# CAPITAL BUDGETING

Dhaval J. Pandya, Ph.D.
Department of Economics,
Asst, Prof. & Head
U.C.C.C. & S.P.B.C.B.A. & S.D.H.G. College of B.C.A. & I.T., Surat
email: djp_econ@yahoo.co.in

# INTRODUCTION

Most of the principles of managerial economics discussed so far focus on analysis of short term decision making problems of a business.

   E.G. : Deciding a product price , How much quantity of output should be produced etc.

However, we will be concerned with analyse of decisions which have long-run implications for a firm. What new fixed assets, plant, and capital equipment be acquired or built up so as to increase the value of firm and its long run profitability.

All of these and other similar decisions require long-term investment analysis which are involved in capital budgeting.

# Meaning : Capital Budgeting

O Capitals budgeting is the process of making decision for long-term investment projects or the process of planning for investment expenditure in capital projects.

O E.G: Investment in new factories, Machinery, Expenditure on investment projects etc.

O Capital budgeting is also known as long term investment or capital projects.

# NEEDS OF CAPITAL PROJECTS :

O Various capital projects for which long-run investment analysis is needed.

O **Replacement** : There is a need for replacement of machinery and capital equipment which is used for production over a number of years. Capital budgeting is required to plan for it.

O **Cost reduction** : Some capital projects are included the installation of new and more efficient machinery and equipment for outdated equipment so, that it is new equipment and machinery with improved technology which makes cost reduction possible .

O **Output Expansion :** Investment in new capital projects is needed for expansion of productive capacity in response to the increased demand for a firm's product.

O **Expansion by developing of new products or markets** : Investment is required for the development of new products in response to change in taste of consumer or for entering a new market.

O **Government Regulations** : There are some investment projects which are required to meet government regulations. Such investment projects include projects for pollution control, projects for healthy and safety etc .

# STEPS OF CAPITAL BUDGETING

DETERMINING THE COST OF THE PROJECT .

ESTIMATING CASH FLOWS .

MEASURING RISKINESS OF ESTIMATED CASH FLOWS.

DETERMINNG THE APPROPRIATE DISCOUNT RATE .

FINDING PRESENT VALUE OF FUTURE CASH FLOWS .

COMPARING PRESENT VALUE OF CASH FLOWS WITH THE COST OF THE PROJECTS .

# Sources of Supply of Capital (Capital Fund)

## Internal Sources

- Depreciation charges & Retained Earnings

## External Sources

- Sales of bonds, Issues of new shares, Issue of preferential share, Convertible securities, Direct loans.

# METHODS OF CAPITAL BUDGETING

## (Methods for Evaluating Capital Projects)

| PAYBACK PERIOD METHOD | NET PRESENT VALUE METHOD | INTEREST ON RATE RETURN METHOD | PROFIT INDEX METHOD |

O **Payback Period** :-

O The number of years the firm takes to recover its initial cost of a project.

O If a firm has to decide whether to accept or reject a project according to its payback criterion.

O An amount of money to be received in the future is less valuable to a firm than the same amount of money received today.

O **Net Present Value (NPV)** :-

O NPV realistically predicts the future cash flows.

O NPV discounts future cash flows at an appropriate discount rate.

O If, NPV>0(positive ),project is to be accepted.

O If, NPV<0(negative), project is to be rejected.

O If, NPV=0, project may be accepted or rejected, the firm decides it.

- **Internal Rate of Return (IRR) :-**
- It is the rate of discount that equates the present value of net cash flows equal to its initial investment cost of the project.
- IRR is used to rank different projects.
- If, IRR is greater than cost of capital, investment in the project should be made.
- **Profitability Index (PI) :-**
- **PI=**  $\dfrac{\text{present value of future cash flows}}{\text{Intial cost of a project}}$

If, PI>1, accept.

If, PI<1, reject.

If, PI=1, accept or reject it.

# Examples

O **Payback period:-**

| Project | Initial cost | 1 | 2 | 3 | 4 | 5 | Payback period |
|---------|--------------|-----|-----|------|-------|-------|----------------|
| A | 1000 | 500 | 500 | 1000 | 1000 | 1000 | 2 |
| B | 1000 | 250 | 500 | 500 | 5000 | 10000 | 3 |

O Here project A recovers its initial cost after 2 years and project B recovers after 3 years. So, the firm selects project A as its project .

O If a firm has to decide whether to accept or reject a project without its need to rank it with others , then according to payback criterion the decision rule is to compare the projects payback period with a

*"Cut-off period".*

O **Net Present  Value:-**

| Project | Initial cost | Net cash flow |
|---------|-------------|---------------|
| A | 100 L | 120 L |
| B | 150 L | 180 L |

O  Solution for project A :-

O $\quad \dfrac{Rt \ - \ CO}{(1+i)} = \dfrac{120 \ -100}{(1+0.1)} = \dfrac{120 \ X \ 10}{11}$

$\qquad\qquad\qquad\qquad\qquad = 109.09\text{-}100 = \underline{\mathbf{9.09}}$

O Solution for project B :-

O $\quad \dfrac{Rt \ - \ CO}{(1+i)} = \dfrac{180 \ – \ 150}{(1+0.1)} = \dfrac{180 \ X \ 10}{11}$

$\qquad\qquad\qquad\qquad\qquad = 163.63 \ – \ 150 = \underline{\mathbf{16.63}}$

O Here the firm will select project B.

- **Internal Rate of Return:-**

- Suppose a firm is considering to invest in a project whose initial cost to it equals to Rs 1000. Net cash flows from this project is Rs 450 per year for five years. After five years the project machine has no salvage value. Firm has to borrow investments funds at 20 per cent per annum. Calculate IRR.

- $\dfrac{R1}{(1+r)} + \dfrac{R2}{(1+r)} + \dfrac{R3}{(1+r)} + \dfrac{R4}{(1+r)} + \dfrac{R5}{(1+r)} = C0$

- $\dfrac{450}{(1+r)} + \dfrac{450}{(1+r)} + \dfrac{450}{(1+r)} + \dfrac{450}{(1+r)} + \dfrac{450}{(1+r)} = 1000$

- Using the calculator r has been found to be equal to 34.9. Thus 34.9 is the IRR of the project. Since, the IRR exceeds the cost of capital, the project should be accepted.

# CAPITAL RATIONING

With the given constraints of available funds , it has to decide which projects it should choose for implementation and accordingly allocate or ration capital funds to them. It is called CAPITAL RATIONING.

| PROJECT | INITIAL COST OF PROJECTS | NPV | IRR | IRR (RANKING) |
|---------|--------------------------|--------|-----|---------------|
| A | 2,00,000 | 10,000 | 20 | 1 |
| B | 1,00,000 | 4,000 | 18 | 2 |
| C | 2,00,000 | 7,000 | 16 | 3 |
| D | 1,00,000 | 2,500 | 14 | 4 |
| E | 1,00,000 | 2,000 | 13 | 5 |
| F | 1,00,000 | 1,900 | 11 | 6 |
| IDLE BALANCE | 1,00,000 | 0 | 0 | 7 |

# CAPITAL RATIONING

❖ Capital rationing is a strategy employed by companies to make investments based on the current relevant circumstances of the company.

❖ Eg: Suppose a company has 1 crore rupees and after using the profitability index technique of capital budgeting company found that three projects of Rs 60 Lakhs, Rs 40 Lakhs and Rs 50 Lakhs are profitable out of five projects but if company has limited cash of Rs 1 crore only.

❖ With this money, company can use capital rationing technique. Under this technique, if company sees that first and third proposal profitability index is high than second, then they will select only two projects combination out of three projects.

❖ Under capital rationing it is not necessary that the projects with positive present values can be taken up because of limits on the funds available for investment. Many a times a firm has to select certain projects, with negative present values because they are expected to generate funds at crucial times.

# Thank You

# Profit Analysis

Dhaval J. Pandya, Ph.D.

Department of Economics,

UCCC & SPBCBA & SDHG College of BCA & IT, Surat

djp_econ@yahoo.co.in

# Introduction

- Business economics has picked-up relevant concepts, techniques, tools and theories from micro and macroeconomics applicable to business issues and problems of decision making. Following are the core topics (scope) of managerial economics:

❑ Demand Analysis.

❑Production Analysis.

❑Cost & Revenue Analysis.

❑Pricing Policies and Practices.

❑Profit Planning & management.

Among all these profit planning & management is an important topic for any business firm, as the key objective of any business firm is to maximize profit.

# Significance of Profit

- A business firm is always profit motivated. Profit seeking is the motive force of any business undertaking. Market economy is, thus, profit-oriented. Thus, the classical economists have regarded profit maximization as the sole objective of the business firm in a capitalist economy.

- Reasonable profit is the righteous reward of the entrepreneur for his entrepreneurial and organizational activity. As such, a rational profit policy and planning is important for a modern business firm.

# ROLE OF PROFIT IN THE ECONOMY

- Profit is a crucial earning expected in a business. A reasonably high level of profit is essential to play its positive role in the market economy as well as the economy as whole, on various counts:

- Shareholders' Benefit.

- High Business Reputation.

- High Capacity to do R & D.

- Prudency Against Risks.

- Ploughing Back for Growth.

- Business Sustainability.

- Better Employment.

- Market Signals.

- Resource Allocation.

# Nature of Profit: In Accounting Terms

- Profit is the earning of an entrepreneur. To the economist, the most significant point about profit is that it is a residual income. However, the term 'profit' has different connotations in the accounting sense and in the economic sense.

- In the accounting sense, when total cost is subtracted from total revenue or total sales receipts of the firm, the residual is termed as profit.

Profit = Total Revenue – Total Cost.

- In the accounting sense practice, when total cost is measured, only explicit costs, i.e., contractual payments made to different factor inputs by the firm are considered. These include wages, salaries, expenses on raw materials, fuel and power, rents, and interest. To these inputs, cost of depreciation charges are added.

# Nature of Profit: In Economic Terms

- In the economic sense, when the total costs are measured, we include explicit as well as implicit costs. Implicit costs refer to costs which are to be deemed and imputed as costs when a firm uses its own capital, for which obviously no interest is payable to anybody. Similarly, the entrepreneur provides managerial service for which he does not receive any remuneration by way of salary. In a true economic sense, therefore, implicit and explicit rents are included in the cost of production.

Profit = Total Revenue – Total explicit and implicit costs.

# Sources of Profit (Theories)

| Economist(s) | Attributes |
| --- | --- |
| J. B. Clark | Profit is attributed to a dynamic economy. (Dynamic changes) |
| F. H. Knight | Profit to risk & uncertainty. |
| J. A. Schumpeter | Emphasizes innovation as the fundamental source of profit. |
| Mrs. J. Robinson, Professor E.H. Chamberlin and Kalecki | Profit is determined by the degree of monopoly power enjoyed by the entrepreneur in the market for his product. |

Prepared By: Dr.Dhaval J. Pandya

# Clark's Dynamic Theory of Profit

- A popular conception of profits is that they arise in a dynamic economy.

- J. B. Clark is the one who first propounded that profits are a dynamic surplus.

- He argues that profit occurs when selling price of the goods exceeds their cost of production.

- He examines the question that what changes occur in the economy & give rise to profits?

# Dynamic Changes

- Clark mentioned 5 changes that occur in the dynamic economy & which gives birth to profits. These changes are as follows…

  1. Changes in the quantity & quality of human wants.

  2. Changes in the methods of techniques of production.

  3. Changes in the amount of capital.

  4. Changes in the forms of business organization.

  5. The growth of population.

- The above changes are constantly taking place & bring about the divergence between price & cost & thereby give rise to profit, positive or negative.

Prepared By: Dr.Dhaval J. Pandya

# Innovation & External Changes

- In addition to these 5 changes by Clark, there are other changes also which occurs in the economy. All the changes which take place & as a result of which profit arise in the dynamic economy may classify into two parts viz.,

(i) Innovations: It represents changes which are introduced by individual entrepreneur themselves. The entrepreneurs earns huge profits from introducing innovations.

(ii) External Changes: …refers to those changes which are external to the firms or industries in an economy. For instance, breaking of wars, inflation, depression, changes in monetary or fiscal policies, technology, changes in taste & preferences of consumers, etc.

# Schumpeter's Innovation Theory of Profit

- The **Innovation Theory of Profit** was proposed by Joseph. A. Schumpeter, who believed that an entrepreneur can earn economic profits by introducing **successful innovations**.

- According to Schumpeter, **innovation** refers to any new policy that an entrepreneur undertakes to **reduce the overall cost of production** or **increase the demand for his products.**

- Innovations have been singled out as a very important factor responsible for the occurrence of profit to the entrepreneurs.

# Types of Innovations

- Innovation can be classified into two categories:

- The **first category** includes all those activities which reduce the overall cost of production such as the introduction of a new method or technique of production, the introduction of new machinery, innovative methods of organizing the industry, etc.

- The **second category** of innovation includes all such activities which increase the demand for a product. Such as the introduction of a new commodity or new quality goods, the emergence or opening of a new market, finding new sources of raw material, a new variety or a design of the product, etc.

- The innovation theory of profit posits that the **entrepreneur gains profit** if his innovation is successful either in reducing the overall cost of production or increasing the demand for his product.

Prepared By: Dr.Dhaval J. Pandya

# Conclusion…

- An entrepreneur can earn **larger profits for a longer duration** if the law allows him to patent his innovation. Such as a design of a product is patented to discourage others to imitate it. Over the time, the supply of factors remaining the same, the factor prices tend to rise as a result of which the cost of production also increases. On the other hand, with the firms adopting innovations the supply of good sand services increases and their prices fall. Thus, on one hand the **output per unit cost increases** while on the other hand the **per unit revenue decreases**.

# Knight's Theory of Profit

- The **Knight's Theory of Profit** was proposed by Frank. H. Knight, who believed profit as a reward for uncertainty-bearing, not to risk bearing. Simply, profit is the residual return to the entrepreneur for bearing the uncertainty in business.

- Knight had made a clear distinction between the risk and uncertainty. The risk can be classified as a **calculable** and **non-calculable** risk. The calculable risks are those whose probability of occurrence can be anticipated through a statistical data. Such as risks due to the fire, theft, or accident are calculable and hence can be insured in exchange for a premium. Such amount of premium can be added to the total cost of production.

- While the non-calculable risks are those whose probability of occurrence cannot be determined. Such as the strategies of a competitor cannot be accurately assessed as well as the cost of eliminating the completion cannot be precisely calculated. Thus, the risk element of such events is not insurable. This incalculable area of risk is the **uncertainty**.

# Conclusion...

- Knight believes that profit might arise out of the decisions made concerning the state of the market, such as decisions with respect to increasing the degree of monopoly in the market, decisions regarding holding stocks that might result in the windfall gains, decisions taken to introduce new product and technique, etc.

- The major criticism of the knight's theory of profit is, the total profit of an entrepreneur cannot be completely attributed to uncertainty alone. There are several functions that also contribute to the total profit such as innovation, bargaining, coordination of business activities, etc.

# Wages

Dhaval J. Pandya, Ph.D.
Head, Department of Economics,
U.C.C.C. & S.P.B.C.B.A. & S.D.H.G. College of B.C.A. & I.T.
Surat

# Introduction

- In general prevalence, wage is a remuneration to labour for the work done for the service rendered by it to the employer.

- According to Section 2(h) of the Minimum Wages Act, 1948 the term "wages" means *all remuneration capable of being expressed in terms of money which would if the terms of the contract of employment express or implied were fulfilled be payable to a person employed in respect of his employment or of work done in such employment* and includes house rent allowance but does not include…

(i) the value of -

(a) any house accommodation supply of light, water, medical attendance etc. or

(b) any other amenity or any service excluded by general or special order of the appropriate government;

(ii) any contribution paid by the employer to any person fund or provident fund or under any scheme of social insurance;

(iii) any traveling allowance or the value of any traveling concession;

(iv) any sum paid to the person employed to defray special expenses entailed on him by the nature of his employment; or

(v) any gratuity payable on discharge.

# Types of Wages
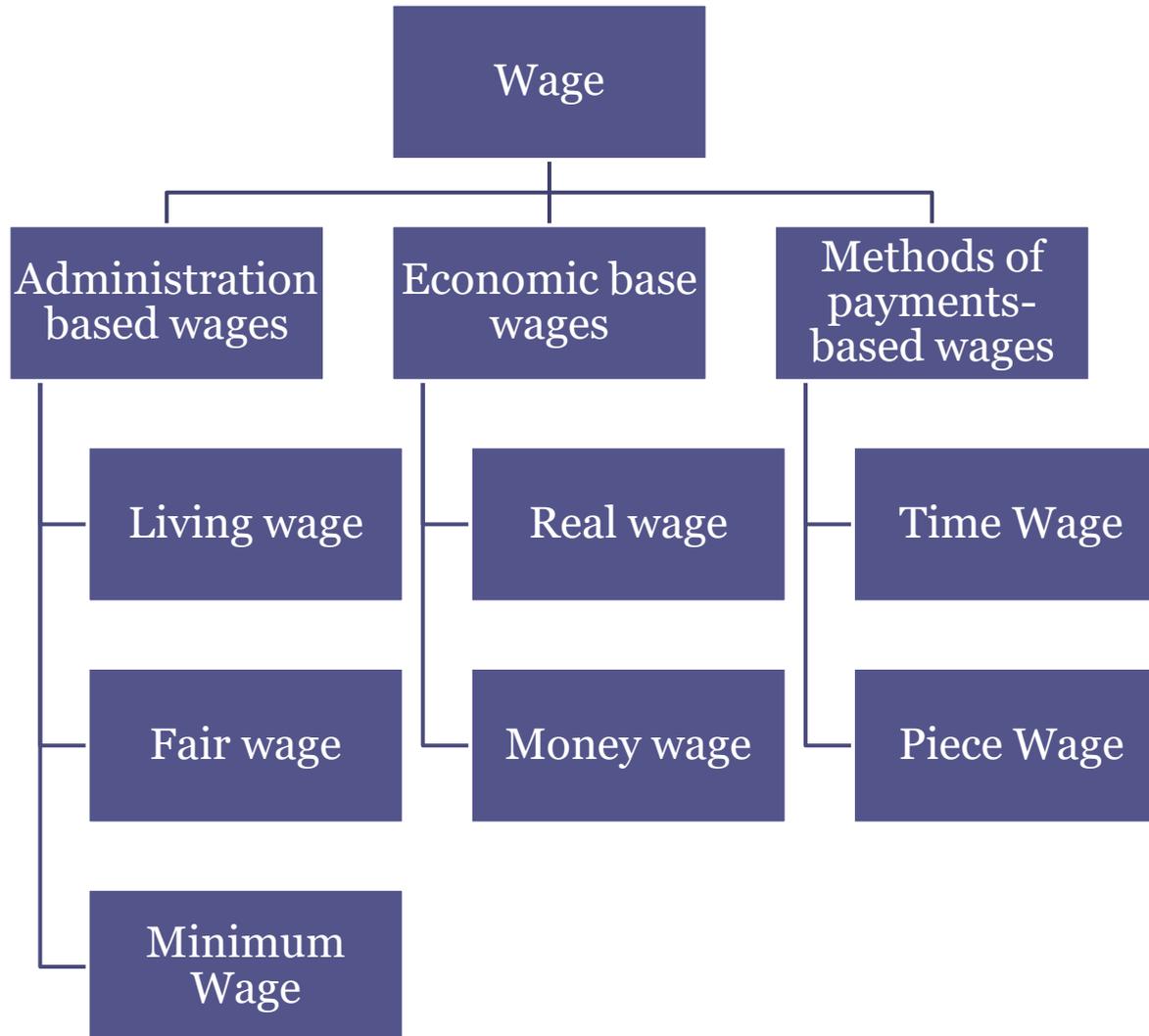
# Administration Based Wages : Living Wage

- The concept of "Living wage" is the wage rate which prevails in most of the economically advanced Countries. The term Living Wage has not been defined under the Minimum wages Act, 1948.

