BRAMHASTRA MARATHON BY MV SIR

BUSINESS ECONOMICS

NOTES

INDEX

FEATURES OF THIS BOOK

- Fully **Coloured** Book
- **ICAI language** used and the book is presented in **Chart form** for easy retention. Only Chapter 4 has been explained directly through ICAI SM.
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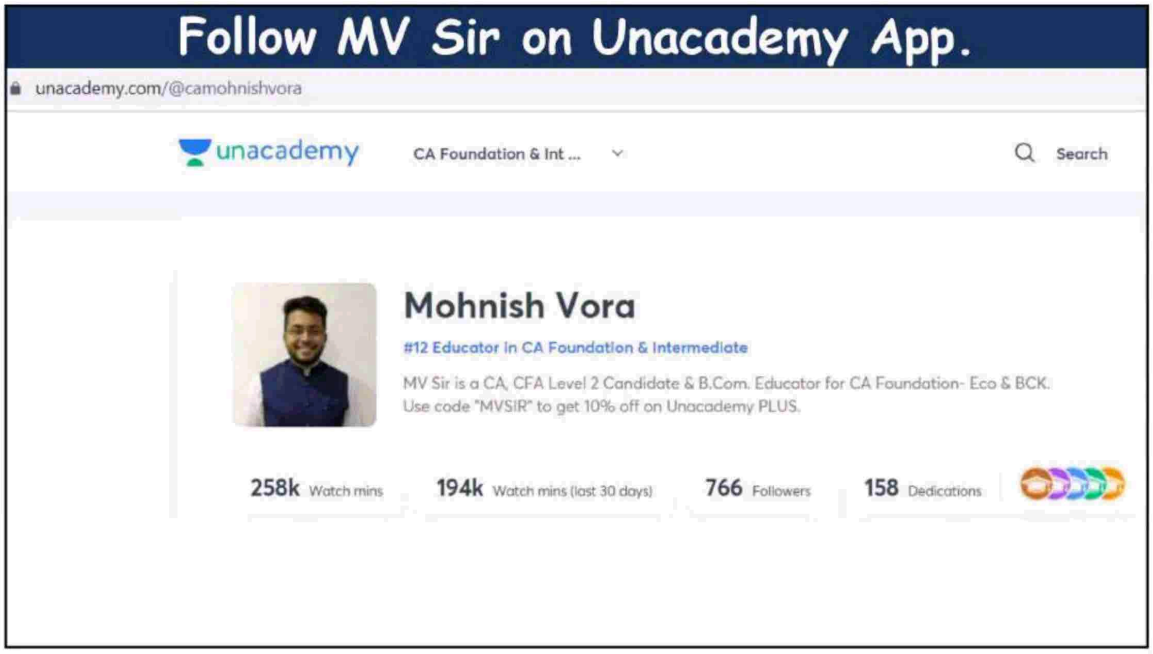
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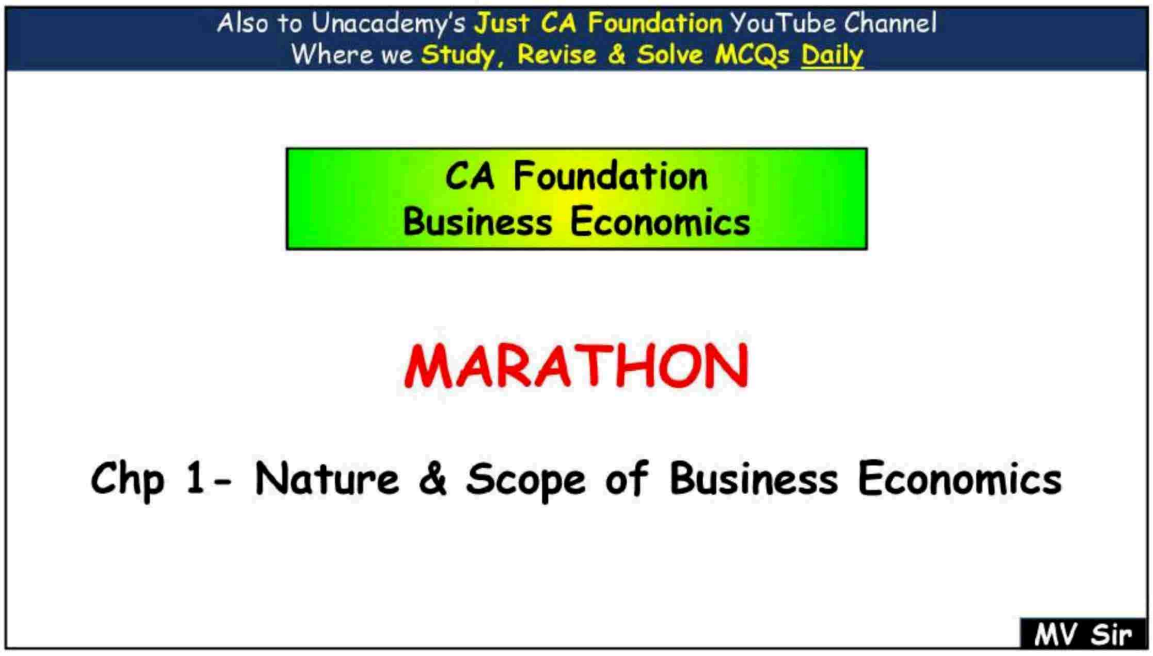
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MARATHON
Chp 1- Nature & Scope of Business Economics
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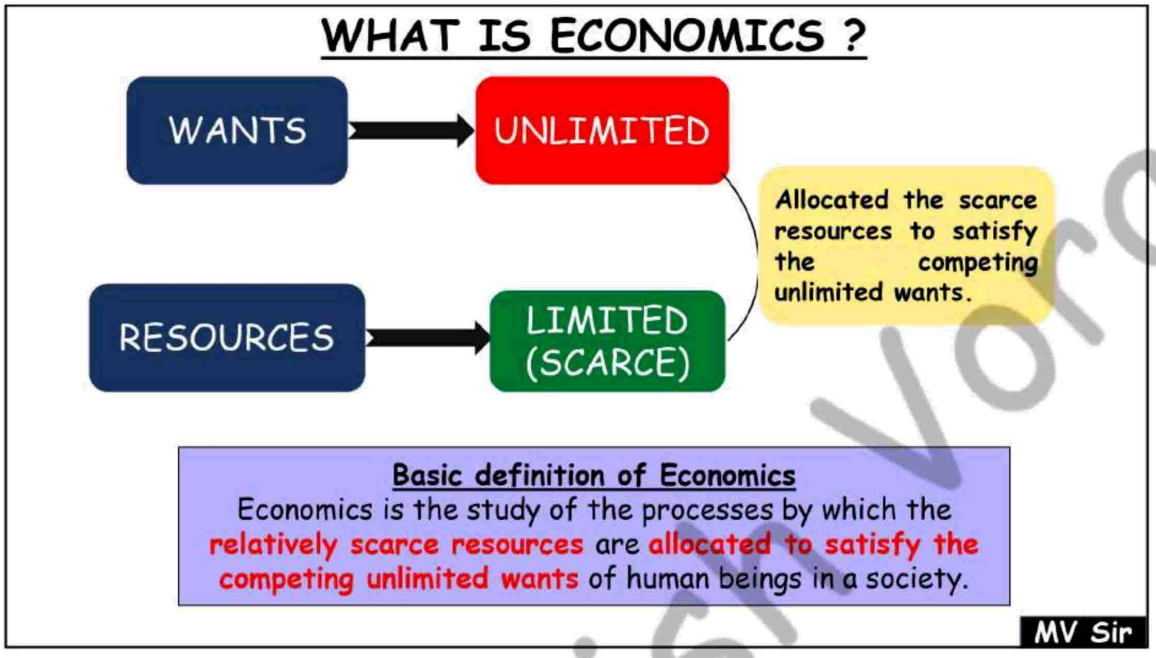

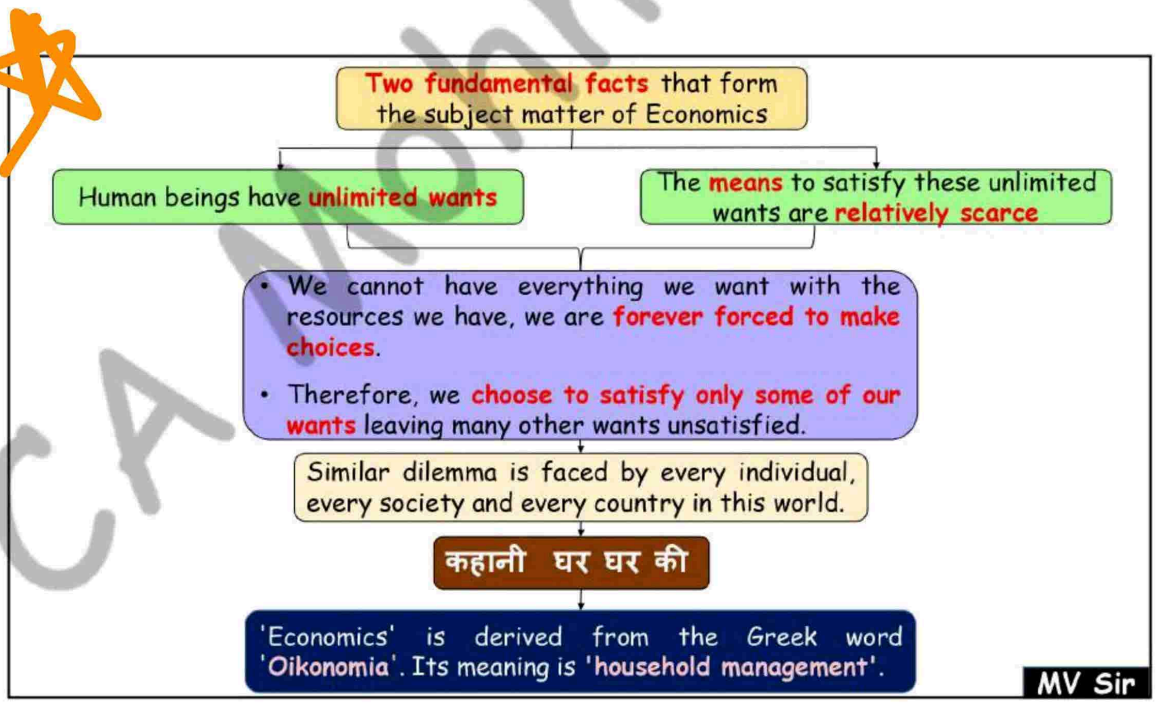

Full Definition of Economics

Economics concerns itself with

i. the crucial concern of how a nation allocates its scarce productive resources to various uses;

ii. it also deals with the processes by which the productive capacity of these resources is increased and

iii. with the factors which, in the past, have led to sharp fluctuations in the rate of utilisation of these resources.

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Decision Making

- Decision making refers to the process of selecting an appropriate alternative that will provide the most efficient means of attaining a desired end, from two or more alternative courses of action.
- It involves evaluation of feasible alternatives, rational judgment on the basis of information and choice of a particular alternative which the decision maker finds as the most suitable.
- The question of choice arises because our productive resources such as land, labour, capital, and management are limited and can be employed in alternative uses. Therefore, more efficient alternatives must be chosen and less efficient alternatives must be rejected.

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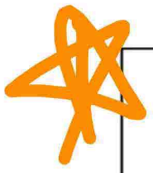

The management of a business unit generally needs to make strategic, tactical and operational decisions. A few examples of issues requiring decision making in the context of businesses are illustrated below:

- Should our firm be in this business?
- Should the firm launch a product, given the highly competitive market environment?
- If the firm decided on launching the product, which available technique of production should be used?
- From where should the firm procure the necessary inputs and at what prices so as to have competitive edge in the market?
- Should the firm make the components or buy them from other firms?
- How much should be the optimum output and at what price should the firm sell?
- How will the product be placed in the market? Which customer segment should we focus on and how to improve the customer experience? Which marketing strategy should be chosen? How much should be the marketing budget?
- How to combat the risks and uncertainties involved?

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Definition of Business Economics

- Business Economics may be defined as the use of economic analysis to make business decisions involving the best use of an organization's scarce resources.
- Business Economics, also referred to as Managerial Economics, generally refers to the integration of economic theory with business practice. While the theories of Economics provide the tools which explain various concepts such as demand, supply, costs, price, competition etc., Business Economics applies these tools in the process of business decision making.
- Business Economics has close connection with Economic theory (Micro as well as Macro-Economics), Operations Research, Statistics, Mathematics and the Theory of Decision-Making.
- Business Economics is not only valuable to business decision makers, but also useful for managers of 'not-for-profit' organisations.

