BASIC ECONOMICS

(Handbook and workbook)

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First Edition

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Preface

If success in the examination is to be achieved thorough understanding of the course should be promoted. For this purpose, the book was organized and arranged carefully and systematically so that it provides a guide to the standard required for success in the principles of economics.

Acknowledgement

I am pleased to acknowledge the assistance and technical support provided by Dr. Dugasa Mulugeta (Ph.D.) Assistant Professor; Ato Thewedros G/Tsadik (B.Sc.): Ato Tadesse Baher (M.Sc.); Ato Girmamoges Redatie; and Ato Bishaw Temari, through out the writing of this book.

Chapter 1

1.1 Definition of Economics

There is no consensus among economists about a precise definition of economics. Among the many definitions of economics the following is one. *Economics* is the study of how society allocates its scarce resources among competing alternatives. Economics operates on 'micro' level and 'macro' level. The micro and macro terms come from the Greek words for 'small' and 'large', respectively.

Microeconomics is concerned with the analysis of individual economic units. These economic units include consumers, workers, investors, owners of land etc.

Macroeconomics studies the activities and behavior of the economy as a whole. Total national output, the general price level, the unemployment rate etc. are some of the macroeconomic concepts.

1.2 Methods of Economic Analysis

Induction and deduction

The fundamental objective of economics, like any science, is to develop theories which can help to explain the events we observe. Economic theory provides the basis for economic analysis and economic analysis makes use of logical reasoning. There are two kinds of logical reasoning. These are the deduction and induction methods. *Deduction* is a logical reasoning to explain specific events on the basis of the already established theory. For example, the law of demand is a theory about consumers behavior. It states that the amount of a good consumers want to purchase usually varies with its price. This can then be tested against how consumers actually behave. If the facts do not support the theory it is rejected.

Induction is a logical way of reasoning to arrive at a valid general statement, on the basis of valid specific facts. For example, suppose we observe that employment has the tendency to rise in the summer and fall in the winter. Having observed this regular pattern, we might

produce a theory to explain it which could then be tested against the facts in the normal way.

Positive analysis and normative analysis

Positive analysis deals with objective explanation of how the economy works. It concerns the analysis of facts. A disagreement on the positive statement is solved by referring to facts.

Normative analysis deals with how the economic problem should be solved. It involves value judgments. A disagreement on the normative statement is solved by voting.

Hidden fallacies

The *fallacy of composition* arises when we automatically assume that what is true for a part must be true for the whole. *False cause fallacy* is the assumption that if event A occurred before event B, event A caused event B.

1.3 Scarcity and Choice

We live in the world of limitless human wants and limited resources. The economic problem, therefore, is

summed up in the two key words - scarcity and choice. It must be noted that scarcity does not simply mean rare as many people think. In other words, because resources are limited does not mean they are necessarily scarce. To the economist, *scarcity* means that society's wants for goods and services far exceed the available resources (land, labor, capital, and entrepreneurial ability).

Because there are insufficient resources to produce all that is desired, society is forced to make choice. There are three fundamental choices to be made.

a) *What to produce*

This means that as society cannot produce all it wants, it must choose which goods and services to produce from the available resources.

b) *How to produce*

This refers to the methods of production to be adopted. Most goods can be produced in a variety of methods. A basic distinction is between capital-intensive production and labor-intensive production.

c) *For whom to produce*

This concerns the methods of distribution of goods and services.

The three basic problems are common to all nations.

1.4 Decision Making units and Alternative Economic Systems

Production, distribution, exchange, and consumption of goods and services constitute the major economic activities. The agencies through which the economic activities are performed are called the units of the economic system. The basic decision making units of the economic system are households and firms. A household may be defined as a single person, or a group of persons who live under one roof and make joint economic decisions. Firm is a decision making unit responsible for the production and sale of goods and services.

There are various types of economic system operating in the world but they can be categorized into market economy, command economy, and mixed economy.

a) Market economy

Under market economy, solutions to the three fundamental choices are given by market forces. Characteristics of market economy:

Private property

Individuals have the right to own, control, and dispose of the means of production.

Freedom of enterprise

Individuals are free to buy or hire economic resources to organize them for production and sell their outputs in markets of their own choice.

Freedom of choice

Individuals are free to start their business; resource owners are free to use their resources as they see fit; and consumers are free to spend their incomes as they want.

Control of the economy by the price system

The interactions of demand and supply cause changes in prices and it is these movements in market prices that determine the ways in which society uses its economic resources.

Self-interest as the motivating force

The pursuit of personal interests is given free expression. In other words, each decision making unit in the economy tries to do what is best for himself/herself.

Perfect competition

It is the regulating factor of self-interest The model of a market economy assumes that there is a large number of competing firms in each market and a large number of individual buyers for each product. Every body tries to maximize his/her gains or self-interest.

A very limited role for government

The model of market economy is characterized by an almost lack of government intervention.

b) Command economy

Under command economy, solutions to the what to produce, how to produce, and for whom to produce choices are given by the government. Characteristics:

Government ownership of resources

Most productive resources are owned by the government on behalf of the society as a whole.

Centralized planning mechanism

Both pricing decision and resource allocation are undertaken by a central planning authority.

Redistribution of income

Imbalances in income distribution in the society are corrected through proper adoption of economic policies and their implementation. Differences in income distribution can only result from differences in skills and efficiency of individuals in the society.

c) Mixed economy

This type of economy is the mixture of market and command economies. The principles of mixed economy seek to moderate the features of both market economy and command economy. **Characteristics**:

The existence of private and public ownership

Resources are owned both by individuals and the government and, therefore, production is organized in both public and private sectors.

Control over the price system

Prices are allowed to be determined freely by the market, but if they cross the limit then the government regulates them.

Control of monopoly business

The freedom of enterprise is controlled in the national interest for which restrictions are imposed on the activities of monopoly firms.

Development planning

In mixed economies development plans are introduced for the sake of rapid and balanced development.

1.5 The Circular Flow of Activity

The essential features of the interrelations between resource markets and product markets are captured in the so-called Circular Flow Of Economic Activity. Fig. 1.1 describes a simple model of a market economy. In the upper half of the diagram, firms express their demand for resources and households who own economic resources supply these resources. From the same market resources go to firms. The payments which firms make in obtaining

resources constitute expenditure of firms. The expenditure of firms flows from them to households in the form of income of resource owners. In the bottom half of the diagram, through consumption expenditure, households express their demand for goods and services in the product market. From the product market money income in the form of revenue of firms flows to firms and goods and services flow to households. Therefore, there is a link between households and firms through markets.

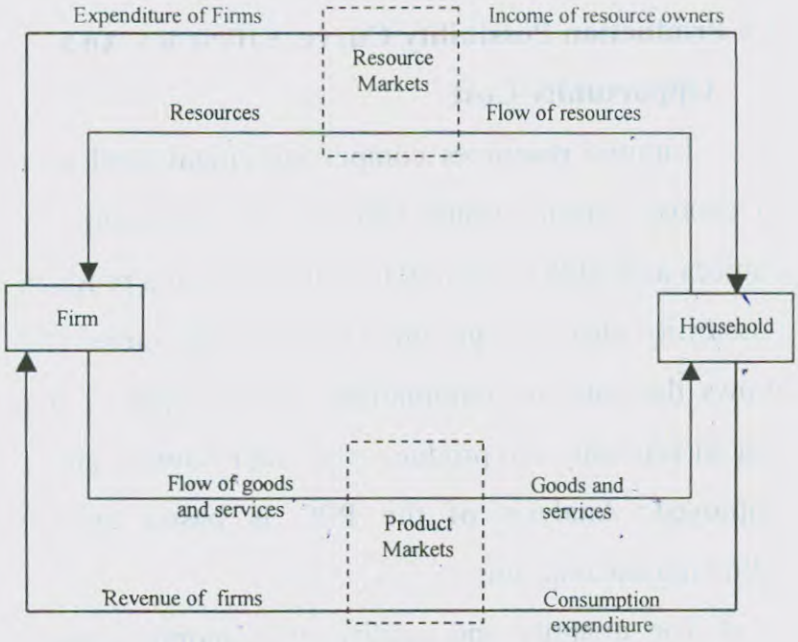

Fig.1.1 Circular flow in market economy

In modern economies, in addition to households and firms there is also the third one known as government. A government influences its economy in the following ways. In a mixed economy, the government produces and/or consumes goods and services, regulates the economy, maintains law and order. It has links with producers and consumers.

1.6 Production Possibility Curve, Efficiency And Opportunity Cost

Limited resources compel individuals and society to choose certain wants. One way of representing the choices available to society is in the form of a production possibility curve. A production possibility curve (PPC) shows the various combinations of two types of goods that an economy can produce when its resources are fully employed. Analysis of the PPC is based upon the following assumptions:

a) The quantity and quality of economic resources available for use during the year are fixed
b) There are two broad classes of output to be produced with available economic resources over the year
c) Some inputs are better adapted to the production of one type of good than the production of the other
d) Technology does not change during the year

In Table 1.1 at alternative A, all resources are used in the production of sickle and hence the maximum amount of it (i.e., 10 million units) is produced. Similarly, at alternative E all resources are used in the production of teff as the result of which the maximum amount of it (i.e., 4 million tons) are produced. These are the two extreme possibilities where the maximum amount of one and no quantity of the other are combined. In between the two extremes, various combinations of sickle and teff can be produced. The table shows that since resources are limited in supply and are fully employed, any increase in production of teff necessities the shift of resources away form the production of sickle and vice versa.

Table 1.1 Production possibility of teff and sickle

Types of product	Production alternative				
	A	B	C	D	E
Teff(in million tons)	0	1	2	3	4
Sickle (in million units)	10	9	7	4	0

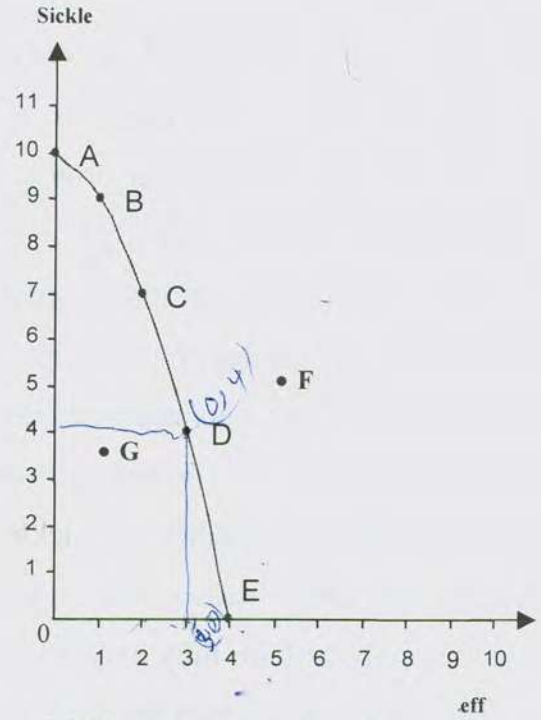

Fig. 1.2 Production possibility curve

In Fig. 1.2, the five production alternatives are plotted. By joining these points with a smooth line, we obtain the PPC. The curve shows that if the society wants to have more teff it must have less of sickle.

Each point on the PPC represents some maximum output of the products which means that society is

working efficiently. Points lying outside the PPC, like F, are unobtainable with the limited resources and fixed technology. With unemployment or underemployment society produces inside the PPC like point G.

Opportunity cost is the amount of other products which must be given up to obtain a unit of any given product. In an equation form,

$$Opportunity\ cost = \frac{The\ amount\ sacrificed\ of\ one\ good}{The\ amount\ obtained\ of\ the\ other\ good}$$

In our case, the amount of sickle which must be sacrificed to get another unit of teff is the opportunity cost of teff. For example, when we go from alternative D to alternative E the opportunity cost of teff is 4 ($\left|\frac{0-4}{4-3}\right|$).The concavity of the PPC reflects increasing opportunity cost.

Economic growth is the expansion in production possibility. That means the PPC shifts its position to the right (see Fig.1.3). Sources of economic growth:

a) Increased quantity of economic resources,
b) Improved quality of economic resources,

c) Advance in technology.

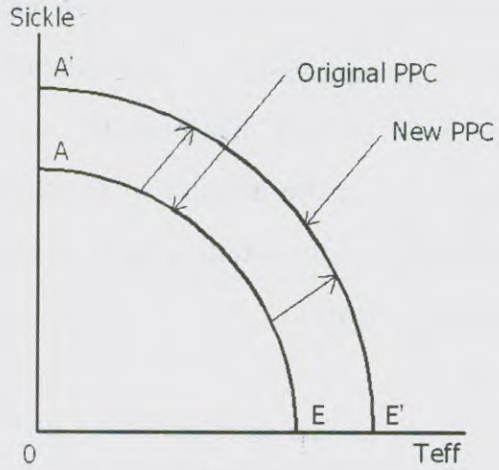

Fig 1.3 Economic Growth

Activities

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_____1(**Microeconomics/Macroeconomics**)deals with large aggregates like money supply. People's _____2(**ability to satisfy wants / wants**) seem to exceed their _____3(**ability to satisfy wants / want**). _____4(**Land / Capital**) is taken to mean all the natural resources available to society. _____5(**Consumer goods / Capital goods**) consist of all those things which people have made to aid them in production. _____6(**consumer goods / Capital goods**) are things which are wanted for their own sake because they provide immediate satisfaction. Any point inside the PPC must indicate that there are _____7(**unemployed / no idle**) resources in the economy. If society's ability to produce output increases, this will be represented by an _____8(**inward / outward**) movement of the entire PPC. When society efficiently allocates its resources and uses the best available technology it operates _____9(**outside the**

PPC / on the PPC) Scarcity compels society to make choice and choice involves _____10(**no sacrifice / sacrifice**). Scarce resources are combined to produce _____11(**free / economic**) goods. While deductive method is _____12(**a descending / an ascending**) process inductive method is _____13(**a descending / an ascending**) process. Firms are on the _____14(**supply / demand**) side in the resource markets, and households are on the _____15(**supply / demand**) side in the product market. _____**16 (Economic / Free**) goods have zero opportunity cost. The PPC is _____17(**straight line / convex to the origin**) when opportunity cost is constant. If an economy is working inefficiently it can have more goods and services with _____18(**additional / no additional**) use of resources. When we say that resources are scarce we mean that we _____19(**want / have**) more than we _____20(**can have / want**) Under _____21(**command economy / mixed economy**) public ownership and private ownership coexist. With

full-employment and no change in the sources of economic growth producing more of one good necessitates producing _____22(**less / more**) of the other good.

True / False

1. Economic resources are scarce in poor countries but not in rich countries.
2. The opportunity cost of sunshine is zero.
3. Society is better off producing inside the PPC rather than on it.
4. The full-production level of an economy implies a high unemployment rate.
5. If the economy is operating inside the PPC there is definitely less than full-employment.
6. If the unemployment rate declines, economic growth will occur.
7. To attain a higher rate of economic growth, society needs to devote a higher proportion of its productive resources to production of consumer goods than capital goods.

8. Microeconomics is the aggregate of macro-level economic activities.

9. Macroeconomics helps us to understand how workers decide where to work.

10. Positive analysis answers the question what will be.

11. Economic goods are obtained without effort.

12. Households are on the supply side in the resource market.

13. Any good or service produced from scarce resources is also scarce.

14. In economics the, term capital includes money.

15. Utilization of the previously unemployed resources does not lead to economic growth.

Multiple Choice

1. Which of the following is not considered a factor of production?

A) Labor
B) Tractor
C) Organizational skill
D) Food

2. The fact that economic resources are scarce means:

A) that it is necessary to make choice since some wants must go unsatisfied

B) that economic goods and services are also scarce

C) that resources should be used in those ways in which their productivity is the greatest

D) all of the above

3. The questions that have to be solved in using resources efficiently are solved in the market economy by:

A) households and firms each behaving selfishly

B) the council of economic advisors

C) firms alone

D) none of the above because there are no questions in the market economy

4. Which of the following economic resource is <u>not</u> land?

A) Organizational skill

B) Arable land

C) Mineral deposits

D) Forest

5. Indicate the wrong statement.

A) A disagreement on a normative statement is solved by voting

B) Topics such as the study of individual markets are considered under macroeconomics

C) Normative statements reflect people's moral attitudes

D) All of the above

6. Which of the following statements is not true?

A) In inductive method reasoning goes from facts to theory

B) Economic theory provides the basis for economic analysis

C) An efficient economy can produce more of one good with out producing less of another

D) None of the above

7. Indicate the wrong statement.

A) Labor-intensive method of production uses large amount of labor relative to capital

B) Scarcity forces society to make choice and choice involves sacrifice

C) Economic goods are obtained without effort

D) All of the above

8. Microeconomics is a branch of economics that studies:

A) The behavior of individual decision-making units in the economy

B) The relationship between total consumption and total income

C) Business cycle

D) All of the above

9. Which of the following statements is true?

A) The real cost of choice to produce more of one good is known as total cost of production

B) Capital differs from other resources in that it is made of metal

C) In rich countries scarcity of resources is not an economic problem

D) The PPC is drawn-up to indicate what can be produced through the best possible employment of resources

10. Choose the correct statement.

A) Restriction of monopoly power formation is the role of the government in the market economy

B) Mixed economy is often called the real system

C) In the circular flow diagram, firms take supply side in the resource market

D) The existence of strong government role is one characteristic feature of market economy

Matching

Column 'A'	Column 'B'
1. Capital	A) Scarcity and choice
2. Consumer goods	B) Obtained without effort
3. The 'invisible hand'	C) Reveals increasing opportunity cost
4. Free goods	D) Involves employment of large amount of labor relative to capital
5. Inductive methods	E) Provide immediate satisfaction
6. Ceteris paribus	F) Answers the question what should be
7. Economic problem	G) The unseen coordination of market
8. Labor-intensive	H) A simplifying assumption of an economic analysis
9. Concavity of the PPC	I) Involves employment of large amount of capital relative to labor
10. Normative analysis	J) Things which are produced not because they are wanted
11 Capital intensive	K) Ascending process

Short-answer questions

1. Explain the relationship between scarcity, choice, and opportunity cost.

2. Determine whether each of the following questions is a microeconomic or macroeconomic issue.

2.1 How do firms decide how many workers to employ?

2.2 Why does the national income grow with fluctuation from the growth trend?

2.3 How markets operate.

2.4 When will the economy speed-up?

2.5 How do workers decide where to work?

3. Distinguish between positive analysis and normative analysis.

4. Mention the basic economic problems.

5. Why do the three fundamental choices arise?

6. How can the central problems of an economy be solved?

7. What does the concavity of the PPC reflect?

8. What happens to the PPC when the quality of the existing economic resources improves?

9. Imagine an economy which operates at a point inside its PPC. What can you say about its resource employment?

10. Mention two factors that can shift the PPC to the right.

11. What does a straight line PPC indicate about costs?

12. Assume that point h with 50 units of good A and 150 units of good B is an efficient point. Could point i with 45 units of good A and 160 units of good B also be an efficient point?

Answers

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1. Macroeconomics
2. wants
3. ability to satisfy wants
4. Land
5. capital goods
6. Consumer goods
7. unemployed
8. outward
9. on the PPC
10. sacrifice
11. economic
12. a descending
13. an ascending
14. demand
15. demand
16. free
17. straight line
18. no additional

19. want

20.can have

21. mixed economy

22. less

True/False

1. False
2. True
3. False
4. False
5. True
6. False
7. False
8. False
9. False
10. True
11. False
12. True
13. True
14. False

15. True

Multiple choice

1. D) Food
2. D) All of the above
3. A) Households and firms each behaving selfishly
4. A) Organizational skill
5. B) Topics such as the study of individual markets are considered under macroeconomics
6. C) An efficient economy can produce more of one good without producing less of another
7. C) Economic goods are obtained without effort
8. A) The behavior of individual decision-making units in the economy
9. D) The PPC is drawn-up to indicate what can be produced through the best possible employment of resources
10. B) Restriction of monopoly power formation is the role of the government in the market economy.

Matching

1. J) Things which are produced not because they are wanted for their own sake
2. E) Provide immediate satisfaction
3. G) The unseen coordination of market
4. B) Obtained without effort
5. K) Ascending process
6. H) A simplifying assumption in economic analysis
7. A) Scarcity and choice
8. D) Involves employment of large amount of labor relative to capital
9. C) Reveals increasing opportunity cost
10. F) Answers the question what should be

Short-answer questions

1. Society's material wants are greater than the resources available to satisfy them. Thus, society must choose which wants to satisfy and which not. This is so because to choose to do some thing is to choose not to

do another thing. When society makes choices, it necessarily incurs an opportunity cost. Therefore:

Scarcity → Choice → Opportunity cost.

2.

2.1 Microeconomics

2.2 Macroeconomics

2.3 Microeconomics

2.4 Macroeconomics

2.5 Microeconomics

3. Positive analysis deals with objective explanation of how the economy works. Normative analysis, on the other hand, deals with how the economic problem should be solved. While a disagreement on the positive statement is solved by referring to facts, a disagreement on the normative statement is solved by voting.

4. What to produce, how to produce, and for whom to produce.

5. The three fundamental choices arise because society's material wants are unlimited but economic resources are scarce.
6. The central problems of an economy can be solved either by market forces or by a central planning body.
7. The concavity of the PPC reflects the law of increasing opportunity cost.
8. When the quality of resources improves the PPC shifts its position to the right which means that economic growth is achieved.
9. The country operates inside its PPC means that there is either unemployment or underemployment of resources.
10. Increase in quantity of economic resources, advance in technology.
11. It indicates constant cost.
12. Point i could also be efficient because more of one good comes with less of another good.

Chapter 2

2.1 Price Mechanism

Economic activities take place through markets. Market is not necessarily a place but is an institution through which price making forces (i.e., supply and demand) operate. In other words, it is any arrangement which brings buyers and sellers of a particular product into contact.

The price mechanism is said to operate where solutions to the three basic problems are given by market forces. The preferences of sellers are registered on the supply side and that of buyers are registered on the demand side, in various markets. The outcome of these choices is a system of product and resource prices. Those buyers and sellers who accept the price will be rewarded which means that they will be able to buy and sell the quantities they wish to do so. But, those who ignore the established price will be punished by the market itself.