- Living wages are wages without which working people cannot live and perform their duties as a citizen. It varies from country to country depending upon the price level of necessaries of life, and it is determined by the socio-economic conditions of a particular country.

- The living wage should enable the wage earner to provide for himself and his family not merely the bare essentials of food, clothing and shelter but *the measure of frugal comfort including education for the children protection against ill health, requirements for essential social needs and a measure of insurance against the more important misfortune including old age.*

- In India, there is no statutory definition for the term 'living wage'. According to Article 43 of the Indian Constitution, the State shall endeavor to secure to all workers living wages, conditions of ensuring a decent standard of life and full enjoyment of leisure and social and cultural opportunities.

# Administration Based Wages : Fair Wage

- Fair wage is a mean between the living wage and the minimum wage. ***A fair wage is related to fair work-load and the earning capacity.*** It can say that it is more than minimum wage but less than the living wage. It may roughly be said to approximate to the need based minimum, in the sense of the wage which is adequate to cover the normal needs of the average employee regarded as a human being in a civilized society.  Fair wage is fixed, taking into consideration, the present economic position and further prospects of the Industry.


- Fair wage depends on -
- (i)    the productivity of Labour.
- (ii)    the prevailing rates of wages in the same industry for similar occupations in the same or similar occupations in the same or neighboring localities;
- (iii)  the level of national income and its distribution; and
- (iv)  the place of the industry in the economy of the country.

# Administration Based Wages : Minimum Wage

- Minimum wages have been defined as the ***minimum amount of remuneration that an employer is required to pay wage earners for the work performed during a given period, which cannot be reduced by collective agreement or an individual contract*** (ILO,1970).

- Minimum wages can be set by statute, decision of a competent authority, a wage board, a wage council, or by industrial or labour courts or tribunals. Minimum wages can also be set by giving the force of law to provisions of collective agreements.

- The purpose of minimum wages is to protect workers against unduly low pay. They help ensure a just and equitable share of the fruits of progress to all, and a minimum living wage to all who are employed and in need of such protection.

# Main Dimensions of Effective Minimum Wages
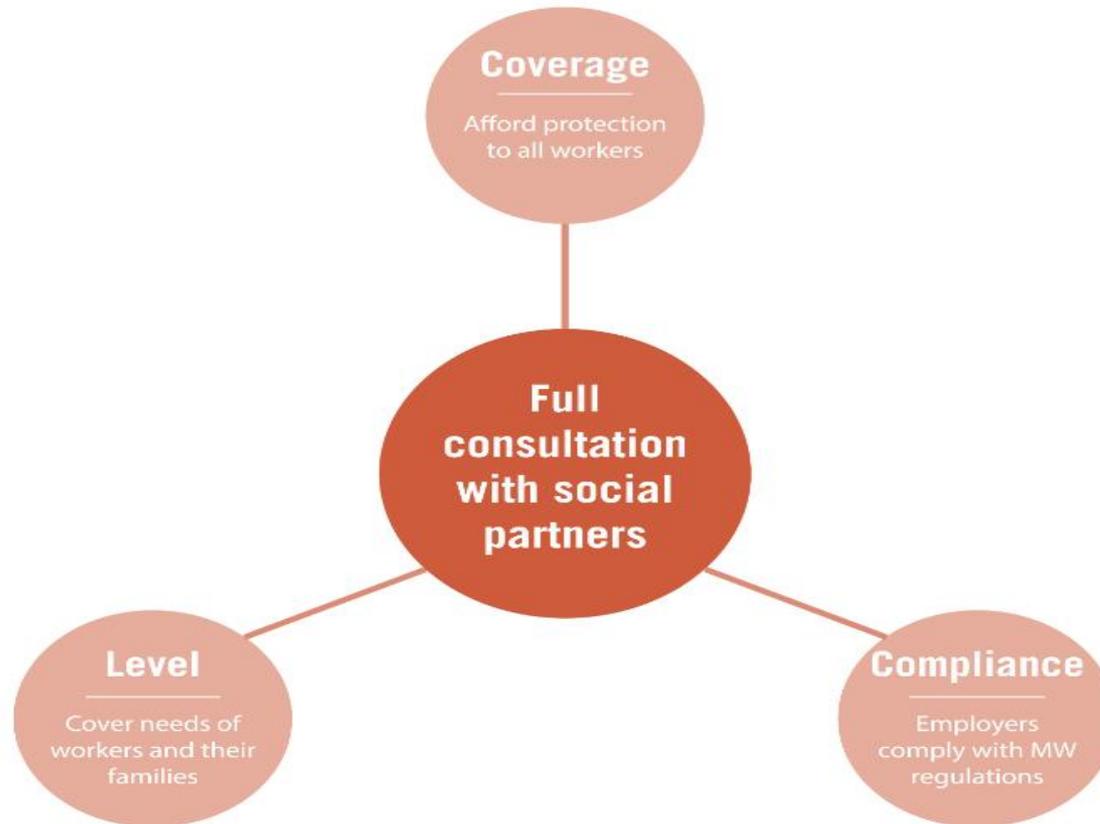
# Efficiency Wage

- Some firms might be able to improve worker productivity by paying a wage that is above the wage paid by other firms.

- There is a link between the nutrition of workers and their productivity in the labour market. As a result, it is possible for a firm to enhance worker productivity by paying workers a wage above the subsistence wage. The firm's workforce could then afford a more nutritious diet and would be better nourished, healthier, stronger, and more productive.

- If firms pay the subsistence level, they attract a workforce composed of undernourished workers who are not very productive. If the firm sets its wage too high above the subsistence level, however, the firm would not be making any money. The increase in labor costs would probably exceed the value of the increased productivity of its workforce. There exists a wage, however, that has come to be known as the efficiency wage, where the marginal cost of increasing the wage exactly equals the marginal gain in the productivity of the firm's workers.

# Determination of Efficiency Wage

- The fact that this total product curve is upward sloping indicates that—for a given level of employment—the workers produce more output the better they are paid. In short, this total product curve embodies the notion that a worker's productivity and work effort depend on the wage. The firm's output might first rise very rapidly as the wage increases. Eventually, the firm encounters diminishing returns as it keeps increasing the wage, and the total product curve becomes concave. The slope of the total product curve is the marginal product of a wage increase, or MPw. The concavity of the total product curve implies that this marginal product eventually declines.

**FIGURE 11-5**  **The Determination of the Efficiency Wage**

The total product curve indicates how the firm's output depends on the wage the firm pays its workers. The efficiency wage is given by point X, where the marginal product of the wage (the slope of the total product curve) equals the average product of the wage (the slope of the line from the origin). The efficiency wage maximizes the firm's profits.
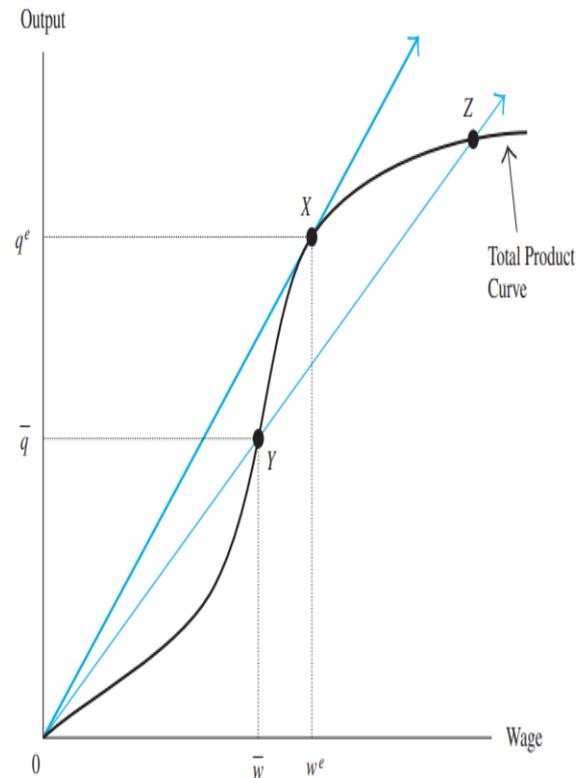
# Time Wage & Piece Wage

- **Time Wage:** When wages are paid according to the period of time, workers has been employed it is known as time wage. This is usually adopted when quality is more important than quantity.

- **Piece Wage:** Piece wage or bonus wage provides a stimulus to output by varying the payments according to the quantity of work done by each worker or by team of workers.

# Money & Real Wage

- **Money Wage:** It is also to be called as **nominal wage.** It refers to the amount of wage which worker receives in money terms. As it is measured in money terms therefore, it is recorded in books of account.

- **Real Wage:** It refers to the perks received by a worker in addition to his money wage is called as real wage. E.g., free medical aid, housing, education for children etc. are few examples of real wage. $R = W/P$

# Determinants of Real Wage

1.  Money wage.
2.  Purchasing power of money.
3.  Non monetary benefits associated with employment-
i.    Additional or incidental or fringe benefits.
ii.   Regularity or irregularity of employment.
iii.  Nature of employment (Normal or risky)
iv.   Scope of extra earnings.
v.    Future prospects. (Vertical mobility).
vi.   Working conditions.

# Wage Differentials : Meaning

- A study of wage differentials is important both from academic & practical point of view.

- Large scale wage differentials can be observed if we examine wage structure in labour market.

- Wage differentials are directly related to the allocation of economic resources of a country, including manpower, growth of national income, & the pace of economic development.

- Wage differentials reflect differences in physical & mental abilities of workers, in productivity & efficiency of management & in consumer preferences.

# Wage Differentials : Meaning

- The importance of proper wage differential has been stressed by Harry Ober in his book *"Occupational Wage Differentials in Industry"*.

- Wage differentials is an outcome of labour market imperfections.

- Wage differential can be observed in same occupation as well in different occupations.

# Wage differentials in the Same Occupation

- Difference in efficiency of workers.
- Difference in production & management techniques.
- Existence of non-competitive groups & immobility of labour.
- Difference in cost of living at different places.
- Differences in bargaining power.
- Experience, seniority & other factors.

# Wage differentials in the Different Occupation

- Lack of equal educational opportunities.
- Natural abilities.
- Risk in different occupations.
- Social esteem in different occupation.
- Regularity or irregularity of occupation.
- Agreeable & disagreeable.
- Possibilities of success & failure.

# Introduction to Wage Theories

- Wage theory is as old as economic theories and during last two or three centuries it has gone through different phases of evolution.

- The various theories of wages which have developed in the process of evolution of economic analysis reflected the changing economic conditions and thinking of that period.

- A review of history of wage theory suggest a division into three broad periods.

# Ramification of Periods
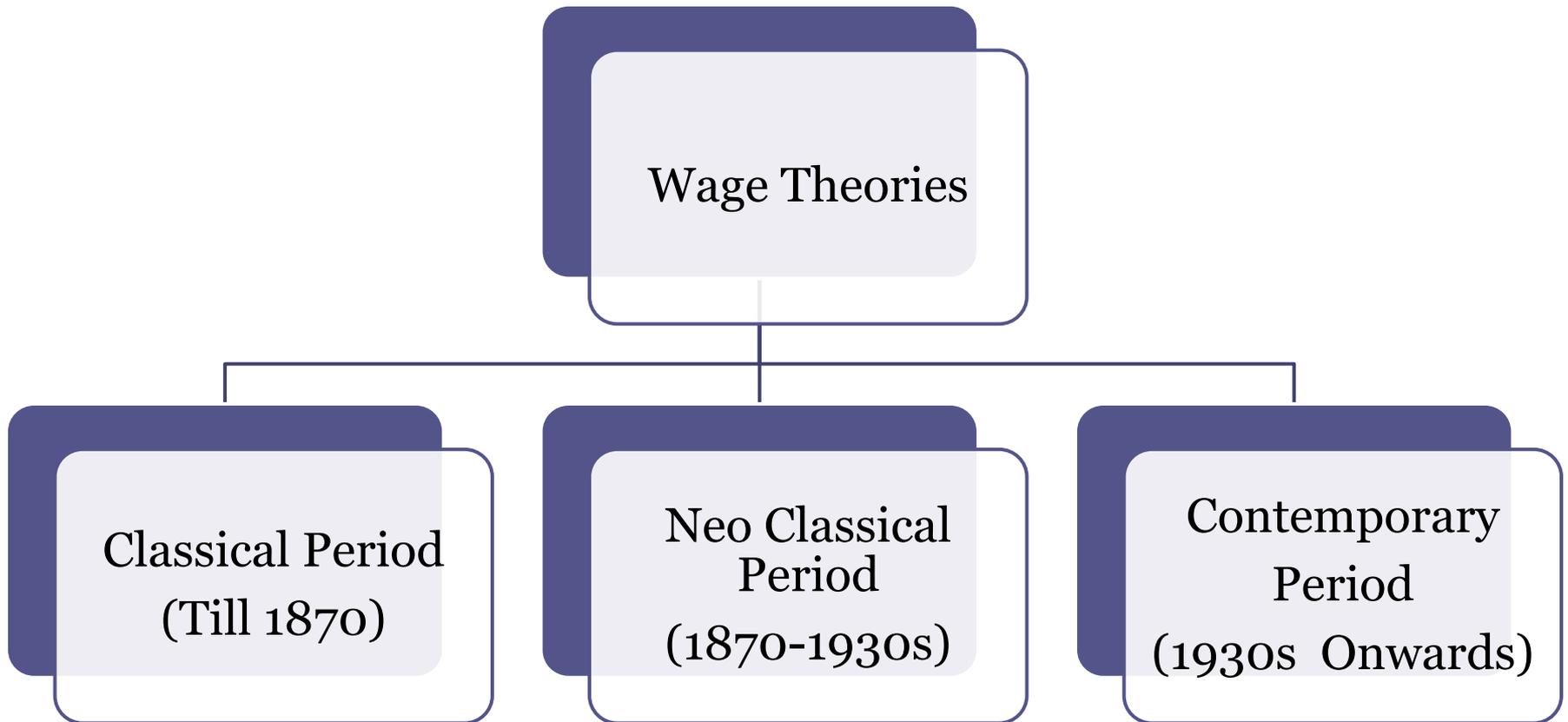
# An overview on Wage Theories

- In classical period wage theories the *wage fund* symbolized wage thinking.

- The second period is characterized as by *Marginal Productivity*.

- In the contemporary period the theories were again focus on *demand and supply* factors.

- The writings of Ricardo contained concern for the great share of national income going to labour. This was supported by Karl Marx and later by Keynes.

- Traditional wage theories were rigid but simple & many of these theories were either discussed from demand point of view or from supply.

# Some Important Wage Theories

1. Subsistence theory of Wages.
2. Standard of Living theory of wages.
3. Residual Claimant theory of wages.
4. Wage Fund Theory.
5. Marginal Productivity theory of wages.
6. Exploitation theory of wages.
7. Demand – Supply theory.
8. Bargaining theory of wages.

# Subsistence Theory of Wages

- This theory is also called as <span style="color:red">'Brazen Law of Wages'</span> or <span style="color:red">'Iron Law of wages'</span>.

- The essence of the theory tells us that *labourer should paid an amount which is just sufficient to maintain him & his average family.* If they are paid well they will increase their family & thereby supply of labour in market.

- The mercantilists & physiocrates also wanted wages to be paid as equal to subsistence amount for different reasons.

# Views on Subsistence Wages

- Adam Smith in his writings on wages said – *"The wages paid to the journeymen & servants of every kind, must be such as may enable them , one with another, to continue the race of journeymen & servants  according as the increasing, diminishing or stationary demand of the society may happen to require."*

- Forty years later, this notion was expanded into a complete Subsistence Doctrine by Ricardo who wrote- *"The natural price of labour is that price which is necessary to enable the labour one with another & to perpetuate their race without either increase or decrease."* This is regarded by Ricardo as their natural price.

- For Malthus wages can not remain constant. It rolls like pendulum. An increase in wage rate leads to increase in population which in turn reduce the wage rate. In other words, wage rate is based on supply of labour.

# Standard of Living Theory of Wages

- In late 9th Century this theory was propounded. Later *Robert Torrens* (1815) which is modified version of subsistence theory.

- The basic essence of the theory is, wages tend to conform to the standard of living of which workers have become habituated. In other words, there should be a **positive correlation of wages & standard of living.**

- Moreover, Wages & living standard are interdependent. It is difficult to trace the cause & effect i.e., whether wage determines standard of living or living standard decides wages.

# Residual Claimant Theory of Wages

- This theory was coined by an American economist *Francis A. Walker*. According to this theory, product of industry is to be divided into four parts namely, rent, interest, profit and wages.

- Workers are paid what is left after making payments to the other factors of production. So the workers get the residual i.e., what remains after payment of rent, interest & profits.

- The theory has one important merit in a sense that it admits the grater efficiency of labour can ensure higher wages.

- It also explains the existence of different wages in different occupations (formal & informal) & regions and differences in efficiencies & productivities.

# Wage Fund Theory

- Wage fund theory is associated with the name –
  J. S. Mill - a classical economist. In his words.. *"wages not only depend on the relative amount of capital & population, but can not, under the rule of competition, be affected by any thing else."*

- According to this theory, the level of wages is determined by dividing wage fund (the demand) by the number of workers (the supply).The wage fund consisted of the surplus income of landlords or entrepreneurs.