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Economics has been broadly divided into two major parts

Micro Economics	Macro Economics
It examines how the individual units (consumers or firms) make decisions as to how to efficiently allocate their scarce resources.	It is a study of the economy as a whole, rather than its individual parts. It analyzes the overall economic environment in which the firms, governments and households make decisions.
Here, the focus is on a small number of or group of units rather than all units combined, and therefore, it does not explain what is happening in the wider economic environment.	This economic environment represents the overall effect of the innumerable decisions made by millions of different consumers and producers.
Few areas under Micro- Economics are: (i) Product pricing; (ii) Consumer behaviour; (iii) Factor pricing; (iv) Behaviour of firms; and (v) Location of industry.	Few areas under Macro- Economics are: (i) National Income and National Output; (ii) General price level and interest rates; (iii) Balance of trade and balance of payments; (iv) The level of employment and rate of economic growth.

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Nature of Business Economics

1. **Business Economics is a Science** → Science is a systematized body of knowledge which establishes cause and effect relationships. Business Economics integrates the tools of decision sciences such as Mathematics, Statistics and Econometrics with Economic Theory to arrive at appropriate strategies. It follows scientific methods and empirically tests the validity of the results.

2. **Based on Micro Economics** → Business Economics is based largely on Micro-Economics. A business manager is usually concerned about ensuring the long-term survival and profitable functioning of the organization. Since Business Economics is concerned more with the decision making problems of individual establishments, it relies heavily on Microeconomics.

3. **Incorporates elements of Macro Analysis** → A business unit does not operate in a vacuum. It is affected by the external environment of the economy in which it operates such as, the general price level, income and employment levels in the economy etc. All these are components of Macroeconomics.

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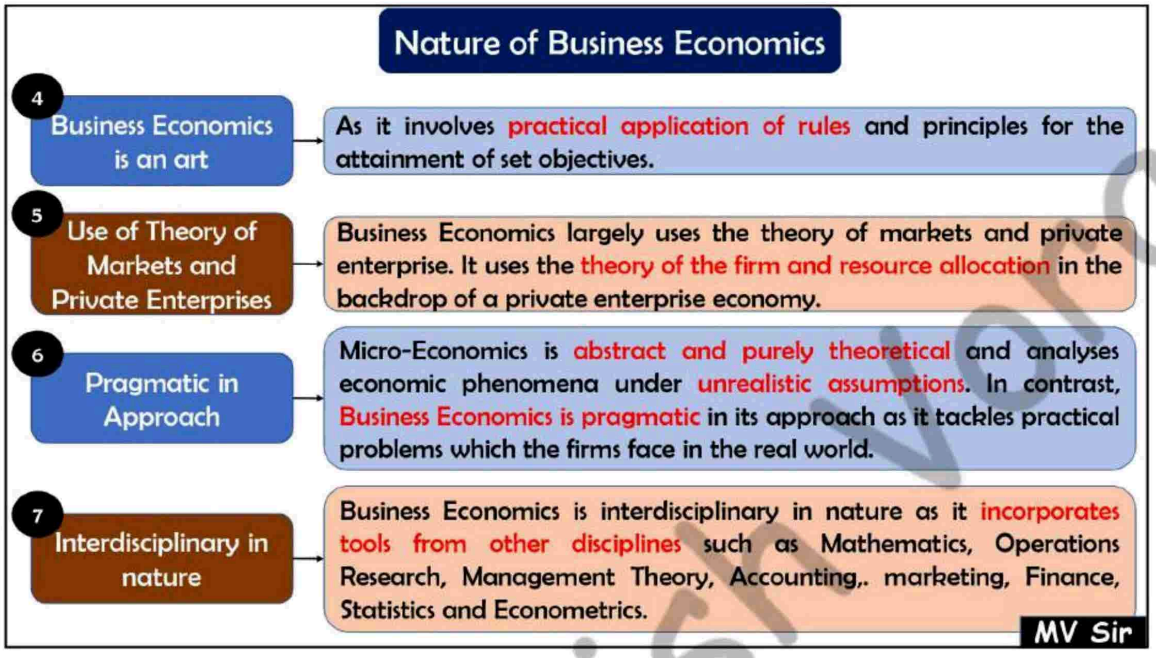