2.2 Demand

An individual's demand for a good is the various quantities if ot the consumer is willing and able to buy at each specific price, over some given period of time. The main factors which influence an individual consumer's demand for good A (d_A) are:

a) The price of the good itself (P_A)

b) The price of the substitutes of the good (P_S)

c) The price of the complements of the good (P_C)

d) Change in income of the consumer (Y)

e) Change in consumer taste (T)

f) Consumer's expectation about future price change (E)

In an equation form, we can express the demand function for a good as:

$$d_A = f(P_A, P_S, P_C, Y, T, E)$$

Assuming that all other factors are constant by varying the price of the good itself, we get an individual's demand schedule for the good (see Table 2.1). A demand schedule, therefore, is a table which presents the quantities demanded at each price level during a specific

time period. Table 2.1 reveals that as price increases quantity demanded decreases, and as price falls quantity demanded increases.

Table 2.1 An individual consumer's demand schedule

Price of A (birr per unit)	Quantity demanded (Units per week)
1.00	5
1.10	4
1.20	3
1.30	2
1.40	1
1.50	0

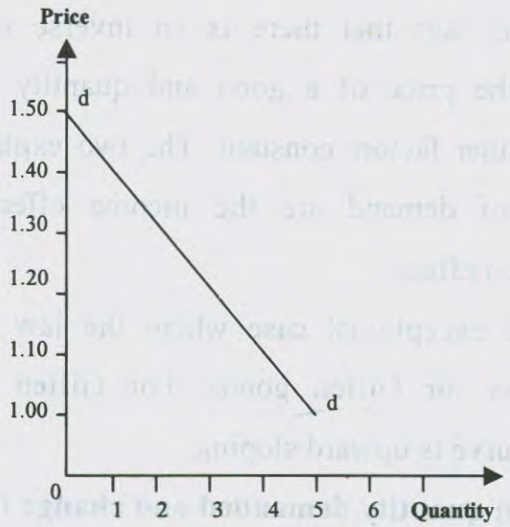


Fig. 2.1 An individual consumer's demand curve

Demand schedule can be represented most conveniently by graph. To plot the information of the demand schedule on a graph, it is conventional to put price on the vertical axis and quantity demanded on the horizontal axis. Plotting each pair of data on a graph and joining the resulting points gives us the individual consumer's demand curve (see Fig.2.1). The curve slopes downward from left to right. The downward slope of the demand curve reflects the law of demand. Thus, the *law*

of demand says that there is an inverse relationship between the price of a good and quantity demanded, keeping other factors constant. The two explanations to the law of demand are the income effect and the substitution effect.

The exceptional case where the law demand is violated is for Giffen goods. For Giffen goods the demand curve is upward sloping.

Change in quantity demanded and change in demand

These two terms imply entirely different things. Fig.2.2 suggests that at p_1 the quantity demanded is q_1 at point 'a' on the dd demand curve. If price falls to p_2 quantity demanded increases to q_2 at point 'b' on the same demand curve. That means due to the fall in the price of the good itself, we moved from point a to point b on the same demand curve. This movement along the same demand curve caused by the change in the price of the good itself is known as *change in quantity demanded*. Here demand either extends when price falls or contracts when price rises but it does not change.

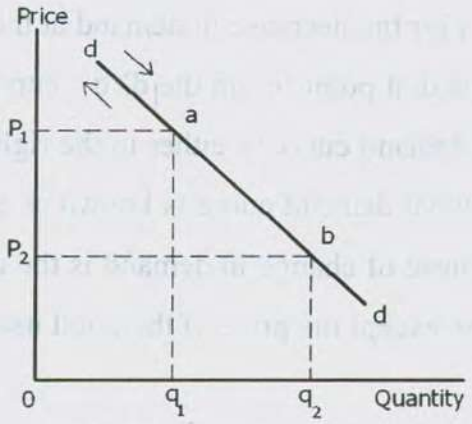


Fig 2.2 Movement along a demand curve

In Fig.2.3, demand for the good is initially represented by dd. A movement or shift in demand to the right (i.e., to d'd') is known as *increase in demand.* This is so because a greater quantity is demanded at any given price than previously. On the other hand, a shift in the demand curve to the left (i.e., to d''d'') is known as a *decrease in demand* because a smaller quantity is demanded at the same price. For example, when price is p_1 quantity demanded is q_1 at point 'a' on the dd curve. But after the increase in demand at the same p_1 more quantity (i.e., q_2) is demanded, at point 'b' on the d'd'

curve. Similarly, after the decrease in demand at the same price q_3 is demanded at point 'c' on the d''d'' curve. The movement of the demand curve to either to the right or to the left of the original demand curve is known as *change in demand*. The cause of change in demand is the change in the other factors except the price of the good itself.

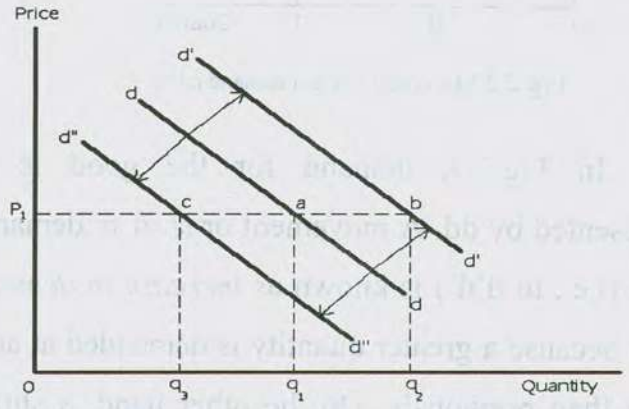


Fig 2.3 A shift of demand curve

Causes of change in demand

a) The price of substitutes

Goods that serve the same purpose are known as *substitutes*. An increase in the price of a good, therefore, will tend to increase demand for its substitutes. Similarly,

a fall in the price of a good will tend to decrease demand for its substitutes.

b)The price of complements

Complements are goods which are jointly consumed. A fall in the price of a good will increase demand for its complement, and a rise in the price of a good will tend to reduce demand for its complements.

c) Consumer income

Demand for normal goods increases when income of the consumer increases, and it decreases when income decreases. For inferior goods demand decreases with rise in consumer income and increases with a fall in income.

d) Consumer taste

Taste is taken to mean preference. If consumer taste is in favor of a good demand for it increases. If consumer taste is against the good demand for it decreases.

e) Consumer expectation about future price change

Expectation about future price rise increases current demand for a good and expectation of future price fall reduces current demand for it.

Market demand

The *market demand* for a good is the sum total of all individual consumers' demand for it. One can derive a market demand curve from individual consumer's demand curves by adding the quantity demanded by each buyer in the market, at each specific price. For simplicity sake, suppose there are only two buyers in the market and that the individual consumer demand equations are:

For consumer 1 $Q_{d1} = 9 - 4p$

For consumer 2 $Q_{d2} = 4 - p_2$

Since market demand is the sum of individual demands, to obtain the market demand we simply add individual demand function for the two consumers. Thus, market demand equals:

$$Q_d = Q_{d1} + Q_{d2}$$
$$= (9 - 4p) + (4 - p_2)$$
$$= 9 + 4 - 4p - p, \; p_1 = p_2 = p$$

$= 13 - 5p$

2.3 Supply

Supply refers to the various quantities of a good a seller is willing and able to offer for sale at each specific price, over some given period of time. Factors influencing supply of good A (s_A):

a) The price of A (P_A)

b) The price of substitutes (P_S)

c) The price of complements (P_C)

d) Cost of production (C)

e) Expectation about future price change (E)

In a symbolic form, supply function for good A can be written as:

$$s_A = f(P_A, P_S, P_C, C, E)$$

Table 3.2 shows the relationship between price and quantity supplied, ceteris paribus. The table reveals that when the price of the good increases its quantity supplied increases, and when price decreases quantity supplied

decreases. This direct relationship between price and quantity supplied is known as the law of supply.

Table 2.2 An individual seller's supply schedule for good A

Good A	
Price (birr per kilogram)	Quantity supplied (Kilogram per week)
30	100
25	90
20	80
15	70
10	60

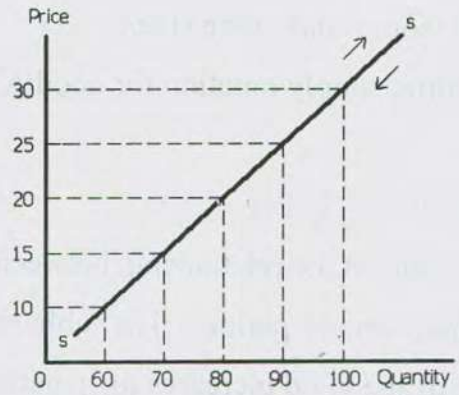


Fig 2.4 Movement along a supply curve

Plotting each pair of the price and quantity data on a graph, we obtain an upward slopping supply curve (see Fig.2.4). Obviously, due to the change in the price of the good itself quantity supplied changes involving movement along the same supply curve. Here, supply either extends or contracts but does not change. This movement along the same supply curve caused by the change in the price of the good itself is known as *change in quantity supplied*. If one of the supply determinants, except the price of the good itself, changes the supply curve shifts its position (see Fig.2.5). If the supply curve shifts to the right (for example, S'S') supply increases, if it shifts to the left (for example, S''S'') supply decreases. This shift in the position of the supply curve, causing change in quantity supplied at each price level is known as change in supply. Change in supply is caused by changes in other factors, price of the good remaining constant.

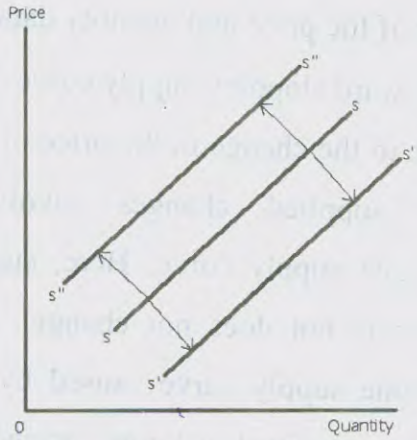


Fig 2.5 A shift of supply curve

The most important causes of change in supply are:

a) The price of substitutes (P_S)

An increase in the price of the substitute of good A causes supply of A to decrease, and a fall in the price of the substitute increases supply of A.

b) The price of complements (P_C)

When the complement of good A are joint products with A or when they are used in fixed proportion with it, a rise in the prices of the complements increases supply

of A. A fall in the prices of complements reduces the supply of A.

C) Cost of production (C)

Other things constant, a rise in cost of production will reduce profit, and hence lead to a decrease in supply. Conversely, a fall in cost of production will lead to higher profit at any given price and thus will lead to an increase in supply.

d) Expectation about future price change

Expectation of the future relative price of a product can affect current willingness to supply. If price is expected to rise current supply decreases, and if price is expected to fall current supply increases.

Market supply

The market supply of a good is the sum of the various quantities supplied at each specific price per time period by all the sellers of the good. Suppose that there are only two sellers in the market and they have identical supply which is represented by the individual supply function:

$$Q_{S1} = 40 + 2P$$

Thus, market supply equals:

$$Q_S = 2(40 + 2P)$$

2.4 Market Equilibrium

Market equilibrium occurs when supply and demand are in balance. In Table 2.3 at the price of birr 2.00 per kilogram, quantity supplied (i.e., 150) equals quantity demanded (i.e., 150). Equilibrium price and equilibrium quantity, therefore, are birr 2.00 and 150 kilogram, respectively. Only at this equilibrium position the market is cleared. As Fig.2.6 shows, graphically market equilibrium is established at the intersection point of market supply and demand curves. At all prices above the equilibrium position, there is always surplus, and this pushes the market price down. Also at all prices below the equilibrium position there is always shortage. When there is excess demand, competition among buyers will push the price up.

Table 2.3 A hypothetical equilibrium of demand and supply for banana

Price (birr per kg.)	Quantity demanded (Kg. per day)	Quantity supplied Kg. per day)	Difference
1.00	250	50	-200
1.50	200	100	-100
2.00	150	150	0
2.50	100	200	+100
3.00	50	250	+200

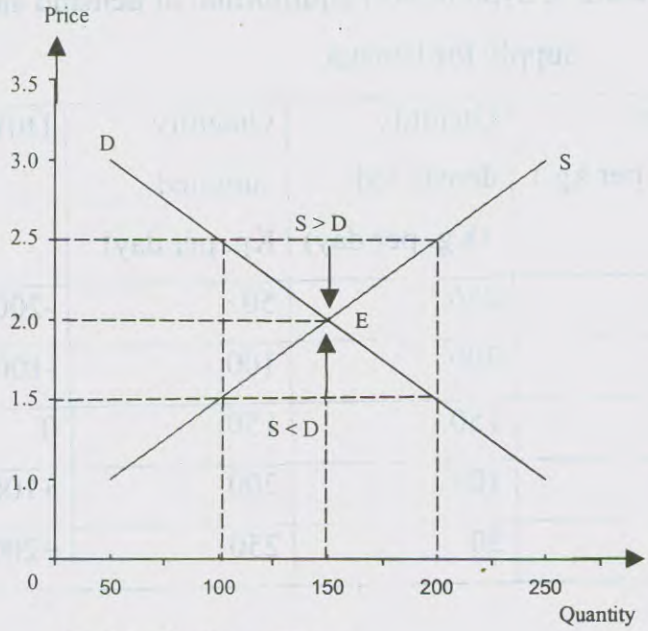


Fig. 2.6 Market equilibrium

Suppose market demand and market supply are represented by the following equations, respectively.

$Q_d = 350 - 100P$

$Q_S = -50 + 100P$

a) Calculate equilibrium price and equilibrium quantity.

b) Determine whether surplus or shortage occurs at the price 3.00.

c) Can equilibrium be established when price equals 3.00?

d) Who are competing when price equals 3.00?

Solution

a) At equilibrium position,

$$Q_d = Q_s$$

$$350 - 100P = -50 + 100P$$

$$350 + 50 = 100P + 100P$$

$$400 = 200P$$

Equilibrium price (P_e) = 2

To determine equilibrium quantity we insert equilibrium price either in the demand equation or in the supply equation. Therefore,

$$Q_d = 350 - 100P$$

$$= 350 - 100 \times 2$$

$$= 350 - 200$$

$$= 150$$

Since at equilibrium position,

Quantity demanded = Quantity supplied = Equilibrium quantity (Q_e)

$Q_d = Q_s = Q_e$

$150 = Q_s = Q_e$

Therefore, equilibrium quantity equals 150.

b) $Q_d = 350 - 100 \times P$

$= 350 - 100 \times 3$

$= 350 - 300$

$= 50$

$Q_s = -50 + 100 \times P$

$= -50 + 100 \times 3$

$= -50 + 300$

$= 250$

When price equals 3, Q_s (250) is greater than Q_d (50).

Thus, at the price 3.00 there is surplus.

c) No because when price equals 3.00, $Q_d \neq Q_s$.

d) Sellers because there is surplus.

Once equilibrium has been established, equilibrium price and equilibrium quantity can only change if there is a change in demand and/or supply.

a) Change in demand

Fig.2.7 shows:

i. **the effect of an increase in demand from DD to D'D'**, *ceteris paribus.*

As the result of the increase in demand price rises from its original equilibrium of op to op', and there is a rise in equilibrium quantity from oq to oq'.

ii. **the effect of a decrease in demand from DD to D"D"**

Equilibrium price falls from op to op" and equilibrium quantity falls from oq to oq".

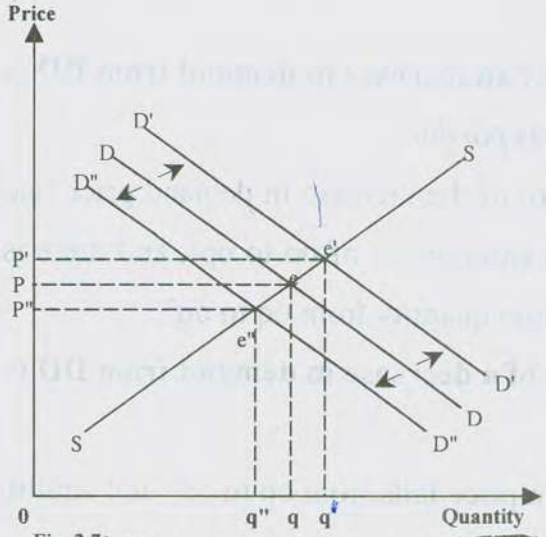


Fig. 2.7: Effects of a shift in demand curve on market equilibrium

b) Change in supply

i. **the effect of an increase in supply from SS to S'S'**, ceteris paribus.

As the consequence of this change, equilibrium price falls from op to op' but equilibrium quantity increases from oq to oq'

ii. **the effect of a decrease in supply from SS to S"S"**

Equilibrium price rises from op to op" but equilibrium quantity falls from oq to oq"

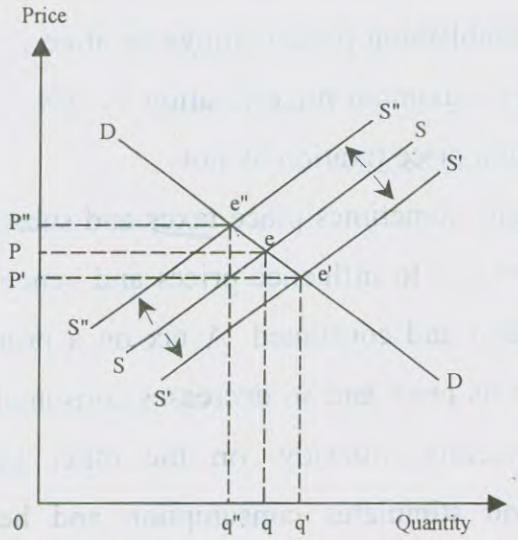


Fig. 2.8 Effects of a shift in supply curve

2.5 Price Controls

We can use the analysis of the competitive industry to predict the effects of price controls. The government, sometimes, intervenes with the functioning of the price mechanism by establishing price ceilings or price floors. Price ceilings are maximum price fixation by law. Price floors are minimum price fixation by law.

Governments sometimes place taxes and subsidies on goods and services to influence prices and hence the quantities produced and consumed. A tax on a product usually increases its price and so decreases consumption and hence production. Subsidy, on the other hand, reduces price and stimulates consumption and hence production.

2.6 Elasticity of Demand

The price elasticity of demand shows the responsiveness of quantity demanded for a good to changes in the price, other things being equal.

$$\text{Price elasticity of demand } (e_d) = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in price}}$$

$$e_d = -\frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

Where P is price, Q is quantity, ΔP is change in price, ΔQ is change in quantity. For a straight line demand curve $\frac{\Delta Q}{\Delta P}$ is the reciprocal of the slope of the demand line.

$$Arc\ e_d = -\frac{\Delta Q}{\Delta P} \times \frac{P_1 + P_2}{Q_1 + Q_2}$$

Where P_1 and Q_1 represent the original price and quantity, and P_2 and Q_2 stand for the new price and quantity, respectively.

The price elasticity of demand can be divided into the following three categories.

a) When the price elasticity of demand is greater than one, demand is elastic. $e_d > 1 \rightarrow$ elastic

b) When the price elasticity of demand is less than one, demand is inelastic. $e_d < 1 \rightarrow$ inelastic

c) When the price elasticity of demand is equal to one, demand is unitary elastic. $e_d = 1 \rightarrow$ unitary elastic

Table 2.4 Demand schedule

Good A	
Price	Quantity demanded
7	1.
6	2
5	3
4	4
3	5
2	6
1	7

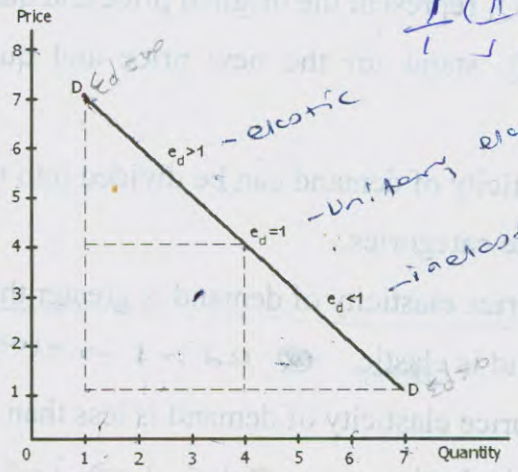


Fig 2.9 Elasticity of demand on a linear demand curve

Example

1) From Table 2.4, and Fig. 2.9, calculate the price elasticity of demand when price equals 4, and determine whether demand is elastic, inelastic, or unitary elastic.

Solution

$$e_d = -\frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

The slope of the demand curve $(\frac{\Delta P}{\Delta Q}) = \frac{7-1}{1-7} = \frac{6}{-6} = -1$

The reciprocal of the slope $\frac{\Delta Q}{\Delta P} = \frac{-1}{1} = -1$

$$e_d = -(-1) \times \frac{4}{4}$$

$$= 1$$

Demand is unitary elastic because $e_d = 1$.

2) Estimate the price elasticity of demand in the price range from 5 to 6. Is demand elastic or inelastic?

Solution

$$Arc\ e_d = -\frac{\Delta Q}{\Delta P} \times \frac{P_1 + P_2}{Q_1 + Q_2}$$

We have already determined the slope of the straight line demand curve and its reciprocal which equals -1. Therefore,

$$Arc\ e_d = -(-1) \times \frac{5+6}{3+2}$$

$$= \frac{11}{5}$$

Demand is elastic because $e_d = \frac{11}{5} > 1$.

Elasticity of demand and total revenue

How a change in price affects total revenue (i.e., price x quantity) depends upon elasticity of demand. If the seller reduces price of a good and :

a) demand is found to be elastic, total revenue will increase.

b) demand is inelastic, total revenue will fall.

c) demand is unitary elastic, total revenue does not change.

The effect of the change in price upon total revenue can be summarized as follows:

	When	if	then	because
1.	$e_d > 1$	↑P	TR↓	Q falls faster than the rise in P
2.	$e_d < 1$	↑P	TR↑	Q falls slower than the rise in P
3.	$e_d > 1$	↓P	TR↑	Q rises faster than the fall in P
4.	$e_d < 1$	↓P	TR↓	Q rises slower than the fall in P

The above summary reveals that:

a) If price and total revenue change in the same direction (for example, price decreases and total revenue also decreases), demand is inelastic.

b) If price and total revenue change in opposite directions (for example, price increases but total revenue decreases), demand is elastic.

c) If total revenue does not change when price changes demand is unitary elastic.