Wage rate = Wage Fund / No. of Workers

# Wage Fund Theory

- If the rate of change in population ($\Delta$P) i.e., no. of workers or supply of laborers is greater than rate of change in capital ($\Delta$K) i.e., wage fund in a case wage rate will decrease & vice versa. However, it is worth noting that in long run wage rate will become fixed.

$$(\Delta P) > (\Delta K) = W/r \text{ Decrease.}$$
$$(\Delta K) > (\Delta P) = W/r \text{ Increase.}$$

- Here it is worth mentioning that

$$\Delta \text{ Wage Fund } = f \text{ (Savings)}$$

- Moreover, Pigou's Wage cut policy is in application in determining the level of employment.

# Marginal Productivity Theory of Wages

- This is one of the oldest & orthodox kind of theory. The origin of the said theory can be traced in the writings of Adam Smith in his chapter named as 'The Wages of Labour' in his book "Wealth of Nations" (1776).

- Later the German economist T.H. Von Thonon, summarized the modern theory of marginal productivity of wage in 1826. He concluded that the wage of any class of workers are equal to the increased product which result from the last worker hired.

- The leading exponent of the marginal productivity theory of wages J. H. Clark, who had suggested in his early writings a bargaining theory of wage, ended up with 'a natural law of wages', which provided that labourer's product & its pay are identical. [$W = MP_L$]

# Assumptions

1. All units of labour are homogeneous.
2. All units of factors are mobile.
3. Law of diminishing returns is applicable to production.
4. The employer can construct revenue curve.
5. Product market is perfect.
6. There is no monopoly element in the determination of factor price.
7. There is free entry & exit of firms
8. Factors of production can be substituted for each other.
9. Perfect knowledge to all the factors about market condition.

# The Statement

- *"...as the employer continue to hire more labour, the marginal productivity of labour, physical or revenue of the product produced by the last worker, goes on diminishing till a point comes when the wages he pays to a worker is just equal to his marginal net product. (Here MR=MC) At this point he stops hiring workers. Thus all workers get their wages equal to the net product of the last worker. The wage rate paid can not be above or below that of another employee in the same market. Finally equilibrium is reached when the rate of pay is uniform for each class of employee in the market area."*

- Wage differentials will exists only in so far as they reflect differences in productivity.

# Exploitation Theory of Marx

- Karl Marx propounded the exploitation theory of wages in his book 'Das Kapital' as 'the theory of surplus value' (1867).

- Marx took the words of Smith & said the value of commodity was determined by the amount of labour used in production.

- If this was the case then any part of return withheld (e.g., profits) was a surplus appropriated by the capitalists, and the result was exploitation of the working man.

# Exploitation Theory of Marx

- Marx points out that labour as a matter of fact is paid an amount which is sufficient to maintain himself & his family and something to rear up his substitutes (i.e., his children). Wages were held at subsistence levels by the impact of reserve army (force of unemployed). This in turn affects (decrease) the share of wages in national income.

- W/r ↓ ⟹ Capitalist's Earning ↑ ⟹ Share of Wages in National Income ↓

# Exploitation Theory of Marx

Marx believed that with the greater degree of exploitation greater amount of capital is accumulated & more the technological advancement are brought about. This creates reserve army & gives capitalists opportunities appropriation of the surplus value. The process of exploitation may go on till the mass misery, oppression, slavery & degradation of the working class become so high that they stand up united to expropriate the expropriators which leads to class war.

Exploitation ⬆

⬇

Capitalist Earning ⬆

⬇

Technology ⬆

⬇

Reserve Army ⬆
(Unemployment)

⬇

Industrial Unrest &
Class conflict
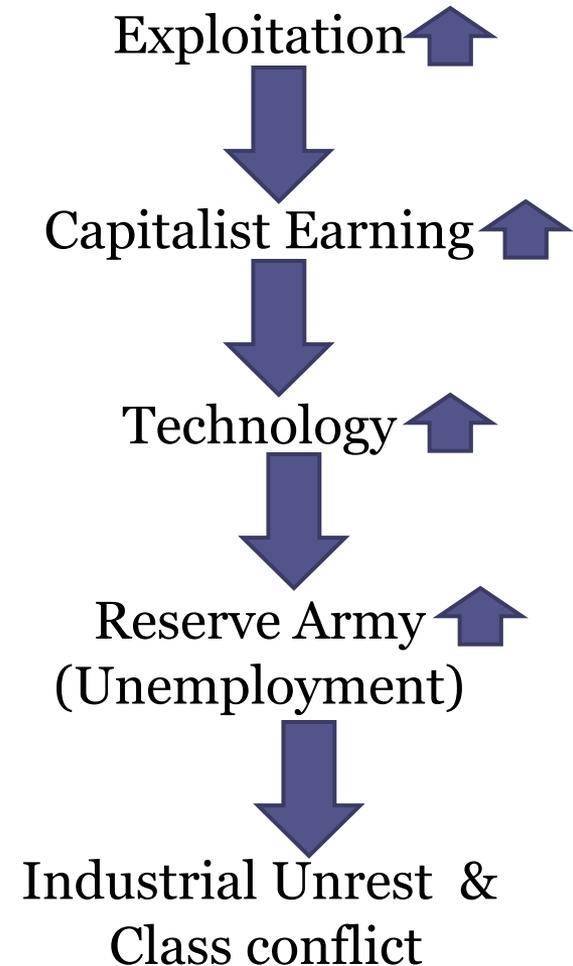
# The Demand - Supply Theory

- The wage determination theory in a free market is simply a case of the general theory of value.

- Wages are the price of labour & thus in absence of control it is determined by free forces of demand & supply.

- This theory tells us that like price of commodity, the wage will be determined at a level , where the demand & supply of labour meets.

- On the demand side, the employer do not want to pay more than the MP of labour & on the supply side the employees do not want to accept less than what is required to keep their standard of living.

# The Demand Supply Theory
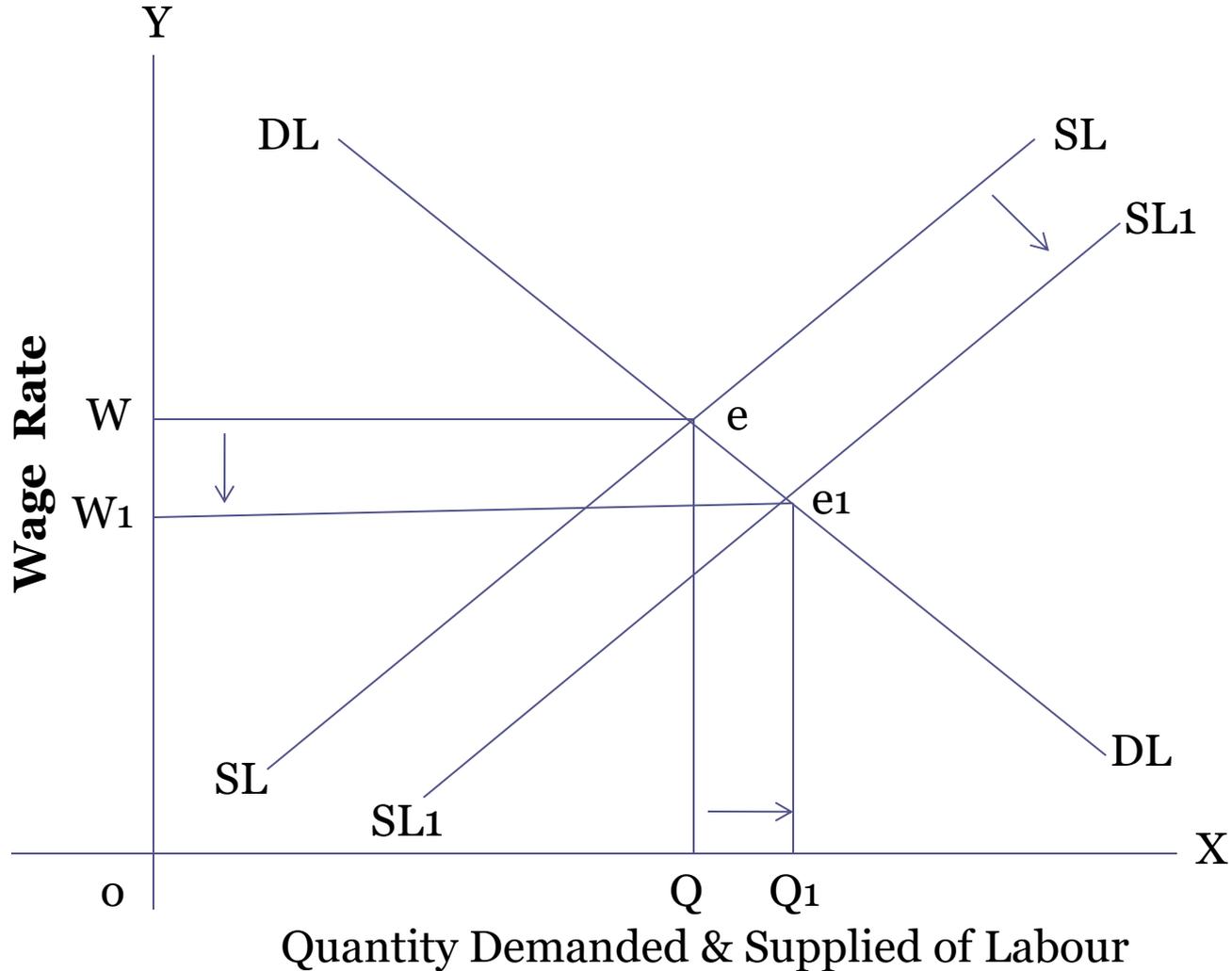
# Bargaining Theory of Wages

- This theory was developed in 1893 by Prof. John Davidson. Later the proponents like Thornton Davidson, Maurice Dobb & Webb contributed their views on this.

- According to this theory the wages are determined by the bargaining power between the employers & employees.

- Wage rate is directly related to their bargaining power. (Positive relation between W/r & bargaining capacity)

- This theory of wage includes social, ethical & political factors for wage determination.

# Bargaining Theory of Wages

- Under this theory the wage rate will be settled between the upper (employees) & lower limits (employers). The employers want to pay less & would not go beyond certain limit and take into account many factors like productivity of labour, investment in capital equipments, cost of capital, competition under type of market etc.

- Similarly labourers will take into consideration his standard of living, self respect, opinions of others, his knowledge, trade union policies etc. Where the actual wage rate will fall in-between these two limits. It is ultimately the bargaining power/ strength of the buyer & seller which finally decides the wages.

# Wage Policy :An Introduction

- In majority of the countries wage policy is a complex & sensitive area of public policy.

- Wage policy is a determinant of the shares of the rival claimants to the product of industry & national dividends, but there may often be a conflict between private & social interest.

- According to the <span style="color:red">Report of the National Commission on Labour</span>, *"Wage policy is pragmatic though it does not follow that it has to be unscientific & remain simply a matter of expediency"*.

- <span style="color:red">I.L.O.</span> has defined the term wage policy to mean *"Legislation or government action calculated to affect the level or structure of wages or both, for the purpose of attaining specific objectives of social & economic policy"*.

# Objectives of Wage Policy as per I.L.O.

- According to one of the ILO publication on *"Problems of Wage Policy in Asian Countries"*,1956 p.39 has enumerated the following objectives of wage policy in developing countries which are as follows-

1. To abolish malpractices & abuses in wage payments.
2. To set minimum wage for workers whose barraging position is weak.
3. To obtain for workers a just share in the fruits of economic development, supplemented by appropriate measures to keep workers expenditure on consumption goods.
4. To bring about efficient allocation & utilization of manpower through wage Diffentials & more appropriate systems of payments by results.

# Rationale (Need) of Wage Policy

- Developing countries have to grapple with the wage policy connected with the general rate of increase in wages & the range & structure of wage differences & the variability of wages.

1. To guarantee a certain minimum living wage to the workers so as to improve productivity.

2. In attaining social objectives as to eliminate exceptionally low wages, reduction in wage differentials & the protection of real wages.

- Generally, wage policy aims at imposing a discipline on all types of wage payments so that excessive, inadequate or inappropriate wage payments may not stand in the way of fulfillment of the objectives, both economic & social ,which any country sets for itself in the pursuit of continued progress & national development.

# Formulation of Wage Policy in India

- Before independence, Indian Government's attitude to labour problems was that of least interference. However, the upsurge of organized labour movement & its alignment with the nationalist movement, the government began to take a positive interest in labour issues.

# Selected References

- Sharma A.M. (2004), Understanding Wage System, HPH, Mumbai.
- Joshi M.V.( 1999), Labour Economics & Labour Problems, Atlantic Publishers& Distributors, Delhi.
- Singh Jiwitesh ,(1998), Labour Economics, Deep & Deep Publications Pvt. Ltd., New Delhi.
- Varma & Agarwal, (1998),Labour Economics, Forward Book Depot, Delhi

# Thank You

For queries you may mail it to...
djp_econ@yahoo.co.in

# MICRO ECONOMICS

Dr. Dhaval J. Pandya
Asst. Prof. & H. o. D.,
Department of Economics,
U.C.C.C. & S.P.B.C.B.A. & S.D.H.G. COLLEGE OF B.C.A. & I.T.,
Udhna, Surat

# Contents

1. Market Morphology.

2. Utility Analysis.

3. Business Environment.

4. Capital Budgeting.

# Market Morphology

❖In common prevalence market is a place where the buyers & sellers meet for the transactions of goods & services which has an economic value.

❖The concept of market can be classified on the basis of time, geographical location & competition.

1. Based on Time: Short term & Long term market.

2. Based on Location: Local, Regional, National, International markets.

3. Based on Competition: Perfect Comp. & Imperfect Comp. markets.

❖In our syllabus market is to be studied from its competitive nature point of view.

# Types of Market



Market
- Perfect Competition
- Imperfect Competition
  - Monopoly
  - Monopolistic
  - Oligopoly
  - Duopoly
  - Monopsony
  - Oligopsony
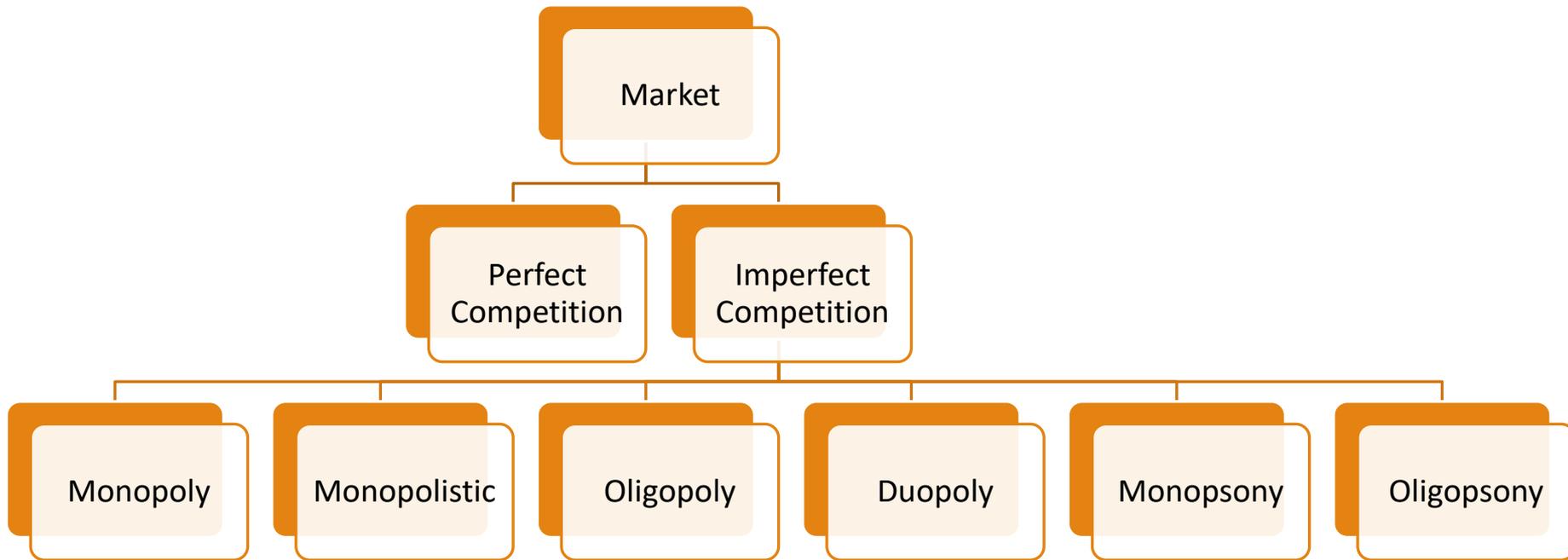
# Features of Perfect Competition Market

1. Large numbers of buyers & sellers.

2. Homogeneous product. (Identical/ Similar)

3. Free entry & exit of the firms.

4. Free mobility of factors of production/resources.

5. Price taker not price maker.

6. Perfect knowledge on the part of buyers & sellers.

7. Non existence of transportation cost. (TC=0)

8. No Government interventions.

# Features of Monopoly Market

1. Single Seller.

2. No distinction between a firm & an industry.

3. No substitutes.

4. Strong entry for the rivals (Competitors).

5. Price maker not price taker.

6. The cross elasticity of a monopolist product is either zero or negative.

# Features of Monopolistic Competition Market

1. Large numbers of buyers & sellers.

2. Easy entry & exit.

3. Product differentiation- Close but not exact substitutes of a product.

4. Firms are independent.

5. Complete dissemination of market information.

6. Existence of Selling Cost. (Advertisement cost).

7. Group Equilibrium.

# Features of Oligopoly Market

1.Few Sellers.

2. Interdependence of firms for decision making.

3. Indeterminate demand curve (price & output).

4. Price Rigidity.

5. Barriers to entry.

# A Comparison of Competitive Markets

| Key Features of Various Competitive Markets | Forms of Market | | | |
| --- | --- | --- | --- | --- |
| | Perfect Competition Market | Imperfect Competition Markets | | |
| | | Monopoly | Monopolistic | Oligopoly |
| No. of firms | Very large | Single | Many but not too large | Few |
| Nature of Product | Homogeneous (Identical) | Unique | Product differentiation | Homogeneous or Heterogeneous |
| Entry Conditions | Free entry | Entry blocked | Free entry (Easy) | Restricted entry |
| Degree of Monopoly power | Zero | Absolute | Limited | Considerable |
| Price Policy | Price taker | Price maker | Uniform price making | Price rigidity |
| Method of Marketing | Market exchange or auction | Promotional advertising if supply is large | Competitive advertising , quality rivalry. | Competitive advertising , quality rivalry. |

PREPARED BY :  DR. DHAVAL J. PANDYA

# Firm & Industry

A firm is a individual manufacturing unit while an industry is a summation of various firms. For instance, in Surat we found various shops of textile products & diamonds but aggregating these shops or firms together leads to a textile industry or a diamond industry.

# Objectives of Firms

1.Profit maximisation.

2.Sales maximisation.