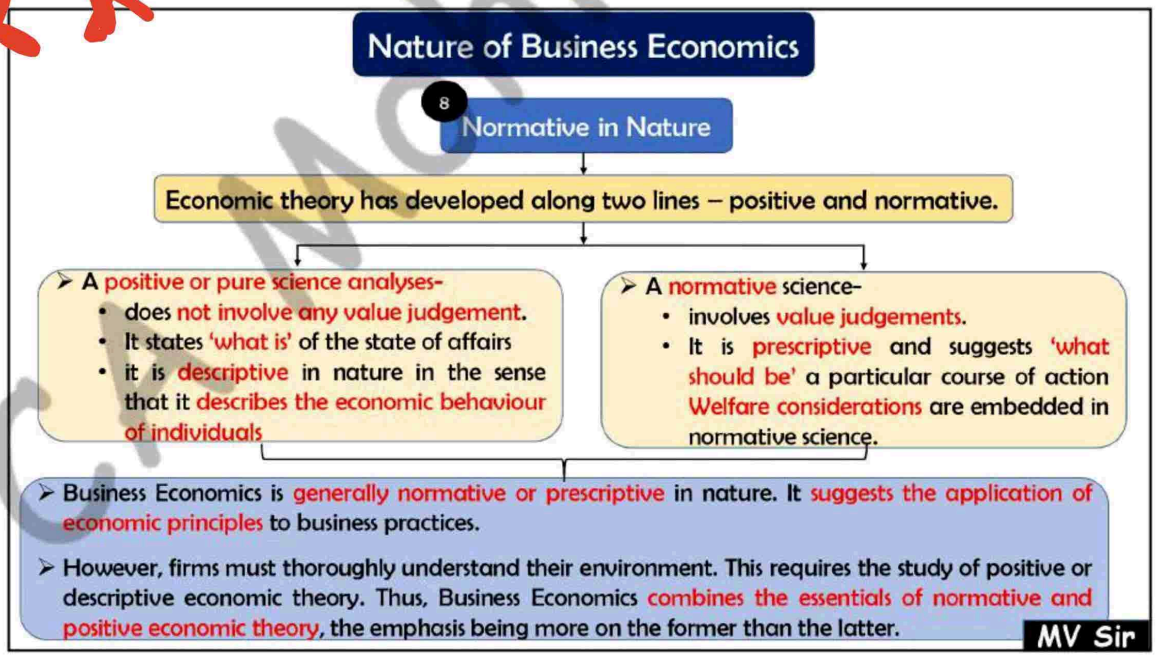

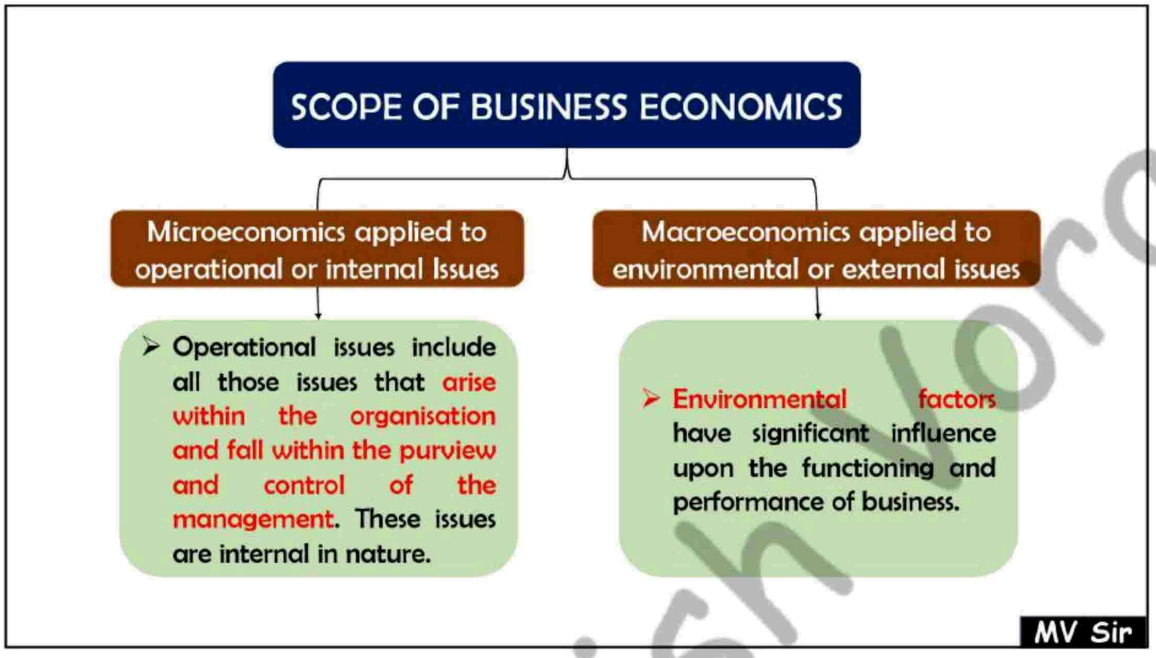

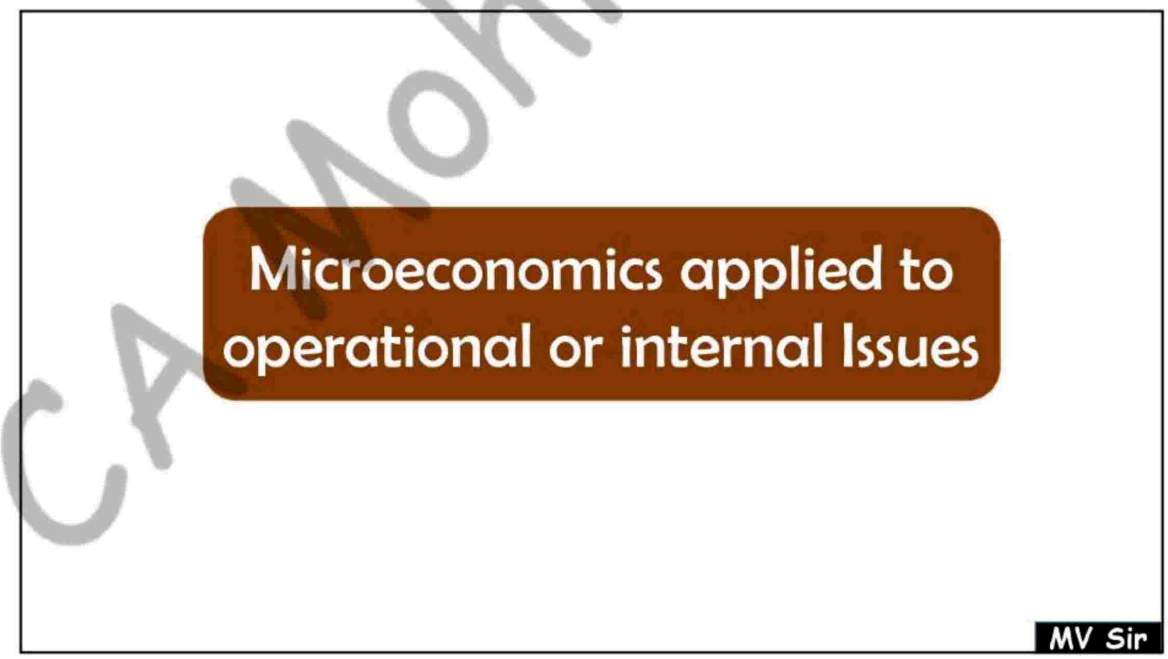

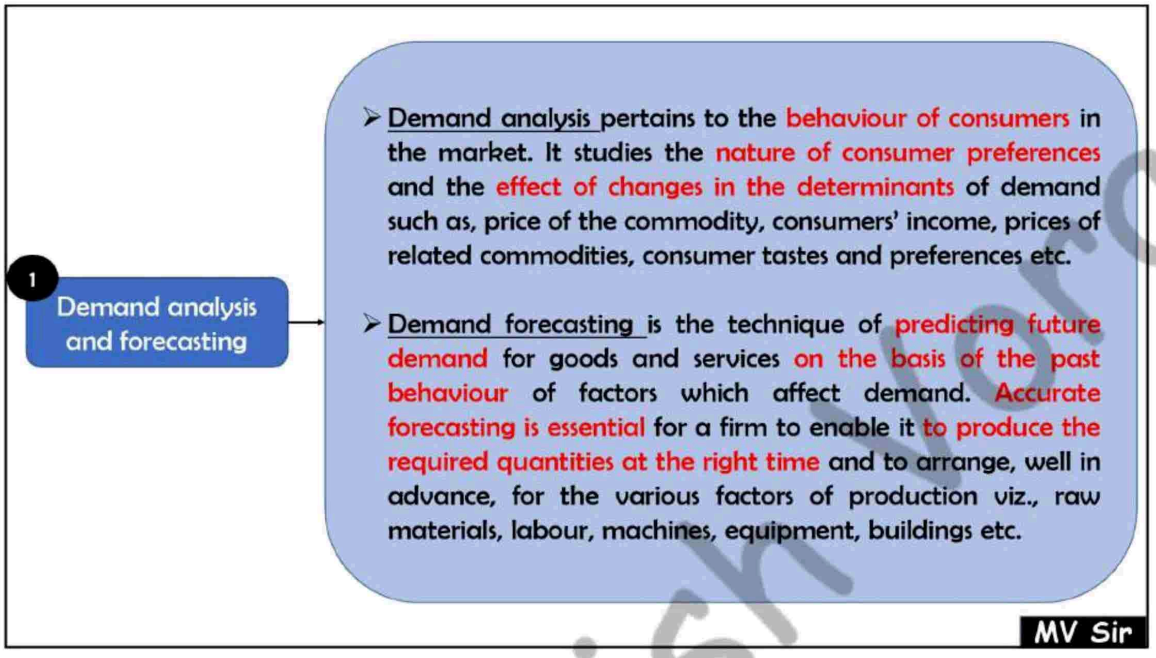

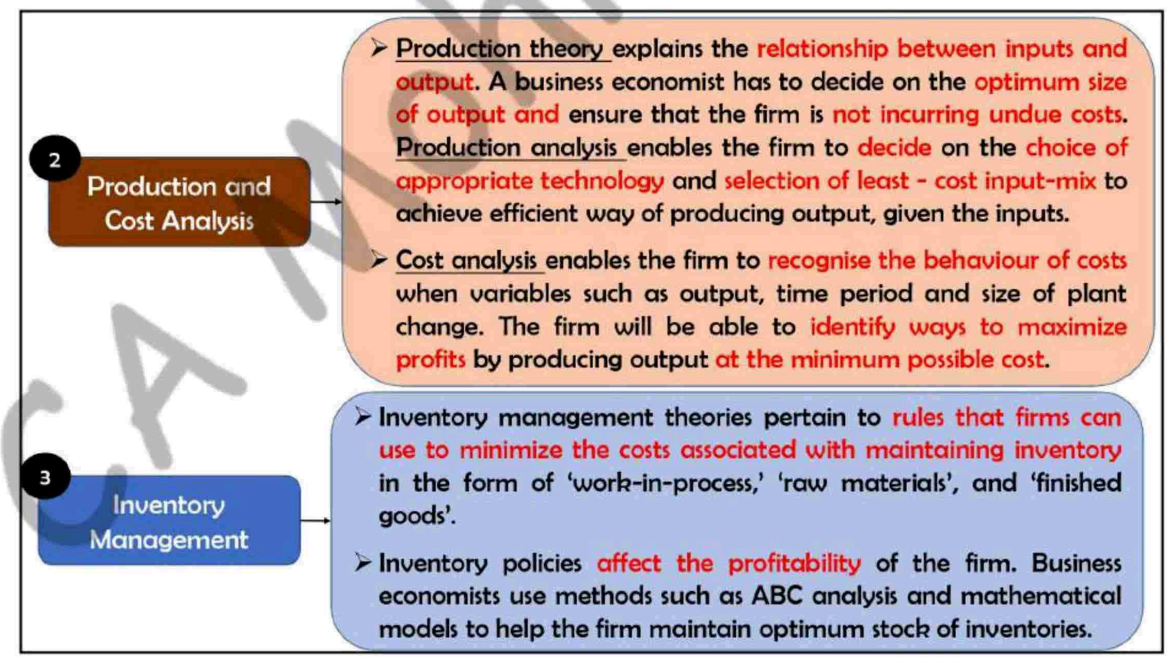

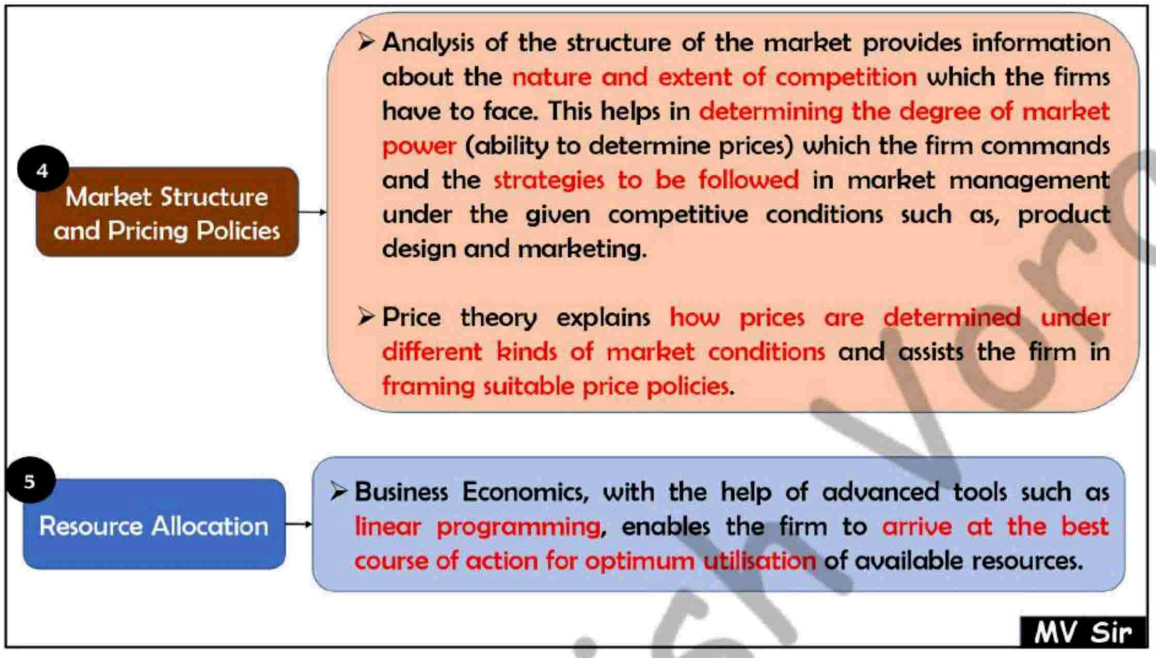

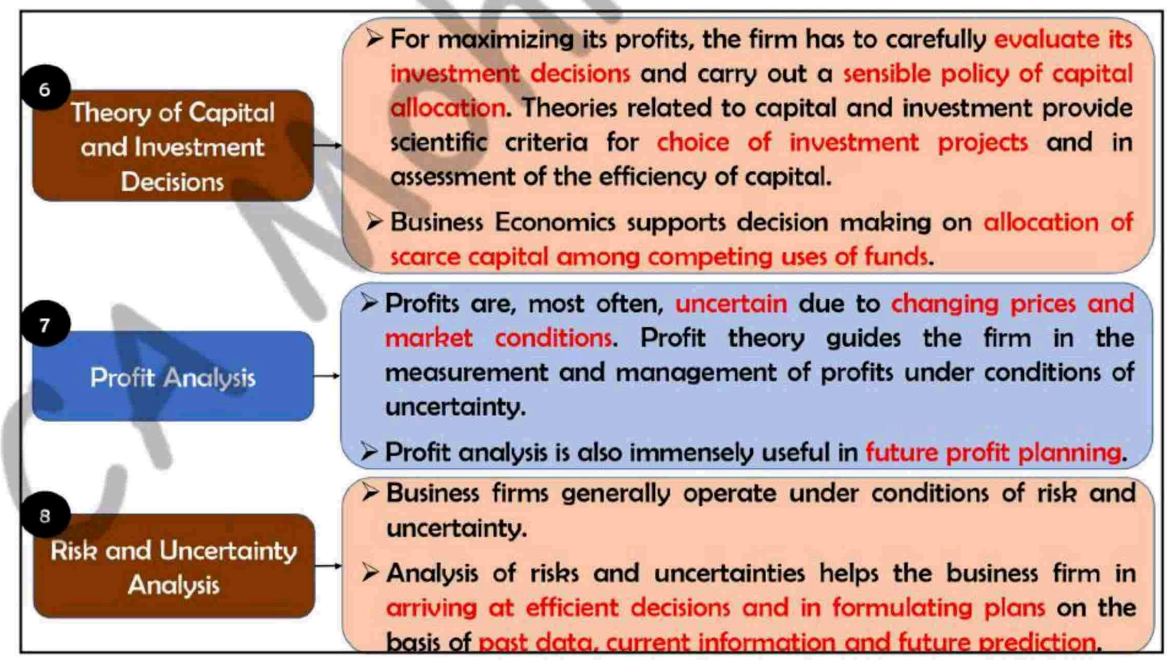

Macroeconomics applied to environmental or external issues

Environmental factors have significant influence upon the functioning and performance of business. The major macro economic factors relate to:

- the type of economic system
- stage of business cycle
- the general trends in national income, employment, prices, saving and investment.
- Government's economic policies like industrial policy, competition policy, monetary and fiscal policy, price policy, foreign trade policy and globalization policies
- working of financial sector and capital market
- socio-economic organisations like trade unions, producer and consumer unions and cooperatives.
- social and political environment.

Business decisions cannot be taken without considering these present and future environmental factors. As the management of the firm has no control over these factors, it should fine-tune its policies to minimize their adverse effects.

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UNIT 2: BASIC PROBLEMS OF AN ECONOMY AND ROLE OF PRICE MECHANISM

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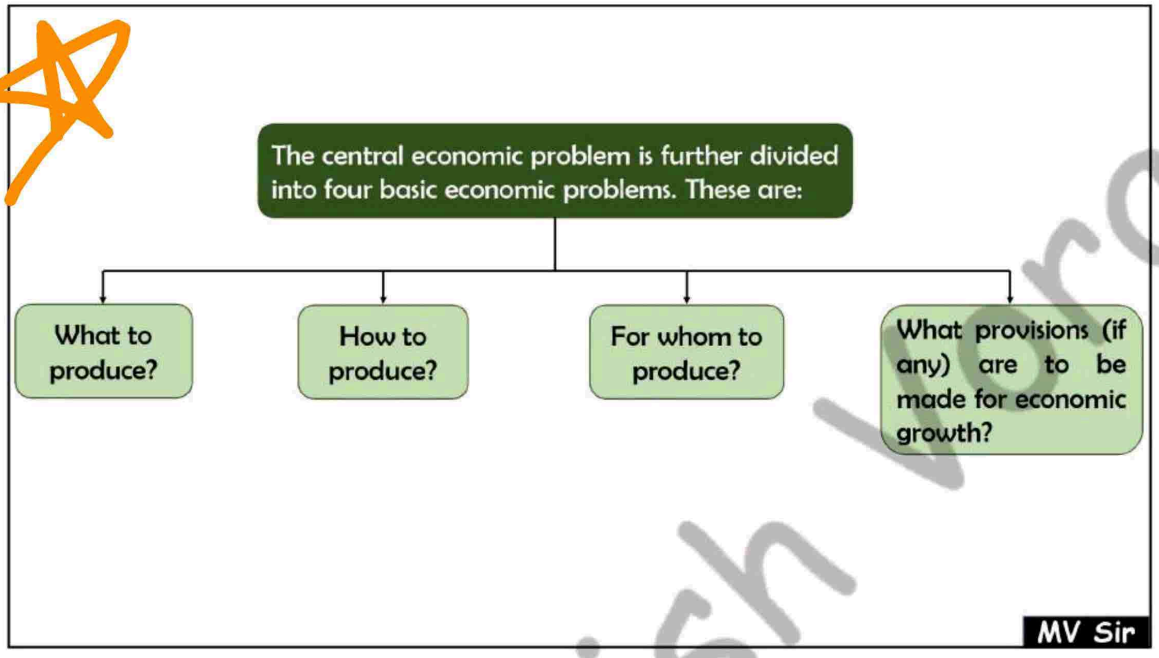