Three exceptional cases

In Fig.2.10, the:

a) D_1 (or vertical) demand curve is known as a perfectly inelastic demand curve. For a perfectly inelastic demand curve price elasticity of demand equals zero.

b) D_2 (or horizontal) demand curve is known as a perfectly elastic demand curve. For such demand curve price elasticity of demand is infinite.

c) D_3 (or rectangular hyperbola) demand curve for which price elasticity of demand equals one is a unitary elastic demand curve.

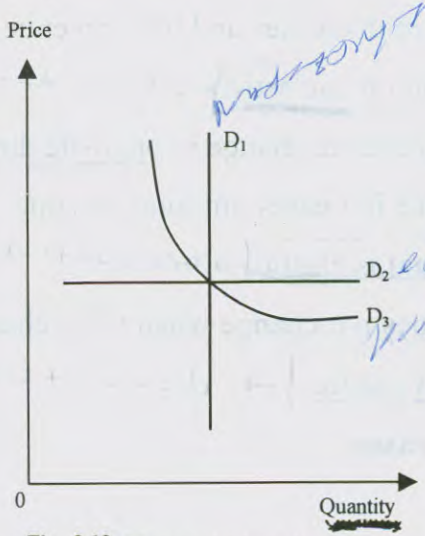


Fig. 2.10 Three exceptional cases of elasticity of demand

Determinants of price elasticity of demand

a) The availability of close substitutes

Demand for a good which has a close substitute tends to be elastic. But, if the good has no close substitute demand for it is inelastic.

b) Nature of the good

If a good is considered a necessity, demand for it will tend to be inelastic. Demand for luxuries, however, tends to be elastic.

c) The proportion of income spent on the good

Demand for those goods on which a consumer spends very small proportion of his/her income will be inelastic. For goods on which the proportion of income spent is high demand is elastic.

d) Time

Demand is less elastic in the short-run than in the long-run.

Income elasticity of demand

Income elasticity of demand (e_Y) shows the way in which a consumer's purchases of a good change as a result of change in his/her income (Y), other things being constant.

$$e_Y = \frac{Perc.\ ch.\ in\ Q.D.}{Perc.\ ch.\ in\ Y}$$

Where P*erc. Ch. in Q.D.* – percentage change in quantity demanded,

Perc. ch. in Y – Percentage change in income.

Income elasticity of demand is positive for normal goods but negative for inferior goods.

Cross-elasticity of demand

Cross-elasticity of demand (e_{AB}) measures the responsiveness of quantity demanded of good A when there is a change in the price of good B.

$$e_{AB} = \frac{Perc.\ Ch.\ in\ Q.\ D.\ of\ A}{Perc.\ Ch.\ in\ price\ of\ B}$$

Cross-elasticity of demand is positive for substitute goods but negative for complementary goods. If the goods are unrelated cross-elasticity of demand equals zero.

2.7 Elasticity Of supply

The elasticity of supply shows the responsiveness of quantity supplied when one of the supply determinants changes.

$$\text{Price elasticity of supply } (e_S) = \frac{\text{Perc. Ch. in Q. S.}}{\text{Perc. Ch. in P.}}$$

$$e_S = \frac{\frac{\Delta Q}{Q} \times 100}{\frac{\Delta P}{P} \times 100}$$

$$= \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

Where *Perc. ch. in Q. S.* - percentage change in quantity supplied,

P - price,

Q - quantity supplied, and

$\frac{\Delta Q}{\Delta P}$ - the reciprocal of the slope of the supply curve.

If : $e_S > 1$ supply is elastic; $e_S < 1$ supply is inelastic; $e_S = 1$ supply is unitary elastic. There are three exceptions to the general rule that elasticity of supply varies along the entire length of the supply curve.

In Fig.2.11, for the:

a) perfectly inelastic supply curve (i.e., S_1) price elasticity of supply is zero because any change in price has no effect on the quantity supplied.

b) perfectly elastic supply curve (i.e., S_3) price elasticity of supply is infinite because an infinitely small change in price leads to an infinitely large change in quantity supplied.

c) unitary elastic supply (i.e., S_2) price elasticity of supply is one because any change in price leads to an equal change in quantity supplied.

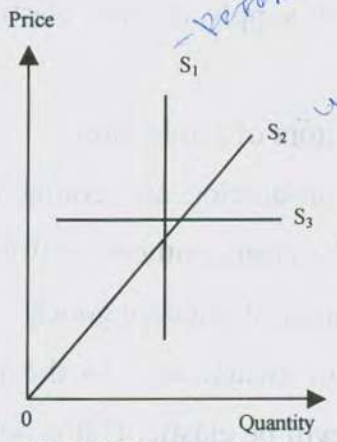


Fig. 2.11 Three exceptional cases of elasticity of supply

Determinants of elasticity of supply

a) Length of time

Momentary time is so short that it is impossible to expand supply. Therefore, in the momentary time supply is perfectly inelastic. In the short-run, it is possible to expand supply by using more of the variable factors, but the existence of fixed factors limits the scope for increased output. Therefore, supply is more elastic in the short-run than in the momentary time. In the long-run, however, there is sufficient time to adjust all factors of

production and hence supply is more elastic than in the short-run.

b) Availability of factors of production

If factors of production are available in required amount supply will be elastic, otherwise it is inelastic.

c) Possibility to produce alternative goods

If it is easy to switch over to the production of other goods supply will be elastic. If it is not easy to shift resources to the alternative production, supply is inelastic.

Exercises

1. In the following table determine whether demand is elastic or inelastic in the price range from 6 to 4.

Price (birr)	Quantity demanded (Units per week)	Total revenue
6	10	60
4	12	48

Solution

When price decreases from 6 to 4 total revenue decreases from 60 to 48. Hence, as price and total revenue are changing in the same direction, demand is inelastic.

2. In the following table:

a) determine whether demand is elastic or inelastic when price increases from 4 to 6.

b) compute the coefficient of price elasticity of demand.

Price (birr)	Quantity demanded (Units per week)	Total revenue
6	10	60
4	18	72

a) When price increases from 4 to 6, total revenue decreases from 72 to 60. As price and total revenue are changing in opposite directions, demand is elastic.

b) $Aarc\ e_d = \frac{\Delta Q}{\Delta P}\frac{P_1 + P_2}{Q_1 + Q_2}$

$= \frac{10-18}{6-4} \times \frac{4+6}{18+10}$

$$= \frac{8}{2} \times \frac{10}{28}$$

$$= \frac{80}{56}$$

$$= 1.43$$

3. At a price of birr 5 producers are willing to offer 200 units of a good for sale each week. At a price of birr 4 they are willing to offer 180 units. Is supply elastic or inelastic?

Solution

Given:	
$P_1 = 5,$	$P_2 = 4$
$Q_1 = 200$	$Q_2 = 180$

$$e_s = \frac{Perc.\ Ch.\ in\ Q.S.}{Perc.\ Ch.\ in\ P}$$

$$Perc.\ Ch.\ in\ Q.S. = \frac{Q_2 - Q_1}{Q_1} \times 100$$

$$= \frac{180 - 200}{200} \times 100$$

$$= \frac{-20}{200} \times 100$$

$= -10$

$$\text{Perc. Ch. in } P. = \frac{P_2 - P_1}{P_1} \times 100$$

$$= \frac{4-5}{5} \times 100$$

$$= -\frac{1}{5} \times 100$$

$= -20$

$$e_s = \frac{-10}{-20}$$

$= 0.5$

4. A manufacturer calculates that the price elasticity of demand for his/her good is 2.2. It is decided to lower the price of the good from birr 6 to 5. At this lower price sales (TR) increases to 15 birr per week. Calculate the quantity sold per week at the original price.

Solution

Given:

$e_d = 2.2$

$P_1 = 6$

$P_2 = 5$

$TR_2 = 15$

$TR_2 = P_2 \times Q_2$

$15 = 5 \times Q_2$

$Q_2 = 15/5$

$= 3$

$$e_d = -\frac{Q_2 - Q_1}{P_2 - P_1} \times \frac{P_1 + P_2}{Q_1 + Q_2}$$

$$2.2 = -\frac{3 - Q_1}{5 - 6} \times \frac{6 + 5}{Q_1 + 3}$$

$$2.2 = -\frac{3 - Q_1}{-1} \times \frac{11}{Q_1 + 3}$$

$$2.2 = (3 - Q_1) \times \frac{11}{Q_1 + 3}$$

$$2.2 = \frac{33 - 11Q_1}{Q_1 + 3}$$

$$2.2(Q_1 + 3) = 33 - 11Q_1$$

$$2.2Q_1 + 6.6 = 33 - 11Q_1$$

$$2.2Q_1 + 11Q_1 = 33 - 6.6$$

$$13.2Q_1 = 26.4$$

$$Q_1 = \frac{26.4}{13.2}$$

$$= 2$$

5. The quantity demanded of good A at a price of birr 7 is 1 unit. Why is this an incomplete statement of demand?

Answer

Because the time period during which the purchase is made has not been mentioned.

6. Assume that a 10 per cent fall in the price of a good results in a rise in the quantity demanded from 24 units to 32 units. Determine the price elasticity of demand.

Solution

Given:

Percentage change in price = 10

$Q_1 = 24$

$Q_2 = 32$

$$Perc.\ Ch.\ in\ Q.D. = \frac{Q_2 - Q_1}{Q_1} \times 100$$

$$= \frac{32 - 24}{32} \times 100$$

$$= \frac{8}{32} \times 100$$

$$= 0.25 \times 100$$

$$= 25$$

$$e_d = \frac{Perc.\ ch.\ in\ Q.D.}{Perc.\ ch.\ in\ P}$$

$$= \frac{25}{10}$$

$$= 2.5$$

7. Suppose that due to a fall in the price of good A by birr 2 quantity demanded increased by 20 units. After the fall in price, the new price and quantity became birr 6 and 60 units, respectively. Calculate the price elasticity of demand.

Solution

Given:

$\Delta P = -2$

$\Delta Q = 20$

$P_2 = 6$

$Q_2 = 60$

$-\Delta P = P_2 - P_1$

$-2 = 6 - P_1$

$P_1 = 6 + 2$

$= 8$

$\Delta Q = Q_2 - Q_1$

$20 = 60 - Q_1$

$Q_1 = 60 - 20$

$$= 40$$

$$e_d = -\frac{\Delta Q}{\Delta P} \times \frac{P_1 + P_2}{Q_1 + Q_2}$$

$$= -\frac{20}{-2} \times \frac{8+6}{40+60}$$

$$= 10 \times \frac{14}{100}$$

$$= 1.4$$

8. Assume that: a seller receives total revenue (TR_1) of 30 when the unit price for his/her product is birr 1.00, and total revenue (TR_2) of 40 when price rises to birr 2. Calculate the price elasticity of demand.

Solution

Given:

$TR_1 = 30$

$P_1 = 1$

$TR_2 = 40$

$P_2 = 2$

$TR_1 = P_1 \times Q_1$

$30 = 1 \times Q_1$

$30 = Q_1$

$TR_2 = P_2 \times Q_2$

$40 = 2 \times Q_2$

$20 = Q_2$

$$e_d = -\frac{\Delta Q}{\Delta P} \times \frac{P_1 + P_2}{Q_1 + Q_2}$$

$$= -\frac{20-30}{2-1} \times \frac{1+2}{30+20}$$

$$= 10 \times \frac{3}{50}$$

$$= \frac{3}{5}$$

$$= 0.6$$

Activities

Programmed Review Activities

In its broadest sense, a market is _____ 1(**necessarily a place / an institution**) through which price making forces operate. For any good, a change in quantity demanded is always caused by a change in _____ 2(**its price / the price of related goods**). A change in quantity demanded refers to a _____3(**shift to a new / movement along an existing**) demand curve. A rise in cost of production will _____4(**increase / decrease**) profit and thus will _____5(**increase / decrease**) supply. An increase in real income will _____6(**reduce / increase**) demand for inferior goods and _____7(**reduce / increase**) demand for _____8(**superior / inferior**) goods. Goods are _____9(**substitutes / complements**) when they are jointly demanded. An increase in the price of a good will tend to _____10(**reduce / increase**) demand for its _____11(**substitute / complement**). At a below equilibrium price quantity demanded _____12(**exceeds /**

falls short of) quantity supplied. At a below equilibrium price, buyers_____13(**bid down / bid up**) price. _____14(**Substitute / Complement**) is a good whose demand varies directly with the price of another good, ceteris paribus.

For a straight line demand curve $\frac{\Delta Q}{\Delta P}$ _____ 15(**varies / is constant**). But, even when demand curve is a straight line, price elasticity of demand varies along its entire length because the ratio _____ 16($\frac{\Delta Q}{\Delta P}$ / $\frac{P}{Q}$) varies. $\frac{P}{Q}$ rises as price rises, so that elasticity of demand _____17(**rises / falls**) as we move up the demand curve. When demand is inelastic, an increase in demand leads to a _____18(**fall / rise**) in total revenue. At all prices greater than the equilibrium price supply is_____19(**greater / less**) than demand. When demand is greater than supply, there is _____20(**surplus / shortage**). Surplus pushes price _____21(**down / up**). When consumer taste is in

favor of a good demand for the good _____22(**decreases / increases**). Supply increases means the whole supply curve shifts its position to the _____23(**right / left**). _____24(**Contraction / Decrease**) in demand is the change in the quantity demanded of a good with a given rise in its price, ceteris paribus. _____25(**Contraction / Decrease**) in demand is a leftward shift in the demand curve due to changes in any of demand determinants except the price of the good itself. Inferior goods are goods for which there is _____26(**a decrease / an increase**) in the consumption with increase in income of the consumer.

What makes buyers buy or refuse to buy is the subject of _____27(**demand / supply**) analysis. The greatest single influence on a person's demand for a product is_____28(**cost of production / its price**). The increase in quantity demanded can also be referred to as _____29(**a contraction / an extension**) of demand and the decrease quantity demanded referred to as _____30(**a contraction / an extension**) of demand.

If an increase in demand causes the price of a good to increase, production will become _____ 31(**more profitable / less profitable**). The amount supplied will _____ 32(**decrease / increase**) because existing firms will be _____ 33(**encouraged / discouraged**) to increase their outputs and new firms will be _____ 34(**driven out / attracted into**) the industry. Movements along the supply curve are described as_____ 35(**extension or contraction of / change in**) _____ supply. A fall in supply means that _____36(**more / less**) is supplied at each and every price and the supply curve moves to the _____ 37(**left / right**).

When price changes there is a change in quantity demanded in the _____ 38(**same / opposite**) direction. An increase in demand _____ 39(**raises / reduces**) equilibrium price and _____ 40(**raises /reduces**) equilibrium quantity. A decrease in supply _____ 41(**raises / lowers**) equilibrium, but _____ 42(**raises / reduces**) equilibrium quantity. If the numerical value of elasticity of demand is _____

43(**greater / less**) than one demand is elastic. If the percentage change in quantity demanded is less than the percentage change in price demand is _____ 44(**elastic / inelastic**) On a straight line demand curve, on the upper portion of the curve demand is _____45(**elastic / inelastic**).The slope of the demand curve _____ 46(**equals / does not equal**) the elasticity of demand. On the _____ 47(**left / right**) portion of a straight line demand curve percentage change in quantity demanded will be relatively small and percentage change in price will be relatively large. Moving along a straight line demand curve to the right will _____ 48(**reduce / increase**) elasticity. When the cost of a good is a relatively small proportion of total expenditure total demand will tend to be _____ 49(**less / more**) elastic.

True/False

1.The demand curve for an individual firm under perfect competition is downward sloping.

2. If the price elasticity of supply is 1.5, supply is elastic.

3. A change in demand means that at each price a different quantity is now demanded than before the change.
4. At any price above the market clearing price, there will be an excess quantity demanded.
5. A movement along a demand curve and a movement of the demand curve have the same cause.
6. A rise in price of a good causes contraction of demand.
7. The change in quantity demanded resulting from the change in demand is brought about by the change in the price of the good itself.
8. Supply means the existing stock of a good.
9. When price changes there is a change in quantity supplied in the same direction.
10. The market-clearing price is also called the equilibrium price.

Multiple choice

1. Which of the following will cause a movement of the demand curve for good A?

   a) A fall in price of A

   b) A fall in the cost of producing A

   c) The development of a complement of A

   d) None of the above

2. If the price elasticity of demand is greater than one, demand is _____

   a) elastic c) unitary elastic

   b) inelastic d) none of the above

3. Indicate the determinant of elasticity of supply.

   a) The proportion of income spent on the good

   b) Availability of factors of production

   c) Nature of the good

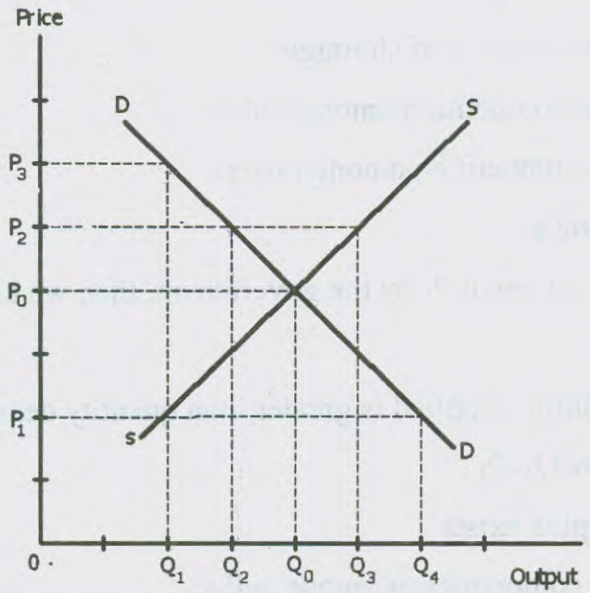
   d) a and c

4. When demand is inelastic, if price rises total revenue will _____

   a) decrease c) increase

   b) not change d) none of the above

Answer questions 5-7 on the basis of the following graph.



5. The price P_3 represents:

   a) a price at which shortage occurs

   b) a price at which demand is greater than supply

   c) a price that might be established by government as a price ceiling

   d) none of the above

dzl P4

6. The force that tends to move the price down from a level like P_2 is:

a) the existence of shortage

b) the competition among sellers

c) the competition among buyers

d) a and c

7. If price is set at P_1 by the government, then we know that:

a) quantity supplied is greater than quantity demanded by Q_4-Q_1

b) surplus exists

c) the competition is among sellers

d) There is favorable condition for the development of black market

8. At the short-run equilibrium, assuming constant supply, with a decrease in demand there will be:

a) lower price and lower quantity

b) higher price and reduced quantity

c) higher price and higher quantity

d) lower price and higher quantity

9. A demand curve with unitary elasticity at all points is:

a) a parabola
c) a hyperbola
b) a straight line
d) none of the above

10. Which of the following statements is true?

a) The law of supply states that there is a direct relationship between the price of a good and its quantity supplied

b) Market supply can be obtained by multiplying the individual supply by the number of sellers, when all sellers have identical supply schedule

c) Market supply is the sum total of individual supplies

d) All of the above

11. A decrease in the price of a good whose demand curve is a rectangular hyperbola causes total revenue to:

a) decrease
c) increase
b) remain the same
d) none of the above

12. Show the elasticity measure which shows a shift in the curve.

a) The cross elasticity of demand

b) The price elasticity of supply

c) The price elasticity of demand

d) b and c

13. Choose the correct statement.

a) Market is necessarily a fixed place

b) In the market, the preferences of sellers are registered on the demand side

c) A horizontal supply curve is known as a perfectly inelastic curve

d) Buyers are on the demand side in the resource market

14. Which of the following statements is true?

a) For Giffen goods there is direct relationship between price and quantity demanded

b) When the price of a good changes demand for it changes

c) A rise in the price of the complement of good A shifts the demand for A to the right

d) If the price of a good is expected to rise current supply for it increases

15. Choose the correct statement.

a) Shortage pushes price down

b) Surplus pushes price down

c) At all prices greater than the equilibrium price there is always shortage

d) None of the above

16. Which of the following statements is not true?

a) A tax on a product stimulates consumption

b) Subsidy decreases price

c) If the price of a good and total revenue change in the same direction demand is inelastic

d) None of the above

Matching

Column A	Column B
1. Demand schedule	a) Decreases consumption
2. Elasticity of demand	b) Upward sloping
3. Change in the quantity demanded	c) Pushes price down
4. Complements	d) Price and total revenue change in opposite directions
5. Taxation	e) The use of one good necessitates the use of another
6. $e_d<1$	f. Perfectly inelastic supply curve
7. $e_d>1$	g. Negative income elasticity of demand
8. Substitutes	h. The relationship between the price of a product and the quantity demanded
9. $e_S=0$	i. If price increases total revenue increases
10. Subsidy	j. Positive cross elasticity of demand
11. Supply curve	k. Measurement of the size of the change in quantity demanded that result from a change in the price of the good itself
12. Inferior good	l. Promotes supply by decreasing cost of production
13. Surplus	m. A movement along the same unchanged demand curve

Short-answer questions

1. What does the law of demand say?

2. Distinguish between quantity demanded and demand.

3. When does want for a good become demand?

4. What is the difference between individual demand and market demand for a good?

5. List the main demand determinants.

6. What is the difference between demand curve and demand function?

7. What does a horizontal demand curve mean, and what is its price elasticity of demand?

8. Make correction to the following wrong statements.

8.1 Demand contracts means the whole demand curve shifts its position to the left of the original one.

8.2 An increase in supply involves upward movement along the same supply curve.

8.3 If the price of a good falls demand for it increases.

8.4 When there is surplus the competition is among buyers.

8.5 A seller who wants to enhance total revenue should decrease price when demand is inelastic.

9. Explain how the decrease in price affects total revenue when demand is elastic.

10. When does the consumer of a good buy more quantities of a good at the same price?

11. How does the change in consumer income affect demand for an inferior good?

12. Due to the increase in the price of good B, demand for good A decreases. Are good A and good B substitutes or complements?