3.Increasing market share.

4.Building goodwill in a market.

5.Consumer's satisfaction.

6.Providing quality products.

7.Growth of a firm.

# Conditions of Equilibrium of a Firm

Broadly the conditions of equilibrium of a firm is bifurcated as under-

1. Marginal Cost should equate Marginal Revenue i.e., M.C. = M.R.

2. Marginal Cost curve should intersects Marginal Revenue curve from below.
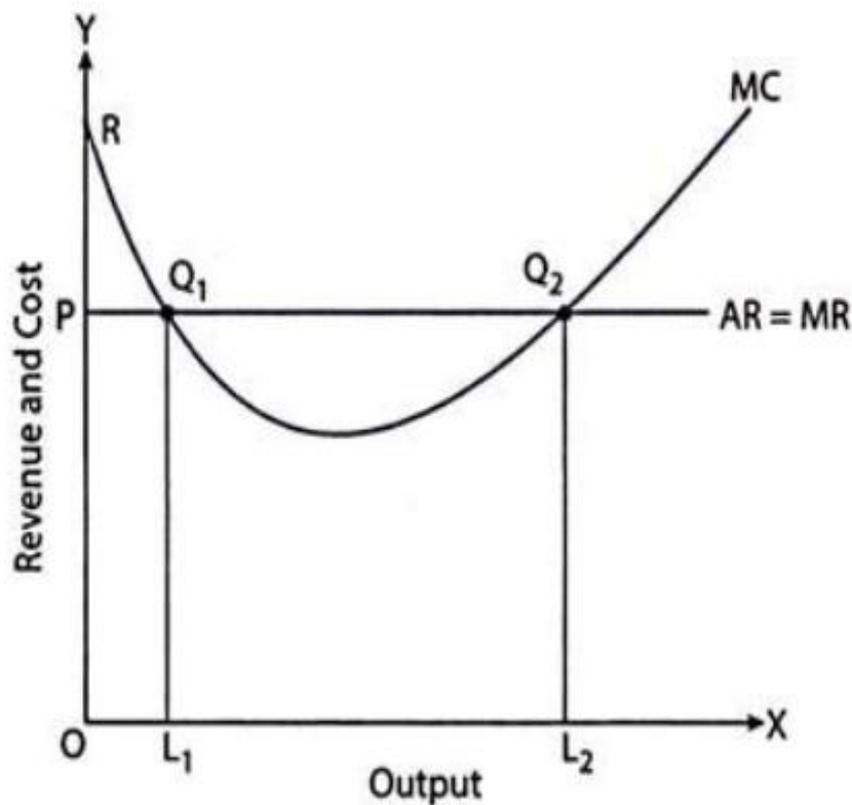
# Condition of Equilibrium of a firm & industry under different Markets

| Forms of Competitive Markets | Equilibrium | | |
| --- | --- | --- | --- |
| | **Firm** | | **Industry** |
| | Short Run | Long Run | |
| PCM | (i) Normal Profit. <br> (ii) Abnormal Profit. <br> (iii) Loss | Normal Profit | Normal Profit |
| Monopoly | (i) Normal Profit. <br> (ii) Abnormal Profit. <br> (iii) Loss | Abnormal Profit | _ |
| Monopolistic | (i) Normal Profit. <br> (ii) Abnormal Profit. <br> (iii) Loss | Normal Profit | _ |

# Situations of Normal Profit ,Abnormal Profit & Loss Under PCM

❑Short Run

1.Normal Profit:

   SAR/P = SAC

2. Abnormal Profit:

   SAR/P > SAC

3.Loss:

   SAR/P < SAC

❑Long Run

 1.Normal Profit:

   SAR=SAC=LAR = LAC=MR=LMC=SMC

# Normal Profit (SAC=SAR/P)
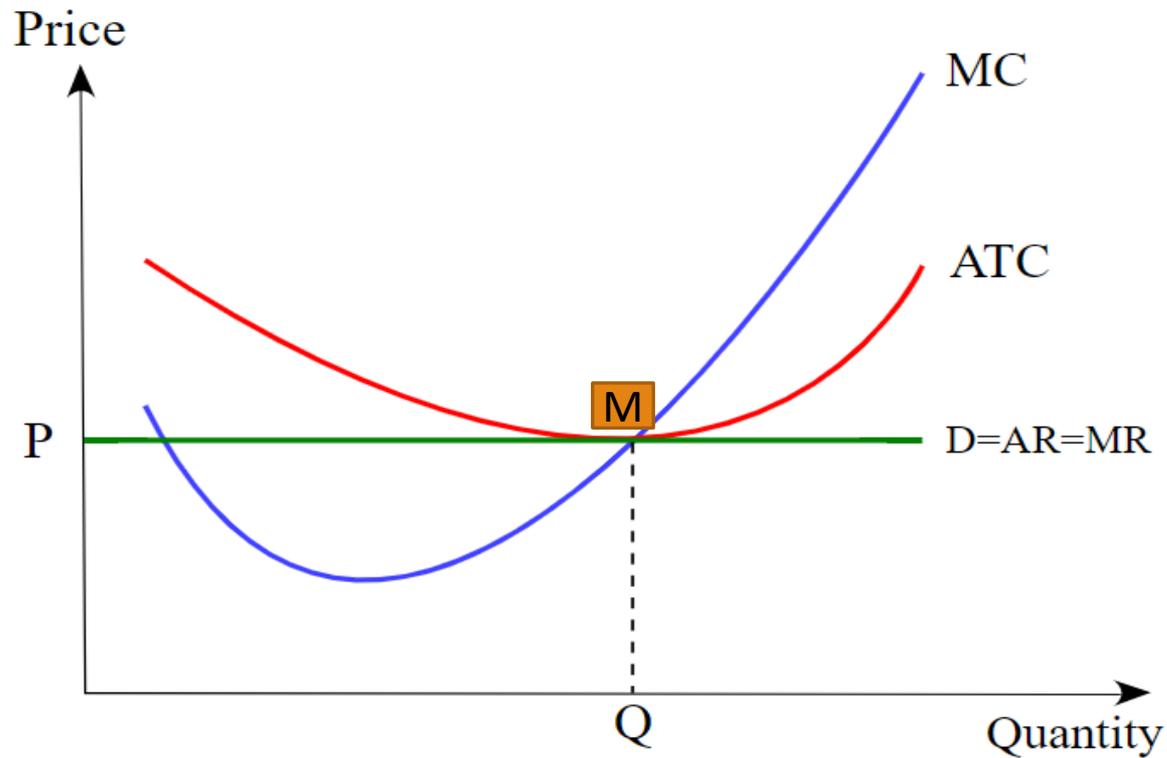
# Super Normal Profit (SAR>SAC)
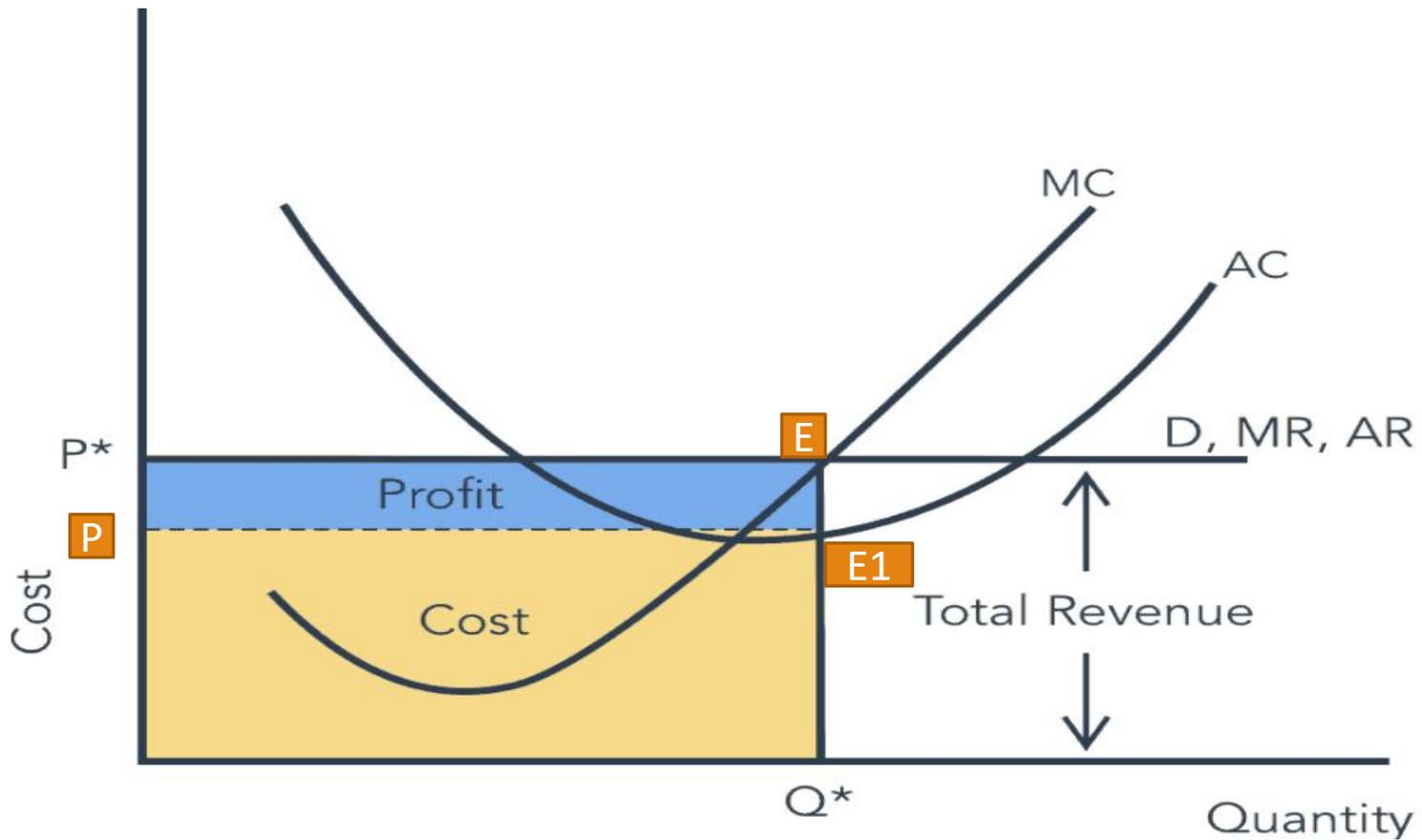
# Loss (SAC > SAR / P)
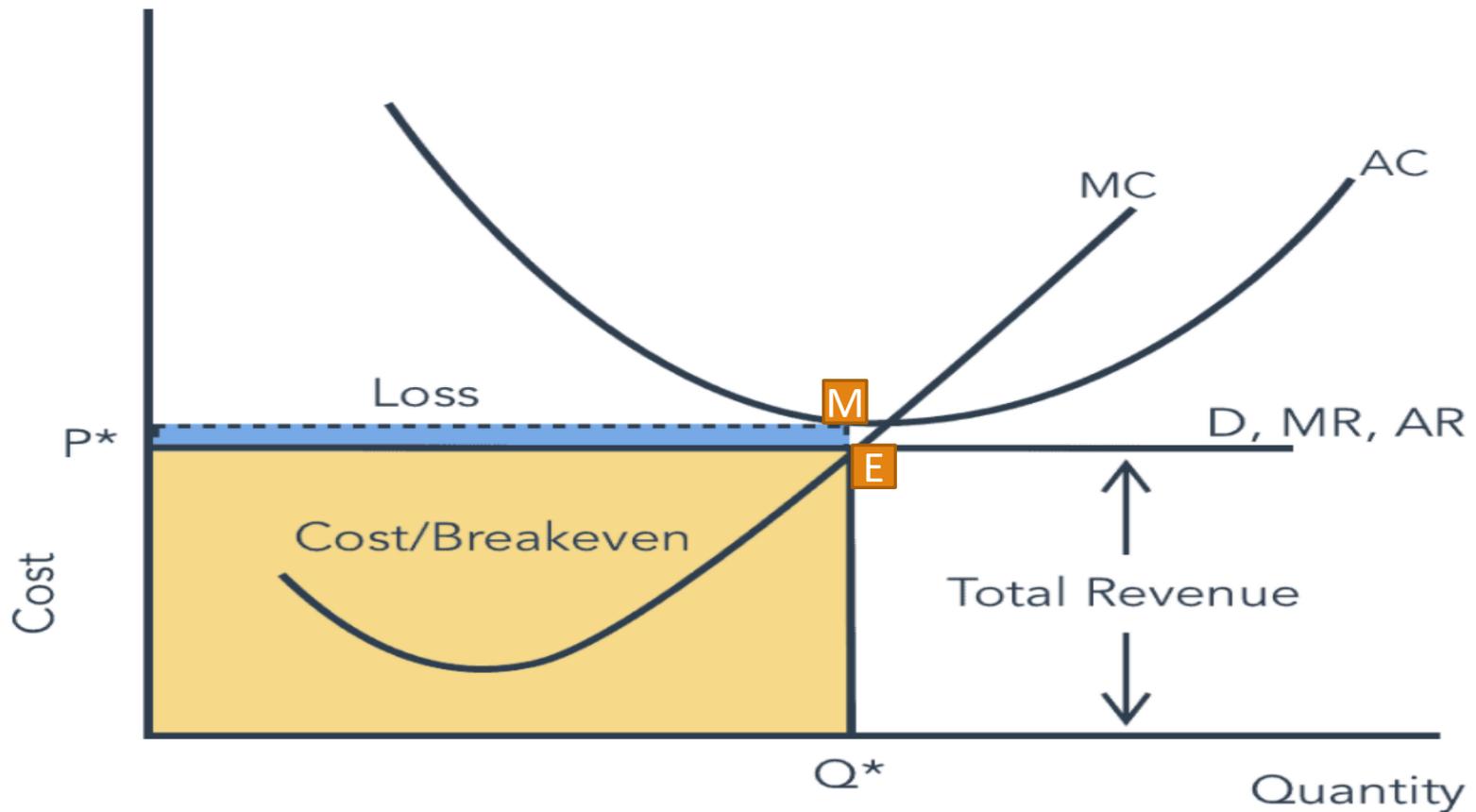
# Long Run Equilibrium of the Firm(Normal Profit)

P=SAR=SAC=LAR=LAC=SMC=LMC
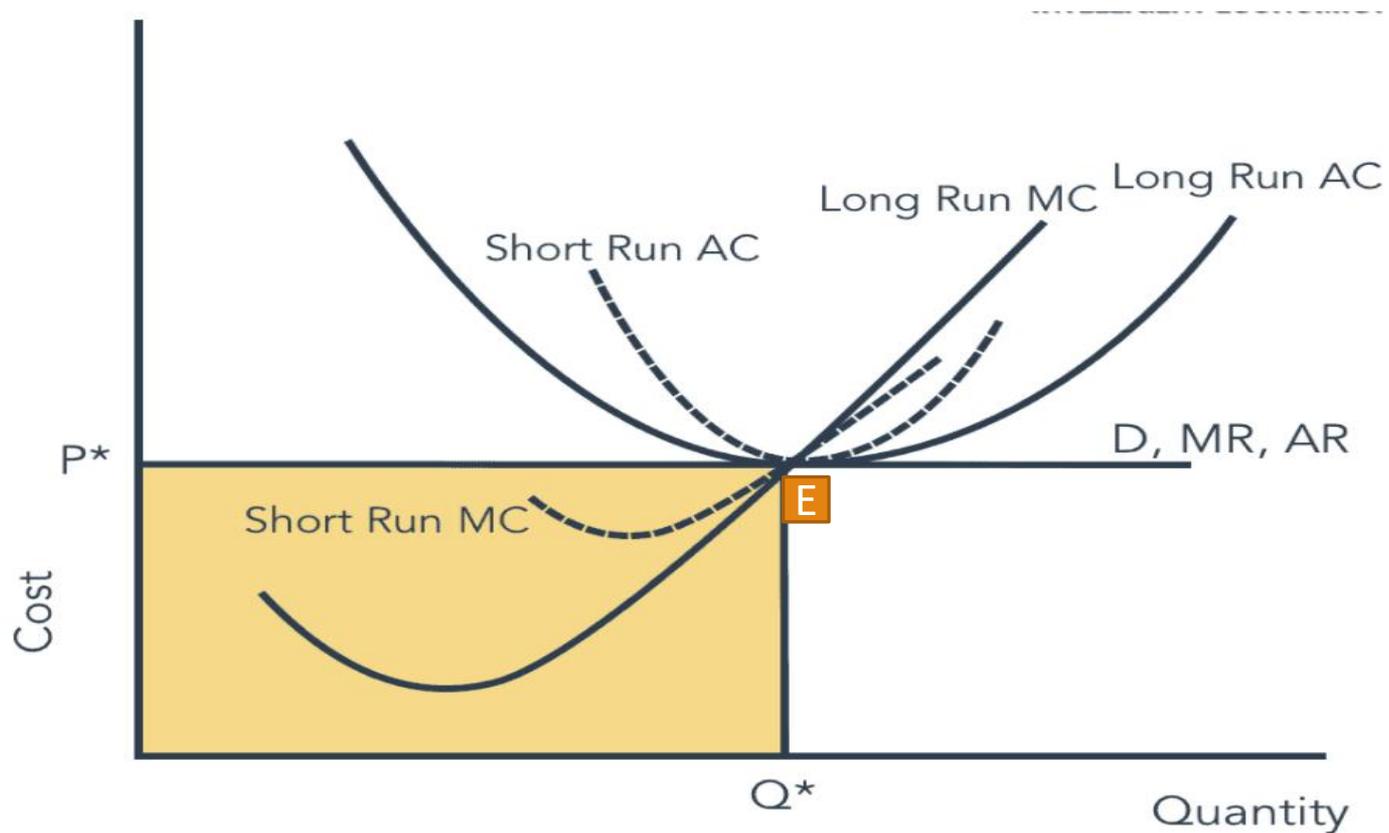
# Monopoly

A **monopoly** (from Greek *mónos*, means single or alone and Poly means to sell exists when a specific person or enterprise is the only supplier of a particular commodity.