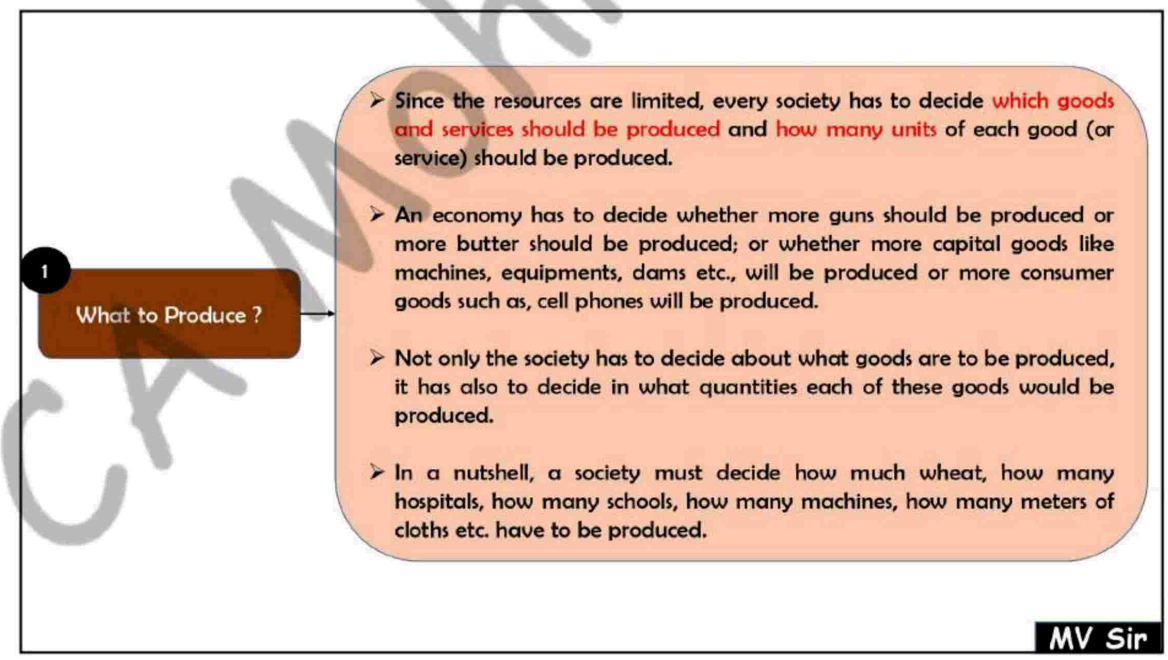

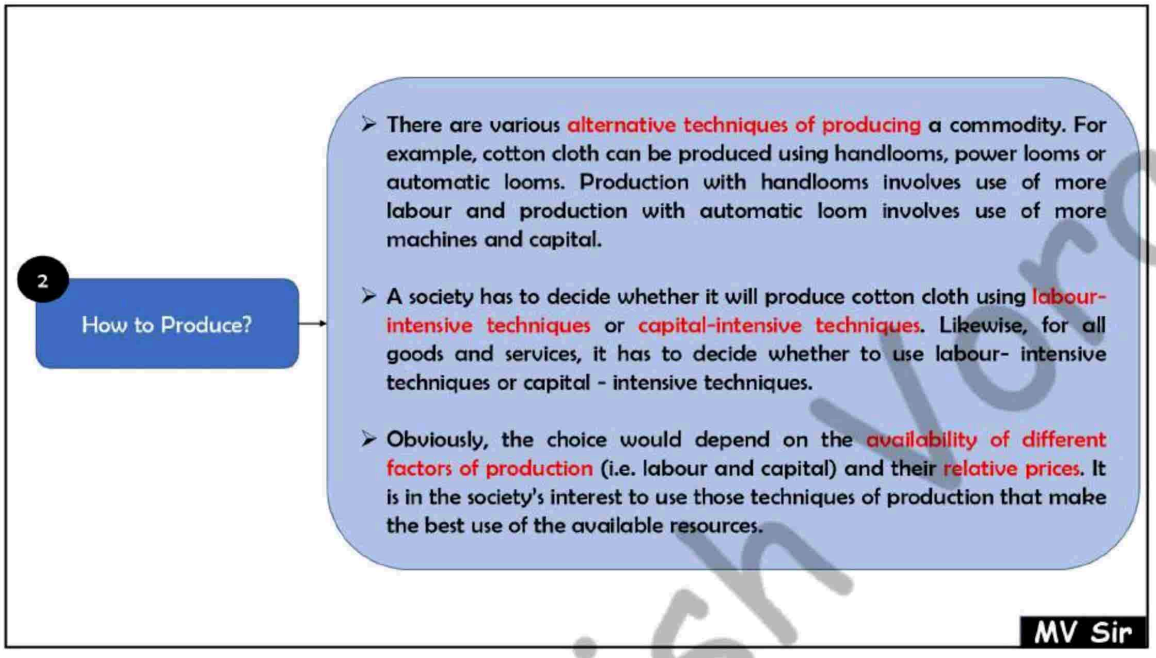

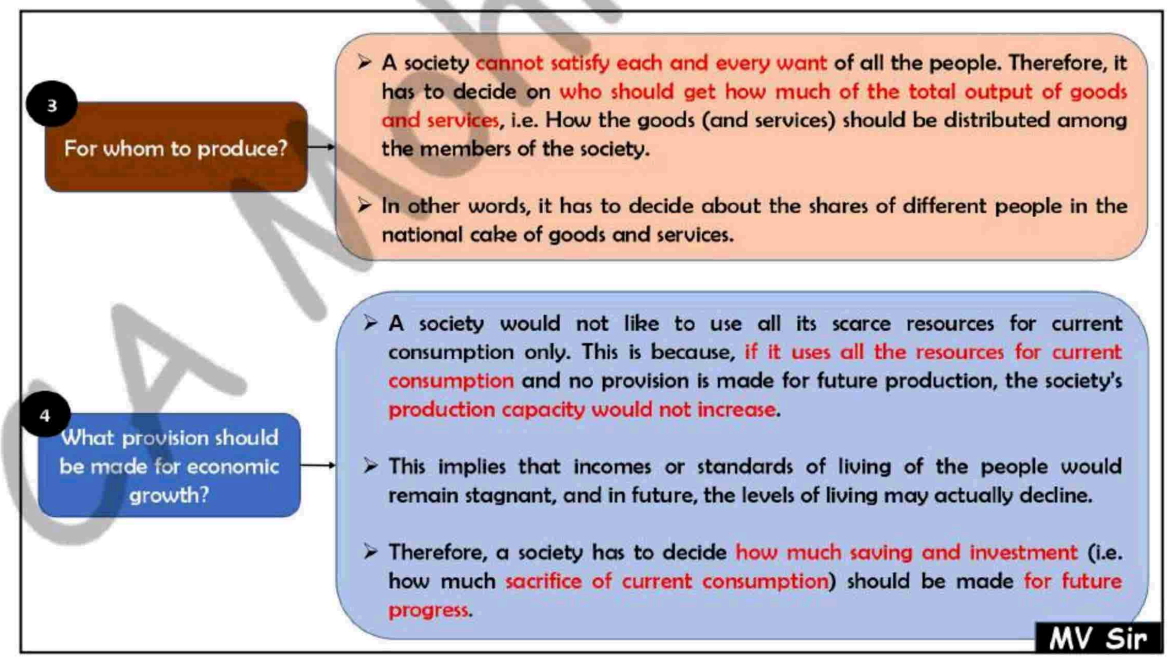

** All 3 Types of Economies are Imp.

Capitalist Economy

- Capitalism, the predominant economic system in the modern global economy, is an economic system in which all means of production are owned and controlled by private individuals for profit.
- In short, private property is the mainstay of capitalism and profit motive is its driving force. Decisions of consumers and businesses determine economic activity. Ideally, the government has a limited role in the management of the economic affairs under this system.
- Some examples of a capitalist economy may include U.S., U.K., Germany, Japan, Mexico, Singapore, etc. However many of them are not pure form of capitalism but show some features of being a capitalist economy.

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Characteristics of Capitalist Economy

An economy is called capitalist or a free market economy or laissez-faire economy if it has the following characteristics

- Right to private property: The right to private property means that productive factors such as land, factories, machinery, mines etc. can be under private ownership. The owners of these factors are free to use them in any manner in which they like and bequeath it as they desire. The government may, however, put some restrictions for the benefit of the society in general.
- Freedom of enterprise: Each individual, whether consumer, producer or resource owner, is free to engage in any type of economic activity. For example, a producer is free to set up any type of firm and produce goods and services of his choice.
- Freedom of economic choice: All individuals are free to make their economic choices regarding consumption, work, production, exchange etc.
- Profit motive: Profit motive is the driving force in a free enterprise economy and directs all economic activities. Desire for profits induces entrepreneurs to organize production so as to earn maximum profits.

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- **Consumer Sovereignty**: Consumer is the king under capitalism. Consumer sovereignty means that buyers ultimately determine which goods and services will be produced and in what quantities. Consumers have unbridled freedom to choose the goods and services which they would consume. Therefore, producers have to produce goods and services which are preferred by the consumers. In other words, based on the purchases they make, consumers decide how the economy's limited resources are allocated.
- **Competition**: Competition is the most important feature of the capitalist economy. Competition brings out the best among buyers and sellers and results in efficient use of resources.
- **Absence of Government Interference**: A purely capitalist economy is not centrally planned, controlled or regulated by the government. In this system, all economic decisions and activities are guided by self interest and price mechanism which operates automatically without any direction and control by the governmental authorities.

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Merits (Advantages) of Capitalist Economy

- Capitalism is self regulating and works automatically through price mechanism. There is no need of incurring costs for collecting and processing of information and for formulating, implementing and monitoring policies.
- The existence of private property and the driving force of profit motive result in greater efficiency and incentive to work.
- The process of economic growth is likely to be faster under capitalism. This is because the investors try to invest in only those projects which are economically feasible.
- Resources are used in activities in which they are most productive. This results in optimum allocation of the available productive resources of the economy.
- There is usually high degree of operative efficiency under the capitalist system.
- Cost of production is minimized as every producer tries to maximize his profit by employing methods of production which are cost-effective.

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Merits (Advantages) of Capitalist Economy

- Capitalist system offer incentives for efficient economic decisions and their implementation.
- Consumers are benefitted as competition forces producers to bring in a large variety of good quality products at reasonable prices. This, along with freedom of choice, ensures maximum satisfaction to consumers. This also results in higher standard of living.
- Capitalism offers incentives for innovation and technological progress. The country as a whole benefits through growth of business talents, development of research, etc.
- Capitalism preserves fundamental rights such as right to freedom and right to private property. Therefore, the participants enjoy maximum amount of autonomy and freedom.
- Capitalism rewards men of initiative and enterprise and punishes the imprudent and inefficient.
- Capitalism usually functions in a democratic framework.
- The capitalist set up encourages enterprise and risk taking and emergence of an entrepreneurial class willing to take risks.

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Demerits (Disadvantages) of Capitalist Economy

- There is vast economic inequality and social injustice under capitalism. Inequalities reduce the aggregate economic welfare of the society as a whole and split the society into two classes namely the 'haves' and the 'have-nots', sowing the seeds of social unrest and class conflict.
- Under capitalism, there is precedence of property rights over human rights.
- Economic inequalities lead to wide differences in economic opportunities and perpetuate unfairness in the society.
- The capitalist system ignores human welfare because, under a capitalist set up, the aim is profit and not the welfare of the people.
- Due to income inequality, the pattern of demand does not represent the real needs of the society.
- Exploitation of labour is common under capitalism. Very often this leads to strikes and lock outs. Moreover, there is no security of employment. This makes workers more vulnerable.
- Consumer sovereignty is a myth as consumers often become victims of exploitation. Excessive competition and profit motive work against consumer welfare.

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Demerits (Disadvantages) of Capitalist Economy

- There is misallocation of resources as resources will move into the production of luxury goods. Less wage goods will be produced on account of their lower profitability.
- Less of merit goods like education and health care will be produced. On the other hand, a number of goods and services which are positively harmful to the society will be produced as they are more profitable.
- Due to unplanned production, economic instability in terms of over production, economic depression, unemployment etc., is very common under capitalism. These result in a lot of human misery.
- There is enormous waste of productive resources as firms spend huge amounts of money on advertisement and sales promotion activities.
- Capitalism leads to the formation of monopolies as large firms may be able to drive out small ones by fair or foul means.
- Excessive materialism as well as conspicuous and unethical consumption lead to environmental degradation.