13. Mention two determinants of elasticity of supply.

Answer

Programmed review activities

1. an institution
2. its price
3. movement along an existing
4. decrease
5. decrease
6. reduce
7. increase
8. superior
9. complementary
10. reduce
11. complement
12. exceeds
13. bid up
14. Substitute
15. is constant
16. $\frac{P}{Q}$
17. rises
18. rise

19. greater
20. shortage
21 down
22. increases
23. right
24. Contraction
25. Decrease
26. a decrease
27. demand
28. its price
29. an extension
30. a contraction
31. more profitable
32. increase
33. encouraged
34. attracted into
35. extension or contraction of
36. less
37. left
38. opposite
39. raises

40. raises

41. raises

42. reduces

43. greater

44. inelastic

45. elastic

46. does not equal

47. right

48. reduce

49. less

True/False

1. F

2.T

3.T

4. F

5. F

6. T

7. F

8. F

9. T

10. T

Multiple choice

1. c) The development of a complement of A
2. a) elastic
3. b) Availability of factors of production
4. c) increases
5. d) none of the above
6. b) the competition among sellers
7. d) there is favorable condition for the development of black market
8. a) lower price and lower quantity
9. c) a hyperbola
10. d) All of the above
11. b) remain the same
12. a) The cross-elasticity of demand
13. d) Buyers are on the demand side in the resource market

14. a) For Giffen goods there is direct relationship between price and quantity demanded

15. b) Surplus pushes price down

16. a) A tax on a product stimulates consumption

Matching

1. h) The relationship between the price of a product and quantity demanded

2. k) Measurement of the size of the change in quantity demanded that results from a change in the price of the good itself

3. m) A movement along the same unchanged demand curve

4. e) The use of one good necessitates the use of another

5. a) Decreases consumption

6. i) If price increases total revenue increases

7. d) Price and total revenue change in opposite directions

8. j) Positive cross-elasticity of demand

9. f) Perfectly inelastic supply curve

10. l) Promotes supply by decreasing cost

11. b) upward sloping

12. g) negative income elasticity of demand

13 c) Pushes price down

Short-answer questions

1. The law of demand says that there is an inverse relationship between price and quantity demanded.
2. Quantity demanded is the specific amount purchased at a given price. Demand is the whole relationship between the various prices of a good on the one hand and the various quantities demanded on the other hand.
3. Want for a good becomes demand only when that want is supported by the ability to pay for the good.
4. An individual's demand for a good is the various quantities of it the consumer is willing and able to buy at each specific price, over some given period of time. Market demand is the horizontal sum of individual demands.

5. The price of the good itself, the price of substitutes, the price of complements, change in consumer income, change in consumer taste, and consumer's expectation about future price change.

6. Demand curve is a curve which shows the quantity demanded of a good at each particular market price. Demand function shows the relationship between the quantity of a good and the demand determinants.

7. A horizontal demand curve means that infinite quantity is demanded at the same price. The price elasticity of demand for a horizontal demand curve equals infinite.

8.

8.1 Demand decreases means the whole demand curve shift its position to the left of the original one.

8.2 An increase in supply involves a shift of the whole supply curve to the right.

8.3 If the price of a good falls its quantity demanded increases.

8.4 When there is surplus the competition is among sellers.

8.5 A seller who wants to enhance total revenue should decrease price when demand is elastic.

9. When demand is elastic if price decreases total revenue will increase.

10. A consumer buys more quantity of a good at the same price when demand increases.

11. For an inferior good, when consumer income increases demand decreases and when consumer income decreases demand increases.

12. Good A and good B are complements.

13. Length of time, Availability of factors of production.

Chapter 3

3.1 Utility and Equilibrium in Consumption

A consumer buys a good or service because it has utility to him/her. Utility is the amount of satisfaction to be obtained from a good or service at a particular time. Utility has nothing to do with usefulness nor it has any ethical connotation. Moreover, utility of a good varies from person to person.

According to the cardinal approach, utility can be measured and its unit of measurement is 'util'. In the ordinal approach utility cannot be measured but it can be compared. Following the cardinal approach and assuming that the consumer consumes n different goods and services:

Total utility (U) is the sum of utilities obtained by a consumer from consuming the various units of goods and services. i.e.,

$$U = U_1 + U_2 + \ldots U_n$$

$$= f_1(q_1) + f_2(q_2) + \ldots f_n(q_n)$$

Where q is quantity purchased.

The additional satisfaction received over a given period by consuming one more unit of a good is known as marginal utility (MU).

A rational and utility maximizing consumer consumes goods in the order of their utilities. Consumer equilibrium is established when the marginal utilities per money spent are equal on each good purchased and his/her money income available for the purchase of the goods has been used up completely. That is:

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

Provided that,

$$P_AQ_A + P_BQ_B + \ldots = Y$$

Where MU_A – Marginal utility of good A,

MU_B – Marginal utility of good B,

P_A – Price of A,

P_B – Price of B,

Q_A – Quantity of A,

Q_B – Quantity of B

Y – Consumer income.

3.2 Law Of Diminishing Marginal Utility

The law of diminishing marginal utility states that the marginal utility of a good declines as more of it is consumed, over any given period. Table 3.1 reveals this law. It must be clear from the table that with the increase in the number of units consumed per unit time, the total utility increases at a decreasing rate. Marginal utility declines continuously and becomes zero when total utility is at its maximum. While consuming a good, a rational consumer should not go beyond the zero level of MU.

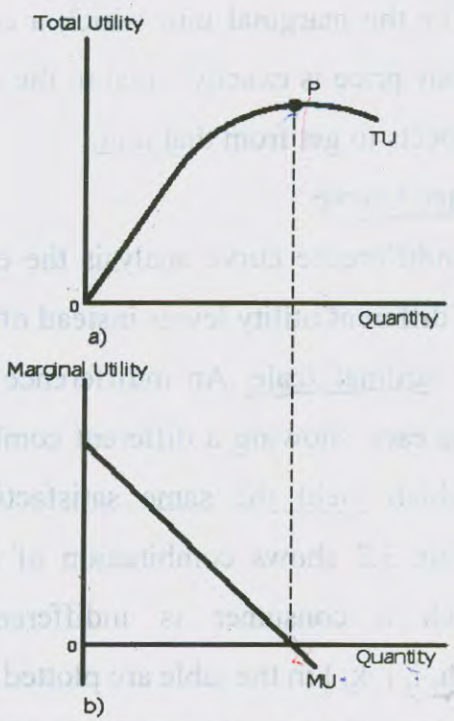


Fig 3.1 The relationship between TU and MU

3.3 Consumer Surplus

Consumer surplus is the difference between what a consumer pays for some good or service and what he/she would have been willing to pay. The price a consumer pays for a good measures only the MU but not the total

utility. Only for the marginal unit which a consumer is just ready to buy price is exactly equal to the satisfaction that he/she expects to get from that unit.

3.4 Indifference Curve

In the indifference curve analysis the emphasis is on comparing different utility levels instead of measuring them through cardinal scale. An indifference curve is a locus of points each showing a different combination of two goods which yield the same satisfaction to the consumer. Table 3.2 shows combination of two goods between which a consumer is indifferent. If the combinations h, i, j, k, l in the table are plotted and joined by a smooth curve the resulting curve is known as an indifference curve (see Fig. 3.2). In Fig.3.2 moving down the curve, the consumer is substituting one good for the other but maintaining a constant level of utility derived from them. The rate at the marginal at which the consumer substitutes one good for the other so as to remain equally satisfied is the slope of the indifference curve. It is known as the marginal rate of substitution.

$$MRS_{BA} = -\frac{\Delta Q_A}{\Delta Q_B}$$

Where MRS_{BA} – Marginal rate of substitution of B for A,

ΔQ_A – Change in quantity of good A,

ΔQ_B – Change in quantity of good B,

Table 3.1 Indifference schedule of goods A and B

Combination	Units of good A	Units of good B
h	24	4
i	12	8
j	8	12
k	6	16
l	5	20

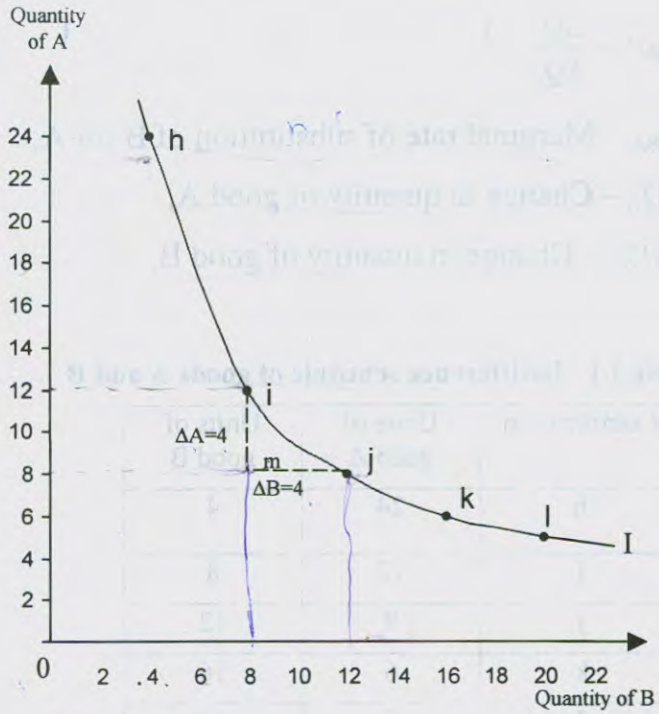


Fig. 3.2 **A consumer's indifference curve**

Characteristics of indifference curve

a) An indifference curve slopes downward from left to right.

b) An indifference curve is convex to the origin.

c) Indifference curves do not intersect nor are they tangent to one another.

Indifference curves by themselves cannot tell us which combination is to be chosen. In addition to his/her desire, the consumer must have the capacity to pay for the goods. The consumer's capacity which is indicated by the budget line is determined by his/her income and the prices of the two goods. Fig.3.3 shows a budget line. Note that $Q_A = \frac{Y}{P_A}$, and $Q_B = \frac{Y}{P_B}$.

Where Y is consumer income.

The budget line divides the area between quantity of A and quantity of B axes into feasibility area (for example point v), and non-feasibility area (for example point w).

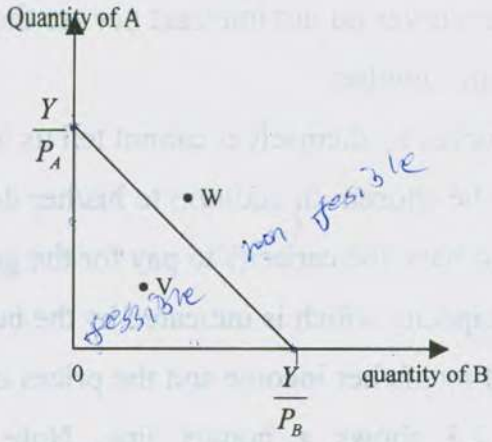


Fig.3.3 Consumers budget time

The utility maximizing rule

Consumer equilibrium is established on the highest attainable indifference curve. For example, in Fig.4.3 consumer utility is maximized at point E. At this point, the slope of the highest attainable indifference curve (i.e., the slope of I_2) is equal to the slope of the budget line (i.e., the slope of KL). This is so because the two are tangent to each other at that point. At the point of tangency (point E):

The slope of the indifference curve = The slope of the budget line , or

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

Activities

Programmed review activities

In the _____ 1(**ordinal / cardinal**) approach, utility is assumed to be quantifiable. Even though human wants in the aggregate are _____ 2(**unlimited / limited**), a particular want _____ 3(**can be / cannot be**) satisfied. A consumer stops buying a good at a point where price and _____ 4(**total utility / marginal utility**) are just equal. _____ 5(**Marginal / Average**) utility is the addition made to the total utility by the consumption of the last unit considered just worthwhile. When only one good is purchased the _____ 6(**inequality / equality**) between MU and price indicates the position of consumer's equilibrium. In the two goods consumption model, the consumer derives maximum satisfaction when the _____ 7(**total / marginal**) utilities per money spent of the two goods are equal. _____ 8(**Indifference curve / Consumer surplus**) is the difference between what a consumer pays for some good or service and what he/she would have been willing to

pay. When _____ 9(**total / marginal**) utility is at its _____ 10(**minimum / maximum**), marginal utility equals zero. When MU is negative, total utility _____ 11(**rises / falls**).

True / False

1. In the cardinal approach, the utilities of the various goods are additive.
2. When a consumer goes on consuming a good, the MU rises as his/her want is satisfied.
3. The marginal unit is not fixed but shifts forward and backward according to changes in price.
4. In case the consumer is buying two goods, the equilibrium position will be determined according to the law of equi-marginal utilities.
5. The utility of a good is the same to all persons.
6. MU equals the slope of the TU curve.
7. Utility is maximized on the lowest attainable indifference curve.
8. Indifference curves can sometimes intersect.

Multiple choice

1. Indicate the wrong statement.

a) When MU is at its maximum TU is negative

b) When TU is at its maximum MU equals zero

c) The budget line shows what the consumer is able to buy

d) None of the above

2. Which of the following statements is true?

a) An indifference curve is convex to the origin

b) Two indifference curves never intersect

c) a and b

d) Indifference curves show what a consumer is able to buy

3. Show the wrong statement.

a) The MU of a good falls when more of it is consumed

b) As a consumer buys more and more of a particular good his/her total utility and marginal utility always decreases

c) A consumer who is in the feasibility area does not spend all his/her income on the two goods

d) All of the above

Matching

Column A	Column B
1. Marginal utility	a) Boundary of consumption
2. Ordinal utility	b) Total utility declines
3. Negative MU	c) The area under the budget line
4. Marginal rate of substitution	d) The slope of the indifference curve
5. $\frac{MU_B}{MU_A} = \frac{P_B}{P_A}$	e) The increase in total utility resulting from the consumption of the marginal unit
6. Budget line	f) Consumer equilibrium
7. Feasibility area	g) Utility cannot be measured
	h) The area outside the budget line

Short-answer questions

1. Define marginal utility.

2. What does the law of diminishing marginal utility state?

3. Describe the utility maximizing rule for a consumer of good A and good B.

4. If $\frac{MU_A}{P_A} > \frac{MU_B}{P_B}$, what does the consumer do?

5. What happens to total utility when marginal utility is negative?

Answer

Programmed review activities

1. Cardinal
2. unlimited
3. can be
4. marginal utility
5. Marginal
6. equality
7. marginal
8. Consumer surplus
9. total
10. maximum
11. falls

True/False

1. T
2. F
3. T
4. T
5. F

6. T

7. F

8. F

Multiple choice

1. a) When MU is at its maximum TU is negative
2. c) a and b
3. b) As a consumer buys more and more of a particular good his/her total utility and marginal utility always decrease

Matching

1. e) The increase in TU resulting from the consumption of the marginal unit
2. g) Utility cannot be measured
3. b) Total utility declines
4. d) The slope of the indifference curve
5. f) Consumer equilibrium
6. a) Boundary of consumption
7. c) The area under the budget line

Short-answer questions

1. Marginal utility is the additional satisfaction received over a given period by consuming one more unit of a good.
2. The law of diminishing marginal utility states that the marginal utility of a good declines as more of it is consumed, over any given period.
3. The consumer's utility is maximized when the marginal utilities per money spent are equal on each good purchased and his/her money income available for the purchase of the goods has been exhausted. i.e., $\frac{MU_A}{P_A} = \frac{MU_B}{P_B}$, provided that $P_AQ_A + P_BQ_B = Y$.
4. He/she will buy more of good A and less of good B.
5. When marginal utility is negative total utility decreases.

Chapter 4

4.1 Single Proprietorship

Single proprietorship is a business owned and operated by one person.

Advantages of single proprietorship

a) Self-interest of the owner minimizes waste and encourages efficiency

The owner has every incentive to make his/her business as efficient as possible.

b) Self-decision

The owner can take bold steps and quick actions in any vital business matter, without fear.

c) Personal contact with employees and customers

The smallness of the business enables the owner to maintain a close and more personal contact with both his/her employees and customers.

d) The ease with which the business starts

Single proprietorship is the easiest type of business to start.

Disadvantage of single proprietorship

a) The smallness of the capital does not allow expansion

Due to the limited access to loan, single proprietorship is unsuitable for industries where there are benefits from large-scale production.

b) Limited continuity

The business may fail to continue after the death or retirement of the able owner.

c) Unlimited liability

In case of business failure, the proprietor can conceivably lose not only what he/she has in the business but also all his/her personal assets.

4.2 Partnership

Partnership is an association of two or more persons to operate a business for profit.

Advantages

a) More capital is available

Partners can supply a large amount of capital into the business for expansion.

b) Efficient management

This type of business is managed well for the partners have expert knowledge in different branches of the business.

Disadvantages

a) Unlimited liability

In case of liquidity, the personal properties of the partners will be at risk.

b) Delay of decision and action

Every decision may require long time discussion, as there may be differences of opinion among the partners.

c) Lack of continuity

A partner's death or retirement causes, in general, the dissolution of the firm.

d) The ability to command resources is limited

The members of the partnership may not be able to supply large capital which is needed to organize business on a large-scale.

4.3 Corporation

Corporation is an association of persons set-up for some common purposes and registered according to the existing company law of the country. It is given the title of 'legal personality'

Advantages of corporation

a) Methods of raising money capital

By selling the securities (stocks or bonds), corporation collects money from many people to meet its needs. Stocks are the securities that represent a share in the ownership of a particular business. Stockholders are the owners of the company and hence get dividends on the shares when the company earns profit. Bonds are the securities issued by the corporation to those who lend it money. Bondholders get regular interest on the bonds.

b) The distinct advantage of limited liability

Once shareholders have fully paid for their shares they have no further liability for the company's debts.

c) Continuity in the business

Corporation has a perpetual succession. It has life independent of the owners, and individual director.

d) Efficient management

Corporation has the ability to acquire more specialized and efficient management than the proprietorship and partnership.

Disadvantages

a) Dishonesty of promoters and directors

Sometimes, corporation has been a cornerstone for the issue and sale of worthless securities.

b) The principal agent problem

Sometimes the management of the corporation may pass on to the hands of dishonest managers who may try to increase their personal gains at the expense of the interest of the stockholders.

c) Lack of direct relationship between employers and employees

Due to the fact that the business is carried on a large scale, there is no direct relationship between

employers on the one hand and employees as well as customers on the other hand.

d) The problem of double taxation

The part of corporate profit which is paid to stockholders as dividends is taxed twice.

Activities

Programmed review activities

There are no complicated legal formalities to be undertaken to start _____ 1(**corporation / single proprietorship**). In _____2(**sole proprietorship / corporation**) type of business organization decisions about what should be done and how it should be done do not require consultations with partners or meetings with directors. Even in a _____ 3(**limited partnership / corporation**) there must be at least one partner whose liability is unlimited. A limited partner _____ 4(**can take part / cannot take part**) in management of the firm. _____ 5(**Corporation / Partnership**) is a legal person quite distinct from its owners. _____

6(**Corporation / Partnership**) can do all the legal things an ordinary person can do. In the single proprietorship there is _____ 7(**legal / no legal**) separation between the firm and owner. All of a stockholder's property is not risked when he/she invests in a _____ 8(**partnership / corporation**). In _____ 9(**corporation / sole proprietorship**) kind of business the owner usually operates and manages the business himself.

True/False

1. The failure of a corporation would cost the stockholders only the amount they had invested in it.
2. The fact that a proprietor has unlimited liability makes it far easier for him/her to borrow money to expand his/her business.
3. The partnership has one real advantage over the sole proprietorship in that its owners enjoy limited liability.
4. In the sole proprietorship if the firm goes bankrupt, the owner's personal property will be used to settle the firm's debts.

5. A partnership is likely to be less efficient than the single proprietorship because it has less opportunity for specialization of management.
6. The owners of a corporation that faces bankruptcy can never lose any more of his/her property than he/she has invested in the firm.

Multiple choice

1. The most important feature of a single proprietorship is that it is a firm with,

a) liability of the proprietor limited to the amount he/she has invested in the business

b) liability of the owner specified at the time the firm is chartered

c) unlimited liability of the proprietor

d) all of the above

2. Which of the following statements is true?

a) Corporation can accumulate large sum of money that is necessary for expansion and other purposes

b) Corporation can escape double taxation

c) Corporation can't incur debts without committing the personal properties of its owners

d) None of the above

3. Which of the following doesn't refer to single proprietorship?

a) Self-decision

b) The problem of double taxation

c) The smallness of capital hinders expansion

d) All of the above

4. An advantage of the corporation which the single proprietorship and partnership do not have is:

a) lack of continuity

b) dishonesty of promoters and directors

c) unlimited liability

d) methods of raising money capital

5. The term 'limited liability' means:

a) the corporation's liabilities to pay dividends to its stockholders is a limited one

b) there are certain obligations which a corporation can legally refuse to pay

c) once a shareholder has paid for his/her stock he/she has no further financial obligation regardless of how much trouble the corporation gets in

d) a and b

Matching

Column A	Column B
1. Unlimited liability	a) It can do all the legal things an ordinary person can do
2. Limited liability	b) Often formed in order to bring some particular skill into the business
3. Corporation	c) Personal property may have to be sold to meet the claim creditors
4. Partnership	d) Creditors cannot take the owner's property to satisfy the debts of the corporation

Short-answer questions

1. List three advantages of single proprietorship.

2. What does the 'unlimited liability' disadvantage of the single proprietorship mean?

3. Mention three disadvantages of a corporation.

4. What is the new method of finance which the single proprietorship and partnership are denied but the corporation enjoys?

Answer

Programmed review activities

1. single proprietorship
2. sole proprietorship
3. limited partnership
4. cannot take part
5. Corporation
6. Corporation
7. no legal
8. corporation
9. sole proprietorship

True/False

1. T
2. F
3. F
4. T
5. F
6. T

Multiple choice

1. c) unlimited liability of the proprietor
2. a) Corporation can accumulate large sum of money that is necessary for expansion and other purposes
3. b) The problem of double taxation
4. d) methods of raising money capital
5. c) once a shareholder has paid for his/her stock he/she has no further financial obligation regardless of how much trouble the corporation gets in

Matching

1. c) Personal property may have to be sold to meet the claims of creditors
2. d) Creditors cannot take the owner's property to satisfy the debts of the corporation
3. a) It can do all the legal things an ordinary person can do
4. b) Often formed in order to bring some particular skill into the business

Short-answer questions

1. Self-interest of the owner minimizes waste and encourages efficiency, self-decision, personal contact with employees and customers.
2. Unlimited liability means that the personal properties of the owner of a firm may be used to settle the debts of the firm.
3. Dishonesty of promoters, the principal agent problem, the problem of double taxation.
4. The sale of security.

