduced in order to increase the disposable income of consumers so as to increase their purchasing power and demand.

Deficit budgeting

This would increase government expenditure relative to their revenue. Expenditure on projects which will stimulate and create demand for commodities would be encouraged. The economy can therefore be revived by borrowings from the Central Bank.

Increase in wages and salaries of workers

This can control deflation as the increase will encourage higher productivity of labour.

Summary

- Inflation is a persistent rise in the general price level causing a downward trend in the value of money.
- Chronic or creeping inflation is one in which the price level rises very gradually from year to year.
- Hyper or galloping inflation is a great upward leap of the price level.
- Suppressed inflation is one in which

maximum price legislation is used to hold down the price level.

- Inflationary gap, inflationary spiral, disinflation, and deflation are all concepts relating to inflation. Others are reflation, slumpflation, and stagflation.
- Inflation is caused by excess demand, cost of wages and imports, demand shift, and deficit budgeting.
- Inflation brings about changes in resource allocation, redistribution of wealth in favour of debtors, lowering of living standards of fixed-income earners, raising of level of output and employment, destruction of the 'store of value' function of money, and reduction in the inflow of foreign exchange.
- Inflation may be controlled by the use of monetary and fiscal policies, maximum price legislation, wage freeze, surplus budgeting, and increase in the output of commodities
- Deflation is the persistent rise in the general price level of goods and services. During deflation, the value of money increases.
- Deflation is caused by surplus budgeting, excess supply over demand, increase in taxation and increase in bank lending rates. Its effects are unemployment, fixed income earners 'gain, lenders gains, low standard of living and exports is encouraged.
- Deflation can be controlled by using fiscal policy, monetary policy, deficit budgeting and increase in wages and salaries to increase productivity.

Review questions

Multiple-choice questions

- 1 Inflation exists when _____.
 - A the volume of money in circulation increases
 - B the prices of essential goods go up
 - C there is a sustained movement of the general price level
 - D none of the above obtains
- 2 Suppressed inflation is characterised by _____.
 - A the use of laws to hold down prices
 - B availability of redundant stocks of money
 - C non-rapid increase in the general price level
 - D all of the above
- 3 When inflation is due to excess demand, it is called _____.
 - A slumpflation
 - B stagflation
 - C demand-pull inflation
 - D excess-demand inflation
- 4 Which of A – D is *not* an effect of inflation? _____.
 - A Long-run change in resource allocation
 - B Income redistribution in favour of creditors
 - C Income redistribution in favour of debtors
 - D Destruction of 'store of value' function of money
- 5 The most effective control of inflation is by _____.
 - A increasing the output of goods and services
 - B wage freeze in the labour market
 - C maximum price legislation in commodity markets

- D use of fiscal policies
- 6 Which of the following is *not* a measure for controlling deflation? _____
- A Deficit budgeting
 - B Wage restraint or wage freeze
 - C Monetary policy
 - D Increase in wages and salaries
 - E Use of fiscal policies
- 7 Deflation is a persistent fall in the general price level and is usually caused by _____.
A a reduction in total demand
B an increase in government spending
C an increase in money supply
D an increase in aggregate demand

Essay questions

- 1 What controls are there for inflation in an economy?
- 2 Explain the following concepts:
 - a) Inflationary gap
 - b) Stagflation
 - c) Slumpflation
- 3 What are the economic consequences of inflation?
- 4 a) Define deflation.
b) What are the causes of deflation?
c) State ways in which deflation can be controlled.

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