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How do capitalist economies solve their central problems?

- A capitalist economy has no central planning authority to decide what, how and for whom to produce.
- Such an economy uses the impersonal forces of market demand and supply or the price mechanism to solve its central problems.

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How do capitalist economies solve their central problems?

Deciding 'what to produce'

- The aim of an entrepreneur is to earn as much profits as possible. This causes businessmen to compete with one another to produce those goods which consumers wish to buy.
- Thus, if consumers want more cars, there will be an increase in the demand for cars and as a result their prices will increase. A rise in the price of cars, costs remaining the same, will lead to more profits. This will induce producers to produce more cars.
- On the other hand, if the consumers' demand for cloth decreases, its price would fall and profits would go down. Therefore, business firms have less incentive to produce cloth and less of cloth will be produced. Thus, more of cars and less cloth will be produced in such an economy.
- In a capitalist economy (like the USA, UK and Germany) the question regarding what to produce is ultimately decided by consumers who show their preferences by spending on the goods which they want.

MV Sir

How do capitalist economies solve their central problems?

Deciding 'how to produce'

- An entrepreneur will produce goods and services choosing that technique of production which renders his cost of production minimum.
- If labour is relatively cheap, he will use labour-intensive method and if labour is relatively costlier he will use capital-intensive method.
- Thus, the relative prices of factors of production help in deciding how to produce.

Deciding 'for whom to produce'

- Goods and services in a capitalist economy will be produced for those who have buying capacity.
- The buying capacity of an individual depends upon his income. How much income he will be able to make depends not only on the amount of work he does and the prices of the factors he owns, but also on how much property he owns.
- Higher the income, higher will be his buying capacity and higher will be his demand for goods in general.

MV Sir

How do capitalist economies solve their central problems?

Deciding about consumption, saving and investment

- Consumption and savings are done by consumers and investments are done by entrepreneurs.
- Consumers' savings, among other factors, are governed by the rate of interest prevailing in the market. Higher the interest rates, higher will be the savings.
- Investment decisions depend upon the rate of return on capital. The greater the profit expectation (i.e. the return on capital), the greater will be the investment in a capitalist economy. The rate of interest on savings and the rate of return on capital are nothing but the prices of capital.

MV Sir

Socialist Economy

- The concept of socialist economy was propounded by Karl Marx and Frederic Engels in their work 'The Communist Manifesto' published in 1848.
- In this economy, the material means of production i.e. factories, capital, mines etc. are owned by the whole community represented by the State.
- All members are entitled to get benefit from the fruits of such socialised planned production on the basis of equal rights.
- A socialist economy is also called as "Command Economy" or a "Centrally Planned Economy". Here, the resources are allocated according to the commands of a central planning authority and therefore, market forces have no role in the allocation of resources.
- Under a socialist economy, production and distribution of goods are aimed at maximizing the welfare of the community as a whole.
- North Korea, the world's most totalitarian state, is a prominent example of a socialist economy. Other examples include China and Cuba.

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Characteristics of Socialist Economy

- **Collective Ownership**: There is collective ownership of all means of production except small farms, workshops and trading firms which may remain in private hands. As a result of social ownership, profit-motive and self- interest are not the driving forces of economic activity as it is in the case of a market economy. The resources are used to achieve certain socio-economic objectives.
- **Economic planning**: There is a Central Planning Authority to set and accomplish socio- economic goals; that is why it is called a centrally planned economy. The major economic decisions, such as what to produce, when and how much to produce, etc., are taken by the central planning authority.
- **Absence of Consumer Choice**: Freedom from hunger is guaranteed, but consumers' sovereignty gets restricted by selective production of goods. The range of choice is limited by planned production. However, within that range, an individual is free to choose what he likes most. The right to work is guaranteed, but the choice of occupation gets restricted because these are determined by the central planning authority on the basis of certain socio-economic goals before the nation.

MV Sir

Characteristics of Socialist Economy

- **Relatively Equal Income Distribution**: A relative equality of income is an important feature of Socialism. Among other things, differences in income and wealth are narrowed down by lack of opportunities to accumulate private capital. Educational and other facilities are enjoyed more or less equally; thus the basic causes of inequalities are removed.
- **Minimum role of Price Mechanism or Market forces**: Price mechanism exists in a socialist economy; but it has only a secondary role, e.g., to secure the disposal of accumulated stocks. Since allocation of productive resources is done according to a predetermined plan, the price mechanism as such does not influence these decisions. In the absence of the profit motive, price mechanism loses its predominant role in economic decisions. The prices prevailing under socialism are 'administered prices' which are set by the central planning authority on the basis of socio-economic objectives.
- **Absence of Competition**: Since the state is the sole entrepreneur, there is absence of competition under socialism.

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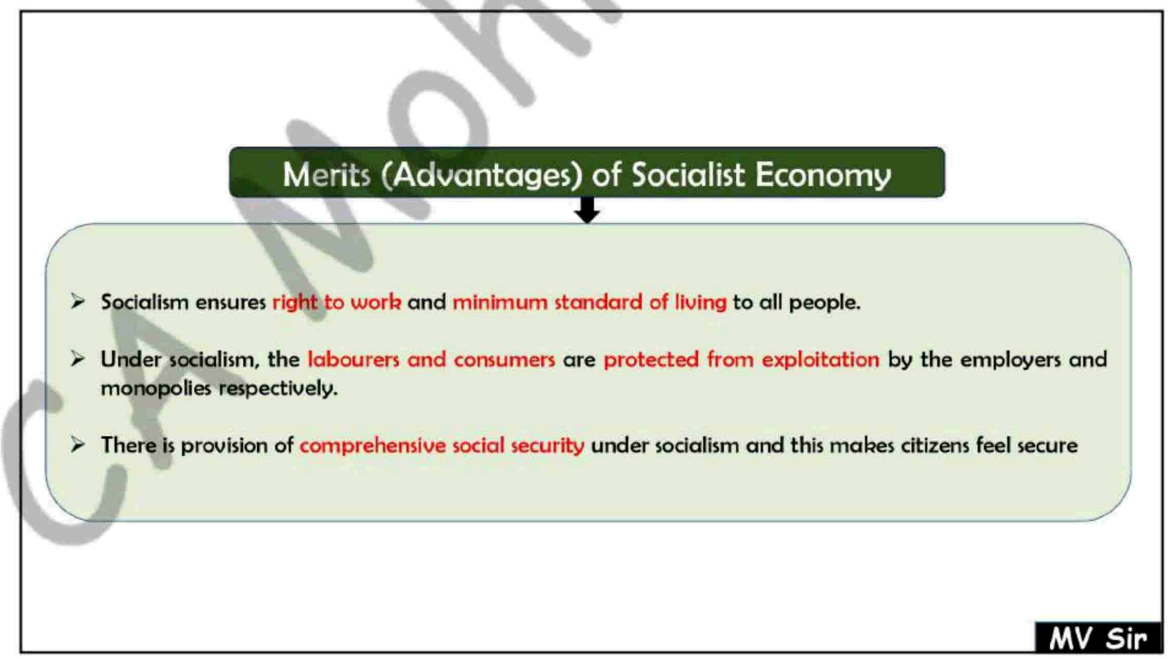

Demerits (Disadvantages) of Socialist Economy

- Socialism involves the predominance of bureaucracy and the resulting inefficiency and delays. Moreover, there may also be corruption, red tapism, favouritism, etc.
- It restricts the freedom of individuals as there is state ownership of the material means of production and state direction and control of nearly all economic activity.
- Socialism takes away the basic rights such as the right of private property.
- It will not provide necessary incentives to hard work in the form of profit.
- Administered prices are not determined by the forces of the market on the basis of negotiations between the buyers and the sellers. There is no proper basis for cost calculation. In the absence of such practice, the most economic and scientific allocation of resources and the efficient functioning of the economic system are impossible.

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Demerits (Disadvantages) of Socialist Economy

- State monopolies created by socialism will sometimes become uncontrollable. This will be more dangerous than the private monopolies under capitalism.
- Under socialism, the consumers have no freedom of choice. Therefore, what the state produces has to be accepted by the consumers.
- No importance is given to personal efficiency and productivity. Labourers are not rewarded according to their efficiency. This acts as a disincentive to work.
- The extreme form of socialism is not at all practicable.

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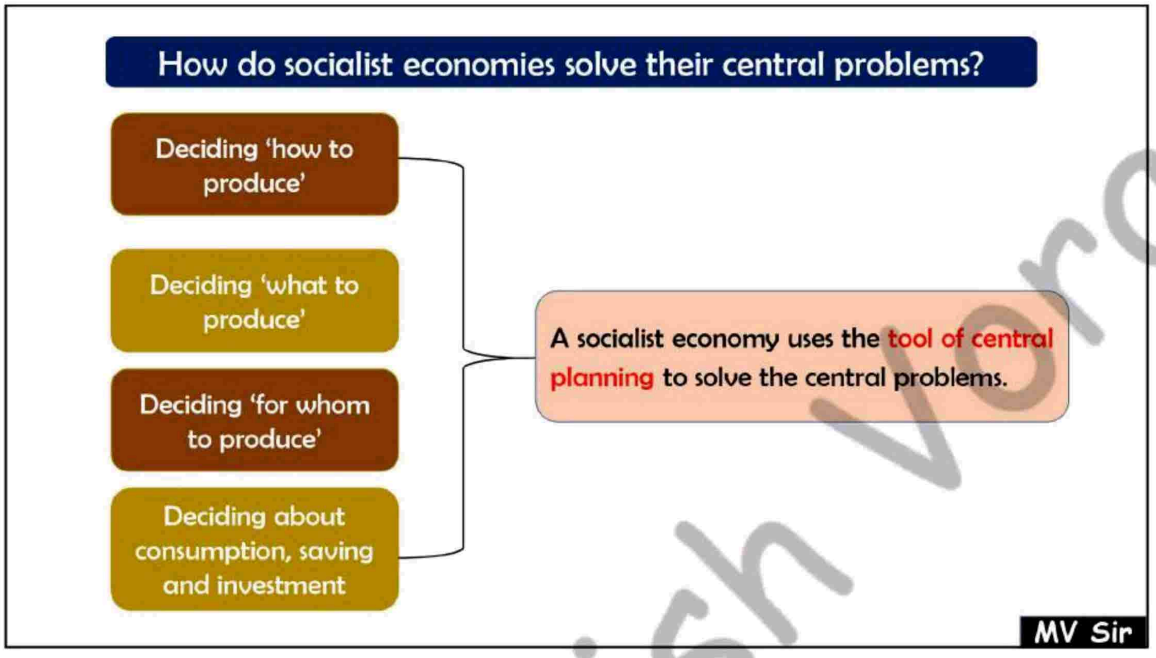

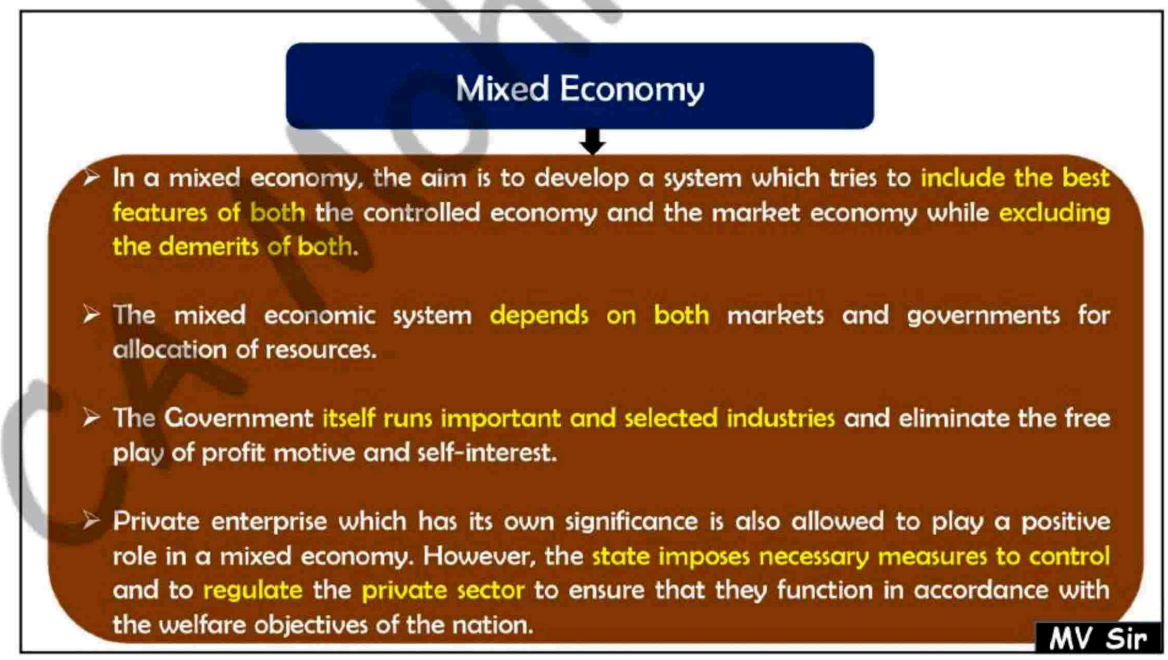

Characteristics of Mixed Economy

- **Co-existence of private and public sector**: The first important feature of a mixed economy is the co-existence of both private and public enterprise. In fact, in a mixed economy, there are three sectors of industries:

a) **Private sector**: Production and distribution in this sector are managed and controlled by private individuals and groups. Industries in this sector are based on self-interest and profit motive. The system of private property exists and personal initiative is given full scope. However, private enterprise may be regulated by the government directly and/or indirectly by a number of policy instruments.

b) **Public sector**: Industries in this sector are not primarily profit-oriented, but are set up by the State for the welfare of the community.

c) **Combined sector**: A sector in which both the government and the private enterprises have equal access, and join hands to produce commodities and services, leading to the establishment of joint sectors.

