**Lecture Notes on Introductory Microeconomics**
**(Ecn 202 2 Units. 200L Economics & Bus. Admin. Students)**

Course Contents

- ✓ The Firm
- ✓ The Theory of Production
- ✓ The Theory of Costs
- ✓ The concepts of Revenue
- ✓ Cost and Output under Perfect and Imperfect Competition Conditions
- ✓ The Theory of Income Distribution and Cobweb Theory
- ✓ The Operation of Factor Markets

**Meaning of a Firm:**

A firm is a business organisation such as a corporation that produces and sells goods and services with the aim of generating revenue and making a profit. A firm is an organization which sells or produces something or which provides a service which people pay for. A firm is a business organization that seeks to make a profit through the sale of goods and services. The term firm is synonymous with business or company. Firms can operate under several different structures, including sole proprietorships and corporations.

**Production Theory**

Production is the creation of utility for the consumption of human being to satisfy their wants. Choices concerning what goods and services to produce are choices about an economy's use of its factors of production, the resources available to it for the production of goods and services. The value, or satisfaction, that people derive from the goods and services they consume and the activities they pursue is called utility. Ultimately, then, an economy's factors of production create utility; they serve the interests of people.

The factors of production in an economy are its land, labor, capital, and entrepreneur. The operations of these factors take place under different economic system such as Capitalism, Socialism, and mixed economy

**Land**: Land house all other factors of production and upon it all the production activities takes place. The characteristic of land are: they are free gift of nature meaning that no human effort has been used to make or alter them and secondly is that they can be used for the production of goods and services. Land is immobile, indestructible,

**Labour:** Labour is human effort that can be applied to production. It includes both skilled and unskilled labour Also both employed and unemployed. It is however perishable, heterogeneous, bargaining, mobile and efficient.

**Capital**: This is factor of production inform of money and machinery that are involved in production of goods and services. We can categorise it as circulating and fixed capital. Capital has the

characteristics of being a man-made factor, mobile, elastic, depreciates, passive, productive and temporary in nature.

**Entrepreneur:** An **entrepreneur** is a person who, operating within the context of a market economy, seeks to earn profits by finding new ways to organize factors of production. He combines all other factors of production together for the production of output. It is usually refers to as an investor. It also has the characteristics of risk-taking and initiation, resource mobilization innovation and creativity and vision and leadership.

**The Production Possibilities Curve (PPC):** A production possibilities curve is a graphical representation of the alternative combinations of goods and services an economy can produce given the available factors of production. In drawing the production possibilities curve, we shall assume that the economy can produce only two goods and that the quantities of factors of production and the technology available to the economy are fixed. PPC is always negatively sloped revealing that there is scarcity of the available capital and labor. Producing more of commodity A requires shifting resources out of commodity B's production and thus producing fewer of B and vice versa.

**Production Possibility Curve of Bread and Wheat**


The above figure shows the possible combination of inputs for the production of bread and wheat. If all the factors of production are deployed to the production of bread alone, 100 units of bread will be produced. And if all the factors of production are deployed to the production of wheat alone, 100 units of wheat will be produced. The production of the two commodities will give the total products available in the economy as reflected in the figure. An economy that is operating

inside its production possibilities curve say point X is operating at low capacity and is underutilising its production capacity. It could therefore by moving upward it, produce more of all the goods and services that people value, such as food, housing, education, medical care, and music. Production along the PPC is at optimal use of available factors of production and is at full employment while point outside the PPC says point Y is unattainable.

**Production and Cost**

The analysis of production and cost begins with a period economists call the short run. The **short run** in this microeconomic context is a planning period over which the managers of a firm must consider one or more of their factors of production as fixed in quantity. For example, a restaurant may regard its building as a fixed factor over a period of at least the next year. It would take at least that much time to find a new building or to expand or reduce the size of its present facility. Decisions concerning the operation of the restaurant during the next year must assume the building will remain unchanged. Other factors of production could be changed during the year, but the size of the building must be regarded as a constant.

When the quantity of a factor of production cannot be changed during a particular period, it is called a **fixed factor of production**. For the restaurant, its building is a fixed factor of production for at least a year. A factor of production whose quantity can be changed during a particular period is called a **variable factor of production**; factors such as labor and food are examples.

The planning period over which a firm can consider *all* factors of production as variable is called the **long run**.

**The Short-Run Production Function**

A firm uses factors of production to produce a product. The relationship between factors of production and the output of a firm is called a **production function.** Our first task is to explore the nature of the production function.

**Total, Marginal, and Average Products**

"Aswani Clothing's Total Product Curve" shows the number of jackets Aswani can obtain with varying amounts of labor (in this case, tailors) and its given level of capital. A **total product curve** shows the quantities of output that can be obtained from different amounts of a variable factor of production, assuming other factors of production are fixed.

**Change in TP**: We measure the slope of any curve as the vertical change between two points divided by the horizontal change between the same two points. The slope of the total product curve for labor equals the change in output ($\Delta Q$) divided by the change in units of labor ($\Delta L$):

Slope of the total product curve = $\Delta Q/\Delta L$

The slope of a total product curve for any variable factor is a measure of the change in output associated with a change in the amount of the variable factor, with the quantities of all other factors held constant

The **marginal product of labor** (MPL), for example, is the amount by which output rises with an additional unit of labor. It is thus the ratio of the change in output to the change in the quantity of labor (Δ*Q*/Δ*L*), all other things unchanged. It is measured as the slope of the total product curve for labor.

MPL=∆TP/∆L

In addition we can define the **average product** of a variable factor. It is the output per unit of variable factor. The **average product of labor** (*AP*L), for example, is the ratio of output to the number of units of labor (*Q*/*L*).

APL=TP/L

The concept of average product is often used for comparing productivity levels over time or in comparing productivity levels among nations.

**Total variable cost (TVC)** is cost that varies with the level of output. **Total fixed cost (TFC)** is cost that does not vary with output. **Total cost (TC)** is the sum of total variable cost and total fixed cost:

**TFC=TVCTFC**

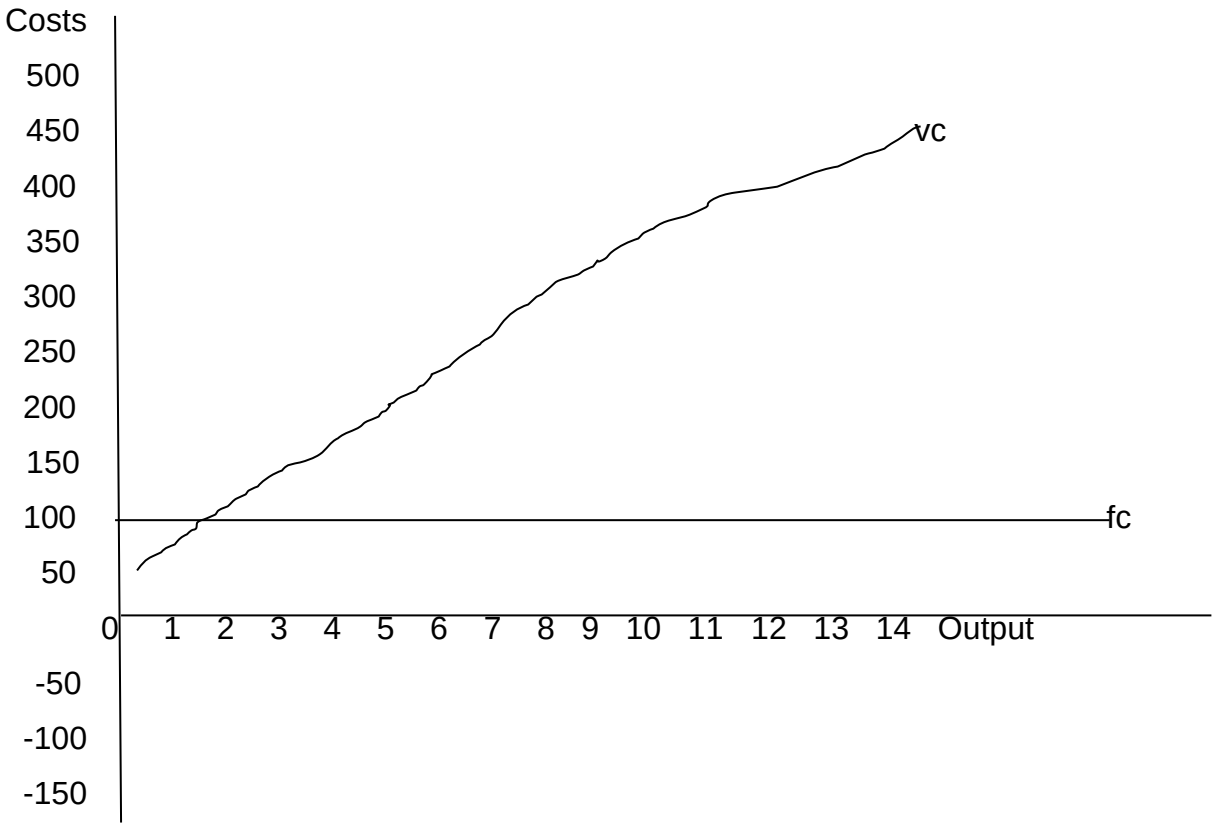
If the total variable cost of a jacket thus equals $100 and three units of labor produce 7 jackets per day; the total variable cost of 7 jackets equals $300.