Chapter 5

5.1 Production

Production refers to the process by which inputs are transformed into final goods and services. Inputs are factors of production that go into the production of goods and services. When considering the causes of changes in output, economists frequently distinguish between the short-run and the long-run. The short-run and the long-run are defined in terms of the time required to bring about changes in the inputs of various factors of production.

The *short-run* is that period of time over which one or more inputs are fixed. It follows that in the short-run, inputs are divided into fixed inputs and variable inputs. *Fixed inputs* are those the supply of which cannot be varied over the time period under consideration. *Variable inputs* are those the supply of which can be varied in the short-run. The *long-run* refers to that period of time over which the supply of all inputs can be varied. Therefore, there is no fixed input in the long-run.

Production in the short-run

Production function describes the technological relationship between inputs and output in physical terms. Suppose the production of a good requires inputs of labor(L), land(L_D), and capital($\bar{K}$). In an equation form:

$$Q = f(L, \bar{L}_D, \bar{K})$$

Where Q is the output of the good per time period; the asterisk over L_D and K implies that land and capital are fixed in the short-run.

Total, average, and marginal products

In the short-run, as land and capital are fixed the output of the good depends upon labor. Table 5.1 shows the various levels of output associated with different number of workers. *Total product* (TP) refers to the total quantity of the good produced by all the factors employed during a fixed time period. *Average product* (AP) is calculated by dividing TP by the amount of the variable input. That is:

$$AP_L = \frac{TP}{L}$$

Marginal product (MP) is the change in TP associated with a small change in the usage of the variable input. That is:

$$MP_L = \frac{\Delta TP}{\Delta L}$$

The law of diminishing marginal returns states that as increasing amount of a variable input is combined with fixed inputs eventually the contribution of each additional

unit of the variable input to the total product declines. This law operates after the highest point on the MP curve.

The information contained in Table 5.1 is represented graphically in Fig.5.1. Both the table and the graph reveal the fact that:

- as labor increases the TP, AP, and MP increase, reach their respective highest points and then decline
- the MP's highest point comes before that of the AP

when:

- MP is greater than AP, AP is increasing
- AP is at its maximum point, MP and AP are equal
- MP is less than AP, AP is decreasing
- TP is at its maximum, MP equals zero
- MP is negative TP decreases.

Table 5.1 Three stages of production

Labor (No of workers)	Total product (Quintals)	Average product	Marginal product	Stages of production
0	0	0	-	I
1	3	3	3	
2	8	4	5	
3	12	4	4	
4	15	$3\frac{3}{4}$	3	II
5	17	$3\frac{2}{5}$	2	
6	17	$2\frac{5}{6}$	0	
7	16	$2\frac{2}{7}$	-1	III
8	13	$1\frac{5}{8}$	-3	

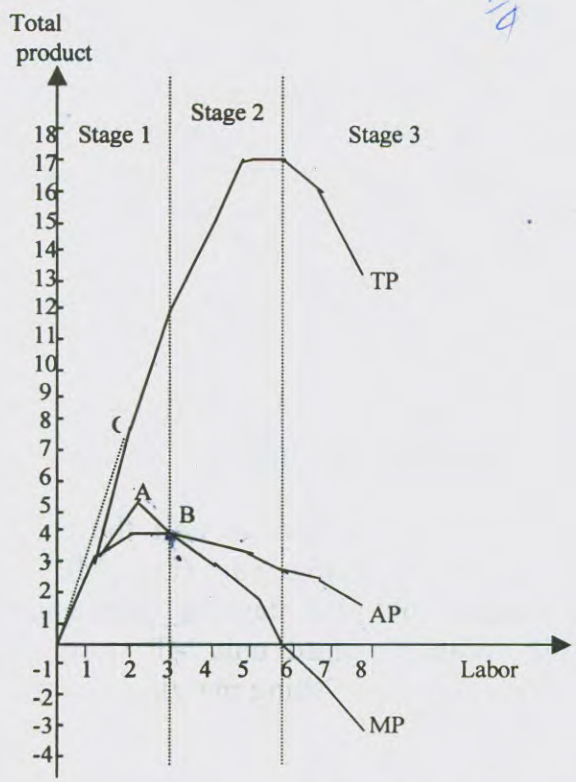


Fig.5.1 Total, average and marginal product curves

There are three stages of production. Stage I extends from the origin up to the highest point of the AP curve. Stage II starts from the highest point on the AP, extends to the right and ends at the point where MP becomes zero. Stage III begins where the MP curve intersects the horizontal axis from above and extends to the right where it is negative. Stage II is the rational stage of production.

Example

On the basis of the data in Table 5.1, comment on the nature of returns to the variable input.

Answer

Up to employment of the second unit the total product increases at an increasing rate (i.e., MP is increasing) which means that the law of increasing returns is operating. With the third unit MP starts to decrease which implies that diminishing marginal returns set in.

5.2 Cost

Fixed and variable costs

In the short-run, costs are divided into fixed costs and variable costs (see Fig.5.2). Fixed costs are those which do not vary with the level of output produced. Once the necessary capital goods are installed and production starts even if the firm does not produce any thing these costs are incurred, in the short-run. Variable costs are those expenses which are related directly to

output. In the long-run, there are no fixed inputs and therefore all inputs are variable.

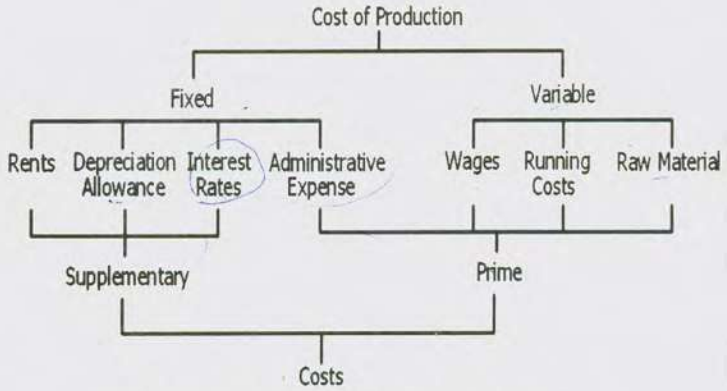


Fig 5.2 Components of cost of production

Total, average, and marginal costs

Total cost refers to the aggregate money expenditure on the inputs used to produce a given level of output. It is the sum of total fixed cost (TFC) and total variable cost (TVC).When there is no production there is also no variable cost and hence total cost equals total variable cost (see Fig. 5.3).

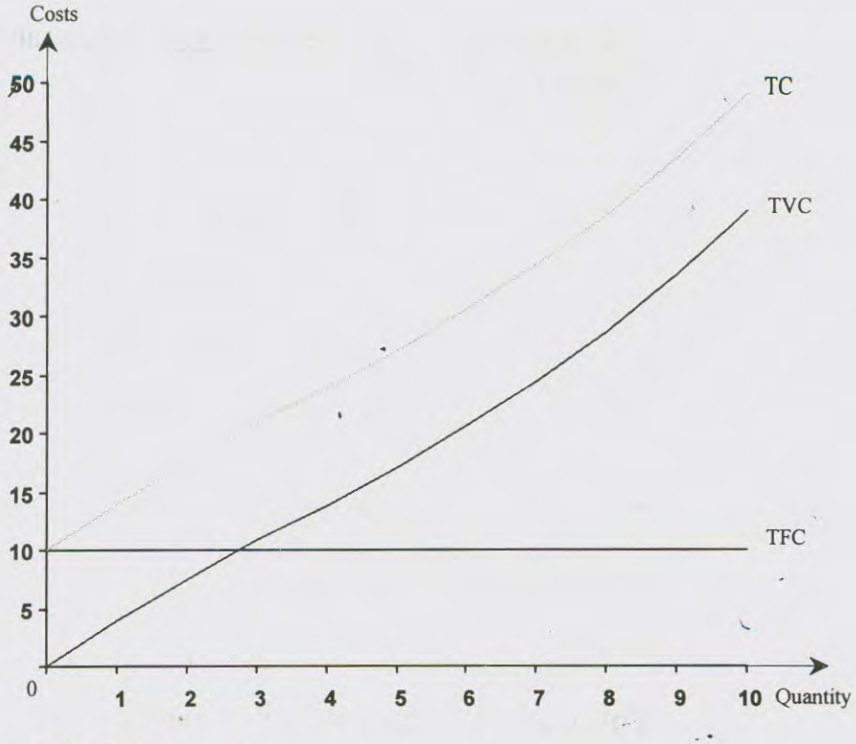


Fig. 5.3 Short–run cost curves

Average cost (AC) equals total cost divided by total output. Since, TC = TFC + TVC dividing both sides by Q yields:

$$\frac{TC}{Q} = \frac{TFC}{Q} + \frac{TVC}{Q}$$

AC = AFC + AVC

Where AFC is average fixed cost; AVC is average variable cost.

With an increase in output AFC continuously decreases but never becomes zero or negative. With a rise in output the AVC and AC first fall, reach their respective minimum levels and then increase.

Marginal cost (MC) is the extra cost of producing an additional unit of output. It is the rate at which TC changes as output changes. When output changes the change in TC will be the same as the change in the TVC MC is not influenced by fixed cost. Mathematically,

$$MC = \frac{\Delta TC}{\Delta Q}, \text{ or}$$

$$MC = \frac{\Delta TVC}{\Delta Q}$$

Where ΔTC is change in total cost,

ΔTVC is change in total variable cost.

ΔQ is change in output.

For the cost-output relationship see Table 5.2.

Table 5.2 and Fig.5.4 show that:

- AC, AVC, and MC curves are U-shaped,
- the minimum point of the AVC curve comes before the minimum point of the AC curve,
- when the MC curve is below the AC curve, AC is decreasing,
- when the MC curve is above the AC curve AC is rising,
- when AC curve is at its minimum AC equals MC.

The explanation of the relationship between the AVC curve and the MC curve is similar to the above mentioned relationship between the AC curve and the MC curve.

Table 5.2 Cost–output relations

Output	TFC	TVC	TC	AFC	AVC	AC	MC
0	10	0	10	-	-	-	-
1	10	4	14	10	4	14	4
2	10	7.5	17.5	5	3.75	8.75	3.5
3	10	10.8	20.8	3.33	3.6	6.93	3.3
4	10	13.8	23.8	2.5	3.45	5.95	3
5	10	17	27	2	3.4	5.4	3.2
6	10	20.5	30.5	1.67	3.42	5.08	3.5
7	10	24.3	34.3	1.43	3.47	4.9	3.8
8	10	28.6	38.6	1.25	3.58	4.83	4.3
9	10	33.5	43.5	1.11	3.72	4.83	4.9
10	10	39	49	1	3.9	4.9	5.5

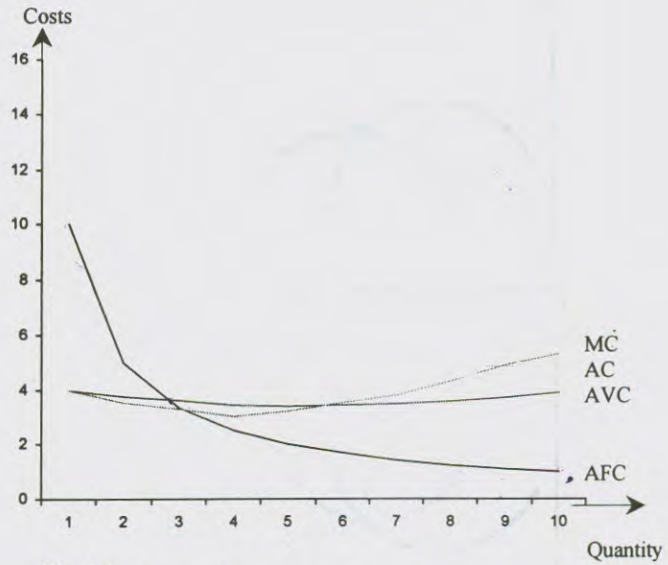


Fig. 5.4 TC, TVC and TFC curves

The relationships between AP and MP, and AVC and MC are shown in Fig.5.5. When there is increasing marginal returns (i.e., up to the highest point on MP curve) MP increases and MC falls. When MP is at its maximum MC is at its minimum. When there is diminishing marginal returns (i.e., after the highest point on the MP curve) MP decreases and MC rises.

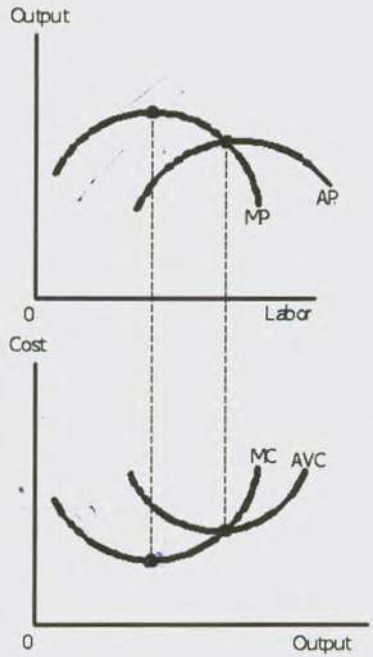


Fig 5.5 The effect of changes in MP and AP on MC and AVC

Production and costs in the long-run

In the short-run, a firm has fixed capacity because some of the inputs may be fixed. In the long-run, however, as all inputs are variable it is possible for the firm to increase capacity. By adjusting capacity in the long-run, the firm can minimize the cost of producing any given level of output. The firm's long-run AC curve shows the minimum AC of producing any given level of output. The long-run AC curve is known as an envelope

curve because it holds an infinite number of short-run AC curves from below.

In the short-run we study returns to the variable input, but in the long-run we study returns to scale of production. Returns to scale refers to the effect that a proportionate change in all inputs has on output. We may distinguish between the three returns to scale.

a) *Increasing returns to scale*

It occurs when a certain percentage change in all inputs causes a more than that percentage change in output. For example, if all inputs are increased by 15 per cent and as the result of this output grows by more than 15 per cent there is increasing returns to scale. This means that there is economies of scale.

b) *Constant returns to scale*

This is the situation where a given percentage change in all inputs causes the same percentage change in output. If all inputs are increased by 15 per cent and as the consequence of this output grows by the same 15 per cent there is constant returns to scale.

c) *Decreasing returns to scale*

This means that a certain percentage change in all inputs causes a less than proportionate change in output. Suppose all inputs are increased by 15 per cent and as the result of this output increases by less than that per çent. In this case there is decreasing returns to scale which means that there is diseconomies of scale.

A firm aims to produce any given level of output in the cheapest possible way. The combination of inputs which minimizes the cost of producing any given level of

output is known as the least-cost combination. With the assumption that there are only two variable inputs (i.e., labor and capital) the least-cost combination is achieved when the ratio of marginal product of labor (MP_L) and the price of labor is exactly equal to the ratio of marginal product capital (MP_K) and the price of capital. That is:

$$\frac{MP_L}{P_L} = \frac{MP_K}{P_K}$$

When this condition is fulfilled the last money spent on each input yields exactly the same return. Any change in the productivity or the price of an input will lead to input substitution. For instance, other things equal, if the price of capital falls the firm will cut back on its use of labor and increases its use of capital. This input substitution continues until the above equality is restored.

Explicit and implicit costs

Explicit costs are the money payments which a firm makes to the outside suppliers of inputs to it. Implicit costs are the costs of self-owned inputs. The sum of explicit costs and implicit costs is known as economic cost of production. The explicit costs of production are accounting costs.

Activities

Programmed review activities

P n 1(**Production / Productivity**) describes the process of creating goods and services. _____ 2(**Fixed / Variable**) inputs are those whose supply can be quickly and easily changed. _____ 3(**Fixed / Variable**) inputs are those which are durable, long-lasting and often take a long time to build, erect and install. The term fixed input only applies to the _____ 4(**long-run / short-run**) period. In the theory of _____ 5(**consumption / production**) we study the factors of production and their organization. A firm seeks to produce that level of output at which its _____ 6(**profits / costs**) are maximum. _____ 7(Short-run / Long-run) is the time period over which production is carried out with the help of fixed inputs and variable inputs. The law of DRVI 8(**diminishing returns to the variable input / returns to scale**) is a phenomenon of short–run production. Production refers to the _____ 9(**creation of goods only / creation of goods and to the supply of services**). The time period required to bring about a change in input

of all factors of production is known as _____ 10(**long-run / short-run**). There are _____ 11(**some fixed inputs / no fixed inputs**) in the long-run. The volume of production can be increased when _____ 12(**only more inputs become available / more inputs become available or when existing inputs yield higher output**). There are no _____ 13(**variable / fixed**) inputs in the long-run. The rate at which total product changes as an additional unit of the variable input is employed is known as _____ 14(**marginal / average**) product. _____ 15(**MP / MC**) is the rate at which total cost changes as output changes. _____ 16(**Variable / Fixed**) costs are still incurred in the short-run even if the firm produces no output. _____ 17(**MC / AC**) is the change in total cost when one more unit is produced. The sum of MC of producing each unit equals _____ 18(**TFC / TVC**)of production. When a firm experiences increasing marginal returns, MP _____ 19(**falls / rises**) and MC _____ 20(falls / rises). _____ 21(**Total product / Average product**) is the total physical output produced by a

particular set of inputs at any time period. If a firm uses two times more of all inputs to produce three times as much output the production exhibits _____ 22(**decreasing / increasing**) returns to scale. _____ 23(**Opportunity / Prime**) cost refers to a lost or foregone alternative which a firm did not choose when it decided what to produce. Firms do not pay _____ 24(**fixed / opportunity**) cost. _____ 25(**Prime / Marginal**) cost is also known as variable cost when it includes _____ 26(**administrative cost / depreciation**). _____ 27(**Marginal / Overhead**) cost is that which is incurred by a producer who wants to increase output by one more unit from a previous given output.

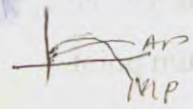
True/False

1. Changes in all inputs is not possible in the short-run.
2. Fixed costs are incurred on variable inputs.
3. When a firm experiences diminishing marginal returns, MP rises.
4. When a firm experiences diminishing returns MC falls.
5. AC curve is pierced by the MC at its minimum point.

6. The short-run AC curve is known as an envelope.
7. Diminishing returns set in because it is impossible to increase the input of fixed inputs in the short-run.
8. Variable costs are the costs of variable inputs.
9. When there is increasing returns, successive equal increase in inputs yield larger increases in output.
10. Sometimes AFC can become zero.
11. When MC is less than AVC, AVC increases.
12. In stage I, the firm's capacity is over-utilized.
13. In stage III, the MP_L is negative.
14. When AP is falling MP is greater than AP.
15. Diminishing marginal returns occurs before diminishing average returns.

Multiple choice

1. When the short-run AP of labor is rising, the MP of labor is:
   a) rising
   b) either rising or falling
   c) falling
   d) none of the above



2.Show the correct statement.

a) The MP curve highest point comes before that of the AP

b) The AP curve highest point comes before that of the MP

c) The AP and MP curves reach their respective highest points at the same time

d) Stage III is the rational stage of production

3. Which of the following statements is wrong?

a) When MP equals zero total product reaches its minimum

b) When total product decreases MP is negative

c) In stage I the fixed input is underutilized

d) In the long-run, all inputs are variable

4. When the short-run MP of labor is less than the AP of labor:

a) AP_L is increasing

b) AP_L is equal to zero

c) AP_L is decreasing

d) none of the above

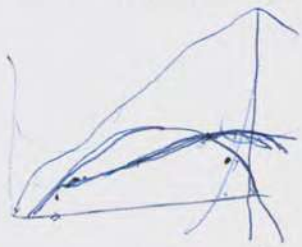
5. In stage III for labor:

a) MP_L is negative

b) TP is decreasing

c) There is a very high variable input-output ratio

d) All of the above



6. In stage I:
   a) AP_L increases
   b) MP_L either increases or decreases
   c) MP_L reaches it maximum
   d) All of the above
7. The rational stage of production:
   a) is between the origin and the highest point of the AP_L
   b) starts at the maximum TP and continues to the negative MP_L
   c) is between the maximum AP_L and the zero MP_L
   d) is between the origin and the zero MP_L

8. Which of the following statements is not true?
   a) In stage II MP_L is negative
   b) In the short-run, a firm can change its output by adding variable inputs on a fixed input
   c) Diminishing returns would set in, once the full productive potential of a fixed input is exhausted
   d) Diminishing returns are reflected in falling MP of a variable input
9. Which of the following is a short-run phenomenon?
   a) Returns to scale
   b) Returns to an input
   c) No fixed input
   d) Economies of scale

10. Marginal cost is always equal to:
    a) AFC
    b) Total cost minus total fixed cost
    c) The change in TVC as output changes by one unit
    d) The average cost of the last unit produced
11. _____ cost always decreases but never becomes zero.
    a) AVC c) TVC
    b) AFC d) None of the above
12. Which of the following statements is wrong?
    a) TFC curve is downward sloping
    b) AFC curve never touches the horizontal axis
    c) TC curve takes the shape of TVC curve
    d) AFC continuously decreases
13. Which of the following does not change in the short-run?
    a) AFC c) TVC
    b) TFC d) a and b
14. Which of the following statements is wrong?
    a) With an increase in output AFC always decreases
    b) When AP is at its maximum AVC is at its minimum
    c) The MC curve intersects the AC curve from below when AC curve is at its minimum
    d) In the long-run, cost can be either fixed or variable

15. Show the correct statement.
    a) In the long-run, TC equals TVC
    b) TC equals average cost multiplied by total output
    c) When there is no production TC equals TFC
    d) All of the above
16. Which of the following statements is true?
    a) The short-run AC curve is U-shaped
    b) The highest possible loss a firm can make in the short-run is its TFC
    c) The TFC curve is always downward sloping
    d) a and b
17. Indicate the wrong statement.
    a) Fixed costs are independent of the level of output
    b) As long as the MC curve is below the AVC curve, AVC curve falls,
    c) The law of diminishing marginal returns starts to operate when MP_L is negative
    d) None of the above

On the basis of the following production schedule answer questions 18-22.