# Normal Profit (SAC=SAR/P)
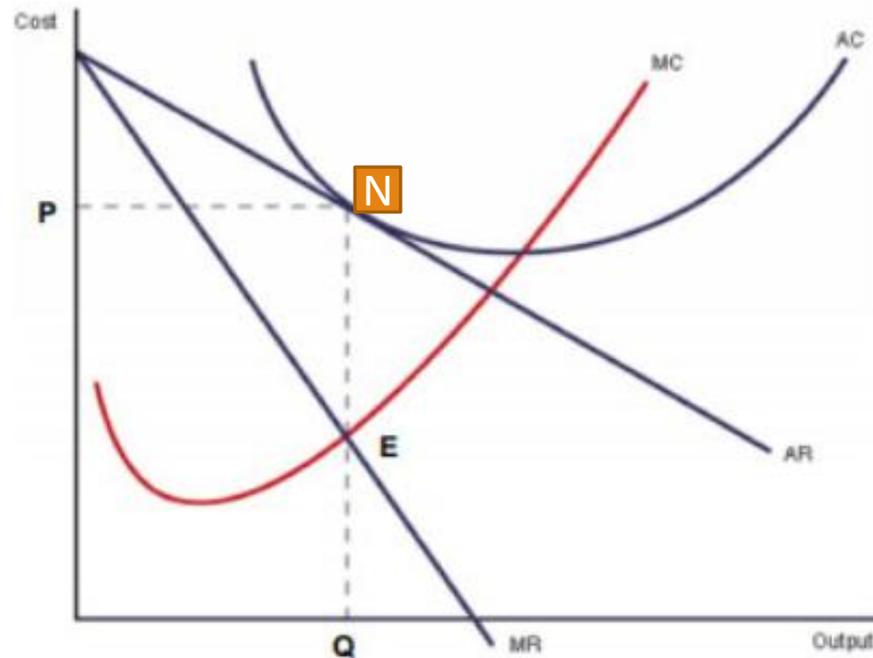
# Super Normal Profit (SAR/P>SAC)
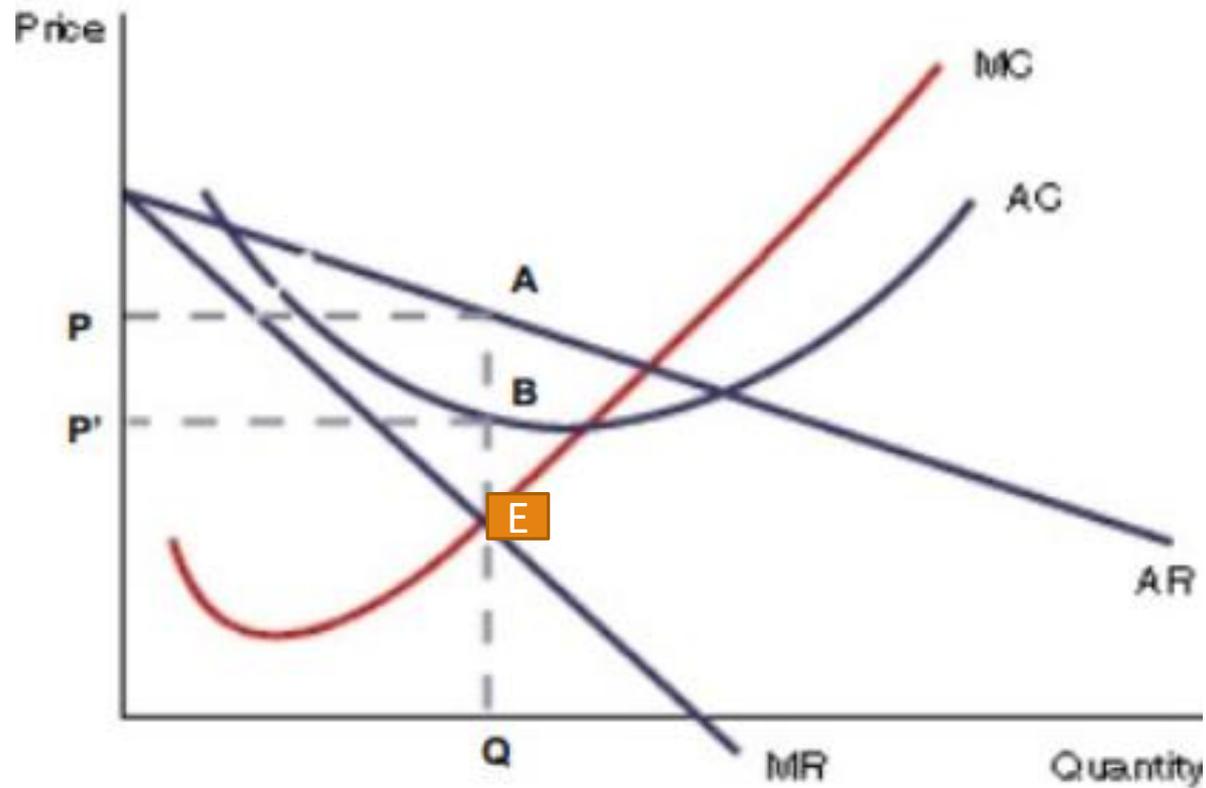
# Loss (SAC > SAR/ P)
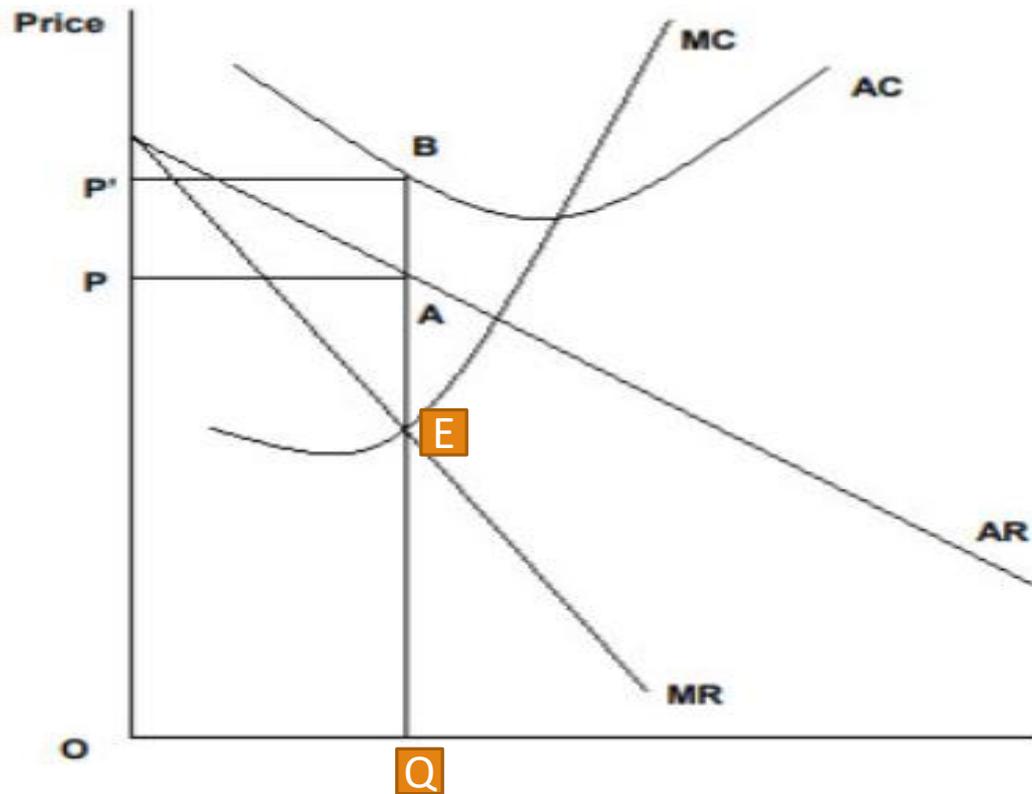
# Monopoly : Price Discrimination

- It is also known as differential pricing. In a broad sense, price discrimination can occur in two way :

  (1) by charging different prices for the same product  &

  (2) by not setting prices for different varieties  of  product or different products in relation to their cost differences.

- However, in theory of discriminating monopolies, generally the meaning of price discrimination is confined to the former notion.

- It is an act of selling same commodity to different market or buyers or customers at different prices.

# Types of Price Discrimination

1. Personal Discrimination.(based on income)

2. Age Discrimination.

3. Sex/Gender Discrimination.

4. Geographical Discrimination.(based on location)

5. Size Discrimination.(based on quantity)

6. Quality Discrimination.

7. Time discrimination.

# Conditions of Price Discrimination (Possible)

❑Price Discrimination would not be possible unless three essential conditions were fulfilled. Prof. G. J. Stiglitz in his book entitled *"The Theory of Price"*(p.240), has given the conditions of P.D.-

1.It is possible under monopoly market.

2. It is possible only when different markets must be separable or there should be minimum two or more than two markets (customer / buyers).

3.The elasticity of demand must be different in different  markets.

4.There should not be possibility of resale.

# Degrees of Price Discrimination (Profitable)

❖The degree of price discrimination refers to the extent to which a seller can divide the market or the consumers & can take the advantage of it in extracting surplus. In the economic literature Prof. A.C. Pigou presents three degrees of P.D. in his book "*The Economics of Welfare*" published in 1946 (p.279).For him a monopolist discriminate the consumers in three different degrees.

# First Degree of Price Discrimination

✓ A first degree P.D. would involve or mean charging different prices for all different units of the commodity in such a way that the price collect for each was equal to the demand price for it & therefore no consumer surplus is left to the buyers.

In other words, when a seller is in a position to know the price each consumer or consumer group is willing to pay,(i.e., he knows his buyers demand or paying capacity), he sets the price accordingly & tries to extract the whole consumer surplus.

Examples- A Professional like a Doctor or Lawyer or CA etc.

# Second Degree of Price Discrimination

✓ When a monopolist is able to charge 'n' different prices in such a way that all the units with demand price greater than 'x' & were sold at 'x' price. All with demand price is less than 'z' & greater than 'y' at the price 'y' & so on i.e.,

$$Px < Py < Pz$$

In other words, the second degree discriminating pricing is to charge different prices of different quantity purchased. Here a monopolist will take away only the part & not the whole consumer surplus. He charges different price for different quantities or block (block pricing method)of the same product.

Examples : A electric co. or telephone co. or Gas co.

# Third Degree Price Discrimination

✓ The III$^{rd}$ degree prevail when a monopolist able to distinguish among customers in 'n' different groups separated from one another by some practical mark & charge separate monopoly price to the members of each group. That is to say a monopolist divides the consumers in to separate groups or markets based on their income, location, types of uses etc & charge different prices to each group of the consumer.

   Examples: Air companies or Railways etc.

If a market is relatively elastic – Price will be less.

If a market is relatively inelastic – Price will be high.

# Monopolistic Competition

❖In 1910 Prof. Shraff has analyzed the imperfect competition market structure. Later on Mrs. Jhon Robinson of Cambridge School of Economics, U.K. & Prof. Edward H. Chamberline of American School of Economics, U.S. has analyzed the imperfect competition in 1920 respectively. That is the two most notable contribution in the price theory were made by these two economists.

❖Prior to 1920 the term monopolistic competition market & imperfect competition market was frequently used interchangeably. However, this is wrong

# I.C.M V/s. Monopolistic Comp. Market

❖The imperfect competition is that market form which lies between the two extremes of perfect competition & pure monopoly. Such market where neither pure perfect competition nor pure monopoly exist is known as Imperfect Competition Market(ICM).ICM is a very wide term & includes a great varieties of markets like Monopoly, Oligopoly, Duopoly, Monopsony etc.

On the other hand, monopolistic competition is a type of market where there are large numbers of firms selling differentiated products which are close but not exact substitute for one another.

❖ The credit for this distinction goes to Prof. Chamberlin.

# Selling Cost

Selling cost is an important feature of monopolistic competition market. Prof. Chamberlin in his book *"The Theory of Monopolistic Competition"*(1933) defines selling cost as –cost incurred in order to alter the position or shape of demand curve for the product is called Selling Cost.

Selling cost includes advertisement expenditure,  salaries & allowances to salesman, expenses on display etc. Among the most significant type is Advertisement Cost. For Chamberlin, advertisement cost are of two types viz.,

1. Informative Advertisement.

2. Persuasive Advertisement.

  Selling Cost affects demand curve in two ways-either it changes its position or it changes its shape.

# Selling Cost Curve

The shape of Sc curve is U-shaped.
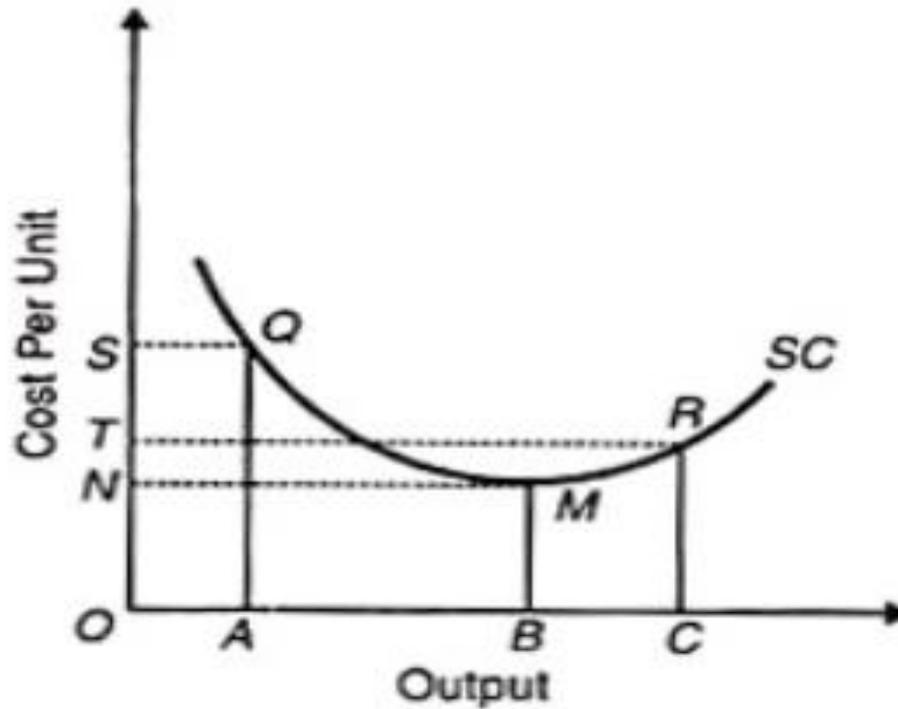
# Monopolistic Wastage

In the light of the objective criteria of social welfare, it has been commonly observed that monopolistic competition is wasteful competition. The waste are of following type-

1. Excess Capacity.

2. Unemployment.(in terms of full employment)

3. Competitive advertisement.

4. Cross transportation. (Textile goods of Mumbai & Surat)

5.Insufficient specialization.

MW = Optimum Output – Actual Output

# Oligopoly Market

❑    In an Oligopoly market there were mainly four models of Oligopoly market namely-

1. Kinked Demand Curve Model.

2. Price Leadership Model.

3. Collusive Model - Cartel Arrangement.

4. The Game Theory/Model.

# Kinked Demand Curve Model

❏ The kinked demand curve model of price stability was developed by Paul M. Sweezy(1939) in his work *"Demand Under Conditions of Oiligopoly"* published in Journal of Political Economics,pp.568-573 ; & Hall & Hitch(1939), in their paper entitled *"Price Theory & Price Behaviour"*, Oxford University Papers, Oxford.

❏ However, this model was famous by Sweezy's name. Therefore, we will explain the model of Sweezy.

# Kinked Demand Curve Model

❑This is the best known model explaining relatively more satisfactorily the behaviour of oligopolistic firms.

❑An oligopolistic firm believes if it reduces the price of its product, rival firms would follow & neutralise the expected gains from price reduction. But, if it raises its price, rival firms would either maintain their price or may even cut their prices down. In either case, the price raising firm stands to lose, at least a part of its market share. This behavirioual assumption is made by all firms with respect to others. Therefore, oligopoly firms find it more desirable to maintain their price & output at the existing level.

# Kinked Demand Curve
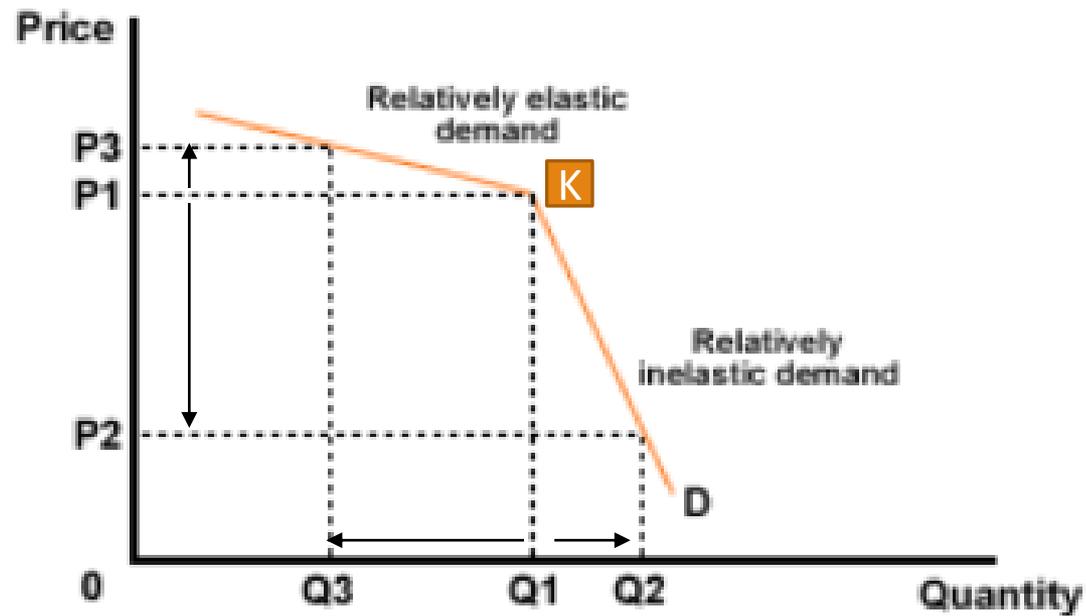
# Kinked Demand Curve Model

❑To look more closely at the kinked demand curve analysis, what is possible actions & reactions of the rival firms to the price changes made by one of the firms?

❑Possibly, there are three ways in which rival firms may react-

(i)     The rival firms follow the price changes, both cut & hike;

(ii)    The rival firms do not follow the price changes;&

(iii)   Rival firms follow the price cuts but not the price hikes.

# Price Leadership Model

❑Price leadership is an informal position of a firm in most oligopolistic industries.

❑Price leadership is said to exist when firms fix their prices in a manner dependent upon the price charged by one of the firms in the industry.

❑The firm that takes the initiative in announcing its price changes is called the price leader. All other firms in the industry which either match the leader's price or some variations thereof are termed as price followers

# Features of Price Leadership

1. A price leader usually aims at making few but larger & dramatic price change.

2. Normally the price leader usually leads only in price rise. But in cases of price reduction, the leader will actually become follower.