**The Long Run**

**The long-run average cost (*LRAC*)** curve shows the firm's lowest cost per unit at each level of output, assuming that all factors of production are variable. The *LRAC* curve is found by taking the lowest average total cost curve at each level of output. The *LRAC* curve assumes that the firm has chosen the optimal factor mix, as described in the previous section, for producing any level of output. The costs it shows are therefore the lowest costs possible for each level of output. It is important to note, however, that this does not mean that the minimum points of each short-run ATC curves lie on the *LRAC* curve. The hypothetical Cost Table of a product is shown below

| A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|
| Qty.Q Variable | FC ₦ Constant | VC ₦ TC-FC(d-b) | TC ₦ FC+VC (b+c) | MC ₦ D1-D2 | AC ₦ TC/Q (D/A) | AFC ₦ FC/Q (B/A) |
| 1 | 100 | 50 | 150 | - | 150 | 100 |
| 2 | 100 | 90 | 190 | 40 | 95 | 50 |
| 3 | 100 | 120 | 220 | 30 | 73.3 | 33.3 |
| 4 | 100 | 150 | 250 | 30 | 62.5 | 25 |
| 5 | 100 | 170 | 270 | 20 | 54 | 20 |
| 6 | 100 | 200 | 300 | 30 | 50 | 16.7 |
| 7 | 100 | 250 | 350 | 50 | 50 | 14.3 |
| 8 | 100 | 300 | 400 | 50 | 50 | 12.5 |
| 9 | 100 | 320 | 420 | 20 | 46.6 | 11.1 |
| 10 | 100 | 400 | 500 | 80 | 50 | 10 |

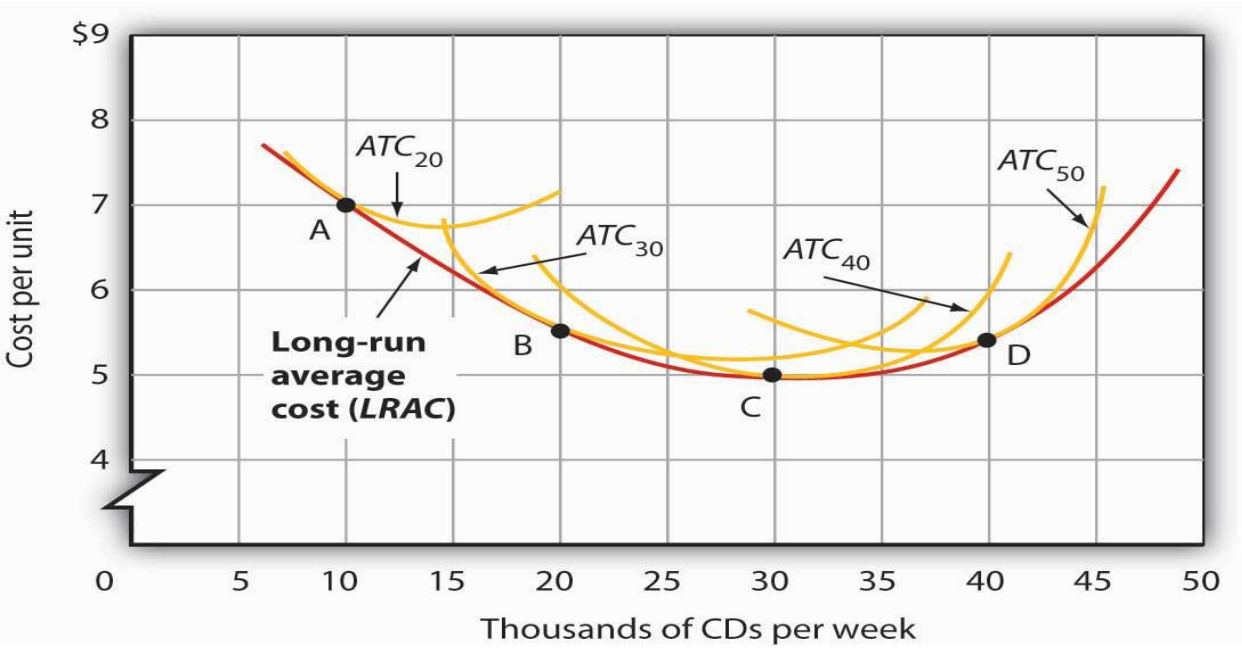
The above table can be plotted into a graph to show the cost functions and its behaviours. You plot the output function on the horizontal axis and the costs function on the vertical axis.




**Long-run Cost**

As in the short run, costs in the long run depend on the firm's level of output, the costs of factors, and the quantities of factors needed for each level of output. The chief difference between long- and short-run costs is there are no fixed factors in the long run. There are thus no fixed costs. All costs are variable, so we do not distinguish between total variable cost and total cost in the long run: total cost is total variable cost.

The long-run average cost (LRAC) curve shows the firm's lowest cost per unit at each level of output, assuming that all factors of production are variable. The LRAC curve assumes that the firm has chosen the optimal factor mix, as described in the previous section, for producing any level of output. The costs it shows are therefore the lowest costs possible for each level of output. It is important to note, however, that this does not mean that the minimum points of each short-run ATC curves lie on the LRAC curve.




The above figure shows the "relationship between short-run and long-run average total costs" and how a firm's LRAC curve is derived. Suppose a producer of compact disc produces CD using capital and labour. We have already seen how a firm's average total cost curve can be drawn in the short run for a given quantity of a particular factor of production, such as capital. In the short run, He might be limited to operating with a given amount of capital; it would face one of the short-run average total cost curves shown in the figure.

If it has 30 units of capital, for example, its average total cost curve is ATC30. In the long run the firm can examine the average total cost curves associated with varying levels of capital. Four possible short-run average total cost curves for the producer are shown in the figure. The relevant curves are labeled ATC20, ATC30, ATC40, and ATC50 respectively. The LRAC curve is derived from this set of short-run curves by finding the lowest average total cost associated with each level of output. Again, notice that the U-shaped LRAC curve is an envelope curve that surrounds the various short-run ATC curves. With the exception of ATC40, in this example, the lowest cost per unit for a particular level of output in the long run is not the minimum point of the relevant short-run curve.

**Economies and Diseconomies of Scale**

Notice that the long-run average cost curve in "relationship between short-run and long-run average total costs" first slopes downward and then slopes upward. The shape of this curve tells us what is happening to average cost as the firm changes its scale of operations. A firm is said to experience economies of scale when long-run average cost declines as the firm expands its output. A firm is said to experience diseconomies of scale when long-run average cost increases as the firm expands its output. Constant returns to scale occur when long-run average cost stays the same over an output range.

**Price, Marginal Revenue, and Average Revenue**

The slope of a total revenue curve is particularly important. The slope measures the rate at which total revenue increases as output increases. It equals the change in the vertical axis (total revenue) divided by the change in the horizontal axis (quantity) between any two points. We can think of it as the increase in total revenue associated with a 1-unit increase in output. The increase in total revenue from a 1-unit increase in quantity is **marginal revenue**. Thus marginal revenue (*MR*) equals the slope of the total revenue curve.