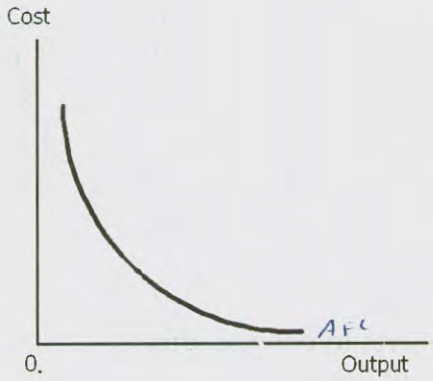
Variable input	Output	MP	AP
1	4	-	4
2	10	6	5
3	18	8	6
4	24	6	6
5	28	4	5.6
6	30	2	5
7	30	0	4.29
8	28	-2	3.5

18. MP of the second unit of the input equals;
    a) 6 c) 8
    b) 4 d) 0
19. The MP of the input starts to decline after:
    a) 2 units of the input are used
    b) 3 units of the input are used
    c) 4 units of the input are used
    d) 7 units of the input are used.
20. Stage III of the production process begins when more than_____ units of the input are used.
    a) 3 c) 7
    b) 4 d) 6

21. The MP of the input is negative when more than _____ units of the input are used.
    a) 4 c) 6
    b) 7 d) 5

22. The MP equals the AP when the AP is equal to:
    a) 2 c) 6
    b) 5 d) 4

23. The following graph has the shape of:
    a) the TFC curve c) the MC curve
    b) the AFC curve d) the AVC curve



Matching

Column A	Column B
1. Variable cost	a) Inputs are divided into fixed and variable
2. Fixed cost	b) Total product increases at a diminishing rate
3. Long-run	c) AP decreases
4. Diminishing returns	d) It is possible for firms to increase capacity
5. Explicit cost	e) The rate of change of total product
6. Short-run	f) The out-of-pocket expenditure on inputs
7. MP=AP	g) Incurred on variable input
8. MP<AP	h) The highest point on the AP curve
9. MP	i) Successive equal increase in inputs yield smaller and smaller increase in output
10. MP falls	j) Incurred even when the firm's output is zero

$MP = \Delta TP$

Short-answer questions

1. Define fixed inputs.

2. What is short-run.

3. Define marginal product.

4. How does total product change when marginal product decreases but positive?

5. What can we say about the relationship between marginal product and average product when average product decreases.

6. Define explicit cost and implicit cost.

7. What are variable costs?

8. Why does the total variable cost curve start from the origin?

9. Identify the wrong statements and provide the right statements.

9.1 Stage III is the rational stage of production.

9.2 When marginal product is at its maximum total product equals zero.

9.3 When marginal product is negative total product decreases.

9.4 After the highest point on the average product curve, marginal product is greater than average product.

9.5 Fixed costs are those which do not vary with the level of output produced.

9.6 The total fixed cost curve continuously decreases but never touches the horizontal axis.

9.7 So far AFC and AVC decrease AC also decreases.

9.8 When the MC curve is below the AC curve, the AC curve rises.

9.9 When output changes, the change in the TVC will be less than the change in the TC.

9.10 When a firm earns zero economic profit it does not cover its total opportunity cost.

9.11 When MP increases MC also increases.

10. A producer of a good pays birr 2000 to buy some inputs used to produce a good. Is it an implicit cost or an explicit cost?

11. Why does AFC decrease as output decreases?

12. What happens to AVC when MC is above the AVC?

13. What does the difference between AC and AVC equal to?

14. What happens to the difference between the AC and the AVC as output increases?

Answer

Programmed review activities

1. Production
2. Variable
3. Fixed
4. short-run
5. production
6. profits
7. short-run
8. diminishing returns to variable input
9. creation of goods and to the supply of services
10. long-run
11. no fixed inputs
12. more inputs become available or when existing inputs yield higher output
13. fixed
14. marginal
15. MC
16. Fixed costs
17. MC
18. TVC
19. rises
20. falls
21. Total product
22. increasing returns
23. Opportunity
24. opportunity cost
25. Prime
26. administrative cost
27. Marginal

True/False

1. T
2. F
3. F
4. F
5. T
6. F
7. T
8. T
9. T
10. F
11. F
12. F
13. T
14. F
15. T

Multiple choice

1. b) either rising or falling
2. a) The MP curve highest point comes before that of the AP
3. a) When MP equals zero total product reaches its minimum
4. c) AP_L is decreasing
5. d) All of the above
6. d) All of the above
7. c) is between the maximum AP_L and the zero MP_L
8. a) In stage II MP_L is negative

9. b) Returns to an input
10. c) The change in TVC as output changes by one unit
11. b) AFC
12. a) TFC curve is downward sloping
13. b) TFC
14. d) In the long-run, cost can be either fixed or variable
15. d) All of the above
16. d) a and b
17. c) The law of diminishing marginal returns starts to operate when MP_L is negative
18. a) 6
19. b) after 3 units of the input are used
20. c) 7
21. b) 7
22. c) 6
23. b) the AFC curve

Matching

1. g) Incurred on variable input
2. j) Incurred even when the firm's output is zero
3. d) It is possible for firms to increase capacity
4. i) Successive equal increase in inputs yield smaller and smaller increase in output
5. f) The out-of-pocket expenditure on inputs
6. a) Inputs are divided into fixed and variable
7. h) The highest point on the AP curve
8. c) AP decreases
9. e) The rate of change of total product
10. b) Total product increases at a diminishing rate

Chapter 6

6.1 Perfectly Competitive Market

Perfect competition is a theoretical model which is based upon price competition. A market is said to be perfectly competitive when a buyer and/or a seller believes that his/her own individual behavior has no influence on market price. Conditions for the existence of perfect competition.

a) There are many buyers and sellers so that individually they are powerless to influence market demand or market supply

b) Each of the firms in the industry supplies exactly the same product.

c) There is perfect knowledge of market conditions among buyers and sellers.

d) There is no restriction to the entry of firms into the industry or their exit from it.

Under perfect competition, the interaction of the market supply and demand determines the market price for the industry. Each firm in the industry takes the price

determined by the industry force of supply and demand as given and sells its entire output at the same price (see Fig.6.1). Thus, the demand curve for the firm under perfect competition is horizontal, at the constant price.

Total revenue (TR) is the product of the price that a firm charges and the quantity of output it sells at this price. i.e.,

$$TR = P \times Q$$

Marginal revenue (MR) is the extra revenue obtained when quantity sold is increased by one unit. i.e.,

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

Where ΔTR is change in total revenue

ΔQ is change in quantity.

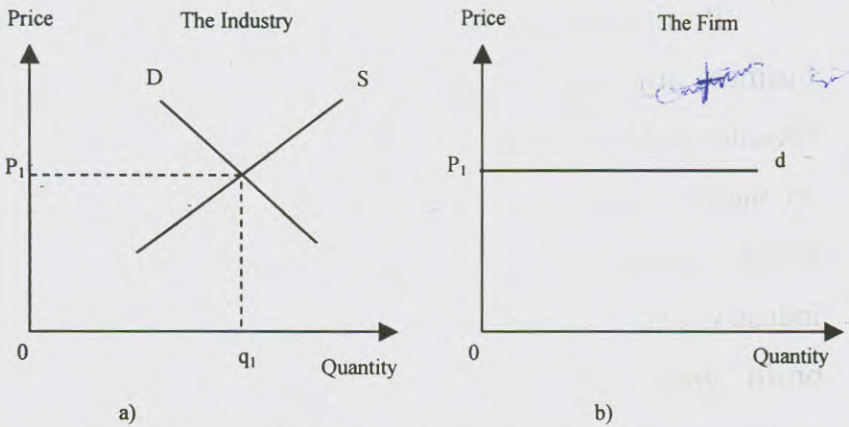


Fig. 6.1 Price determination for perfectly competitive firm

The relationship between price and average revenue can be shown as follows:

$$TR = p \times Q$$

$$P = \frac{TR}{Q} = Average\ revenue(AR)$$

Hence, for a firm operating under conditions of perfect competition the following equality holds true:

Price = Marginal revenue = Average revenue

Profit-maximization

Profit-maximization is a popular objective of business firms. *Profit* is the difference between total sales revenue and total cost. A producer makes investment in an industry and stays there only when there is normal profit. Normal profit is the minimum profit in the industry, and it is considered as cost in economics. The profit greater than the normal profit is known as economic or surplus profit. Economic profit is not regarded as cost.

The profit-maximizing level of output (i.e., producer equilibrium) can be explained in terms of: total revenue and total cost; and marginal revenue and marginal cost.

Total condition of profit-maximization

In the total revenue-Total cost approach, a firm is in equilibrium when its total profit (∏) is the maximum. That is, ∏ =TR-TC is the maximum. The output produced at the level when the difference between total revenue and total cost is the maximum is known as the profit-

maximizing level of output or the optimal output. The output level at which total revenue equals total cost (i.e., total profit equals zero) is known as the break-even output.

Marginal condition of profit-maximization

In the marginal revenue-marginal cost approach, profit is maximized at the level of output where marginal revenue equals marginal cost (MC) and MC curve intersects the marginal revenue curve from below at that point. When MR > MC, profit can be increased by increasing output. When MR < MC, profit can be increased by reducing output.

Earlier, we said that for a firm under perfect competition P = MR = AR. It follows that at the short-run profit-maximizing level of output MR = AR = MC.

In the short-run, an individual firm under perfect competition may make normal profit, excess profit, or loss. In the long-run, however, all firms earn only normal profit and produce at minimum AC (ATC). The long-run equilibrium of a perfectly competitive firm, therefore, is

to be found where MR = AR = MC = AC. Here, not only the firm but also the industry is in equilibrium.

Derivation of the supply curve of a firm

In Fig.6.2a at point B, P_2 = MC = ATC which means that the firm will be making only normal profit. Point B is the break-even point. If price decreases below P_2, the firm will be making loss because price will be less than AC. In the short-run, the firm may continue to supply even when price is less than AC provided it is above the AVC (at point A). Point A is known as the shut-down point. Therefore, the short-run supply curve of the perfectly competitive firm is that part of the MC curve which lies above the AVC.

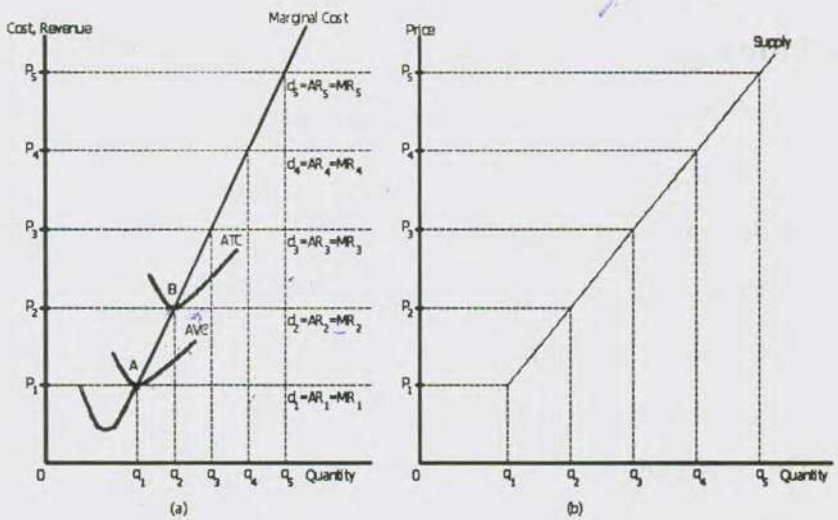


Fig 6.2 A firm's short-run supply curve

Market supply

The market supply curve for a good is obtained by adding together the supply curves of all the firms producing the good. Since each firm's supply curve is its MC curve above the intersection with the short-run AVC curve, the market supply curve is the horizontal sum of the MC curves of the firms comprising the industry.

6.2 Monopoly

A pure monopoly concerns the existence of a single seller of a good for which there is no close substitute.

Characteristics of monopoly

a) There is only one seller.

b) The product is unique.

c) The monopolist is a price-maker.

d) The existence of barriers to entry into the market.

e) There may or may not be advertisement.

The demand curve for a monopoly firm is downward sloping. The elasticity of demand for the monopoly firm is significantly less than that of a competitive firm. A lower elasticity of demand means that the firm's maximum profit will be earned at a higher price than when there is competition. Faced with a downward sloping demand curve, a monopoly firm has the power to determine either price or quantity. But, it cannot determine both price and quantity at the same time.

Unlike the firm under perfect competition:

- the monopolist's average revenue and marginal revenue are not equal (see Fig.6.3). For the profit-maximizing monopolist $P \neq MR$, $P \neq MC$ but $MR = MC$.
- for the monopoly firm, its MC curve above the intersection with the AVC curve is not its supply curve.

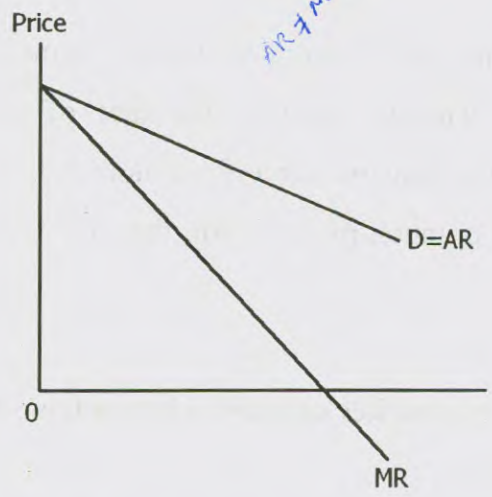


Fig 6.3 Monopoly MR and AR

6.3 Monopolistic competition

Monopolistic competition is a market structure in which many sellers compete to sell a differentiated product.

Characteristics

a) Many sellers and buyers,

b) Product differentiation,

c) Free entry and exit,

d) No collusion.

The demand curve a monopolistically competitive firm faces is downward sloping like that of a pure monopolist. But the demand curve for a monopolistically competitive firm is much more elastic than for the pure monopoly firm.

6.4 Oligopoly

Oligopoly is a market structure where a few sellers dominate the industry.

Characteristics

a) Barriers to entry,

b) Few sellers,

c) Recognized mutual interdependence,

d) Products are either identical or differentiated.

Oligopolists have a common interest in setting prices so that monopoly profits are made and an individual interest in attempting to get the maximum possible profit. A group of firms acting together to determine price and output decisions is known as *cartel*. An oligopoly with no collusion faces a kinked demand curve. The kinked demand curve suggests that if an individual oligopolist raises price above the price corresponding to the kink point other firms will not follow it. On the other hand, a price cut by an individual oligopolist may be matched by rival firms.

Comparison of the various market forms

Market form	Number of sellers	Type of product
Perfect competition	Many	Identical
Pure monopoly	Single	-
Monopolistic competition	Many	Differentiated
Oligopoly	Few	Identical or differentiated

Market form	Price	Output
Perfect competition	At minimum long-run ATC	At minimum point of ATC
Pure monopoly	Greater than minimum ATC	To the left of minimum point of ATC
Monopolistic competition	Greater than minimum ATC	To the left of minimum point of ATC
Oligopoly	Greater than minimum ATC	To the left of minimum point of ATC

Market form	Profit	Efficiency
Perfect competition	Zero economic profit	Peak efficiency
Pure monopoly	Makes economic profit	Less than peak efficiency
Monopolistic competition	Zero economic profit	Less than peak efficiency
Oligopoly	Makes economic profit	Less than peak efficiency

Activities

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_____ 1(**Monopoly / Perfect competition**) is a market where no single buyer or seller can exercise any influence on the market price and there is no government role in the market. A product is identical under _____ 2(**perfect competition / monopolistic competition**). In the long-run, the perfect competitor's price is equal to the _____ 3(**minimum / maximum**) on the firm's ATC curve. A monopolist's product has _____ 4(**close substitutes / no close substitutes**). A monopolistically competitive firm has _____ 5(**few / many**) firms selling _____6(an identical / a differentiated) product. If the conditions of perfect competition are fulfilled competition will give rise to _____ 7(**one / variable**) market price. Under _____ 8(**monopoly / perfect competition**) variations in an individual firm's output will have no influence on the price at which it sells its product. An oligopoly firm works at _____ 9(**peak / less than peak**) efficiency. The monopolist's price is _____ 10(**greater / less**) than the perfect competitor's.

Oligopoly is an industry with _____ 11(**many / few**) sellers. Under _____ 12(**monopolistic competition / perfect competition**) buyers are indifferent from whom they buy because all inputs of the good are homogeneous. The firm under perfect competition is known as a _____ 13(**price-maker / price-maker**). For a perfectly competitive firm at output levels when MR>MC expansion of output adds more to _____ 14(**total cost than it does to total revenue / total revenue than it does to total cost**). When MR>MC total profit can be increased by _____ 15(**expanding / reducing**) output. Average revenue minus average cost equals _____ 16(**average profit / total profit**) and this multiplied by output gives _____ 17(**average / total profit**).The industry is in long-run equilibrium when price has fallen to the extent that all firms in the industry earn _____ 18(**only normal / economic**) profit. If total revenue is greater than total variable cost, then, the firm will be better off by _____ 19(**ceasing production altogether / continuing in production**). In the short-run, the

minimum acceptable price, if the firm is to undertake production, is that price which exactly equals the minimum short-run _____ 20(**ATC / AVC**) of production. _____ 21(**Pure monopoly / Oligopoly**) exists when supply of a particular good or service is in the hands of a single seller. Because an oligopoly firm perceives demand to be _____ 22(**elastic / inelastic**) if it raises price and relatively _____23(**elastic / inelastic**) if it decreases price, it perceives its demand curve to be _____ 24(**horizontal / kinked**) at the ruling market price. Because an oligopoly firm perceives its demand curve to be kinked, it has a _____ 25(**a continuously straight line / discontinues**) MR curve. It is profitable to produce _____ 26(**less / more**) quantity if it adds more to the firm's revenue than to its cost. _____ 27(**MR / AR**) is another name for price. Under monopoly marginal revenue is always _____ 28(**greater / less**) than price. In the long-run, a perfectly competitive firm's equilibrium position is at the place where its long-run average cost equals _____29(**price / total cost**). A

monopolist's demand curve is _____ 30(**different from / the same as**) that of the industry. Under monopolistic competition, the theory suggests that _____ 31(**less / more**) will be produced at a _____ 32(**lower / higher**) price than under perfect competition. It is difficult to compare perfect competition with monopolistic competition because the product is _____ 33(**identical / differentiated**) under perfect competition but _____ 34(**identical / differentiated**) under monopolistic competition. According to the kinked oligopoly demand curve, a firm thinks that if it lowers its price its rivals will _____ 35(**raise / lower**) their prices. In the short-run, if a perfectly competitive firm is able to just cover its _____ 36(**variable / fixed**) costs, it will continue production because it will have to bear the _____ 37(**variable / fixed**) costs even if it stops producing its product. Under perfect competition, at equilibrium position, price divided by marginal cost _____ 38(**equals / is greater than**) one. The _____ 39(**sellers' / buyers'**) behavior is described by

the demand curve and the sellers' by the _____ 40(**demand / supply**) curve. If demand is constant but supply increases because of a _____ 41(**rise / fall**) in cost, then the new equilibrium price would be _____ 42(**higher / lower**) and the new equilibrium quantity would be _____ 43(**lower / greater**) because this shift causes a _____ 44(**rightward / leftward**) movement of the supply curve. In this case, the relative magnitudes of the price and quantity changes will depend upon the elasticity of demand between the two _____ 45(**supply / demand**) curves. The more _____ 46(**inelastic / elastic**) is the demand curve, the more will a change in supply _____ 47(**decrease / increase**) price and the _____ 48(**more / less**) will it _____ 49(**increase / reduce**) quantity. The elasticity of a monopolist's demand curve is much _____ 50(**higher / lower**) than that of a perfectly competitive firm and lower elasticity of demand means a _____ 51(**lower / higher**) price relative to marginal cost. The product of a monopoly firm will be sold with a very _____ 52 (high / low) MC ratio.

True/False

1. When the price of a good is below the equilibrium price, there is excess supply.
2. The influence of any particular firm on the price of its product depends largely upon the number of competing firms in the industry and the type of product sold.
3. If supply is greater than demand, there will be pressure for the price to fall.
4. The monopolist's power is unlimited because he/she can determine both price and quantity at the same time.
5. Under perfect competition, an equilibrium price is one where P=MC.
6. The demand curve for a firm under perfect competition is downward sloping.
7. A change in demand means that at each price a different amount is now demanded than before the change.

8. The degree to which P and Q change after a change in demand will depend on the elasticity of demand.
9. If the supply curve is very inelastic, a given increase in demand will cause a greater increase in quantity than if supply is very elastic.
10. A lower elasticity of demand means that the firm's maximum profit will be earned at a higher price than when there is competition.
11. A monopoly firm's MC curve above the intersection with its AVC curve is its supply curve.
12. The demand curve for the product of a monopolist is the same as the demand curve for the industry.
13. In the momentary time, supply curve is horizontal.
14. The minimum acceptable long-run price is that price which equals the minimum ATC of production.
15. Under monopoly, the sale of an additional unit increases total revenue by the price of that unit. = MR
16. In economics, normal profit is not considered as cost.
17. The concept of a supply curve is not valid for a monopoly.

18. If a good has a close substitute, it is very likely that the demand for it will be inelastic.
19. When MR<MC, a reduction in output will reduce total cost by more than it reduces total revenue so that total profit will rise.
20. In the momentary time, supply curve is horizontal.
21. In the short-run, firms are obliged to meet their variable costs whether they undertake production or not.
22. At equilibrium position, price equals MC under perfect competition.
23. If total revenue is less than TVC, the firm will be better off by continuing in production.
24. In the short-run, equilibrium price under perfect competition may be above or below average cost.
25. MR is another name for price.
26. Under perfect competition, a firm can produce a some-what different good from other firms in its industry.