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Merits (Advantages) of Mixed Economy

- Economic freedom and existence of private property which ensures incentive to work and capital formation.
- Price mechanism and competition forces operating in the private sector promoting efficient decisions and better resource allocation.
- Consumers are benefitted through consumers' sovereignty and freedom of choice.
- Appropriate incentives for innovation and technological progress.
- Encourages enterprise and risk taking.
- Advantages of economic planning and rapid economic development on the basis of plan priorities.
- Comparatively greater economic and social equality and freedom from exploitation due to greater state participation and direction of economic activities.
- Disadvantages of cut-throat competition averted through government's legislative measures such as environment and labour regulations.

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Demerits (Disadvantages) of Mixed Economy

- Excessive controls by the state resulting in reduced incentives and constrained growth of the private sector.
- Poor implementation of planning
- Higher rates of taxation
- Lack of efficiency
- Corruption
- Wastage of resources
- Undue delays in economic decisions.
- Poor performance of the public sector. Moreover, it is very difficult to maintain a proper balance between the public and private sectors. In the absence of strong governmental initiatives, the private sector is likely to grow disproportionately

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How do Mixed economies solve their central problems?

- Deciding 'how to produce'
- Deciding 'what to produce'
- Deciding 'for whom to produce'
- Deciding about consumption, saving and investment

A mixed economy uses a mix of both price mechanism and central planning to solve its basic economic problems

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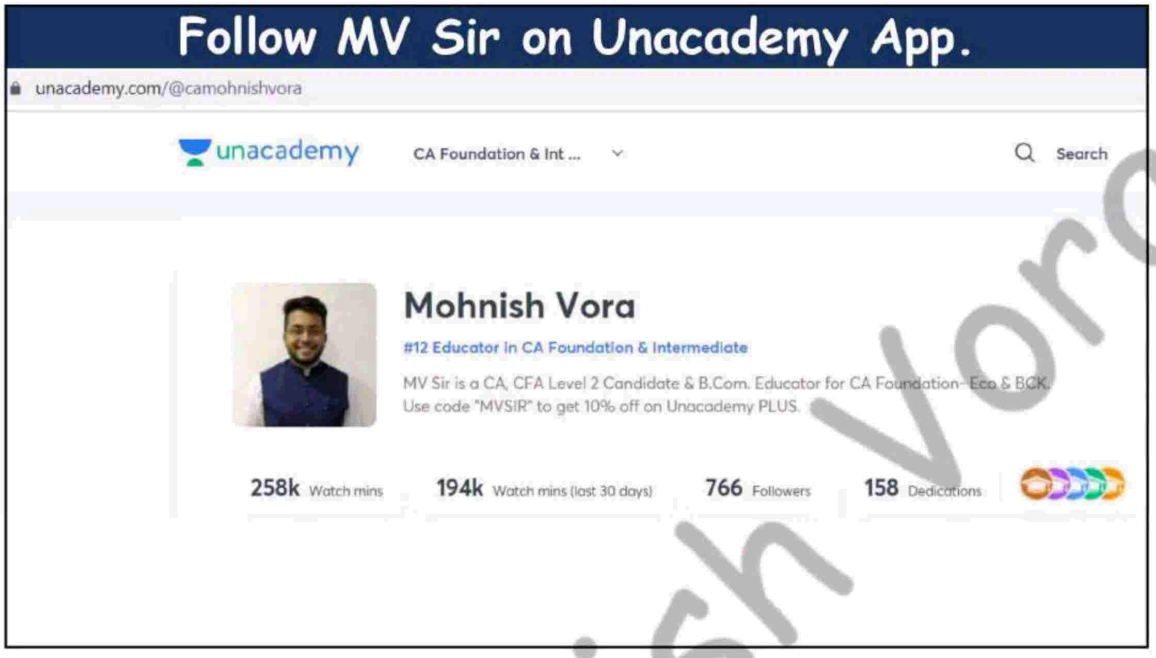
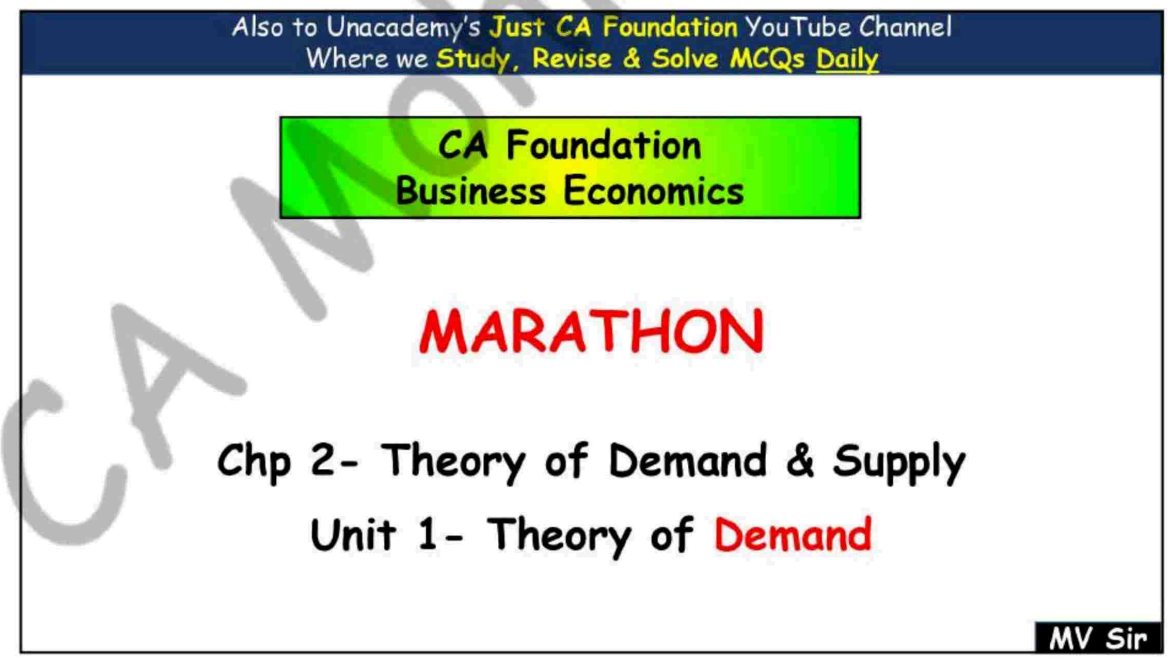
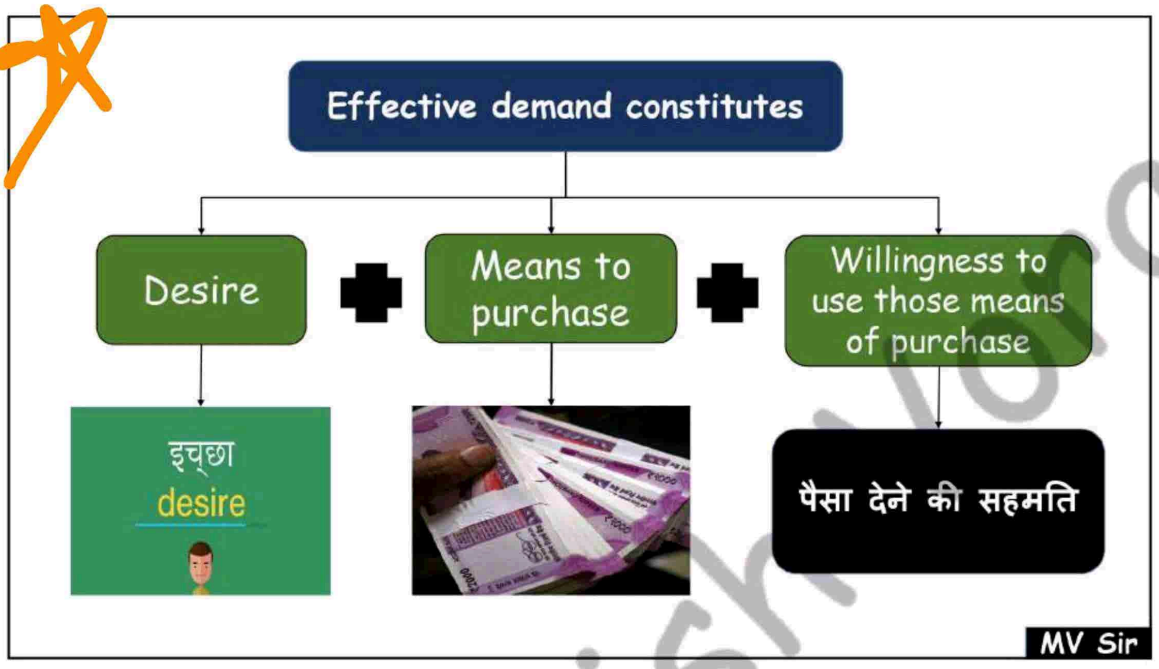
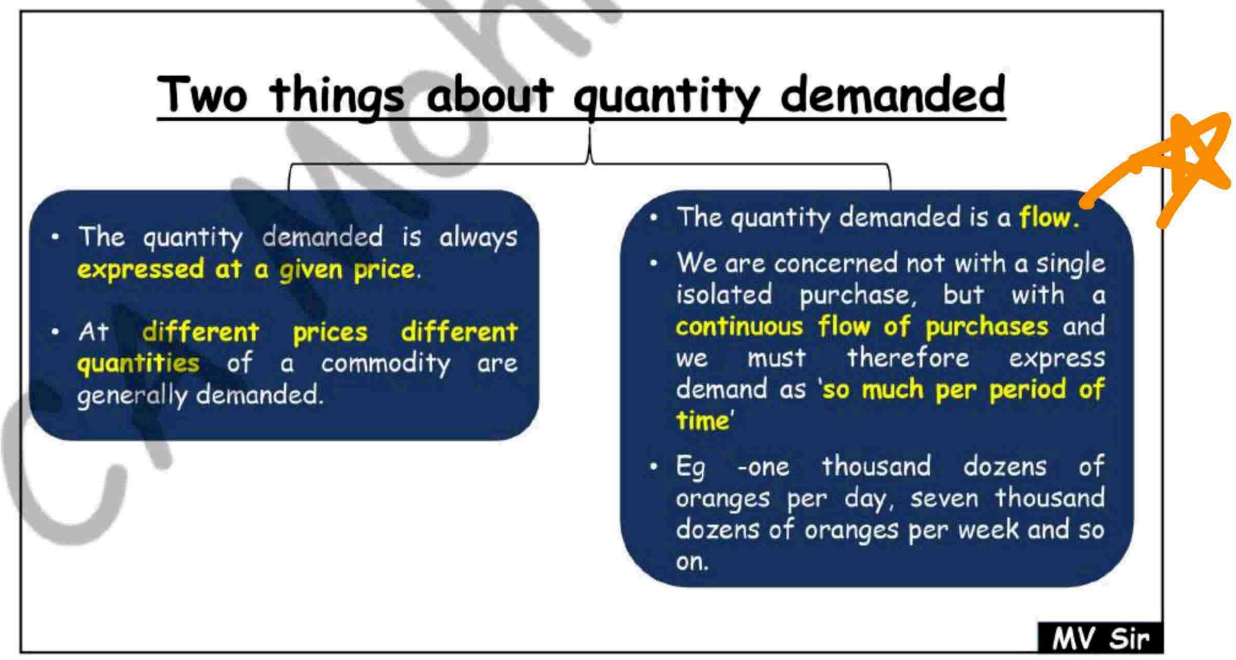