Price also equals **average revenue**, which is total revenue divided by quantity. To obtain average revenue (*AR*), we divide total revenue by quantity, *Q*. Because total revenue equals price (*P*) multiply by quantity (*Q*), dividing by quantity leaves us with price.

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

**MEANING AND THEORIES OF PROFIT AND REVENUE**

The term **profit** means different things to different people.

**The Accounting Profit**

To the accountant, 'profit' means the excess of revenue over all paid out costs, such as manufacturing and overhead expenses. It is more like what is referred to a 'net profit'.

Accounting profit may be defined as follows: Accounting Profit = a =TR – (w + r + I + m) where TR = Total Revenue; w = wages and salaries; r = rent; i = interest; and m = cost of materials. You can observe that when calculating accounting profit, it is only the explicit or book costs that are considered and subtracted from the total revenue (TR).

**The Economic or Pure Profit**

Unlike accounting profit, economic profit takes into account, both the explicit costs and implicit or imputed costs. Economist's concept of profit is the pure profit or 'economic profit'. Economic profit is a return over and above the opportunity cost, that is, the income expected from the second alternative investment or use of business resources. The implicit or opportunity cost can be defined as the payment that would be necessary to draw forth the factors of production from their most remunerative alternative use or employment. Opportunity cost is the income foregone which the business could expect from the second best alternative use of resources. The foregone incomes referred to here, include interest, salary, and rent, often called transfer costs**.**

Economic profit also makes provision for (a) insurable risks, (b) depreciation, (c) necessary minimum payments to shareholders. This is to prevent them from withdrawing their capital investments. Economic profit may therefore be defined as 'residual left after all contractual costs,

including the transfer costs of management, insurable risks, depreciation, and payments to shareholders have been met. Thus,

Economic or Pure Profit = $e_P$ = TR – EC – IC where EC = Explicit Costs; and, IC = Implicit Costs.

**Total cost - total revenue analysis**

Total cost is the costs of all inputs used in production while total revenue is the money realized from sales of goods produced by the firm. Total profit is the difference between total revenue and total cost. Total profit is maximized when the positive difference between total revenue and total cost is greatest. The equilibrium output of a firm is the output at which profit is maximized.

In a perfectly competitive market, the firm can vary his sales without affecting the market price. Thus the price is constant irrespective of the level of sales.

| Output (Q) | Price / unit | Total revenue | Total cost | Profit | MR | MC |
|---|---|---|---|---|---|---|
| 0 | 10 | 0 | 500 | -500 | - | - |
| 50 | 10 | 1250 | 1500 | -250 | 1250 | 1000 |
| 100 | 10 | 1450 | 1600 | -150 | 200 | 100 |
| 150 | 10 | 1900 | 1900 | 0 | 350 | 300 |
| 200 | 10 | 2800 | 2200 | 600 | 900 | 300 |
| 250 | 10 | 3650 | 2500 | 1150 | 850 | 300 |
| 300 | 10 | 4000 | 3000 | 1000 | 350 | 500 |
| 350 | 10 | 4500 | 4000 | 500 | 500 | 1000 |
| 370 | 10 | 5000 | 5000 | 0 | 500 | 1000 |

The total revenue for the firm is obtained by multiplying output in Column 1 by the respective unit price in column 2. The total cost in column 4 from the total revenue in column 3 gives the profit for the firm. You can see from the above table that total profit is maximized at N1150.00 when the firm produces and sells 250 units of the commodity per period of time.

**PROFIT MAXIMISATION AS A BUSINESS OBJECTIVE**

**Profit Maximisation Objective**

Profit maximisation objective helps in predicting the behaviour of business firms in the real world, as well as in predicting the behaviour of price and output under different market conditions.

**Total cost-total revenue analysis**

There are some theoretical profit-maximising conditions that we must have in our finger tips. These are presented below:

**The Profit-Maximising Conditions**

We first define profit as: P= TR – TC ……..1

where TR = Total Revenue = Unit price (P) x Quantity (Q) = PQ, and,

TC = Total cost = Variable Cost (VC) + Fixed Cost (FC).

There are two major conditions that must be fulfilled for equation (1) to be a maximum profit:

(i) the first-order (or necessary) condition, and

(ii) the second-order (or supplementary) condition.

The **first-order condition** requires that at a maximum profit, marginal revenue (MR) must equal marginal Cost (MC). Note that by the term 'marginal revenue', we mean the revenue obtained from the production and sale of one additional unit of output, while 'marginal cost' is the cost arising from the production of the one additional unit of output.

The **second-order condition** requires that the first-order condition must be satisfied under the condition of decreasing marginal revenue (MR) and increasing marginal cost (MC). Fulfillment of these two conditions makes the second-order condition the sufficient condition for profit maximizations.

In technical terms, the profit-maximising conditions can be formulated as follows: Given profit (P ) = TR – TC to be maximized, let:

MR = MC.

To get the second-order condition, we take the second derivative of the profit function to arrive at the second condition which must be negative.

d2 = d2TR – d2TC …….2

d2TR - d2TC

d2TR < d2TC

dQ2 <dQ2

**Example**

Suppose that the unit price of a commodity is defined by: P = 100 – 2Q

Then,

TR = PxQ = PQ  The equation will therefore be (100 – 2Q) Q

= $100Q – 2Q^2$ …….3

Suppose also that the total cost of producing this commodity is defined by the cost function:

TC = $10 + 0.5Q^2$ …….4

You are required to apply the first-order condition for profit maximisation and determine the profit-maximising level of output.

According to the first-order condition, profit is maximized where: MR = MC,

Or  dTR = dTC

dQ =dQ

Given equations (3) and (4), we get:

MR = dTR = 100 – 4Q  (dQ) ……5

MC = dTC = 1Q = Q  (dQ)  …….6

It follows that profit is maximized where:

MR = MC

Or  100 – 4Q = Q  which is equal to  5Q = 100 ……7

Solving for Q in equation (7), we get: Q = 100/5 = 20.

The output level of 20 units satisfies the first-order condition. Let us see if it satisfies the second-order condition.

Recall that the second-order condition requires that:

d2TR – d2TC < 0 dQ2dQ2 or dMR – dMC < 0 dQ dQ

or d(100 – 4Q) – d(Q) < 0 dQ dQ -4 -1 = -5 < 0

Thus the second-order condition is also satisfied at the output level of 20 units. We therefore conclude that the profit-maximising level of output in this problem is 20 units.

To determine the maximum profit, you will substitute 20 for Q in the original profit function. Thus, the maximum profit will be:

P* = TR – TC

= 100Q – 2Q2 – (10 + 0.5Q2) ……..8

= 100Q – 2.5Q2 – 10

= 100(20) – 2.5(20)2 – 10

= 2000 – 1000 – 10

= 990

We conclude that the maximum profit is N990 only.

Example: Given a company demand and average cost function to be

Q-90+2P=0 ……9

And $Q^2$-39.5Q+120+125 ……..…10

Find the level of output which maximises the TR, minimises cost and maximises the profit.