3. The price leader must also be willing to incur the risk of price war in order to establish & maintain leadership.

4. The price leader has an important role in demand forecasting & cost conditions.

5. In case of quality, service or reputation differences of products, a price leader himself operates at upper stratum.

6. With the passage of time, the price leader tends to lose relative market position.

7. There is a growing tendency for price leaders to take long run point of view.

# Types of Price Leadership

1. Dominant Price Leadership

   (Largest firm in the industry / market share.)

2. Barometric Price Leadership.

   (Better knowledge of market)

3. Low Cost Price Leadership.

# Consumer Behaviour

The theory of consumer behaviour or the demand theory seeks to explain the decision making behaviour of the consumer in demanding a particular commodity.

Economists have offered their theories of consumer behaviour on the basis of the measurement of utility.

# Utility Analysis of Demand

Marshall expressed the behaviour of demand for a rational consumer in terms of demand curve which is represented graphically as *'Law of Demand'*.

Demand curve generally slopes downwards (negative slope) which indicates the inverse functional relationship between price and demand.

Theoretically, consumer purchase more quantity as the price falls & vice versa is explained by Marshall in terms of 'Law of Diminishing Marginal Utility'.

# What is utility?

Utility is a power or property of a commodity to satisfy human desire.

Utility is a subjective concept related to inner sentiments of a consumer.

Is utility is measureable? If yes,

Than How...???

What is a unit for measure...?

# Types of Utility



Utility

Total Utility

Marginal Utility
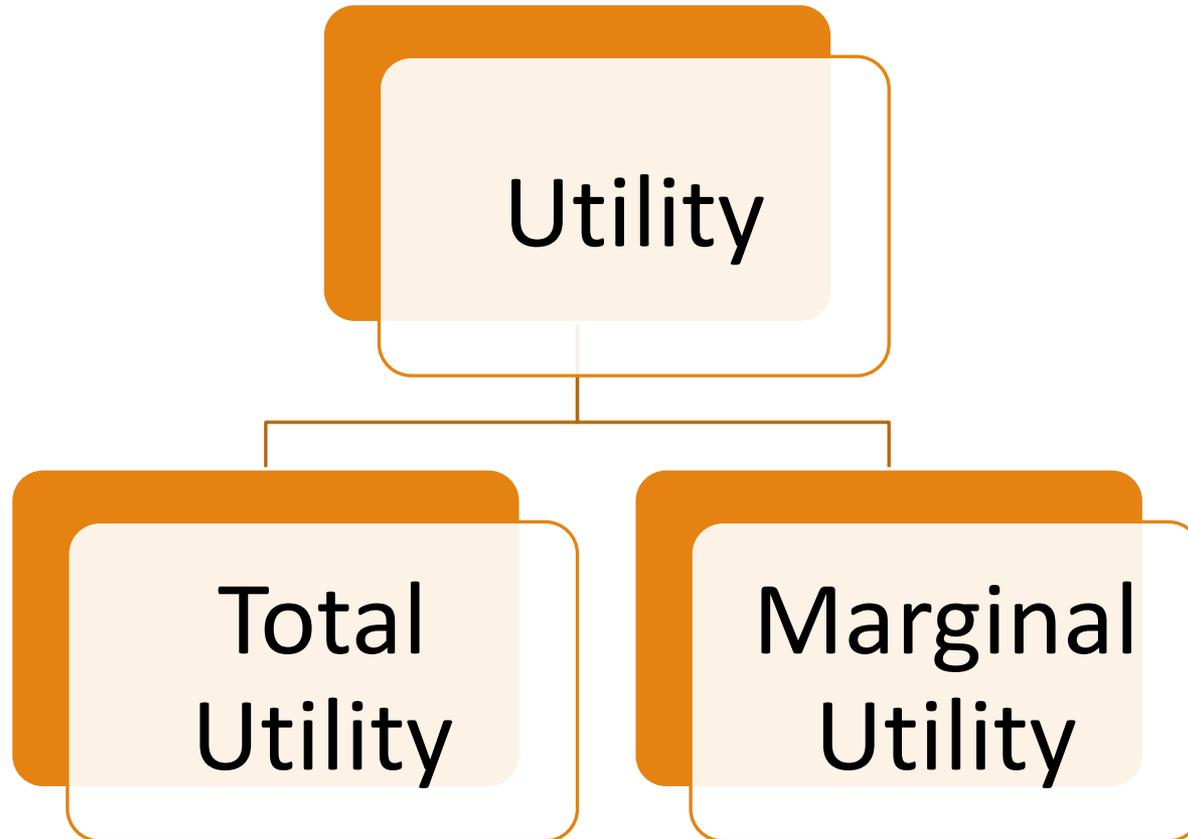
# Types of Utility

1. Total utility :

   It is an amount of utility derived from the consumption of all the units at its disposal. For instance, if a consumer consumes 'n' units of commodity than the aggregate of the utility derived from 'n' units will be referred to as total utility of 'n' units.

2. Marginal Utility:

   It is an utility of an extra or additional unit. It can be expressed mathematically as-

$$MU_x = dU_x / dq_x$$

# The effects

To understand these laws we must have to first clarify the concepts of different types of Effects viz.,

1. Price Effect

2. Income Effect &

3. Substitution Effect.

# Approaches of Consumer behaviour

Introspective Cardinal Approach

(Marshallian Approach)

Introspective Ordinal Approach

(Hicksian Approach)

Revealed Preference Approach

(Samuelson's Approach)

# Introspective Cardinal Approach

The Marshallian cardinal approach to the theory of demand is based on the following postulates-

(1) Concept of utility- numerical measurement.

(2) The law of diminishing marginal utility.

(3) The law of Equi-marginal utility

Hence, Marshallian theory is commonly describes as the 'Marginal Utility Approach'

# Introspective cardinal Approach

In this approach Classists like H. H. Gossen- Germany (1854), W. S. Javons- France (1874), Karl Menger –Austria (1921) & others.. Contributed. However, the significant refinement in this approach was done by Dr. Alfred Marshall (1890)- a neo-classists.

Therefore, the credit goes to the Dr. Marshall and it is often to be popularly known as Marshallian Utility Approach.

He developed to significant laws viz.,

  1. Law of Diminishing Marginal Utility

  2. Law of Equi-marginal Utility

# The Statement

*"Ceteris Paribus, as the quantity of commodity consumed or acquired by the consumer increases, the marginal utility of the commodity tends to decline and so as an increase in total utility is found."*

Mathematically , the law implies a decreasing functional relationship between quantity consumed and marginal utility derived.

$$Mux = f(Qx) , where, dUx/dQx < 0$$

# The Law of Diminishing Marginal Utility
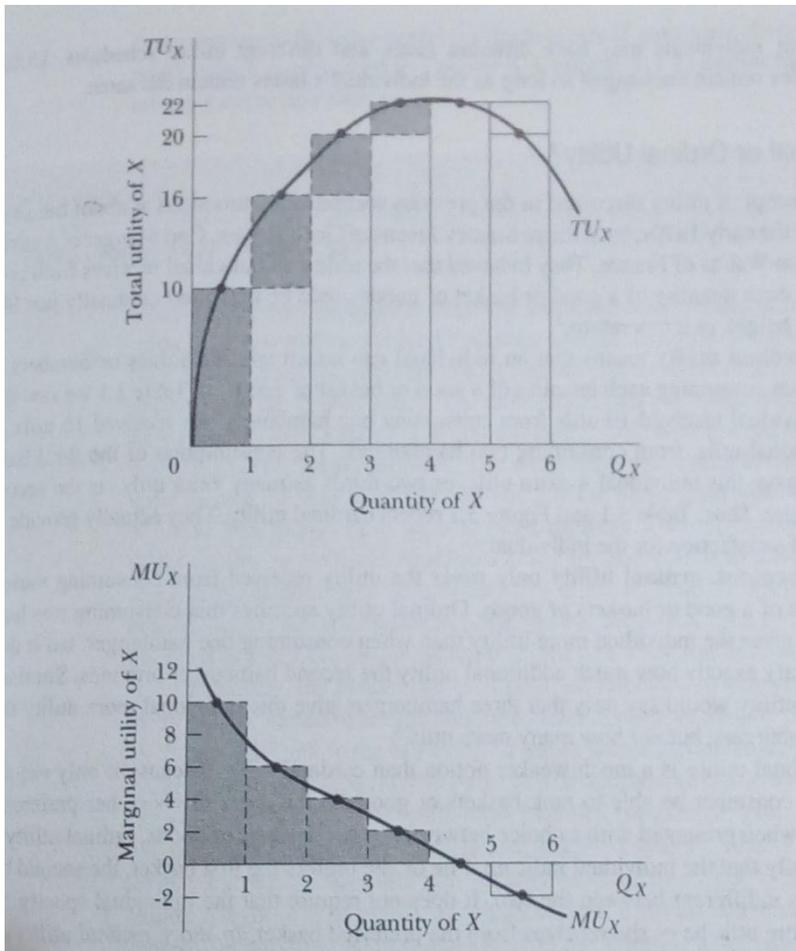


The relationship between demand & MU can explain the behaviour of demand in relation to price & thus demand curve.

# The Assumptions

1. The commodities must be homogeneous in colour, taste , volume etc.

2. Continuity in consumption.

3. Units should be of Suitable size.

4. Price of substitutes should remain constant.

5. A consumer should be rational.

6. Goods should be of normal type.

# The Problem

1. Limited income.

2. Prices are given.

3. Different utility for different commodities.

# The Law of Equi-marginal utility

The law is also known as –

The Law of  Maximum Satisfaction

The law of Equi-marginal returns

Principle of marginal Comparison

The law of substitution

Gossen's Second Law

# The Statement

*"If a person has a thing which can be put to several uses he will distribute it among these uses in such a way that it has the same marginal utility or if it had a greater marginal utility in one use than in another he would gain by taking away a some of it from the second use and applying to the first."* For instance,

$$\underline{MUa} = \underline{MUb} = \underline{Muc} = Y$$
$$\quad Pa \qquad Pb \qquad Pc$$

Further, in distributing the commodity among various uses the consumer will secure maximum satisfaction.

# The Assumptions

1. Consumer attempts to maximise his satisfaction.

2. Utility is measurable or quantifiable.

3. Marginal utility of money is constant.

4. Marginal utility must be declining at the time of equilibrium.

5. Consumer acts rationally.

6. Limited money income.

# The law of Demand with MU

Conditions…

1. $MU_a/P_a = MU_b/P_b$ ; 20/5 = 12/3 ; 4 = 4

2. $MU_a/P_a > MU_b/P_b$ ; 20/4 > 12/3 ; 5 > 4

# Introspective ordinal approach

This approach is also known as Indifference Curve Approach.

The main proponents of this approach are J. R. Hicks, R. G. D. Allen, & Pareto.

However, it seems to be conceived by F.Y. Edgeworth in 1881 as an alternative approach to the marginal Utility approach.

In 1934, Hicks & Allen in their article entitled *"A Reconstruction of theory of Value"* presented a scientific treatment of indifference curve analysis. Later in 1939 Hicks in his famous work "Value & Capital" offered a detailed treatment of new analysis.

Parato - an Italian economist while criticizing Marshall said that instead of utility measures cardinally we can measure utility ordinally. But the real credit goes to Prof. J.R. Hicks expounded  & popularized the innovation of indifference curve approach to the demand

# Scales of preference : Ordinal utility

Prof. Hicks introduced the concept of "Scales of Preferences" of a consumer.

Hicks discarded the Marshallian assumption of cardinal measurement of utility & suggested ordinal measurement.

Ordinal measurement implies comparison and ranking without quantification of the magnitude or differences of satisfaction enjoyed by consumer. In ordinal sense, utility is viewed as the level of satisfaction rather than amount of satisfaction.

# Ordinal Utility

In ordinal approach consumer can always compare the level of satisfaction yielded by one particular combination of goods with that of another combination.

This conceptual (mental) arrangement of combination of goods & services set in the order of the level of significance is called Scale of Preferences.

Indifference curve is a tool with which we can measure utility.

# Indifference Schedule

Definition:

'An Indifference Schedule is a list of alternative combinations of two goods say for instance X & Y which yields the same level of satisfaction to the consumer.'

Indifference Schedule

| Combination | X Commodity (Apples) | Y Commodity (Bananas) | Marginal Rate of Substitution [$\Delta Y / \Delta X$] |
|---|---|---|---|
| A | 1 | 12 | - |
| B | 2 | 8 | 4 |
| C | 3 | 5 | 3 |
| D | 4 | 3 | 2 |
| E | 5 | 2 | 1 |

# Graphical Representation of I.C.
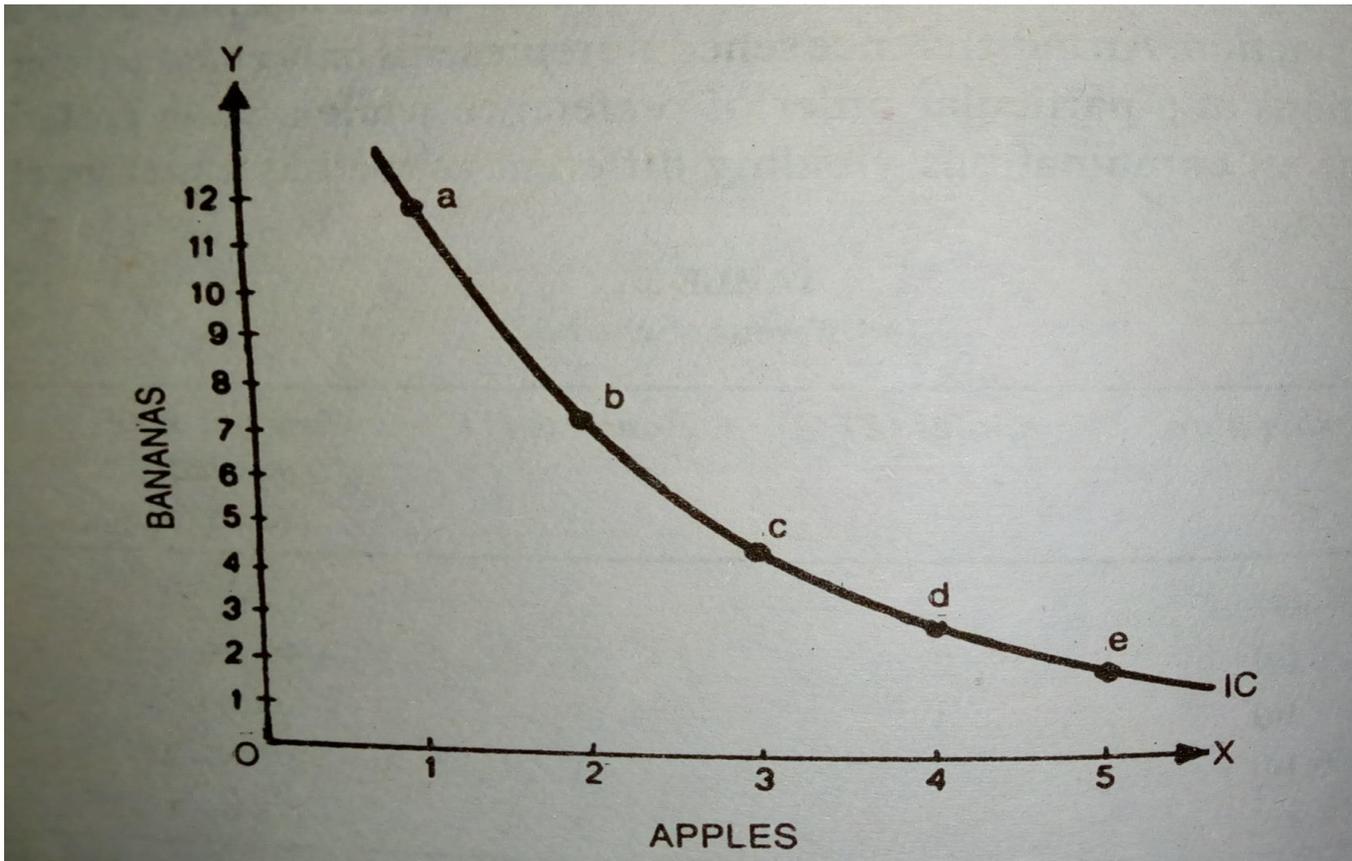
# Indifference Curve (I.C.)

The indifference curve is a geometrical device representing all such combinations of two goods yielding equal satisfaction of a particular level.


Definition:

 'An indifference curve of the locus of points representing all the different combinations of two goods say X & Y which yields same level of utility or satisfaction to the consumer.'