By demand, we mean

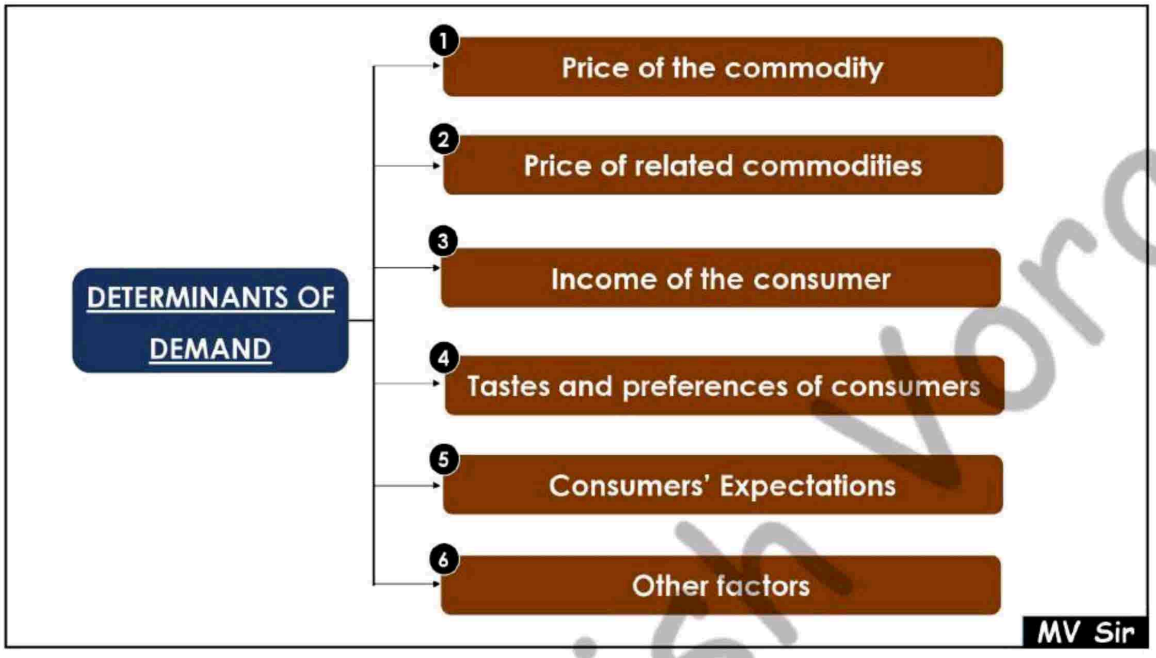
- the **various quantities** of a
- given **commodity or service**
- which **consumers would buy** in one market
- during a given **period of time**,
- at **various prices**, or at various incomes, or at various prices of related goods

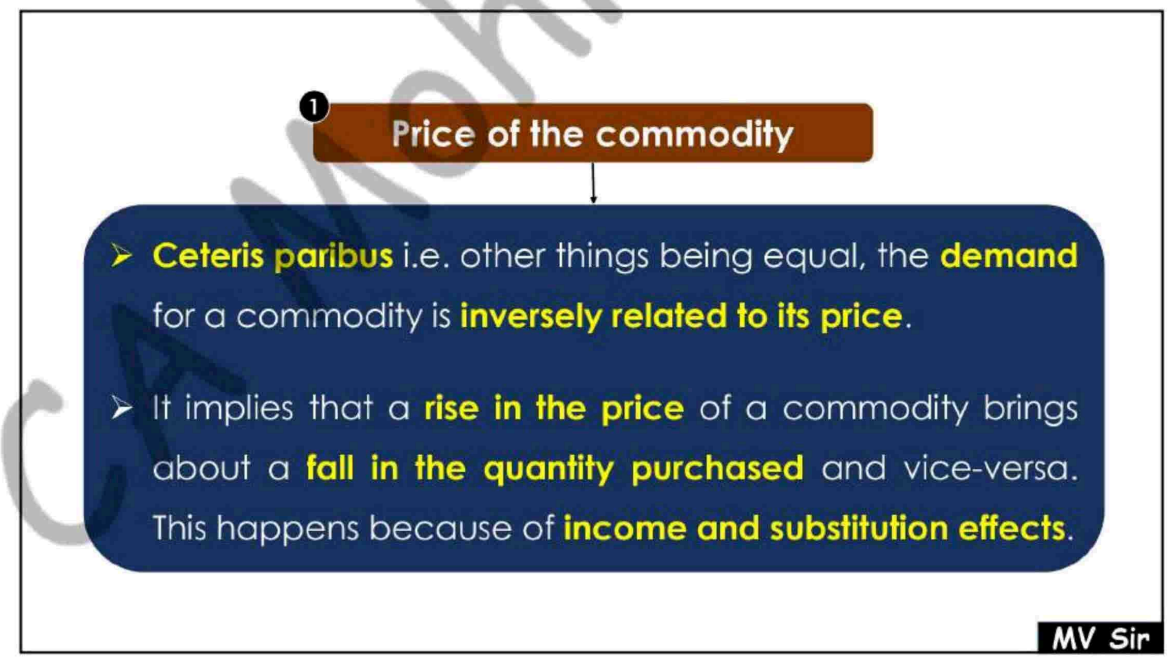
MV Sir

What determines Demand ?

- **Determinant** = A factor which affects the outcome of something.
- **Knowledge of the determinants** of demand for a product and the **nature of relationship between demand and its determinants** are essential for a business firm for estimating market demand for its products.

MV Sir





Income Effect

Annual Income = Rs 1,00,000		Expense on 10 Pair of Clothes = Rs 30,000	Balance Income = Rs 70,000

Next Year Discount on clothes 40 %

Annual Income = Rs 1,00,000		Expense on 10 Pair of Clothes = Rs 18,000	Balance Income = Rs 82,000

- Now, the same 10 Pair of clothes can be purchased in lesser amount (Rs 18000),
  OR
- More clothes can be bought in same amount of money. (Rs 30,000)

The increase in Balance (Real) Income will induce the consumer to buy more.