**Solution:**

Dd function: Q-90+2P=0

2P= 90-Q P=45-0.5Q

TR=PxQ Q(45-0.5Q)

TR = 45Q-0.5$Q^2$ ……11

$TR_{max}$ dTR/dQ = 45-Q 45-Q =0 Q = 45

The second order condition is

$d^2TR/d^2Q$ = d/dQ(45-Q) = -1 and -1 < 0

Therefore, $TR_{max}$ = 45Q-0.5$Q^2$

At TRmax 45, TRmax = 45(45-0.5$(45)^2$ =N1,012.50

AC = $Q^2$-39.5Q+120+125/Q

TC = QxAC Q($Q^2$-39.5Q+120+125) ……..12

TC = $Q^3$-39.5$Q^2$+120Q+125

MC= dTC/dQ = 3$Q^2$-79Q+120 ……..13

$MC_{min}$ = 6Q-79 and 6Q-79 will be equated to 0 to determine the value of Q

$6Q-79=0 \quad 6Q=79 \quad Q=79/6 = 13.2$

$MC_{min}$ $d(6Q-79)/dQ = 6$ and $6>0$

Therefore, $MC_{min} = 3Q^2-79Q+120$

To get the profit, $\pi = TR-TC$

$TR = 45Q-0.5Q^2$

$TC = Q^3-39.5Q^2+120Q+125$

$\Pi = 45Q-0.5Q^2-(Q^3-39.5Q^2+120Q+125)$ ……..14

$\Pi = 45Q-0.5Q^2-Q^3+39.5Q^2-120Q-125$

$\Pi = -Q^3+39Q^2-75Q-125$…… 15

$\Pi_{max} = \frac{d\Pi}{dQ} = -3Q^2+78Q-75$ ……16

Equating equation 33 to zero and solving through simple algebra,

$-3Q^2+78Q-75 = 0$

$(-3Q+3)(Q-25) = 0$

$Q = 1$ or $25$

The output level at which profit is maximised is $Q = 1$ or $Q = 25$

Substitute these values into profit function equation 32

$\Pi = -Q^3+39Q^2-75Q-125$

$\Pi = -(25)^3+39(25)^2-75(25)-125 \quad -15625+24375-1875-125$

$\Pi = 24375-17625 = N6750$

In order to exemplify the break-even analysis under linear cost and revenue conditions, you can assume a linear cost and revenue function as follows:

Cost function: $C = 100+10Q$……..17

Revenue function: $R = 15Q$……..…….18

The cost function implies a total fixed cost (TFC) of N100. Its variable cost varies at a constant rate of N10 per unit in response to increases in output. The revenue function implies that the market price for the firm's product is N15 per unit of sale.

Given equations 17 and 18, the break-even output can be computed algebraically in the following way:

At the break-even point,

Total Revenue (R) = Total Cost (C), so that in this example,

$15Q = 100 + 10Q$

$5Q = 100 \quad Q = 20.$ It follows that the break-even level of output is 20 units.

**Constrained Profit Maximisation**

Let the profit function of a hypothetical firm be given as:

$f(X, Y) = 100X - 2X^2 - XY + 180Y - 4Y^2$ ……..19

Where X and Y represent two products.

We wish to maximise equation above subject to the constraint that the sum of the output of X and Y be equal to 30 units. That is,

X + Y = 30 ……20

Solving by the substitution method, we obtain as follows:

First note that the process of the substitution method involves two steps

1. express one of the variables (X or Y in which case) in terms of the other and solve the constraint equation for one of them (X or Y), and later,

2. substitute the solution obtained into the objective function (that is, the function to be maximized or the profit function) and solve the outcome for the other variable.

**Solution**

Given the constraint equation above, we solve for the values of X and Y in terms of one another to obtain:

X = 30 – Y Or

Y = 30 – X

By substituting the value of X into the profit equation (19), we obtain equation 21 with one unknown:

$= 100(30 – Y) – 2(30 – Y)^2 – (30 – Y)Y + 180Y – 4Y^2$ ……21

$= 3000 – 100Y – 2(900 – 60Y + Y^2) – 30Y + Y2 + 180Y – 4Y^2$

$= 3000 – 100Y – 1800 + 120Y – 2Y^2 – 30Y + Y2 + 180Y – 4Y^2$

$= 1200 + 170Y – 5Y^2$ ……..22

Equation (22) can now be maximised by obtaining the first derivative and setting it equal to zero and solving for Y:

dY= 170 – 10Y = 0 …….23

Solving equation (23) for Y, we get:

10Y = 170 Y = 17.

Substituting 17 for Y into the constraint equation (20), we get: X + 17= 30 X = 13

It follows that the optimum solution for the constrained profit maximisation problem is X= 13 units and Y = 17 units. This values of X and Y satisfies the constraint. Expressed differently, the firm maximises profit by producing and selling 13 units of product X and 17 units of product Y.

The maximum profit under the given constraint can now be obtained by substituting the above values of X and Y into the profit function, equation (19):

(X, Y) = (13, 17) = 100(13) – 2(13)2 – (13)(17) + 180(17) – 4(17)2 = 2,645.

Thus, the maximum profit under constraint is N2,645.

**Constrained Cost Minimisation**

We now apply the substitution method to the problem of constrained cost minimisation. Suppose the cost function of a firm producing two goods, X and Y, is given by:

C = 2X2 – XY + 3Y2 ……24

and the firm must meet a combined order of 36 units of the two goods.

The problem is to find an optimum combination of the products X and Y that minimises the cost of production. Alternatively stated, we

Minimise C = 2X2 – XY + 3Y2

Subject to X + Y = 36 ……..25

Again, substitution method requires that the constraint equation on equation above is expressed in terms of any of the two goods, X and Y, and then substituted into the objective function (equation 25) Expressing X in terms of Y, we get:

X = 36 – Y ……..26

Substituting equation 25 above for X in the objective function, you get:

C = 2(36 – Y)2 – (36 – Y)Y + 3Y2 ……..27

= 2(1296 – 72Y + Y2) – 36Y + Y2 + 3Y2

= 2592 – 144Y + 2Y2 – 36Y + Y2 + 3Y2

= 2592 – 180Y + 6Y2

According to the optimisation rule, for the now objective function (equation (24)) to be minimised, the first derivative must be equal to zero, viz:

Y = 2592 – 180Y + 6Y2

dY = 180 + 12Y = 0 ……28

Solving for Y in equation (28), we get the value of Y as follows:

12Y = 180 Y = 15

Substituting this value into the constraint equation you get: X +15 = 36 X = 21

Thus, the optimum solution demands that 21 units of X and 15 units of Y minimise the cost of meeting the combined order of 36 units (that is, 21 + 15 = 36 units).

The minimum cost of producing 21 units of X and 15 units of Y can be obtained as follows, using equation (24) the objective function:

Minimum Cost = 2X2 – XY + 3Y2

= 2(21)2 – (21)(15) + 3(15)2

= 882 – 315 + 675 = 1,242

Thus, the minimum cost of producing the combined order is N1,242.

## MARKET, MARKET STRUCTURE AND PRICING DECISIONS

Market means different things to many people. To some people, “it is a geographical location specifically designed for people to meet openly. To other group, it may be used to refer to demand for a particular product. This is made clear when some people say market is dull meaning that the demand is either low or below expectation. To the third group of people, which we can say is the economists’ definition of market, “Is any mechanism that ensures the exchange of goods and services through personal interactions of the buyers and sellers as well as impersonal through the use of telephones, telegraphs, telefax, and other social and electronic media.

We have different types of market depending on the product or service bought and sold in them. We have factor market where factors of production are bought and sold. We have product market where goods like food stuffs, agricultural and manufactured products are sold. We have financial markets that deal in different financial assets such as money and capital markets, the stock exchange or securities market and the foreign exchange market.

However, other forms of market can also be identified using pricing systems and output in the markets which can be classified as perfect and imperfect markets.

### Concept of Market

Market: A market may be defined as an area over which buyers and sellers negotiate the exchange of well - defined commodity. A market can also be viewed as a set of arrangement by which buyers and sellers are in contact to exchange goods and services. Market brings together buyers and sellers of goods and services. Whether the buyers and sellers meet physically or not, a market performs the economic function of price determination and output policies.

Markets are separated from each other by commodity sold, natural economic barriers and barriers created by the central authorities (government). Individual markets differ from each other in many ways. The type of commodity sold or the nature of competition within the market can distinguish markets. Goods markets are those where goods and services are bought and sold. The sellers are the firms and the buyers are households and central authorities. The factor markets are those where services are bought and sold. The sellers are the owners of factors of production (usually households, but sometimes firms); the buyers are usually firms and the central authorities. Individual markets may differ from each other to the degree of competition among the various buyers and sellers in each market. In this respect we have competitive markets, monopoly, Monopolistic competition and oligopoly markets.

### Elements of Market Structure

Market structure means those characteristics of markets that influence the behaviour and performance of firms that sell in that market. Economists have grouped markets into four broad types based on the number of buyers and sellers and determination of output and pricing policies.

The four major types of markets are perfect competition, monopoly, monopolistic competition and oligopoly. We shall briefly examine the characteristics of each of these key market structures. .