# Assumptions...

1. Consumer is interested in buying two goods in combinations.

2. Consumer is able to rank his preference.

3. Non- satisfaction.

4. Rationality & transitivity.

5. Utility is measured ordinally.

6. Continuity.

# Properties of I.C.
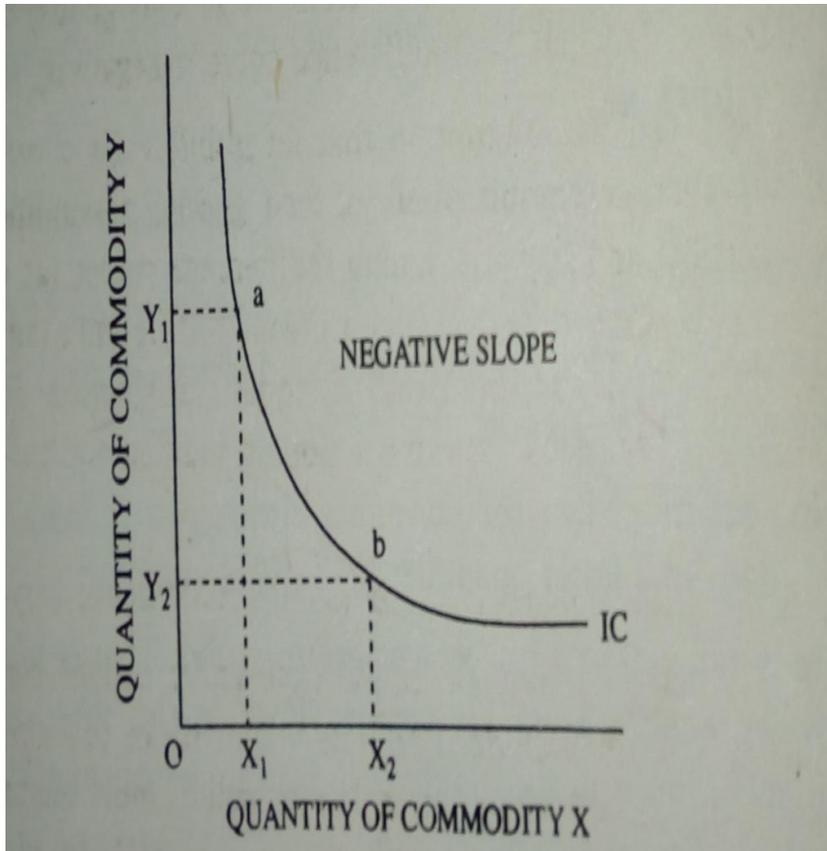


1. Indifference curve slopes downwards from left to right. In other words, I.C. are negatively sloped.

2. They are convex to the point of origin.

# Properties of I.C.
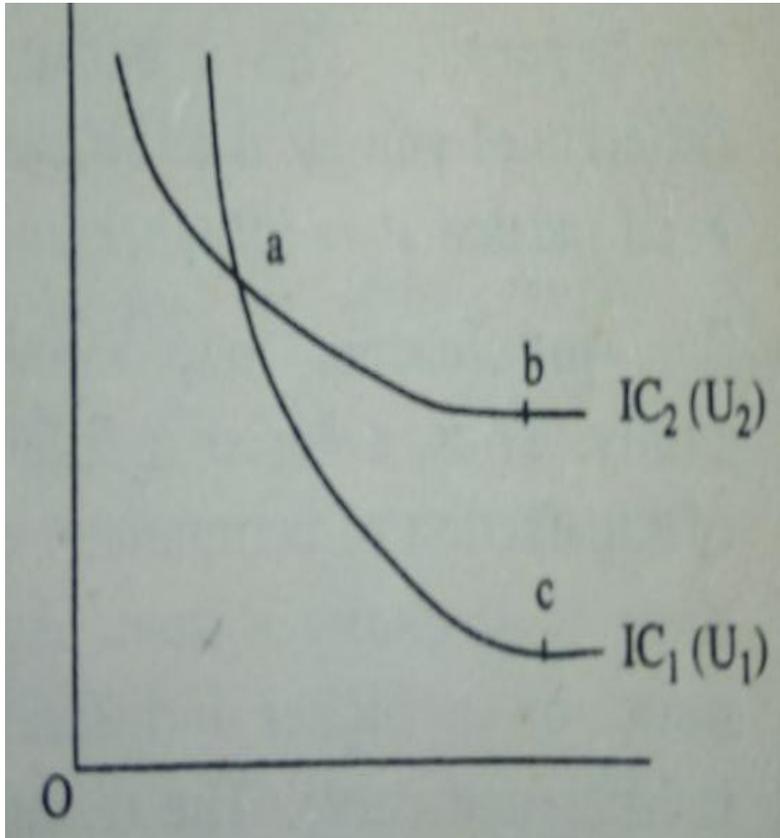


3. Two I. C. never intersects one another. It is because each I.C. represents a specific level of satisfaction. For instance IC-1 represents U-1 level of satisfaction & I.C.-2 gives you U-2 level of satisfaction.

# Properties of I.C.
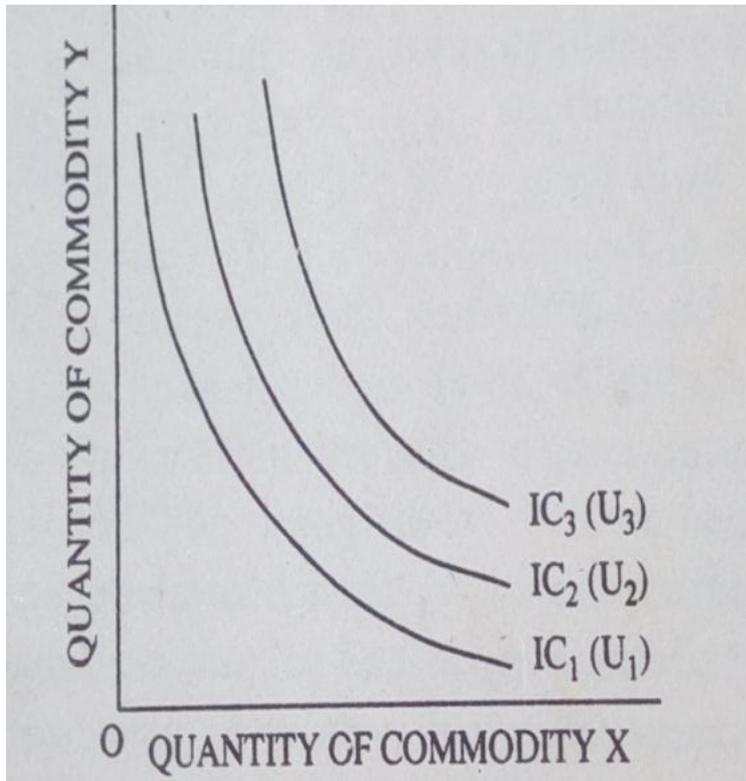


4. A higher level of I.C. represents a higher level of satisfaction. For example- different I.Cs like IC-1, IC-2 & IC-3 represent different level of satisfaction namely, U-1, U-2, U-3 like wise.

5. Two I.Cs. need not be always parallel to each other.

# The Concept of
# Marginal Rate of Substitution.. (M.R.S.)

The law of diminishing marginal rate of substitution forms the core of the Indifference Curve Analysis.

The M.R.S. refers to the rate of substituting one commodity (on marginal basis) for the other along an indifference curve.

# Definition & Measurement of M.R.S.

**Definition:**

*"The Marginal Rate of Substitution of X for Y (MRS$_{XY}$) refers to the amount of Y that must be given up per unit of X gained by a consumer to keep the level of satisfaction unchanged."*

| Commodity X | Commodity Y | MRS $= \Delta X / \Delta Y$ |
|:---:|:---:|:---:|
| 10 | 25 | - |
| 11 | 20 | - 5/1 = - 5 |
| 12 | 16 | - 4/1 = - 4 |
| 13 | 13 | - 3/1 = - 3 |
| 14 | 11 | - 2/1 = - 2 |

# The Budget Constraint - The Price - Income Line

What a consumer can actually buy depends on the income at his disposal and the price of goods he wants to buy. Thus income & price are the two objective factors which forms the budgetary constraint of a consumer.

The consumption or purchase possibility of the consumer is restricted to the budget constraint.

# Alternative Purchase Possibilities

| Combinations | Units of Com.-X (Price = Rs.5/Unit) | Units of Com-Y (Price = Rs.10/Unit) |
|---|---|---|
| A | 10 | 0 |
| | 4 | 3 |
| | 2 | 4 |
| B | 0 | 10 |

This is possible in a case when a consumer has a money income of Rs. 50 to be spent on two commodities X & Y and if the price of commodity X is Rs.5 per unit and price of Y is Rs.10 per unit.

# Budget Line

Definition

"The budget line is the locus of points representing all different combinations of two goods that can be purchased by the consumer, given his money income and price of the two goods"
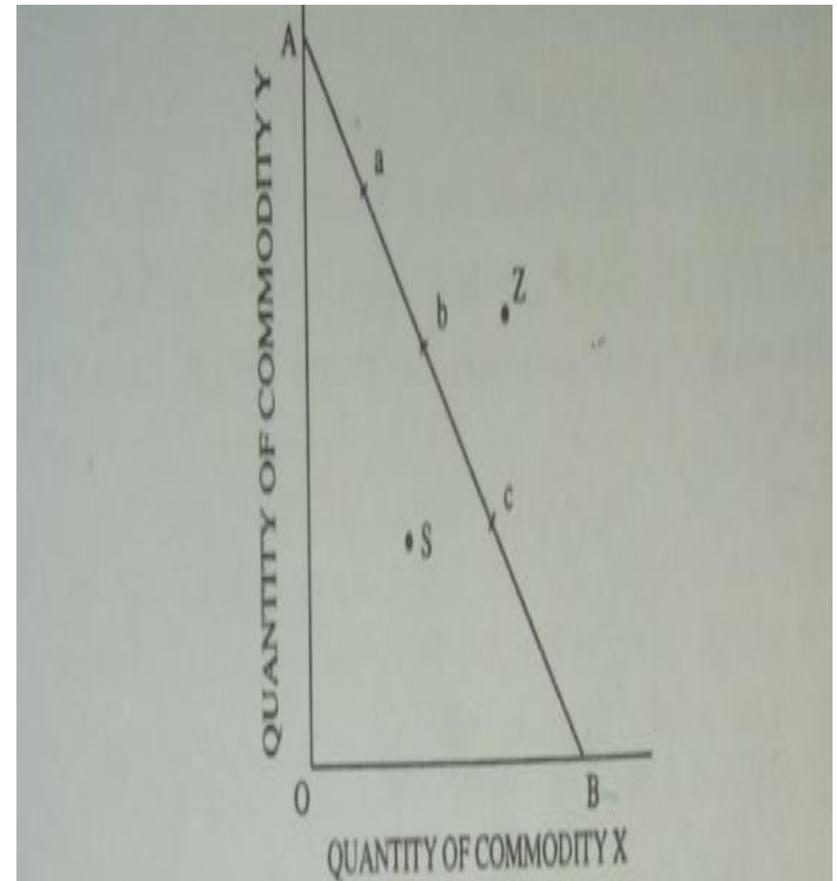
# Changes in the Budget Line
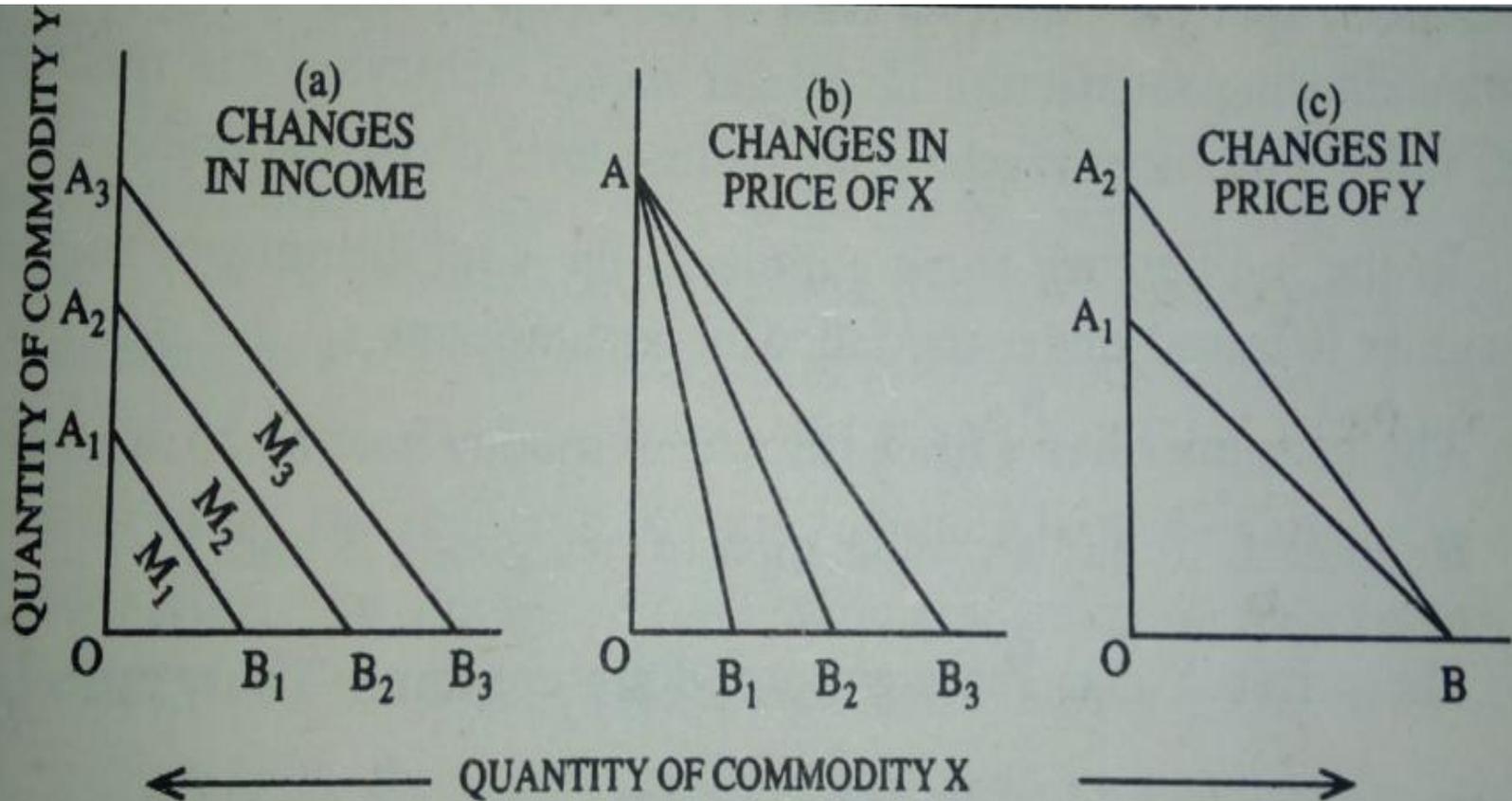


Fig. 2.10 Price Lines

The price lines or budget lines shift with change in income, price remains unchanged. Their slope changes when price ratios change, income remaining unchanged.

# Consumer's Equilibrium

A rational consumer attains an equilibrium position when his motive of maximizing satisfaction is realized.

In other words, when the market condition (Budget Line) equates to the psychological condition (Indifference curve) of a consumer he attains equilibrium.

Hypothesis:

*Consumer equilibrium is attainted when given his budget constraint, the consumer reaches the highest possible point in the indifference curve.*

# Condition of Equilibrium

The maximum satisfaction is yielded when the consumer reaches equilibrium at a point of tangency between an indifference curve and the price line.

# Consumer's Equilibrium
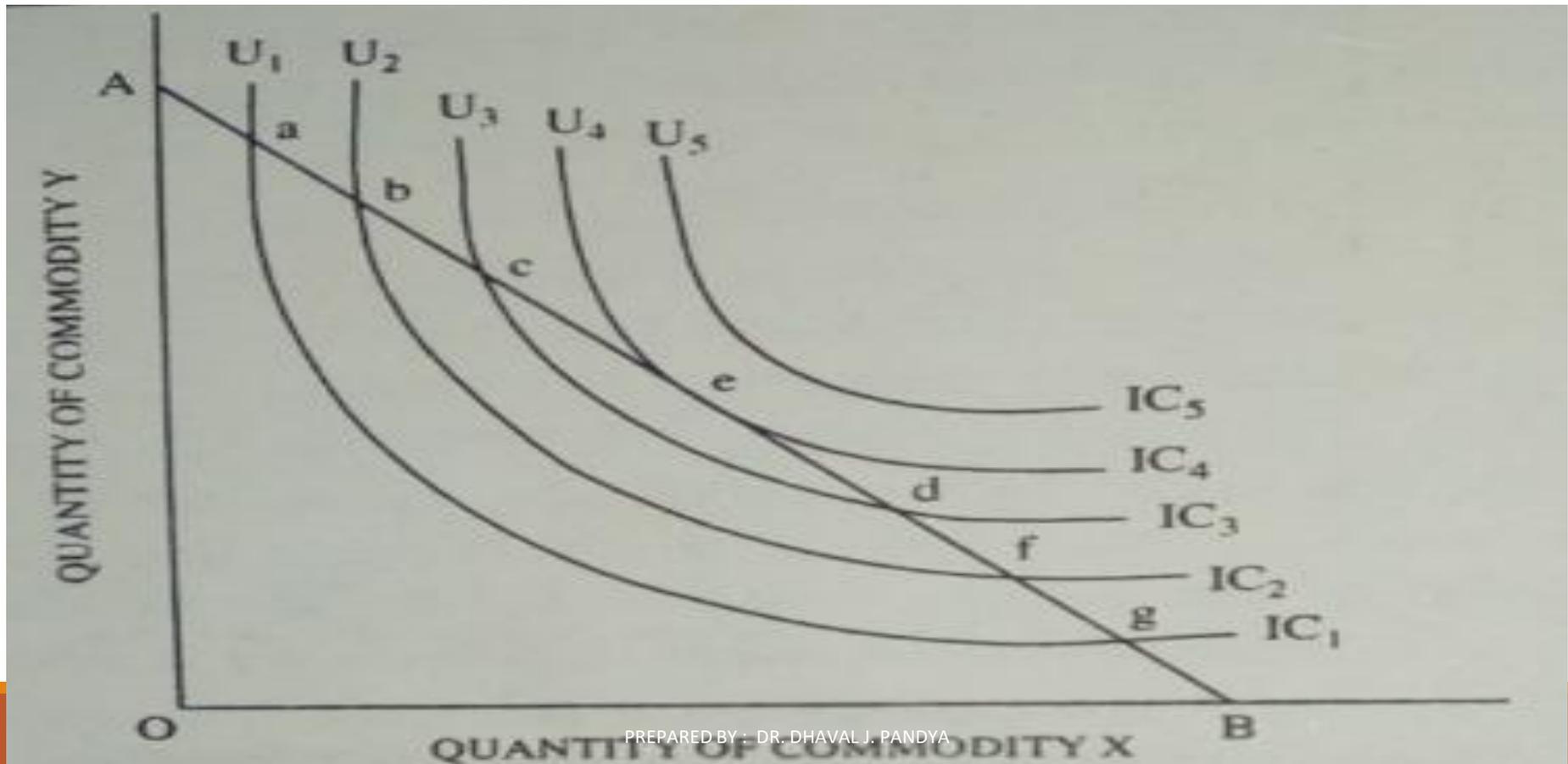


Fig. 2.12 Condition of the Consumer Equilibrium
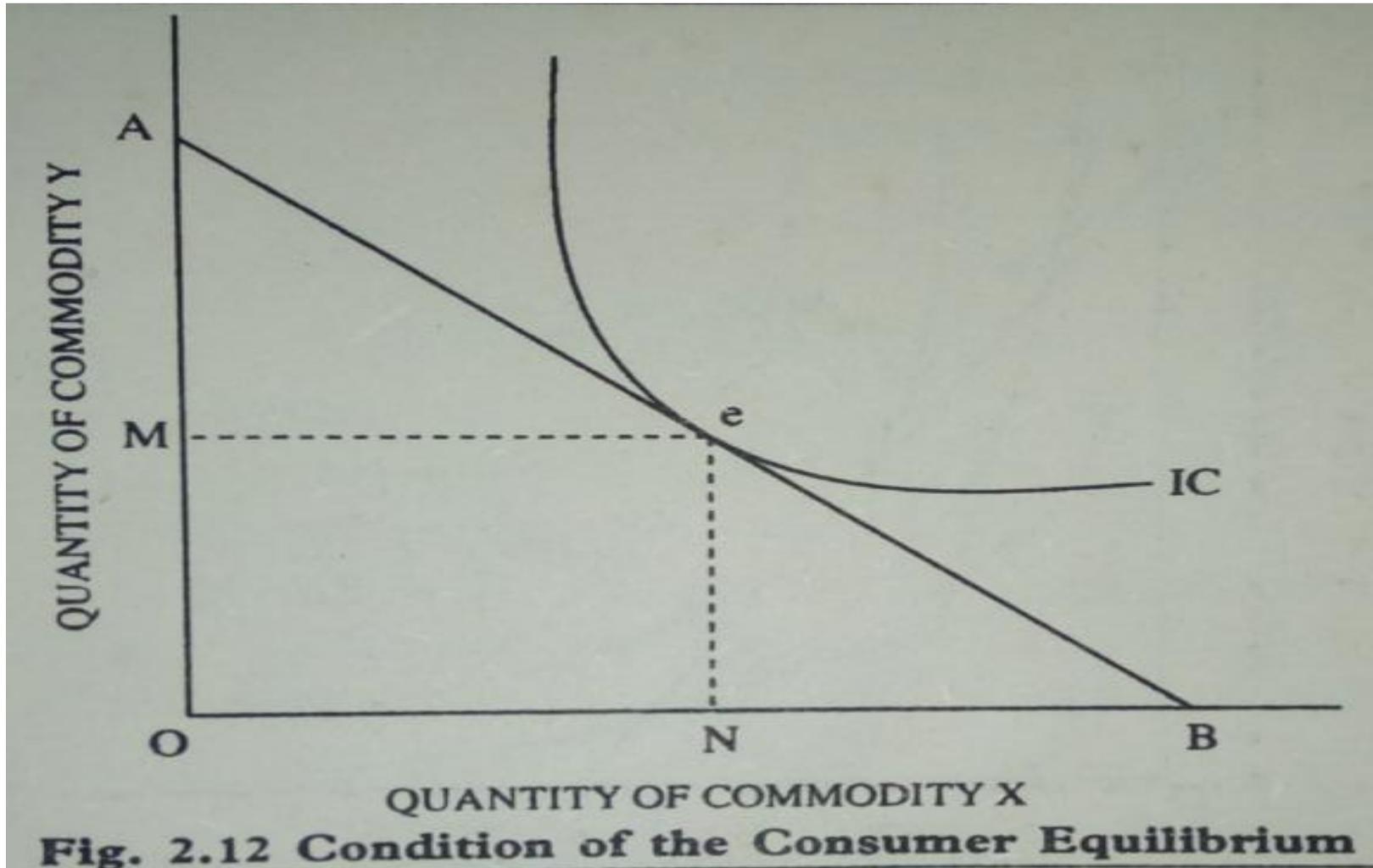
# Analysis of consumer's equilibrium

(A)    Price Effect : Price Consumption Curve (P.C.C.)