27. At a positive level of output, if price equals MR, demand is perfectly elastic.
28. The supply of a monopolist is non-existent.
29. All markets with many sellers and many buyers are perfectly competitive. F

Multiple choice

1. While a perfect competitor equates price and marginal cost to maximize profit, a monopolist should equate:
   a) price and total cost
   b) price and marginal cost
   c) total revenue and total cost
   d) marginal revenue and marginal cost ✓
2. If a perfectly competitive firm is operating at an output where MR is birr 15 and MC is birr 10 to maximize profit it should:
   a) produce more
   b) produce less
   c) keep output constant
   d) none of the above

3. With a constant upward sloping supply curve, if demand curve shifts its position to the right equilibrium price:

a) decreases

b) remains the same

c) increases

d) none of the above

4. A monopoly firm expands output when:

a) MC is greater than MR

b) MR is greater than MC

c) MR equals MC

d) MR is negative

5. Which of the following is true?

a) Perfect competition cannot be realistically expected to exist in totality in every day life

b) A perfectly competitive firm is a price-setter

c) Under oligopolistic market structure there are many buyers and sellers

d) all of the above

6. A monopoly firm never produces at the level of output where:

a) demand is price elastic

b) demand is price inelastic

c) MR is negative

d) b and c

7. For an oligopoly with no collusion, the demand curve is likely to be:

a) less elastic for price increases than for price cuts

b) more elastic for price reductions than for price increases

c) less elastic for price reductions than for price increases

d) none of the above

8. For a firm under perfect competition, the profit-maximizing level of output is at:

a) any point where MR<MC

b) the equality of the rising MC curve and the constant MR curve

c) the equality of price and MC

d) b and c

9. Choose the correct statement.

a) The monopolist can get economic profit in the long-run because barriers prevent new firms entering the industry

b) When demand is unitary elastic MR=0

c) The monopolist charges a price greater than MC

d) all of the above

10. Indicate the wrong statement.

a) For a perfectly competitive firm, the slope of the total revenue curve equals marginal revenue

b) The perfect competitor's demand and MR curves are identical only in the long-run

c) A monopoly firm can increase the price of its product without decreasing its output

d) b and c

Matching

Column A	Column B
1. Perfect competition	a) Loss
2. Break-even point	b) The firm and the industry are identical
3. Shut-down point	c) A firm earns economic profit
4. A kinked demand curve	d) P=AVC
5. TR<TC	e) P=MR=AR
6. AR>AC	f) Product differentiation
7. Oligopoly	g) A high degree of interdependence
8. Monopolistic competition	h) Oligopoly with no collusion
9. Pure monopoly	i) P=ATC

Short-answer questions

1. Is economic profit greater than accounting profit?

2. Show that the average revenue (AR) of a firm and the price for its product are equal.

3. List the main characteristics of perfect competition.

4. Under perfect competition, the demand curve and the MR curve are represented by the same curve. Explain

5. At what point MR equals AR?

6. Some of the following statements are wrong. Identify them and provide the right statements.

6.1 If a firm produces the quantity of output at which MR=MC it always earns profit.

6.2 The break-even point during a production process is the level of output at which the firm earns economic profit.

6.3 MR for the n^{th} unit is determined by the difference between the total revenue obtained from n units and the total revenue obtained from (n-1) units.

6.4 Under perfect competition, the demand curve for both the firm and the industry is downward sloping.

6.5 If the AVC is greater than price the firm should shut-down.

6.6 The market supply curve is the vertical summation of the individual firm's supply curves.

6.7 Under monopoly price and MR are equal.

6.8 Price discrimination is a situation of charging different consumers different prices for the same product, with different costs.

7. How does a firm under perfect competition decide whether to continue in production or not, in the short-run?

8. Mention four sources of monopoly.

9. Why only the firm's MC curve above the intersection with the AVC curve is its supply curve, instead of the entire MC curve?

10. Why is the concept of supply curve not valid for monopoly

11. Mention three characteristic features of monopolistic competition.

12. Define oligopoly.

.Answer

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1. Perfect competition
2. Perfect competition
3. minimum
4. no close substitute
5. many
6. a differentiated
7. one
8. perfect competition
9. less than peak
10. greater
11. few
12. perfect competition
13. price-taker
14. total revenue than it does to total cost
15. expanding
16. average profit
17. total profit
18. only normal

19. continuing in production
20. AVC
21. Pure monopoly
22. elastic
23. inelastic
24. kinked
25. discontinuous
26. more
27..AR
28. less
29. price
30. the same as
31. less
32. higher
33. identical
34. differentiated
35. lower
36. variable
37. fixed
38. equals

39. buyers'

40. supply

41. fall

42. lower

43. greater

44. rightward

45. supply

46. inelastic

47. decrease

48. less

49. increase

50. lower

51. higher

52. high

True/False

1. F

2. T

3. T

4. F

5. T
6. F
7. T
8. F
9. F
10. T
11. F
12. T
13. F
14. T
15. F
16. F
17. T
18. F
19. T
20. F
21. F
22. T
23. F
24. T

25. F

26. F

27.T

28.T

29. F

Multiple choice

1. d) marginal revenue and marginal cost
2. a) produce more
3. c) increases
4. b) MR is greater than MC
5. a) perfect competition cannot be realistically expected to exist in totality in every day life
6. d) b and c
7. c) less elastic for price reductions than for price increases
8. d) b and c
9. d) All of the above
10. d) b and c

Matching

1. e) P=MR=AR
2. i) P=ATC
3. d) P=AVC
4. h) Oligopoly with no collusion
5. a) Loss
6. c) A firm earns economic profit
7. g) A high degree of interdependence
8. f) Product differentiation
9. b) The firm and the industry are identical

Short-answer questions

1. No because:
   - economic profit s obtained by subtracting the sum of explicit cost and implicit cost from total revenue but
   - accounting profit is the difference between total revenue and explicit cost.
2. Total revenue (TR) = P x Q

$$P = \frac{TR}{Q} = AR$$

3. Many buyers and sellers, identical product, free entry and exit, perfect knowledge.

4. The demand curve is obtained by plotting the price and quantity demanded pairs of data. The MR curve, on the other hand, is obtained by plotting the MR and quantity demanded pairs of data. But, under perfect competition price equals MR. Therefore, the two curves are the same.

5. MR equals AR at the highest point of the AR curve.

6.

6.1 If a firm produces the quantity of output at which MR=MC, it can earn profit only if price is greater than average cost.

6.2 The break-even point during a production process is the level of output at which the firm suffers no losses and also earns no profit.

6.4 Under perfect competition, the demand curve for a firm is horizontal but the demand curve for the industry is downward sloping.

6.6 The market supply curve is the horizontal summation of the individual firms' supply curves.

6.7 Under monopoly MR is less than price.

6.8 Price discrimination is a situation of charging different consumers different prices for the same product, with the same cost.

7. If the firm can cover at least its variable cost of production from the sales revenue it should continue to produce, in the short-run. If price is less than the AVC, the firm can't cover its TVC and hence it should shut-down. Therefore, the firm decides whether to continue in production or not by comparing the price at which it sells the good and its AVC.

8. Legal restriction, natural factor endowment, high entry costs, patent.

9. If price decreases below the AVC the firm the firm will not continue in production and hence the portion of the MC curve that is below the AVC curve is not relevant to production.

10. A monopoly firm is not at the mercy of the market. It can sell the same quantity at different prices or different quantities at the same price. This means that there is no unique relationship between price and quantity. Therefore, the monopolist does not have a supply curve as we usually define the term.
11. Many buyers and sellers, product differentiation, free entry and exit
12. Oligopoly is a market structure where a few sellers dominate the industry.

Chapter 7

7.1 GDP and GNP

Every day enormous quantities of different goods and services are produced. As production is going on all the time, the amount produced can only be measured over some given period of time. What is being measured is a flow of goods and not a stock. A stock is the total accumulated amount of any item existing at a specific time. But, a flow measures the rate at which the stock is changing. National output is usually measured over a period of one year. The money value of all goods and services produced in the economy is referred to as national income or national product. Gross domestic product (GDP) and gross national product (GNP) are the two most important measures of national income. GDP is the total market value of all final goods and services produced, during a year, by resources located within a country, regardless of their ownership. GNP is the total market value of all final goods and services produced, during a year, by resources owned by the citizens of the

country. The net difference between income inflow (Y_I) and income outflow (Y_O) is known as net property income from abroad. The relationship between GDP and GNP is as follows:

$$GNP = GDP + (Y_I - Y_O)$$

If net property income from abroad is positive, GNP>GDP. If net property income from abroad is negative GNP<GDP. If net property income from abroad is zero, GNP=GDP.

There are also other measures of the performance of the economy, like Net National Product (NNP), National income (NY), Personal Income (PY), and Personal Disposable Income (PDY).

$$NNP = GNP - Depreciation\ (D)$$

$$NY = NNP - IBT + S$$

$$PY = NY - (UCP + CYT + SSC) + TP$$

$$PDY = PY - PYT$$

Where IBT- Indirect business tax,

S- Subsidy

UCP- Undistributed corporate profit

CYT- Corporate income tax,

SSC- Social security contribution,

TP- Transfer payments, and

PYT- Personal income tax.

7.2 Approaches to Measurement of the National Income

There are three possible approaches to measuring of the national income. These are: the output approach, the income approach, and the expenditure approach.

Output approach

In the output approach, national income is measured by adding up the outputs of all the firms in the country. It must be noted that the cost of intermediate goods must be excluded so that double counting is avoided. The two possible ways of avoiding double counting are:

- to consider only the value of the final products, or
- to take the sum of the values added by all firms at the different stages of production.

National output is composed of a vast range of different goods and services whose quantities cannot be added together in physical units. Therefore, all the goods and services are multiplied by their respective market prices and then the product is added up. Hence, GNP is the market value of annual output. Difficulties arise for goods and services which have no market price. Public services and self-provided goods and services have no market price which makes their inclusion in the national income difficult.

Income approach

In this approach, national income is measured by adding up all the incomes paid to factors of production used in producing the national output. In the income approach:

$$GDP = W + R + I_T + P_T$$

$$GNP = W + R + I_T + P_T + Y_I - Y_O$$

Where W- Wages and salaries,

R- Rents,

I_T - Interest,

P_T – Profit.

Transfer payments are not included in the national income. Transfer payments represent payments by the government to individuals not because of their contribution to the production of the current national output but because of the social security conventions.

Expenditure approach

In this approach, national income is found by summing up all the spending on the final goods and services in the economy. In the expenditure approach:

a) in a closed economy:

$$GNP=GDP = C + I + G$$

b) in an open economy:

$$GDP = C + I + G + NE$$

$$GNP = C + I + G + NE + Y_I - Y_O$$

Where C- Consumption expenditure,

I- Investment by the private sector,

G- Government expenditure on goods and services,

NE- Net export.

7.3 Nominal and Real National Income

If the physical outputs produced during a given year are measured in terms of the prices of the same year, the national income is known as *nominal GNP*. Apparently, GNP changes with a change in the physical outputs or a change in the general price level or a change in both. But, what society needs is the rise in physical output because it is real output that determines the standard of living. Real national income is derived by deflating the nominal GNP

$$\text{Real national income} = \frac{\text{Nominal national income}}{\text{Price index}} \times 100$$

7.4 National Income and Economic Welfare

There is no way of obtaining a precise measurement of the standard of living because so many different things affect the welfare of human beings. The most widely used statistics for measuring changes in a country's standard of living is national income per head (i.e., per capita income). Even though national income is used as a basis for estimating the standard of living it has

limitations as a measure of the standard of living. This is so because national income usually includes some items that ought to be excluded from the standard of living measure while it excludes certain items that ought to included in it. Net Economic Welfare (NEW) better reflects the standard of living.

NEW is based upon national income but makes some plus and minus adjustments. The plus adjustments are the value of non-marketed goods, and the value of leisure. The minus adjustment is the cost of environmental damage.

Activities

Programmed review activities

National income is defined as a _____ 1(**stock / flow**)of output. National income is the _____ 2 (**money value of total / sum of total physical**) output. _____ 3(**GNP / GDP**) takes account of the fact that some residents of the country earn incomes from owning resources located abroad. The sum of _____ 4(**factor incomes / personal incomes**) includes transfer payments. Second-hand goods are _____ 5(**part / not part**) of the current flow of output, and factors of production have already received payment for these goods at the time they were produced. Any income earned by a salesperson employed in the second-hand trade is _____ 6(**included / not included**) in the national income statistics. The service rendered in the second-hand goods trade is _____ 7(**not a part / a part**) of current production. The value of total output produced by nationally-owned resources whether they are located at

home or abroad is known as _____ 8(**GNP / GDP**). GNP does not include all final output that satisfies economic desires but only that which is considered _____ 9(**illegal / legal**). The services of a housewife _____ 10(**enter / don't enter**) the GNP. A man who marries his maid _____ 11(**reduces / increases**) GNP. Government payments that don't buy current output are _____ 12(**omitted / included**) in the measure of personal income. Payments to buy already existing goods _____ 13(**are / are not**) treated as part of the GNP. By subtracting capital consumption allowance from GNP, we get _____ 14(**national income / net national product**). _____ 15(**Transfer payments / factor payments**) produce neither output nor factor income.

True/False

1. The sum of all factor incomes are the same as the sum of all personal incomes.

2. When we measure national income, we are measuring the flow of output over a period of time.
3. Nominal per capita income is the best measure of the standard of living.
4. In a closed economy GNP=GDP.
5. Government payments that don't buy current output are omitted in counting GNP.
6. The value of output produced by factors of production located within a country is known as GNP.
7. The profits of second-hand dealers are not included in the national income.
8. Inflation will lead to a higher money value irrespective of whether the volume of output has increased.
9. Transfer payments are included in GNP but not in personal income.
10. Summing up the value added at each stage of production involves double counting.
11. The value of intermediate goods is not included in the national income.

12. In the expenditure approach of national income determination, only expenditure on current output is relevant.

Multiple choice

1. Choose the correct statement.
   a) Nominal GNP is national income adjusted for inflation
   b) The cost of environmental damage caused by economic activities is a negative adjustment to national income
   c) The per capita income equals GNP minus depreciation
   d) Personal income equals GNP minus depreciation
2. Which of the following is the highest?
   a) GNP
   b) NNP
   c) Personal income
   d) Depreciation

GNP - D

3. GNP measures:

a) the total stock of a country's wealth adjusted for changes in prices

b) the total annual output of all the producers in the economy excluding intermediate goods

c) the total yearly value of a country's output after allowance has been made for taxes

d) the total annual value of a country's output after allowance has been made for depreciation

4. Which of the following is <u>not</u> an element of GNP in the income approach?

a) Investment expenditure

b) Wages and salaries

c) Rents

d) Profits

5. When NEW is determined which one of the following is a positive adjustment to GNP?

a) Health hazards that ensue from production

b) The value of leisure

c) The value of non-marketed goods

d) b and c

6. In order to derive personal income from national income, the national income must be adjusted by:

a) subtracting corporate income tax

b) subtracting undistributed corporate profit

c) adding transfer payments

d) all of the above

7. In measuring GNP, double counting can be avoided by:

a) measuring the value of intermediate goods

b) measuring only the total value of output sold to the government and investors

c) measuring the value added by all firms

d) measuring only the value of output sold to final users and to intermediate users

Matching

Column A	Column B
1. NNP	a) Derived by deflating the nominal GNP
2. No market value	
3. Transfer payments	b) Government payments that don't buy current output
4. GNP<GDP	
5. Real GNP	c) Capital consumption allowance
6. Open economy	
7. Per capita income	d) National income divided by total population
8. Depreciation	
	e) Output of self-provided goods and services
	f) GDP minus depreciation
	g) GDP=C+I+G+NE
	h) Negative net property income from abroad

Short-answ questions

1. What does the equality of GNP and net national product indicate?

2. What does the word 'Gross' in the GNP indicate?

3. Is GNP greater than GDP when net property income from abroad is negative?

4. Make correction to the following wrong statements.

4.1 GNP is the sum of all goods and services in physical terms.

4.2 The rise in the nominal GDP implies that the real GDP rises.

4.3 In an open economy:

GDP = C +I + G+ export + import

4.4 The part of the corporate profit retained by the firm for capital formation or to meet any unforeseeable needs is known as social security contribution.

5. What is the difference between value of output and value added?

6. What are the two ways of avoiding double counting?

7. List the components of GDP in the expenditure approach.

8. Fill in the second column

If :	then, aggregate demand ?
consumption falls,	
investment rises,	
government purchase rises,	
investment falls,	
imports rise,	
net export falls,	
exports rise,	

Answers

Programmed review activities

1. flow
2. money value of total
3. GNP
4. personal incomes
5. not part
6. not included
7. a part
8. GNP
9. legal
10. don't enter
11. reduces
12. included
13. aren't
14. national income
15. transfer payments

True/False

1. F
2. T
3. F
4. T
5. T
6. F
7. F
8. T
9. F
10. F
11. T
12. T

Multiple choice

1. b) The cost of environmental damage caused by economic activities is a negative adjustment to national income
2. a) GNP

3. b) the total annual output of all the producers in the economy excluding intermediate goods
4. a) Investment expenditure
5. d) b and c
6. d) all of the above
7. c) measuring the value added by all firms

Matching

1. f) GDP minus depreciation
2. e) Output of self-provided goods and services
3. b) Government payments that do not buy current output
4. h) negative net property income from abroad
5. a) Derived by deflating nominal GNP
6. g) GDP = C+I+G+NE
7. d) National income divided by total population
8. c) Capital consumption allowance

Short-answer questions

1. The equality of GNP and net national product indicates that depreciation equals zero.
2. The word 'Gross' in the GNP indicates that depreciation has not been deducted from the value of total output.
3. No because:

   GNP = GDP + net property income from abroad

   When net property income from abroad is negative GNP less than GDP.

4.

4.1 GNP is the market value of all the physically different goods and services.

4.2 The rise in the nominal GDP doesn't necessarily imply that the real GDP rises.

4.3 In n open economy:

GDP = C + I +G + export – import

4.4 The part of the corporate profit retained by the firm for capital formation or to meet any unforeseeable needs is known as undistributed corporate profit.

5. While value of output is the total market value of a good, the value added is the addition made to the existing value of the good by the firm in question. Therefore, the difference between value of output and value added of a good is the value of intermediate goods.

6. The two ways of avoiding double counting are:
   - to consider only the value of final products.
   - to take the sum of the values added by all firms at the different stages of production.

7. Consumption expenditure, private sector investment expenditure, government expenditure on goods and services, net export.

8.

If :	then, aggregate demand
consumption falls,	decreases
investment rises,	increases
government purchase rises,	increases
investment falls,	decreases
imports rise,	decreases
net export falls,	decreases
exports rise,	increases

Chapter 8

8.1 The Consumption Function

Consumption (C) is that part of the disposable income (Y_d) devoted to the purchase of consumer goods and services. Since income is either spent or saved, saving (S) is that part of the disposable income which is not spent on consumer goods and services. Thus,

$$Y_d = C + S$$

Propensities to consume and save

Marginal propensity to consume (MPC) refers to the extent to which additional income is used for consumption.

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

Where ΔC- Change in consumption

ΔY_d – Change in disposable income

MPC lies between zero and one.

Average propensity to consume (APC) is equal to total consumption divided by total disposable income .

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

Consumption function shows the different levels of consumption at different levels of income. It has two component parts.

$C = a + bY_d$

Where C- Total consumption

a – The intercept

b- MPC

'a' which does not depend upon current income is known as *autonomous consumption*.

'bY_d' Which is influenced by the current disposable income is known as induced consumption.

When disposable income is zero there is no induced consumption and hence total consumption equals autonomous consumption.

Marginal propensity to save (MPS) is the ratio of the change in total savings (ΔS) to change in total disposable income.

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

MPC+MPS=1

Average propensity to save (APS) equals total savings (S) divided by total disposable income.

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

$S = -a + (1-b)Y_d$

In addition to the current disposable income consumption expenditure depends upon wealth, credit availability, and consumer expectation.

8.2 Investment

Investment means expenditure on all types of capital goods (i.e., machinery and equipments, constructions, and inventories). Private investment spending is a highly volatile component of aggregate demand. The motive for business investment is profit.

Role of investment:

a) Changes in investment can have a significant impact on aggregate demand and hence on national output and employment.

b) The act of investment increases the productive capacity of an economy.

The total purchase of capital goods is known as *gross investment*. Gross investment minus depreciation is known as *net investment*. *Replacement investment* is the investment which is necessary to replace that part of the stock of capital which is used up in producing the given year's output.

Investment which does not depend upon national income is known as *autonomous investment*. Investment which is brought about by changes in the level of national income is called *induced investment*.

Methods of project appraisal

a) The pay-back period

The *pay-back period* is the time required to recover the total investment expenditure.

$$Pay-back\ period = \frac{Total\ investment\ expenditure}{Total\ net\ income\ flow}$$

b) The net present value (NPV)

$$NPV = PV - C$$

Where PV- Present value

C- Cost of investment

$$PV = \frac{F}{(1+i)^n}$$

Where F- The future value of a sum

i- interest rate

n- The number of years

If the NPV ≥ 0, the project is regarded as profitable.

c) The internal rate of return (r)

The internal rate of return of a project is the discount rate at which the present values of the expected income flow during its life-span equals its investment cost. If r>i the investment project is accepted.

Determinants of investment:

a) interest rate

b) the expected income flow from investment

c) the cost and productivity of capital goods

d) expectation

e) level of income

Activities

Programmed review activities

In economics, investment includes expenditure on _____ 1(**stocks or bonds / machinery and equipments**) but doesn't include _____ 2(**a firm's purchase of used capital goods / inventories**). If a firm is neither expanding nor contracting it will have the investment expenditure which is known as _____ 3(**net investment / replacement investment**). The change in consumption caused by a change in income is known as _____ 4(**MPS / MPC**). _____ 5(**Autonomous / Induced**) consumption expenditure is independent of the current income. If disposable income equals zero _____ 6(**induced / autonomous**) consumption equals _____ 7(**100 / 0**) and hence _____ 8(**autonomous / induced**) consumption equals total consumption.

True/False

1. The consumption function shows a direct relationship between consumption and income.
2. Disposable income is the only factor that influences consumption expenditure.
3. The MPC is the slope of the linear consumption curve.
4. By investment we do not mean the purchase of financial securities.
5. Investment includes the purchase of used capital equipment.
6. Net investment includes only expansion investment expenditure.
7. If disposable income equals zero autonomous consumption equals zero.
8. In economics, the term investment is restricted to the creation of real assets.
9. If the investment expenditure is more than sufficient to replace obsolete capital goods, the country's total productive capacity is decreased.