1. **Perfect competition**: There are a large number of firms in the industry and the product is homogenous. Competition is perfect because each firm can sell any amount of output at the prevailing market price, implying that there are no rivalries among the individual firms.

The products are perfect substitutes for one another so that the price elasticity of demand curve of the individual firm is finite. This market structures thrives mainly on farms.

**Features of Perfect Competition**

The model of perfect competition is focused on the following assumptions.

a. **Large numbers of sellers and buyers**:-Under this condition each firm alone cannot affect the price in the market by changing its output.

b. **Product homogeneity**: The industry is defined by a group of firms producing a homogenous product. The assumption of large number of sellers and product homogeneity imply that the individual firm in a purely competitive market is a price- taker. Its demand curve is infinitely elastic, indicating that the firm can sell any amount of output at the prevailing market price.

c. **Free entry and exit of firms**: Entry or exit may take time, but firms have freedom of movement in and out of the industry.

d. **Profit Maximization**. The goal of a" firms is profit maximization.

e. **No government Regulation**: No government intervention in the market; (tariffs, subsidies rationing of production and demand and so on are ruled out). Any market where the above assumptions (a-e) are fulfilled is called pure competition though this is almost impossible in real life. It is different from perfect competition, which requires the fulfilment of the following additional assumptions.

f. **Perfect mobility of factors of production**. Factors of production can be moved from one place to the other.

g. **Perfect knowledge**: Sellers and buyers have complete knowledge of the conditions of the market. Information is free and costless uncertainty about future development in the market is ruled out.

**Price and Output Determination under Perfect Competitive Market** Price and output are being determined at a point where there is an interaction between the demand curve and supply curve. When this point is set, the price is known by all the market participants and all output will be made available at that price. No individual buyer or seller is able to influence the market price and output. That is the point economists refers to as “equilibrium Price and Quantity”.

Here the marginal cost is equal to marginal revenue (MC=MR), and the tendency for abnormal profit is wiped out in the market. All profits made in the market are normal profits.

The above is shown in the figure below:

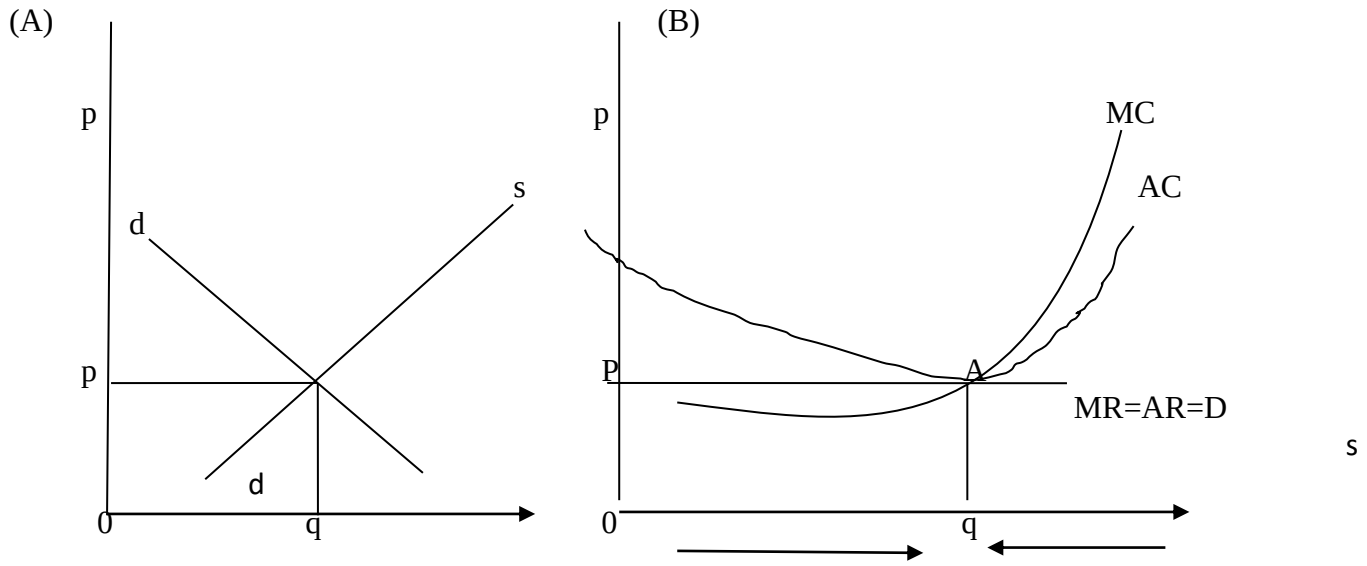



Figure 1 (A) shows the establishment of price and quantity in the economy. In (B) point (a) shows the level of output at which normal profit is maximised. The firm is producing at highest efficiency here. The arrow at the left point of (a) shows that it is possible to increase output profitably since MC < MR. The arrow at the right of point A indicate that production should be reduced back to A because MC > MR. Hence point A is the efficient production point in the economy under perfect competitive markets.

2. **Monopoly**: There is only one firm in the industry and there are no close substitutes for the product of the monopolist. Monopoly power is acquired when a firm has developed effective market mechanism to prevent competition or entry into the market. The demand of the monopolist firm coincides with that of the industry, which has finite price elasticity. There is a barrier to entry in a monopolistic market. Examples of this market structure are in local telephone; electricity and oil utilities, these are referred to as "natural monopolies".

**Features of Monopoly**

A market structure, which exhibits the following characteristics, is described as a monopoly market. The assumptions underlying the monopolistic market are as follows:

a. Single seller in the market

b. The product may not be homogenous.

c. The-goal of the firm is profit maximization.

d. Entry into the market is restricted.

e. Perfect knowledge is assumed however obtaining information is at an expense.

Information is decided on marginalistic rules, by equating marginal cost (MC) of information to its Marginal Revenue (MR).

f. The demand of the firm is also that of the industry and hence it is negatively sloping.

g. The monopolistic can determine either his output or his price, but not both.

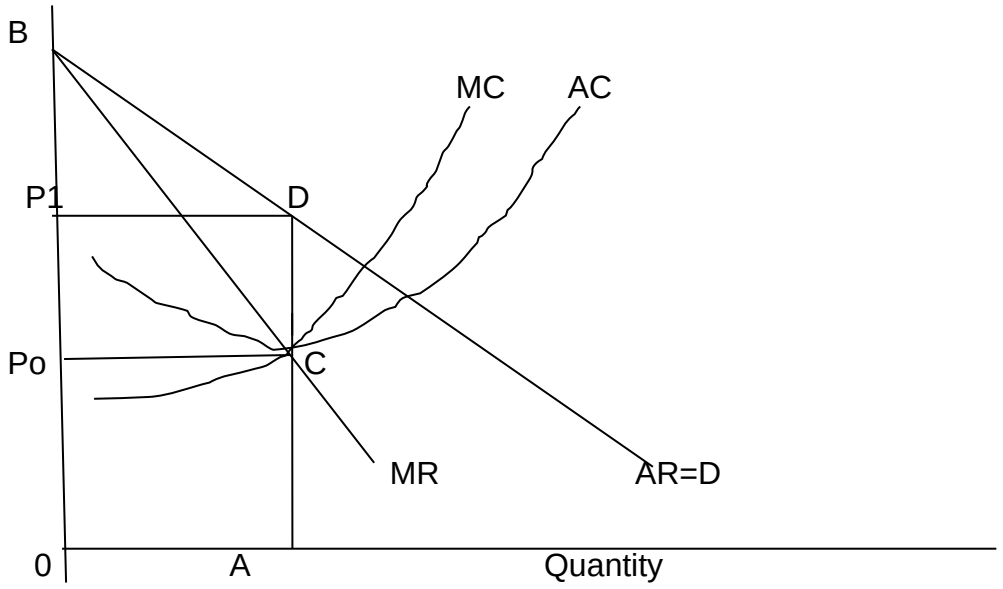
h. The market elasticity of demand must be greater than unity in equilibrium because the monopolist can increase his revenue by increasing his price.

i. The supply function is not uniquely determined thus the monopolist MC curve is not its supply curve.