(B)    Income Effect :Income Consumption Curve (I.C.C)

(C)    Substitution Effect.

# The Price Effect: Price Consumption Curve

The consumer's reaction to a change in a price of a commodity on demand ,other things being constant (viz., money income, tastes price of other goods etc.) is called price effect.

Definition: The price effect is the change in the quantity demanded of a commodity resulting from a change in its price, when consumer's income held constant.

# Price Consumption Curve (P.C.C.)

Definition:

The Price Consumption Curve (P.C.C.) is the equilibrium point corresponding to the changing slope of price line due to changes in the relative prices of two commodities, when the consumer's income remains constant.



Fig. 3.5 Price-Consumption Curve
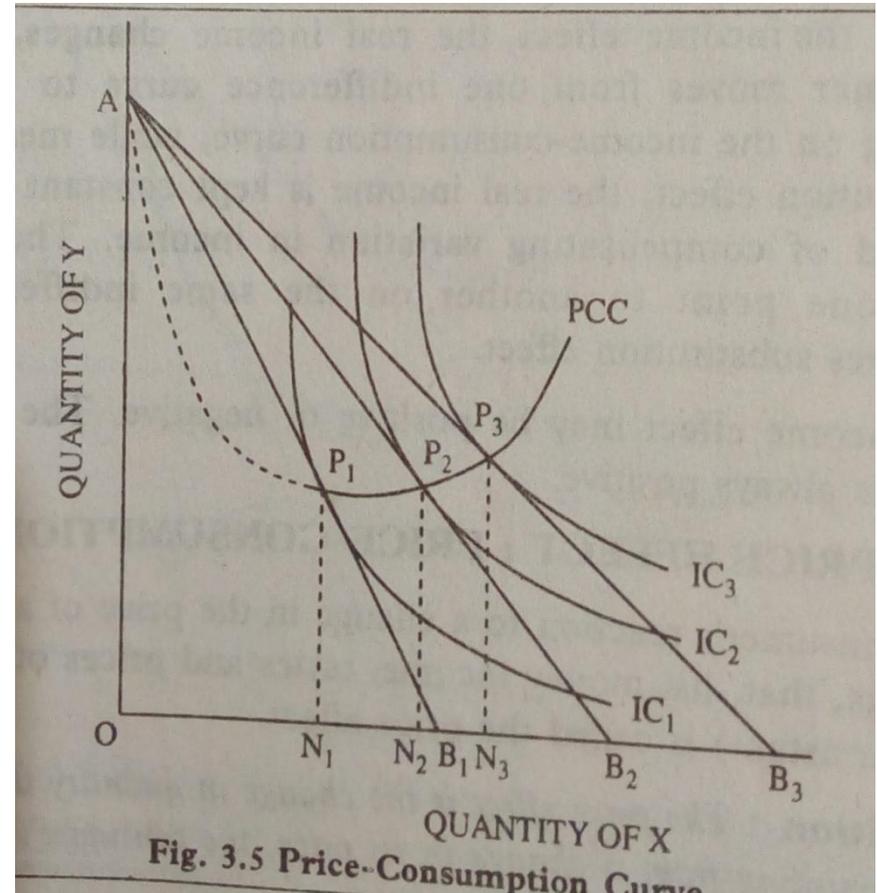
# The Income Effect:
# Income Consumption curve (I.C.C.)

A consumer's demand for the goods changes when his income changes. Thus, when we are examining the effect of consumer's income on the quantity demanded it can be called as   income effect.

Y ^          Q/d ^

  Definition: The income effect refers to the change in the demand for a commodity resulting from a change in the income of a consumer , prices of goods remains constant.

# Income- Consumption Curve (I.C.C.)

Definition:

The Income–Consumption Curve is a curve drawn through the equilibrium points corresponding to the shifting budget lines when a consumer's money income is altered & when the prices of the goods are held constant. This curve measures income effect.
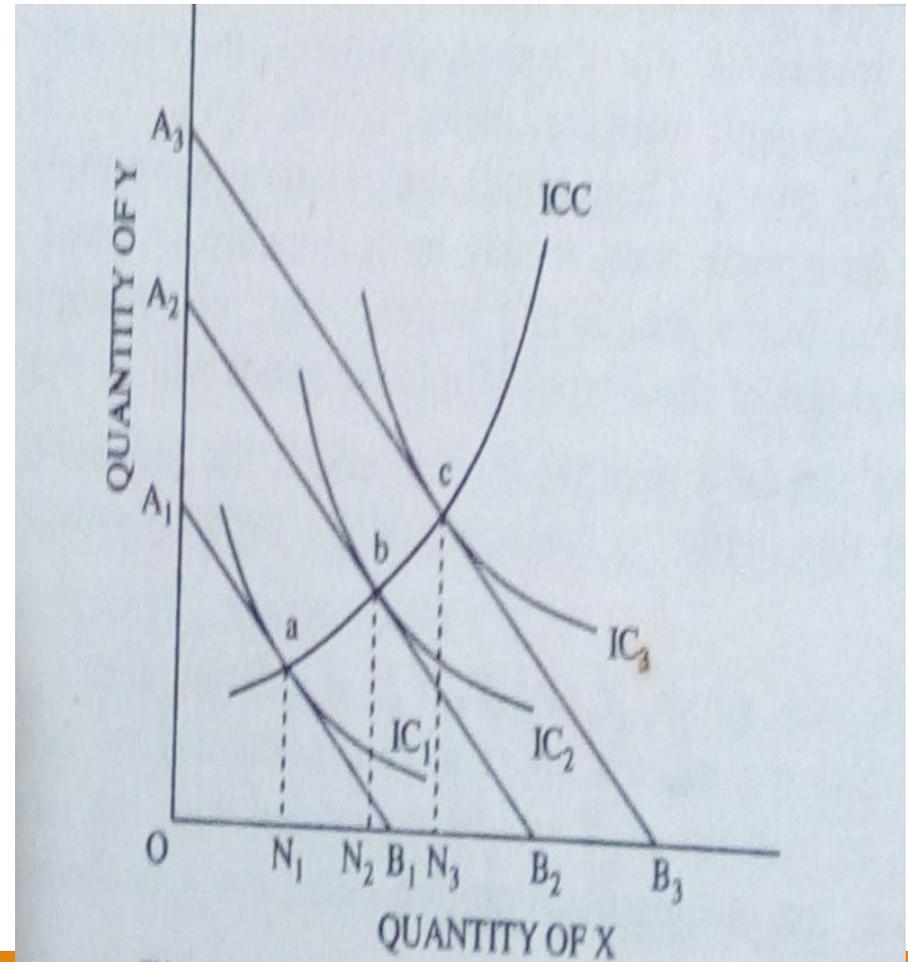
# Interpretation of Different Slopes of ICC

| | Slope of ICC | (i) Nature of Commodity (ii) Kind of Income Effect | |
| --- | --- | --- | --- |
| | | Commodity X | Commodity Y |
| 1. | Positive (Upward Sloping Curve) | (i) Superior (ii) Positive | (i) Superior (ii) Positive |
| 2. | Zero (Horizontal ) | (i) Superior (ii) Positive | (i) Neutral (ii) Zero |
| 3. | Infinity (Vertical) | (i) Neutral (ii) Zero | (i) Superior (ii) Positive |
| 4. | Backward | (i) Inferior (ii) Negative | (i) Superior (ii) Positive |
| 5. | Downward | (i) Superior (ii) Positive | (i) Inferior (ii) Negative |

# Graphical Representation
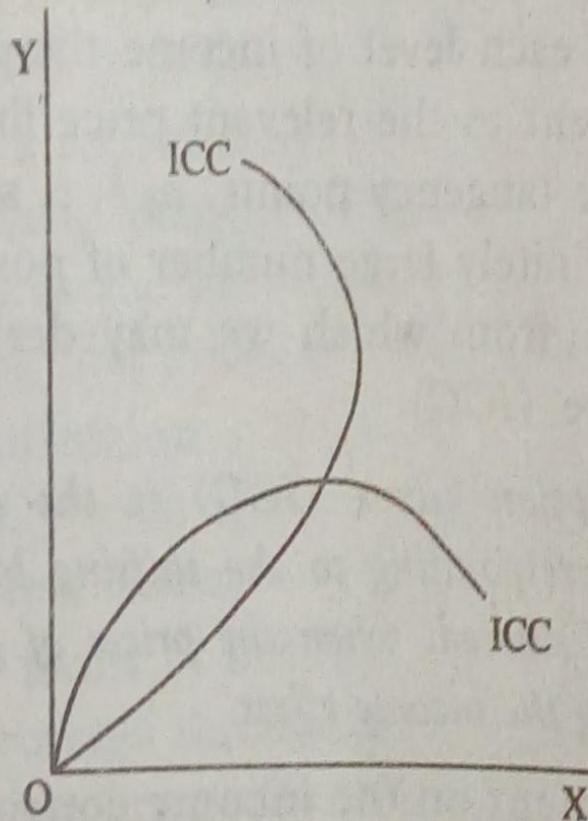


**Fig. 3.2 Slopes of ICC**

Backward slope $X$ inferior commodity.
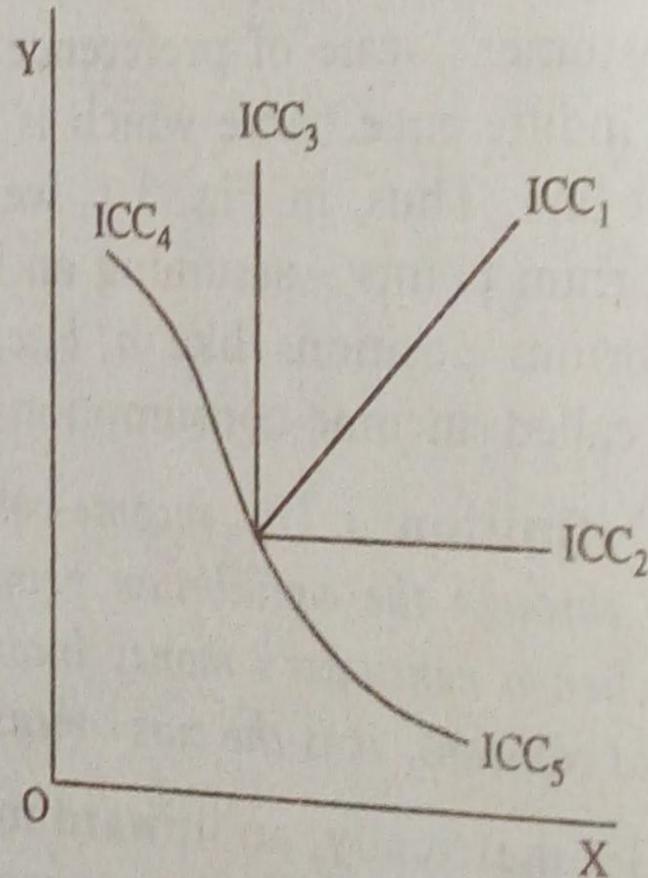Downward slope $Y$ inferior commodity.

**Fig. 3.3 Slopes of ICC**

$IC_3$ indicate zero income effect in case of $X$.
$IC_2$ indicate zero income effect in case of $Y$.

# Substitution Effect

Definition :

  The substitution effect is the change in the quantity demanded of a commodity resulting from a change in its price relative to the price of other commodities where, the consumer's real income or satisfaction level remain constant.

# Hicksian Analysis
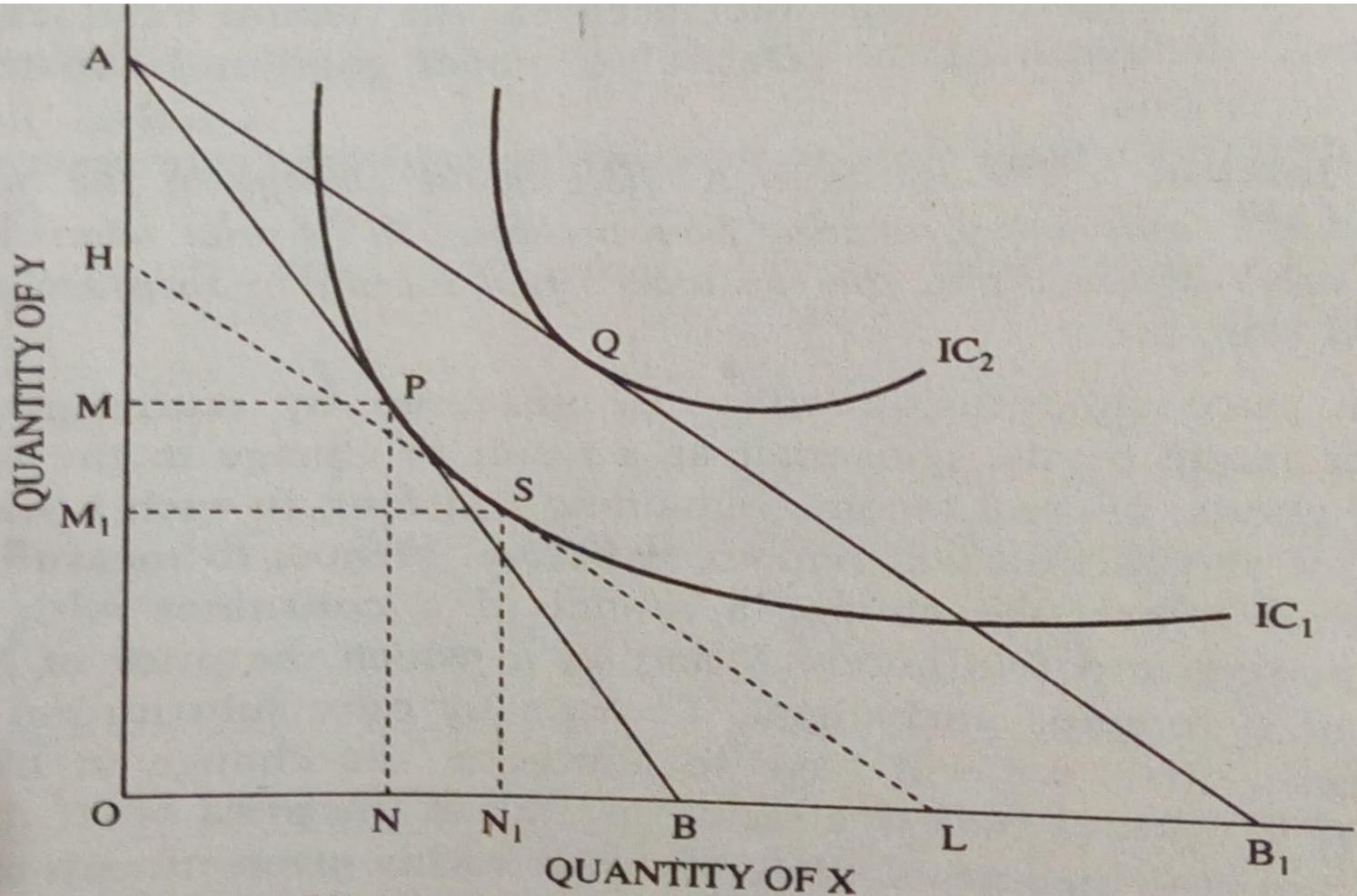## Compensation Variation in Income Method



**Fig. 3.4 Hicks's Measurement of Substitution Effect**

P to S movement on the same indifference curve measures substitution effect.

# Reveled Preference Approach

Prof. Paul A. Samuelson presents a novel approach to the theory of demand in terms of "Revealed Preference Hypothesis" which is based on Observed Market Behaviour.

On the basis of actual observations, Samuelson examines how a consumer reacts to change in price & income. His approach is Objective in nature.

Like Hicks, Samuelson also assumes ordinal measurement of utility

# The Hypothesis

According to Samuelson- " Given the budgetary constraint & alternative basket (Combinations), if goods have the same price, if a consumer chose a particular basket, he reveals his preference. For example, suppose there are two alternative basket A & B of two goods X & Y. Both the baskets being equally expensive, if consumer chose basket A rather than basket B , he revels his preference for basket A".

# Assumptions

1. Two commodity model.

2. Given the price & income situation.

3. Constancy in taste.

4. Rationality.

5. Revealed Preference axiom.

6. Strong ordering.

7. Consistency postulate.

8. Transitivity.

9. Positive income elasticity of demand.

# Thank You