10. High interest rate discourages business persons from making more investment.

Multiple choice

1. The consumption function shows the relationship between consumption expenditure and the level of:
   a) personal income
   b) disposable income
   c) national income
   d) GNP
2. The MPC shows:
   a) the relationship between consumption and the level of income
   b) the relationship between consumption and savings
   c) the ratio of consumption to income
   d) the change in consumption that results from a one birr change in income

3. Gross investment spending includes:

a) expenditures for new housing construction but only when the construction is done by business firms for profits

b) expenditure for all construction and equipment, whether new or used

c) expenditure for securities

d) all of the above

4. Which of the following statements is not true?

a) The amount of investment necessary to maintain the size of the country's capital stock is called net investment

b) The amount of investment necessary to maintain the size of the country's capital stock is called gross investment

c) Investment includes the purchase of corporate bonds but not of government bonds

d) all of the above

5. Choose the correct statement.

a) The difference between gross investment and net investment is replacement investment

b) When disposable income equals zero induced consumption equals zero

c) a and b

d) If disposable income changes autonomous consumption changes

Matching

Column A	Column B
1. Net investment	a) Determinant of consumption expenditure
2. Profit	b) The ratio of change in consumption and change in income
3. MPC	c) The motive for business investment
4. MPS	d) Not influenced by current disposable income
5. Autonomous consumption	e) Includes only expansion investment
6. Consumer expectation	f) 1-MPC

Short-answer questions

1. What is autonomous consumption?

2. When will selection of a project on the criterion of pay-back period have meaning?

3. Identify the wrong statements and provide their correct form.

3.1 The consumption function reveals a negative relationship between consumption and income.

3.2 The ratio of the change in consumption expenditure and the change in disposable income is known as APC.

3.3 The MPC is the slope of the consumption curve.

3.4 A reduction in the costs of capital equipment would decrease investment expenditure.

Answer

Programmed review activities

1. machinery and equipments
2. a firm's purchase of used capital goods
3. replacement investment
4. MPC
5. Autonomous
6. induced
7. 0
8. autonomous

True/False

1. T
2. F
3. T
4. T
5. F
6. T
7. F
8. T

9. F

10. T

Multiple choice

1. b) disposable income
2. d) the change in consumption that results from a one birr change in income
3. a) expenditures for new housing construction but only when the construction is done by business firms for profits
4. d) All of the above
5. c) a and b

Matching

1. e) Includes only expansion investment
2. c) The motive for business investment
3. b) The ratio of change in consumption caused by change in disposable income
4. f) 1-MPC
5. d) Not influenced by current disposable income

6. a) Determinant of consumption expenditure

Short-answer questions

1. Autonomous consumption is the part of the consumption expenditure which does not depend upon current income.
2. Selection of an investment project on the criterion of pay-back period will have meaning only when the lifetime of the project is not less than the pay-back period.
3.

3.1 The consumption function reveals a positive relationship between consumption and income.

3.2 The ratio of the change in consumption expenditure and the change in disposable income is known as MPC.

3.4 A reduction in the costs of capital equipment would increase investment expenditure.

Chapter 9

9.1 Business Cycles

Periodic fluctuations in economic activities which occur as the economy moves away from its trend path are known as business cycle. The business cycle has four phases. These are:

a) Peak

Peak is a period high employment, high level of demand, and high degree of utilization of resources.

b) Recession

Recession is a period when economic activities slow down.

c) Trough

Trough is a period of the lowest level of national output in the business cycle.

d) Recovery

This is a period of rising aggregate demand, expanding output levels and a falling rate of unemployment.

9.2 Unemployment

The sum of the number of the population in the working age with jobs and those who are actively seeking job but failed to find it is known as the *labor force*. The *unemployed* are those in the range of the working age who are available for work and have actively sought employment during the previous four weeks but unable to get job at the existing wage. Only those who are employed and unemployed are in the labor force. Not every one in the working age without job is considered unemployed.

$$National\ unemployment\ rate = \frac{Number\ of\ employed}{Labor\ force} \times 100$$

Types of unemployment

a) Frictional unemployment

It includes unemployment resulting from seasonality, the process of voluntarily switching jobs etc.

b) Structural unemployment

This is unemployment which arises from a change in the structure of demand for goods and services in an economy.

c) Cyclical unemployment

Cyclical unemployment results from declines in national output in periods of low economic activity When cyclical unemployment is present, the economy is not utilizing its labor force to the extent possible.

Frictional and structural unemployment are known as *normal unemployment*. Normal unemployment is unavoidable. But, cyclical unemployment which is excessive unemployment is avoidable. When the unemployment rate is no more than the normal unemployment, there is full-employment.

9.3 Inflation

Inflation is a situation of continuously rising general level of prices. The rate of inflation varies from country to country. While some countries are able to hold the rate of inflation at less than 10 per cent per annum others may experience rate of inflation more than 100 per cent per annum.

The use of price controls may prevent the rising general level of prices. This is known as suppressed

inflation. On the other hand, the situation when the rate at which prices rise gets completely out of hand is known as *hyperinflation*. Historical events evidence that 'in Germany in 1923, at one time, prices were doubling every hour' and in Hungary 'in 1945 wages were increased at the rate of 150 per cent per week and yet they still lagged behind the rate at which prices were rising'.

Types of inflation

a) Demand-pull inflation

The cause of demand-pull inflation is the excess demand at or close to full-employment.

b) Cost-push inflation

This describes a situation where the source of upward pressure on prices is rising costs. It is caused by all factors that decrease aggregate supply.

Effects of anticipated inflation

a) Income redistribution effect

Inflation redistributes income away from fixed income groups towards others living on flexible incomes.

Inflation has also the tendency to benefit debtors and harm creditors.

b) Effect on output and employment

For an economy producing below potential, demand-pull inflation has an expansionary effect upon output and employment.

Anticipated inflation leads to speculative practices diverting resources from productive to unproductive sphere which reduces the economy's productive capacity.

Inflation can be measured by means of the general price level. A price index compares the cost of a given combination of goods and services for two or more different years.

$$\text{Price index} = \frac{\textit{Cost of a market basket in a given year}}{\textit{Cost of the same market basket in the base year}} \times 100$$

The rate of inflation (R.I.) is determined as:

$$R.I. = \frac{\text{Price index in year } 2 - \text{Price index in year } 1}{\text{Price index in year } 1} \times 100$$

Types of inflation

a) Consumer price index (CPI)

It measures the change in the average price of a market basket of consumer goods and services. It represents the consumption pattern of a typical household. The CPI does not include capital goods, exports, or items of government purchase. But, it includes imported consumer goods.

b) Producer price index (PPI)

The PPI measures the price of products purchased by producers. Its interpretation is similar to that of CPI.

c) Implicit GNP deflator

It is obtained by dividing nominal GNP by real GNP and multiplying it by 100. Unlike CPI and PPI it is not based upon a fixed market basket. A change in the prices of imported goods will have no impact on the implicit GNP deflator.

Activities

Programmed review activities

During _____ 1(**trough / peak**) unutilized capacity gradually disappears and businessmen find it difficult to raise production so easily by putting resources to work. The price level is likely to fall only if the recession is _____ 2(**prolonged / a short-lived affair**). _____ 3(**Recovery / Trough**) is characterized by massive unemployment. During _____ 4(**recovery / depression**) banks will have surplus funds because no body is willing to take risk. The _____ 5(**frictional / structural**) unemployment results from changes in technology. _____ 6(**Structural / Cyclical**) unemployment affects the whole economy rather than particular industries. When there is full-employment there may be some unemployment but that unemployment is no more than the _____ 7(**cyclical / normal**) unemployment. The _____ 8(**cyclical / structural**) unemployment is controllable. Where inflation is _____ 9(**unanticipated /**

anticipated) some people will be better off while other are made worse off. In the event of _____ 10(**anticipated / unanticipated**) inflation, speculators buy gold or foreign currency instead of making investment in capital goods. _____11(**Consumer price index / Implicit GNP deflator**) is based upon market basket of goods and services. _____ 12(**PPI / CPI**) does not include consumer goods. _____ 13(**CPI / PPI**) measures the price level for products which are used to produce other goods. Inflation redistributes income and wealth from those with _____ 14(**fixed / variable**) incomes and those who are _____ 15(**debtors / creditors**) to those with _____ 16(**flexible / fixed**) incomes and those who are _____ 17(**debtors / creditors**). With a general rise in prices, we must consider those factors that bring an increase in aggregate _____ 18(**supply / demand**) or a fall in aggregate _____ 19(**supply / demand**). When the economy is well below the full-employment level, the increase in aggregate demand generally brings

more _____ 20(**output / prices**) than _____ 21(**output / prices**) because the aggregate supply curve is _____ 22(**more / less**) elastic. Cost-push inflation comes from any factor that shifts the aggregate supply curve to the _____ 23(**left / right**). A worker who is laid-off until business picks up again is an example of _____ 24(**frictional / cyclical**) unemployment.

True/False

1. When prices rise real incomes fall.
2. If a person borrows birr 500 for one year and , during the course of that year, prices increase by 10 per cent, the borrower will be a loser.
3. In order for an increase in aggregate demand to cause inflation, the economy must be operating at a close to capacity.
4. An increase in profits will shift the supply curve to the left, causing a price rise.
5. The shortage of factors of production will cause costs and prices to rise.

6. During recession, demand for goods declines.

7. Full-employment implies zero unemployment.

8. Consumer price index does not include export goods.

Multiple choice

1. Which of the following is harmed by inflation?

   a) Debtors and creditors

   b) Debtors and people on fixed income

   c) Creditors and people on fixed income

   d) Sales people and creditors

2. Choose the correct statement.

   a) Demand deficiency unemployment is avoidable

   b) Creditors generally do better when inflation is anticipated.

   c) Creditors generally do better when inflation is unanticipated

   d) a and b

3. Indicate the wrong statement.

a) During business cycle recoveries are followed by recession

b) Inflation benefits lenders

c) All the population whose age fall within the range of the working age is in the labor force

d) All of the above

4. Show the correct statement.

a) Inflation can be defined as a persistent rise in the general price level

b) During inflation, all prices are necessarily rising

c) People who are 'between jobs' are examples of cyclical unemployment

d) a and b

5. Which of the following statements is not true?

a) A rise in the prices of inputs is the source of cost-push inflation

b) In order for demand-pull inflation to occur it is necessary that the economy be operating far below capacity

c) A change in prices of imported goods has no impact on the implicit GNP deflator

d) Structural unemployment can be reduced by extensive retraining scheme.

Matching

Column A	Column B
1. Massive unemployment	a) Price controls prevent the rising general level of prices
2. Frictional unemployment	b) Leads to speculative practices
3. Peak	c) Unemployment caused by the process of voluntarly switching jobs
4. Anticipated inflation	d) Measures the prices of capital goods
5. PPI	e) Demand deficiency unemployment
6. Suppressed inflation	f) High degree of utilization of resources

Short-answer questions

1. List the four phases in the business cycle.

2. Provide the correct forms of the following wrong statements.

2.1 The national unemployment rate statistics includes a full-time student in the working-age.

2.2 Lenders benefit from inflation.

2.3 When CPI is determined exported consumer goods are included in the market basket.

Answer

Programmed review activities

1. peak
2. prolonged
3. Trough
4. depression
5. structural
6. Cyclical
7. normal
8. cyclical
9. unanticipated
10. anticipated
11. Consumer price index
12. PPI
13. PPI
14. fixed
15. creditors
16. flexible
17. debtors
18. demand

19. supply
20. output
21. prices
22. more
23. left
24. frictional

True/False

1. T
2. F
3. T
4. F
5. T
6. T
7. F
8. T

Multiple choice

1. c) Creditors and people on fixed income
2. d) a and b
3. d) All of the above
4. a) Inflation can be defined as a persistent rise in the general price level
5. b) In order for demand-pull inflation to occur, it is necessary that the economy be operating far below capacity

Matching

1. e) Demand deficiency unemployment
2. c) Unemployment caused by the process of voluntarily switching jobs
3. f) High degree of utilization of resources
4. b) Leads to speculative practices
5. d) Measures the prices of capital goods
6. a) Price controls prevent the rising general level of prices

Short-answer questions

1. Peak, recession, trough, and recovery.

2.

2.1 The national unemployment rate statistics does not include a full-time student in the working-age.

2.2 Lenders loose from inflation.

2.3 When CPI is determined exported consumer goods are not included in the market basket.

Chapter 10

10.1 Review of Demand and Supply Analysis in Macroeconomics

Aggregate demand shows the total quantity of all final goods and services which will be purchased at each possible price level. As shown in Fig. 10.1, the aggregate demand curve slopes downward from left to right. There are two main explanations to why the aggregate demand curve is downward sloping. These are the real balance effect and the interest rate effect.

In addition to the general price level, there are other factors influencing aggregate demand. These are:

a) government policy

b) confidence

c) foreign output

d) asset value

e) demographic change

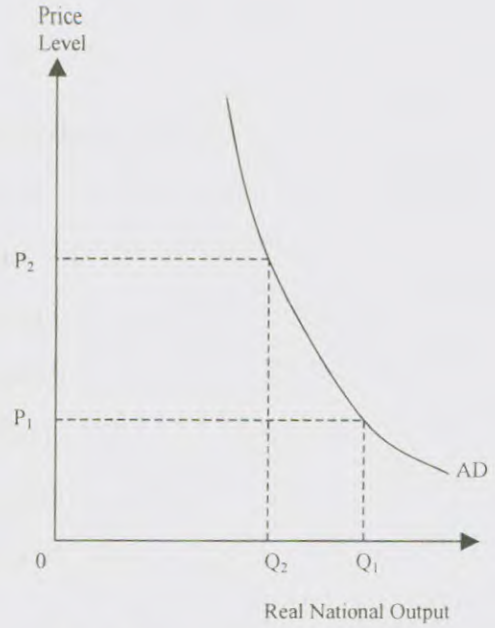

Fig. 10.1 Aggregate demand curve

Aggregate supply indicates the total quantities of all goods and services which will be supplied at each possible price. In the short-run, aggregate supply is influenced by the following factors:

a) cost of production

b) weather condition

c) natural disaster

In the long-run, however, aggregate supply changes as a result of a change in the quantity and/or quality of factors of production.

Shape of the aggregate supply curve

There is no consensus among economists regarding the slope of the aggregate supply curve. Before the 1930's, the prevailing economic theory was that of classical economists. According to this theory the economy itself has a self-correction mechanism that can keep it working at full-employment most of the time, and hence no need for government role. The classical model is based on the assumption that wages and prices are flexible downward.

After the depression of 1930's, however, a new economic theory (the Keynesian model) came into being. In the Keynesian model, the main assumption is that wages and prices are inflexible downward, at least in the short-run. In the Keynesian model, instead of the self-correction mechanism government policies to influence

aggregate demand play a major role to restore aggregate demand to the level that will ensure full-employment.

In the short-run, the national output supplied varies directly with the price level and therefore the short-run aggregate supply curve (SRAS) curve is upward sloping as shown in Fig.10.2. Many economists believe that, in the long-run, the aggregate supply curve is a vertical line at the full-employment level of output.

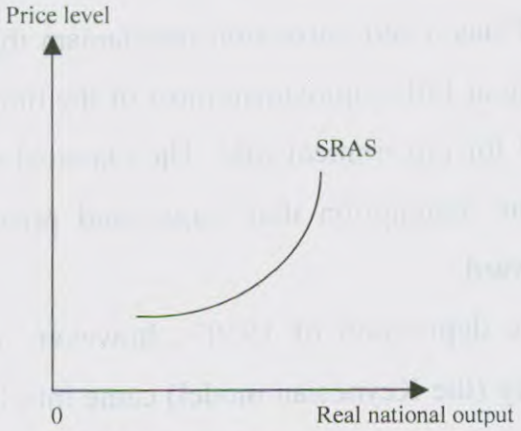

Fig.10.2 Short-run AS curve

10.2 Instruments of Policy

There are a number of economic policies used to ... e economic stability. The following are among them.

) Fiscal policy

Fiscal policy is a deliberate manipulation of government expenditure and taxation so as to achieve desired economic and social objectives. A tax cut and rise in government expenditure aimed at increasing aggregate demand is known as an *expansionary fiscal policy*. A *contractionary fiscal policy* is a policy aimed at restraining aggregate demand by increasing tax and reducing government expenditure.

b) Monetary policy

Monetary policy refers to actions taken by national banks to manipulate either the supply of money or interest rate to bring about desired changes in the economy. A *tight monetary policy* involves a reduction in the growth of the supply of money and/or an increase in the interest rate. An *easy monetary policy* is a policy when the

national bank acts to increase the growth of money supply and/or to reduce the interest rate. The traditional monetary instruments through which a national bank carries out the monetary policies are:

i) open market operation

ii) changes in discount rate, and

iii) changes in required reserve ratio

c) Incomes policy

The main aim of the an incomes policy is to achieve a close relationship between changes in productivity and changes in income. The incomes policy includes requesting voluntary restraint, and imposing statutory controls.

Activities

Programmed review activities

The aggregate demand curve slopes _____ 1(**upward / downward**) from left to right. The two main explanations to the downward sloping aggregate demand curve are the _____ 2(**real balance effect / substitution effect**) and the _____ 3(**income effect / interest rate effect**). A tight monetary policy involves _____ 4(**a reduction / an increase**) in the growth of the supply of money and/or _____ 5(**a decrease / an increase**) in the interest rate.

True/False

1. The substitution effect explains the downward sloping of the aggregate demand curve.
2. Inflation erodes the real value of assets.
3. If the economic agents are pessimistic about the future aggregate demand increases.
4. A tax cut has an expansionary effect upon aggregate demand.

5. A rise in the growth of money supply has aggregate demand increasing effect.

Multiple choice

1. As the general price level falls:
   a) the quantity of national output demanded rises
   b) the quantity of national output demanded falls
   c) the quantity of national output demanded remains constant
   d) none of the above
2. The aggregate supply curve is vertical:
   a) neither in the short-run nor in the long-run
   b) in the short-run but not in the long-run
   c) in the long-run but not in the short-run
   d) both in the short-run and in the long-run
3. Which of the following factors influences aggregate demand?
   a) The price of factors of production
   b) Foreign output
   c) The price of substitutes
   d) a and c

4. Which of the following is an expansionary fiscal policy?

a) A fall in government expenditure

b) A rise in tax

c) A fall in supply of money

d) A reduction in the interest rate

5. Indicate the wrong statement.

a) Cost of production is the determinant of the short-run aggregate supply

b) A rise in the supply of money and a rise in the interest rate are easy monetary policies

c) Government policy is one of the determinants of aggregate demand

d) The real balance effect explains the downward sloping of the aggregate demand curve

6. The fact that the economy is tending toward full-employment is a belief of:

a) the classical economists

b) Keynes

c) both Keynes and the classical economists

d) none

7. Choose the correct statement.

a) The classical economists believed in strong government role

b) The Keynesian model is against government role

c) In the Keynesian theory wages are inflexible downward

d) All of the above

:ching

iumn A	**Column B**
1. Demographic change	a) A vertical line at full-employment
2. Weather condition	b) A factor influencing aggregate supply
3. Keynesian economic theory	c) A factor influencing aggregate demand
4. Long-run aggregate supply curve	d) Establishing a relationship between productivity and income
5. Incomes policy	e) Downward inflexibility of wages, in the short-run

Short-answer questions

1. Describe the real balance effect explanation of the downward sloping of the aggregate demand curve.

2. List the main determinants of aggregate demand.

3. The following statements are wrong. Write their correct form.

3.1 The Keynesian theory of the shape of the aggregate supply curve assumes the flexibility of wages at least in the short-run.

2 The long-run aggregate supply curve is vertical at the current level of national output.

.3 The short-run macroeconomic equilibrium is established at the intersection point of aggregate demand curve and the vertical short-run aggregate supply curve.

A tax cut and rise in government expenditure reduce aggregate demand.

What is the classical economists position on wages and prices?

Answer

Programmed review activities

1. downward
2. real balance effect
3. interest rate effect
4. a reduction
5. an increase

True/False

1. F
2. T
3. F
4. T
5. T

Multiple choice

1. a) the quantity of national output demanded rises
2. c) in the long-run, but not in the short-run
3. b) Foreign income
4. d) A reduction in the interest rate

5. b) A rise in the supply of money, and a rise in the interest rate are easy monetary policies
6. a) the classical economists
7. c) In the Keynesian theory wages are inflexible downward

Matching

1. c) A factor influencing aggregate demand
2. b) A factor influencing aggregate supply
3. e) downward inflexibility of wages, in the short-run
4. a) A vertical line at full-employment
5. d) Establishes a relationship between productivity and income

Short-answer questions

. Inflation erodes the real value of assets. Thus:

When the price level rises purchasing power falls and economic agents cut-back on their expenditures. When the price level falls purchasing power rises and the agents end-up buying more goods and services.

5. b) A rise in the supply of money, and a rise in the interest rate are easy monetary policies

6. a) the classical economists

7. c) In the Keynesian theory wages are inflexible downward

Matching

1. c) A factor influencing aggregate demand
2. b) A factor influencing aggregate supply
3. e) downward inflexibility of wages, in the short-run
4. a) A vertical line at full-employment
5. d) Establishes a relationship between productivity and income

Short-answer questions

. Inflation erodes the real value of assets. Thus:

When the price level rises purchasing power falls and economic agents cut-back on their expenditures. When the price level falls purchasing power rises and the agents end-up buying more goods and services.

2. Government policy, confidence, foreign output, asset value, and demographic change.

3.

3.1 The Keynesian theory of the shape of the aggregate supply curve assumes the inflexibility of wages, at least in the short-run.

3.2 The long-run aggregate supply curve is vertical at the natural level of national output.

3.3 Short-run macroeconomic equilibrium is established at the intersection point of aggregate demand curve and the upward sloping aggregate supply curve.

3.4 A tax cut and rise in government expenditure increase aggregate demand.

4. The classical economists position on is that wages and prices are flexible downward.