**Price and Output Determination under Monopoly**:

Since we have earlier concluded that monopoly single-handedly deals in entire production of certain goods, he can charge higher or lower price for his product by either reducing or increasing his output .It is not necessarily binding on the monopoly to produce or charge price at a point where MC =MR =P. This is why monopoly is being accused of earning abnormal profits.

The figure below shows the behaviour of monopoly pricing, output and profit policies.




From 1c , the price is $P_1$ and the demand curve is BARD. Instead for the producer to charge $P_0$ as the price at the point at which MC =MR =C., he charges $P_1$ and produces at $P_0$CA.

$P_1DP_0C$ is the abnormal profit he enjoys because he is a monopolist. The normal profit would have come at point C where MR=MC

As in the case of perfect competition, pricing and output decision under monopoly are based on revenue and cost conditions. A monopolist can reduce its product price and sell more, and raise its product price and still retain some customers.

When a demand curve slopes downward, the associated marginal revenue (MR) curve lies below the average revenue (AR) curve.

Monopoly arises due to such factors as:

(i) Economies of scale; (ii) sole ownership; (iii) legal sanction and protection; and, (iv) Mergers and acquisition.

3. **Monopolistic Competition**: There is very large number of firms, but their product is somewhat differentiated. Hence the demand of the individual firm has a negative slope, but the price elasticity is high due to the existence of the close substitutes, produced by the other firms of the industry. Entry is free and easy. Firms in the industry are neither complete monopolists nor perfect competitors. Examples of a monopolistic competition include automobile industries, textile industries, food and soap industries. A monopolistic competitive firm spends much on advertisements in order to create awareness on the particular brand whose differences in the real sense may be either real or fancied

**Features of Monopolistic Competition**

Monopolistic competition is similar to pure competition in certain ways: there are many sellers and there is free entrance into the industry. The difference is that the product is differentiated or not identical with that of another. The term monopolistic competition refers to the fact that each seller has a kind of limited monopoly for his own product.

The advantage of having your own brand is that it enables you develop your own regular customers whom you hope will come back to you again. To the extent that he can gain some independence in price setting. If he cuts his price below that of others, he will gain some customers.

4. **Oligopoly**: There is a few numbers of firms, so that sellers are conscious of their interdependence. There is a substantial barrier to entry into the industry. The competition is not perfect, yet the rivalry is very high among firms, unless they make a collusive agreement. The product that the oligopoly produces may be homogenous (pure monopoly) or differentiated (differentiated oligopoly). In the later case the elasticity of the individual market demand is smaller than the former. Examples of oligopoly markets are those of automobiles, computers and aircraft industries.

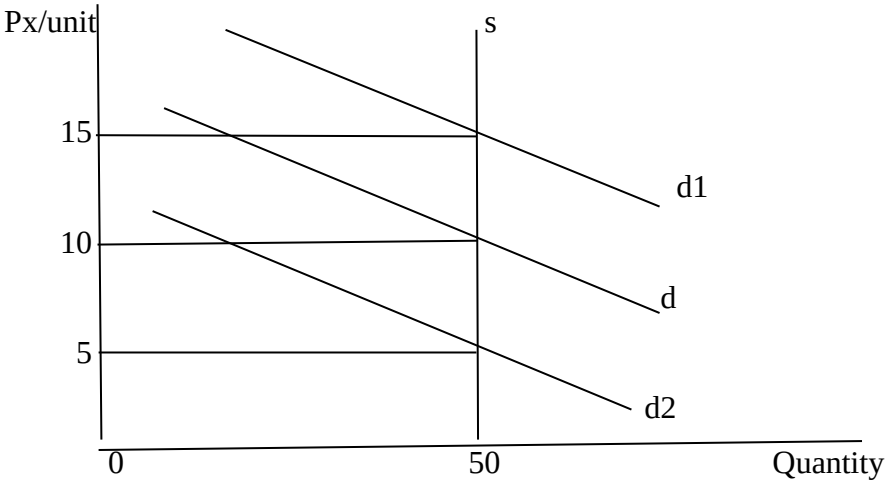
**Features of Oligopoly**

An oligopoly is an industry that contains only a few competing firms. Few enough so that each firm can keep watch on the action of his rivals. The few sellers may be selling either a homogenous product or a differentiated product. In the former case, they will normally sell at the same price while in the latter case this is not strictly necessary; but there is still strong tendency to sell at about the same price. Each firm in the oligopolistic market has enough market power to- prevent its being a price taker, but each firm is subject to enough inter-firm rivalry to prevent its considering the market demand curve as its own.

**Equilibrium in the market period**

Changes in the level of output in the short run can only be achieved by altering the amount of variable factors used in production. However, in the long run all factors are varied and therefore a change in the level of output can be accomplished by changing any of the production inputs. Productions of some goods are fixed for a short period of time, such that even when there is urgent need for expansion, it is impossible to adjust output level within such a short periods. For example, after the harvest of an agricultural product, the quantity of the commodity cannot be increased until the next harvest. On the contrary, production of some goods can be altered instantaneously. The short period of time in which supply is absolutely fixed is called the market period. We can distinguish three different supply periods, the market period in which all goods available for sale have already been produced (fixed supply), the short run period which allows changes in the rate of production from existing plants, and the long run period which is long enough for new plants to be built for expansion. Since supply of each firm is absolutely fixed in the market period, the market supply curve is simply the horizontal summation of all firm's supply curves. The market period, also referred to as the very short run period is characterized by a completely straight-line market supply curve parallel to the vertical axis as shown in the figure below:

Distinguish between the market period and the short run period.




In figure 1d, If we represent the total market supply of a commodity in the market period by the straight-line labeled S, and if the fixed quantity of the commodity available for sale is 50 units, market equilibrium is attained at that price where market demand is equal to market supply. Consider the initial market demand labeled d, the equilibrium market price is N10.00 per unit in the market period. This is the price at the point of intersection of market demand d and market supply curve S. If market demand were greater, say, d1 in the figure above, the equilibrium price will

increase to N15.00 per unit but the market equilibrium quantity would remain fixed at 50 units because supply is absolutely fixed in the market period. Similarly, if demand were less, d2, equilibrium price would decrease to N5.00per unit at the same market equilibrium quantity. We can therefore deduce that in the market period, demand alone determines the market equilibrium price, given fixed supply. It is important to note this condition applies to only the market period, in the short and the long run, both demand and supply jointly determine both the equilibrium price and quantity.

**Short run equilibrium of a firm in a perfectly competitive market**

A firm makes short run decision subject to the limitations imposed by its fixed inputs.

In the short run, altering the intensity of available resources used in production can change the rate of output per period of time. The firm in a perfectly competitive market can adjust its level of output in the short run to maximize profit or minimize losses. The short run equilibrium of the firm can be explained with the help of total cost-total revenue analysis and the marginal cost-marginal revenue analysis.

**Theory of Income Distribution**

Theory of income distribution is, the systematic attempt to account for the sharing of the national income among the owners of the factors of production: land, labour, and capital. Traditionally, economists have studied how the costs of these factors and the size of their return: rent, wages, and profits are fixed. According to the classical theory of distribution, the prices of the services of factors of production are determined by the forces of supply and demand of such services.

**The cobweb model**

The Cobweb model or cobweb theory is an economic model that explains why prices may be subjected to periodic fluctuations in certain types of markets. It describes cyclical supply and demand in a market where the amount produced must be chosen before prices are observed. It is basically presenting the idea that price fluctuations can lead to fluctuations in supply which cause a cycle of rising and falling prices.

In a simple cobweb model, we assume there is an agricultural market where supply can vary due to variable factors, such as the weather.

The main assumption of Cobweb model is that the price of previous year is a key determinant of supply in the current year. The cobweb model is also known as dynamic stability with lagged adjustment**.** Whenever demand or supply changes, equilibrium also changes as well. There is a time lag between a change in price and an appropriate adjustment in supply in response to it. Supply lag is the time gap between the decision to change the quantity supplied in response to a

given price, and it is actually being supplied. The supply lag often results in oscillations in price and quantity over time.

We assume that supply is a lagged function of price. It shows that supply responds to a change in price after a time lag.

$S_t = f(P_{t-1})$

On the other hand, there is no lag in the demand function; i.e. quantity demanded in this year depends on this year's price only. The cobweb theorem can be explained in the form of three theorems:

**Theorem I:**

If the slope of the demand curve is less than the slope of the supply curve, then the equilibrium is stable: The system is convergent.

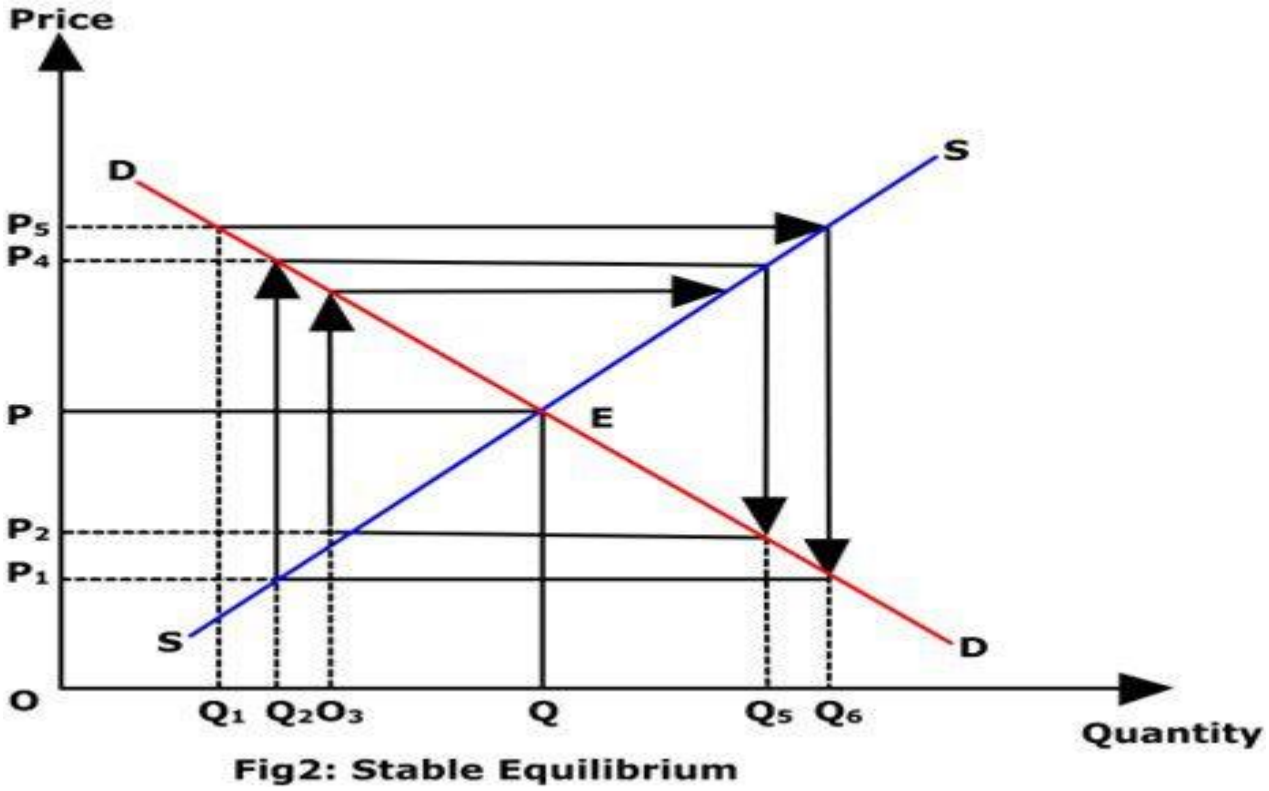



Fig2: Stable Equilibrium

In Figure 2, price is measured on the y-axis and quantity on X-axis. DD and SS are the demand and supply curves. The initial equilibrium occurs at point E, where demand is equal to supply. This is the equilibrium in period t.

Suppose the price rises due to some reason to OP5; then equilibrium will be disturbed. At the new price OP5, demand is less than the expected supply by Q1Q6. Due to this, in period t+1, supply rises to OQ6 exceeding demand by Q1Q6. As a result, the price falls down to OP1 and

causing a rise in demand for OQ6. But in response to the fall in price, supply in period t+2 decreases to OQ2. Now demand is more than supply by Q2Q6. As a result, the price rises to OP4, causing an increase in supply in period t+2 by Q2Q5. It is the price now that has to adjust itself to existing demand and supply conditions.

This whole process is repeated period after period. Each time the process of adjustment is repeated, the magnitude of change in supply, price and demand is decreasing. In period t+1, supply increases by Q1Q5. In period t+2, it decreases by Q2Q6 and in period t+3, it increases by Q2Q5 such that Q1Q6>Q2Q5>Q3Q. The same is true for demand and price. The decreasing magnitude of changes in demand, price and supply converges the equilibrium point at E. The equilibrium position is stable.

**Theorem II:**

If the supply curve has a smaller slope than the slope of the demand curve, the equilibrium is unstable. The adjustment process is divergent or oscillatory.

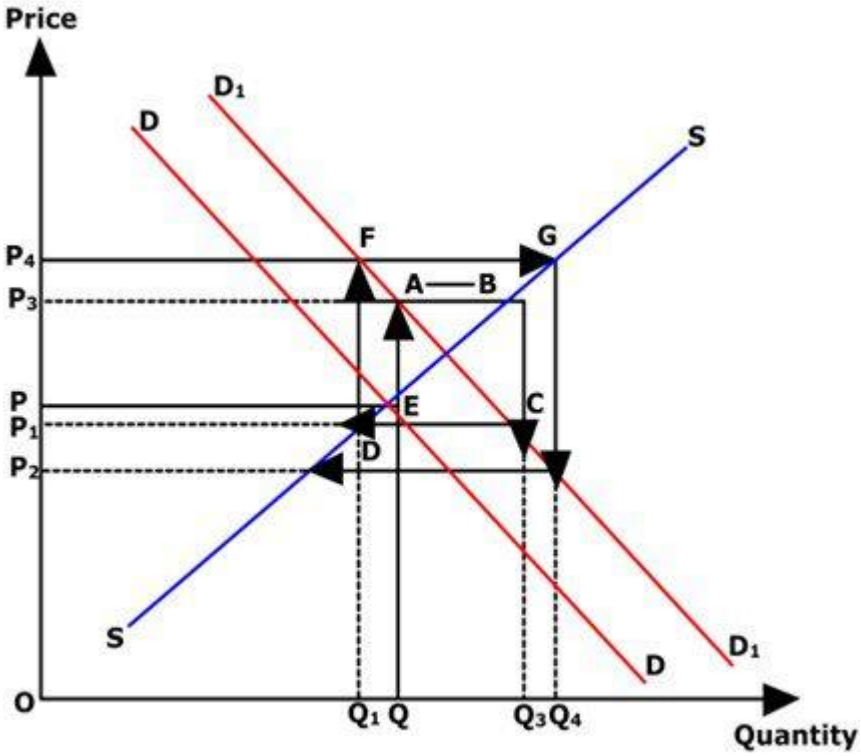



**Fig 3: Unstable Equilibrium**

When the slope of the supply curve is less than the slope of the demand curve, then the process of adjustment makes the price and quantity diverge away and away from the equilibrium position. In this case, the magnitude of changes in price and quantity around the equilibrium point goes on to increase. Thus, the new equilibrium position is unstable. This is shown in the figure.

In Figure 3, price is measured on the y-axis and quantity on X-axis. DD and SS are the demand and supply curves. The initial equilibrium occurs at point E, where demand is equal to supply. This is the equilibrium in period t; suppose there is an increase in demand because of some reason. This increase in the demand curve shifts the demand curve to the right to D1D1.

An increase in demand results in price in period t from OP to OP3. At this price, supply is more than demand. This excess supply forces the price to fall to OP1. In the next period t+2, supply decrease by Q1Q3, i.e. reduction of supply by CD amount. Now demand is more than supply, and therefore price rises to OP4.

We can observe from the fluctuation in demand and supply that the amplitude of changes in price and quantity goes on increasing. This causes the movement of price quantity combinations away and away from the equilibrium point. Therefore, the equilibrium position is unstable.

**Theorem III:**

If the slope of the demand curve is equal to the slope of the supply curve: equilibrium is non-damped oscillating.

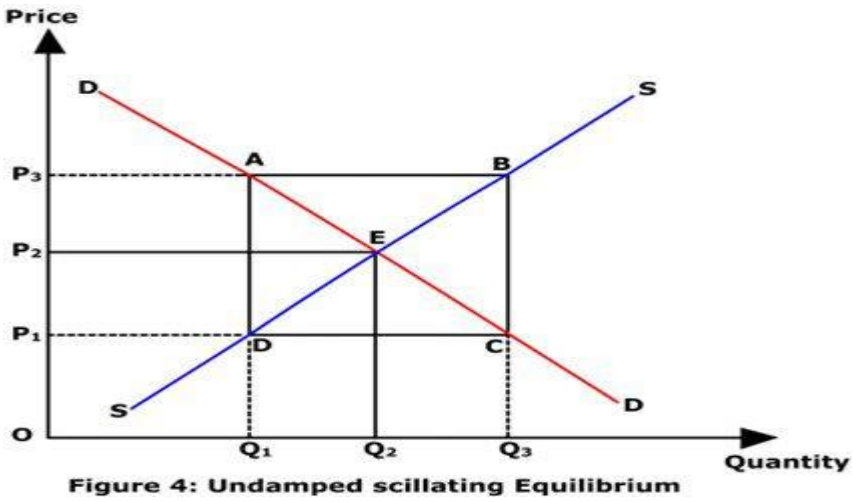


Figure 4: Undamped scillating Equilibrium

The undamped oscillating equilibrium is the equilibrium which, when displaced, keeps shifting in a circular way around the original equilibrium point with a constant change in demand, quantity and price. It is shown in Figure 4.

In Figure 4, the initial equilibrium is at point E, where the demand is equal to the supply. The equilibrium price is OP2, and the equilibrium quantity is OQ2. Let us suppose that the equilibrium is displaced either by a change in price or by a change in quantity. In both cases, equilibrium will keep circulating around its original point E.

Suppose the price rises from OP2 to OP3, then demand decreases from OQ2 to OQ1. This also results in an increase in supply from OQ2 to OQ3. This would result in an excess supply equal to AB. This excess supply exerts pressure on the prices to fall by BC. This fall in price resulted in a rise in demand and a decrease in supply, i.e. excess demand of Q1Q3. This excess demand in Q1Q3 causes the price to go up by P1P3. This process of change in price and quantity continues indefinitely.

Ricci's presented the diagrams of all the three basic types- **convergent, divergent and continuous**. No one out of three has considered the broader view of the cobweb theory. Schultz used it as an illustration of the difference between lagged readjustment and simultaneous readjustment of supply to demand.

**The Operation of Factor Markets**

In the factor market, producers, entrepreneur or business operators are the buyers. These factors may be bought, rented, or hired. We call these inputs such as raw materials, land, labour or capital. They are needed before output is released or produced. Factor market is patronised for whatever a business needs in order to build, package, and deliver the products or services they provide. Sellers of inputs include producers of raw materials, land owners, skilled and unskilled labour and capital owners.

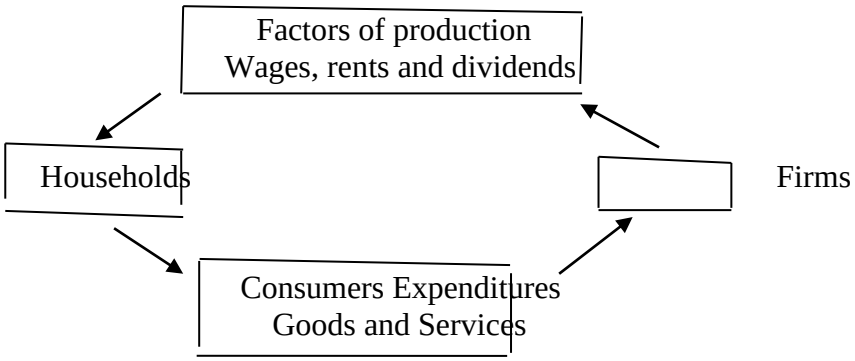
Land, labour and capital are traded in the factor market where the equilibrium quantity and price of these factors are determined. The entrepreneurship as organiser creates firms and hires the other factors for production activities.

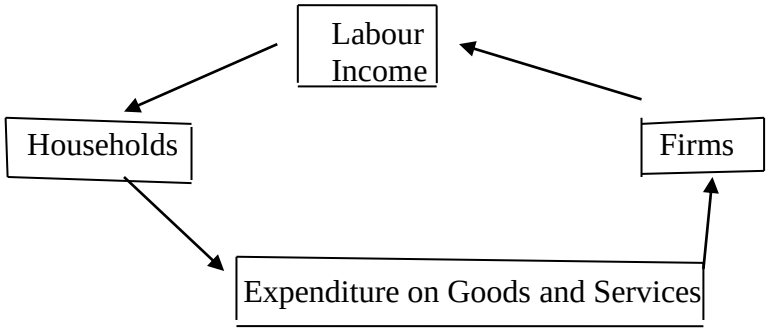
We have labour, capital and product market. Product market cannot exist without the factor markets and factor markets are labour and financial or money market.

A product market, or goods and services market, is where individuals go to purchase finished products.

**THE CIRCULAR FLOW OF INCOME**

This is describing the flow of money among the economic agents within the economy. It is represented by the diagram below:






In discussing the circular flow of income, we refer to the movement of income ad payments from economic agents to one another. This can be discussed looking into different economic sectors vis a vis two, three and four sector economy. Two sectors comprises of household and business sector.

Product price is determined by the cost of production. When salaries and wages go up due to increased demand for labour or government intervention, businesses must pay more for labour to produce their products. So also is the price of land and capital. This increases the cost of production, which then translates into higher prices for consumers as businesses pass on their rising costs of input price to consumers to remain profitable.

That is, the demand is determined by or originates from the demand for the product the inputs are used to produce. The labour market demand curve is the MRPL curve. The curve shows the relationship between the quantity demanded and the wage rate holding the marginal product of labour and the output price constant.

*Capital can be seen in three forms:*

*Physical Capital* - This includes man-made or manufactured resources used in production. Examples of physical capital are hand tools, machines, equipment, and even buildings.

*Human Capital* - This is a more modern concept and entails enhancements in labor as a result of knowledge and education. Human capital is just as important as physical capital since it represents the value of the knowledge and experience a worker possesses. Today, advancements in technology have made human capital more relevant. For instance, workers with advanced degrees are in higher demand compared to those with regular degrees.

*Financial Capital*: These are money required to purchase other forms of capital and factors of production.

Factor market has the characteristics of

**Trading of factors of production** – The goods bought and sold in factor market are resources that are traded for the production of goods or services.

**Derived demand** – Factor demand is necessitated for production. That is what they are needed for. What can be derived from their activities? Example: When Leather boots are suddenly trendy and everybody, young or old, wants to get their hands on a pair, the leather boot manufacturer

needs more shoemakers and capital and possibly more machines to be able to meet this demand. Therefore, the demand for shoemakers (labour) has been **derived** from the demand for leather boots.

**Perfect competition in the factor market**

Perfect competition in the factor market refers to a high level of competition that pushes the supply and demand for each factor to an efficient equilibrium.

If there is imperfect competition in the shoemaker labor market, then one of two things will occur: A shortage of labourers will force firms to pay an inefficiently high price, reducing total output.

If the supply of shoemakers exceeds the demand for shoemakers, then a surplus will occur resulting in underpaid labour wages and high unemployment. This will actually make the firms more money in the short run, but in the long run, can hurt demand if unemployment is high.

If the market has perfect competition, then the supply and demand of shoemakers will be equal at an efficient quantity and wage.

Perfect competition in the factor market provides the highest total quantity of workers and at a decent wage as the market can handle. If the quantity of workers or wages changes, the market will only decrease in overall utility.

Similar market forces apply to the other factors of production such as capital. Perfect competition in the capital market means the loanable funds market is in equilibrium, providing the highest overall quantity of loans and price efficiency.

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