MV Sir

Substitution Effect

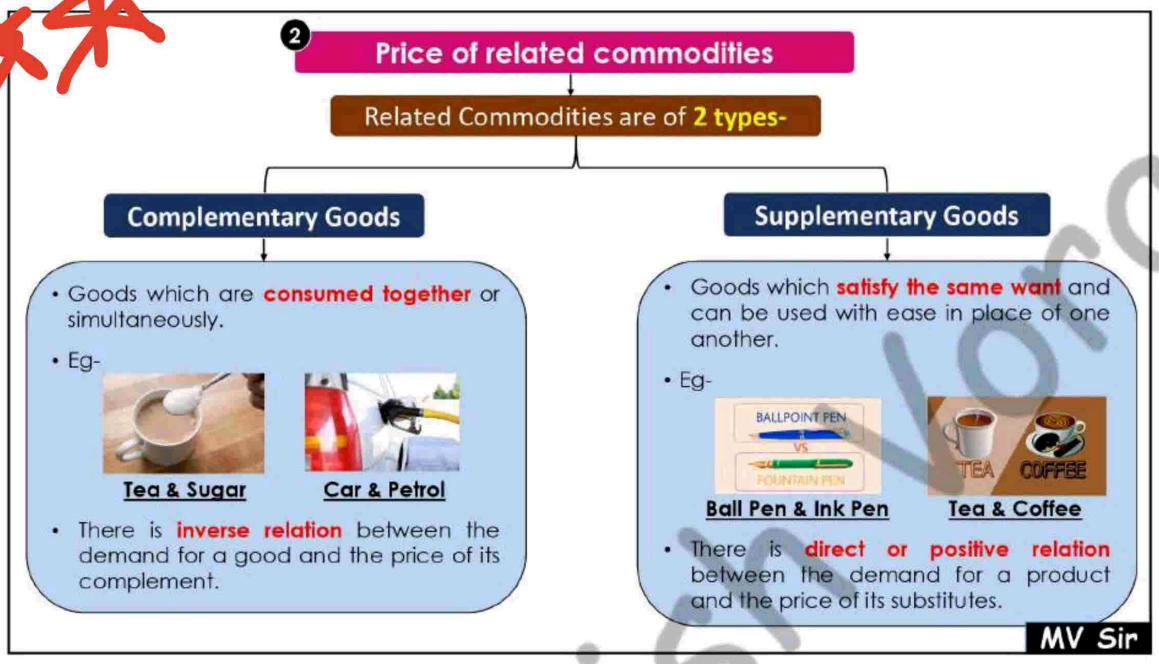
~~Price= Rs. 50~~

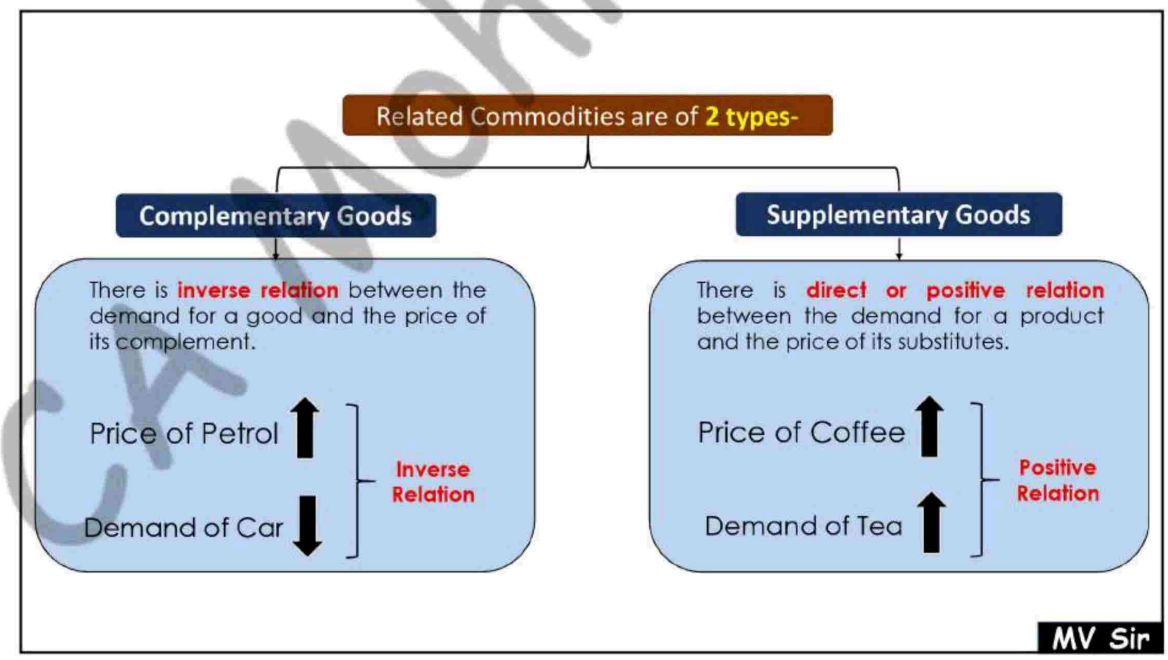
Revised Price= Rs. 30

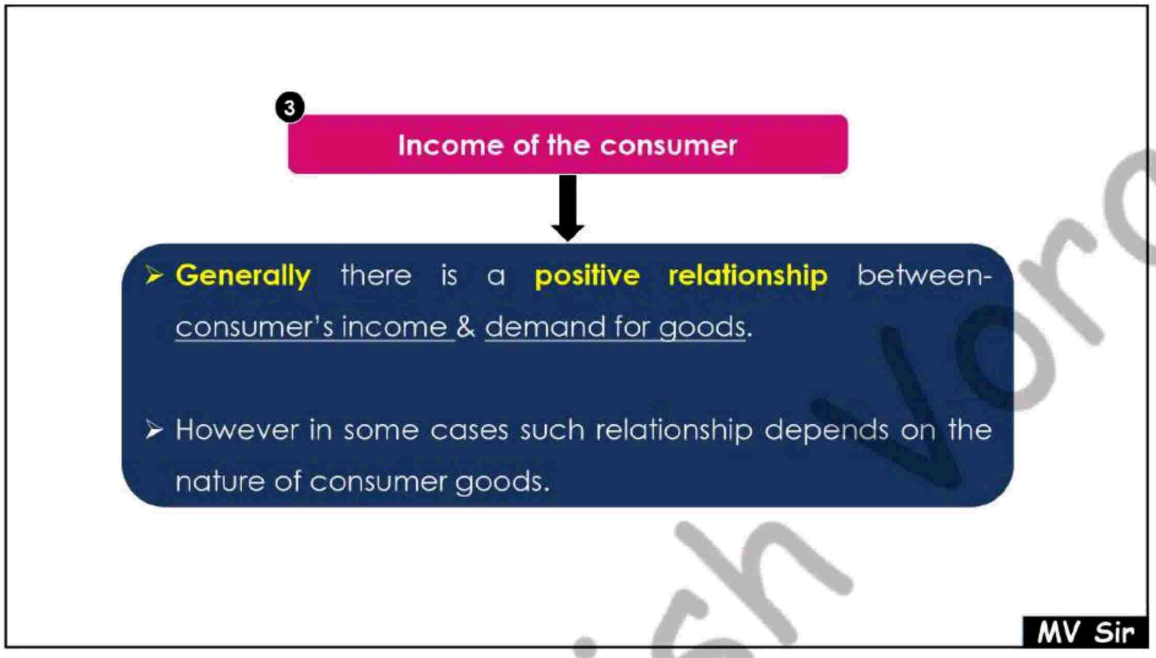
Price= Rs. 50

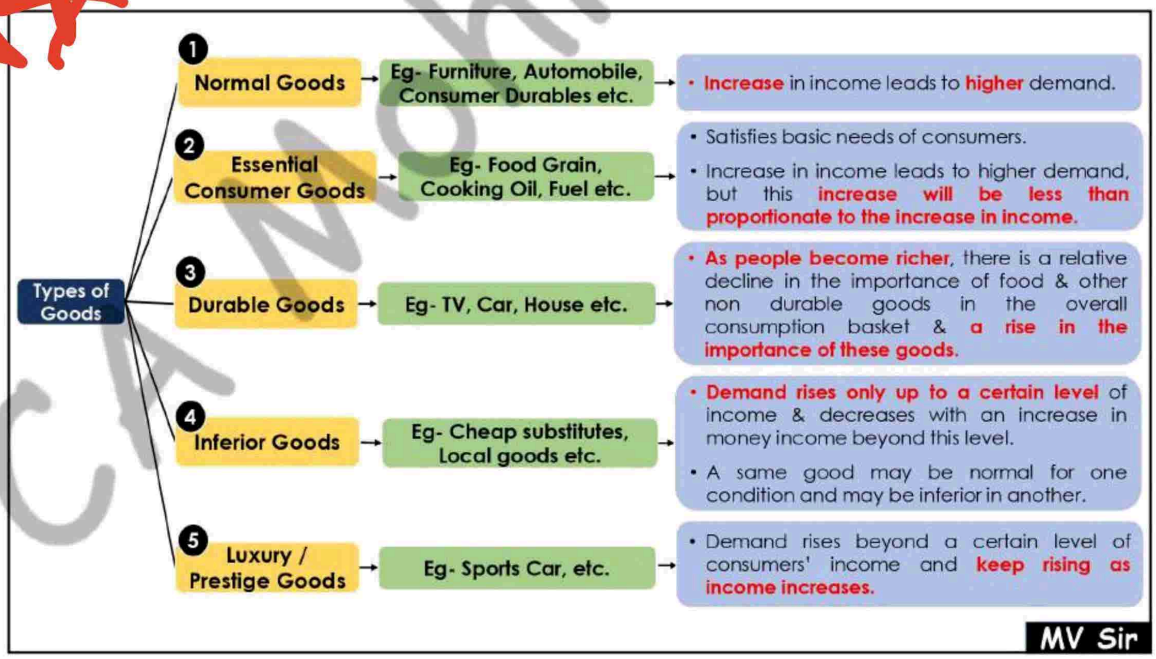
- When the **price of a commodity falls**, it becomes **relatively cheaper** than other commodities.
- Assuming that the prices of all other commodities remain constant, it **induces consumers to substitute the commodity whose price has fallen** for other commodities which have now become relatively expensive.
- The result is that the total **demand for the commodity whose price has fallen increases**. This is called substitution effect.

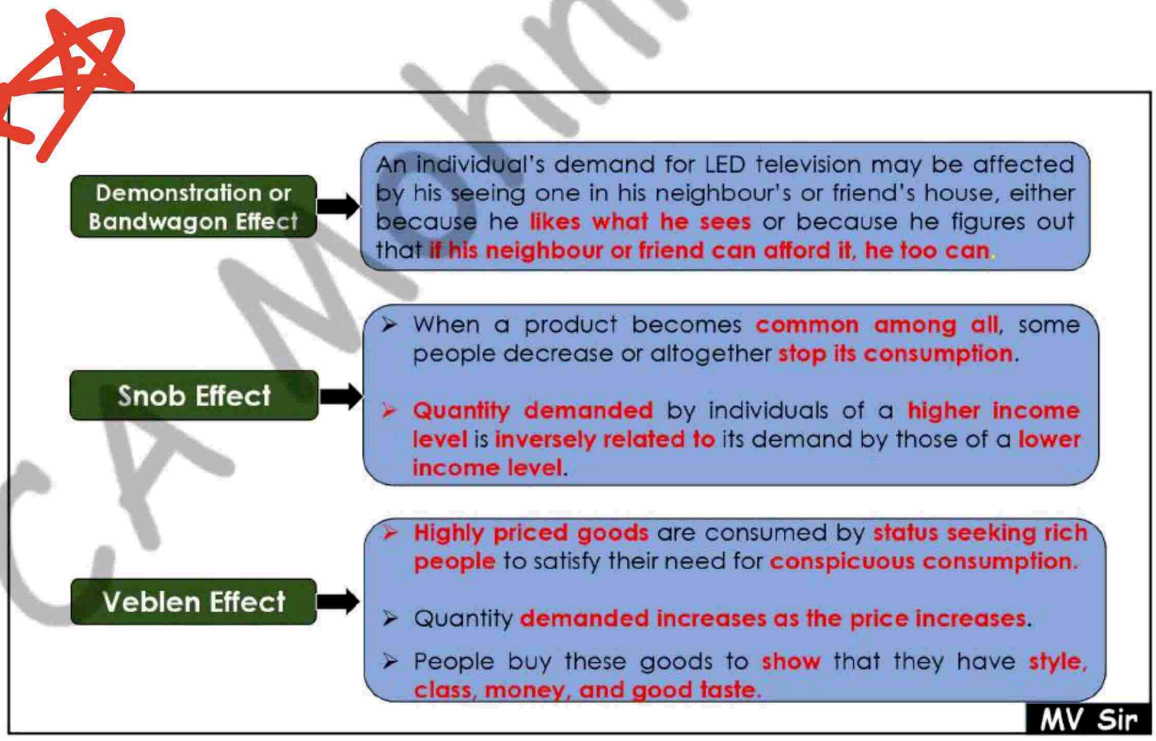
MV Sir

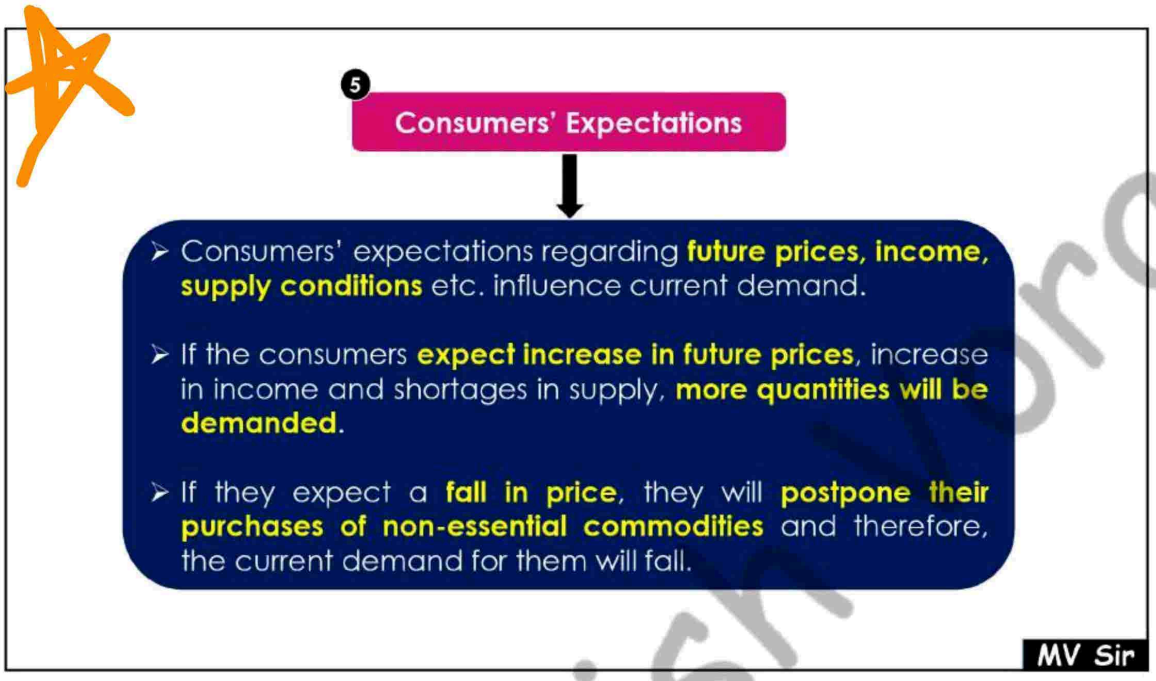


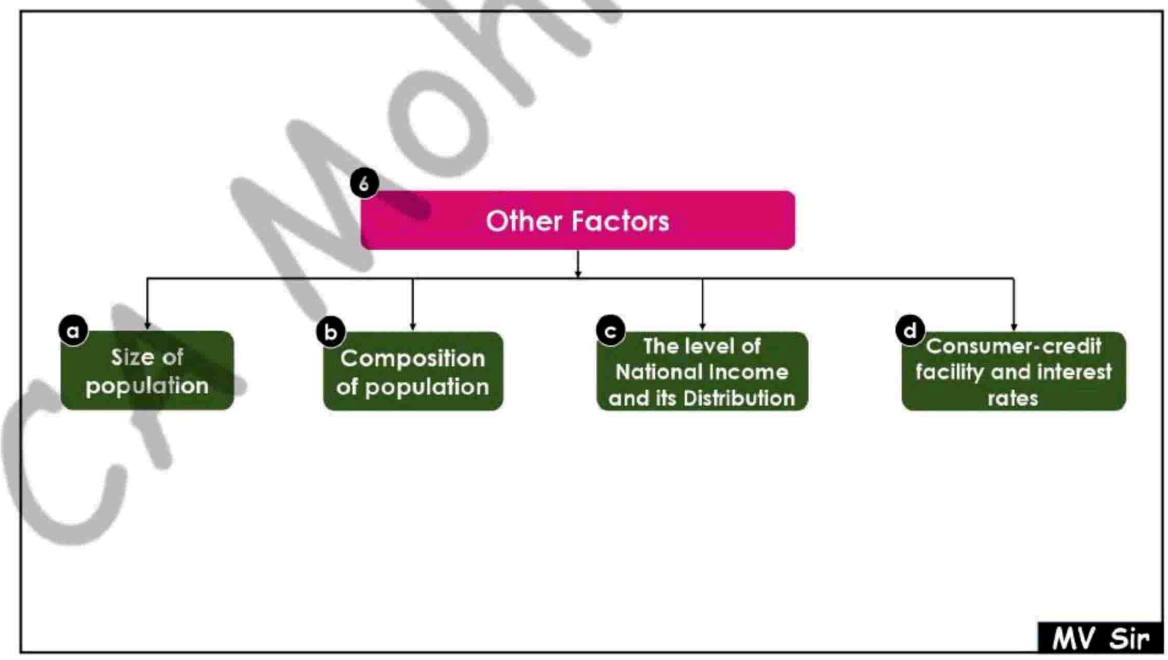












a **Size of population** → Generally, **larger the size of population** of a country or a region, **greater is the demand** for commodities in general.

MV Sir

b **Composition of population** →

- If there are **more old people** in a region, the demand for **spectacles**, **walking sticks**, etc. will be **high**.
- Similarly, if the population consists of more of **children**, demand for **toys**, **baby foods**, **toffees**, etc. will be more.

MV Sir

c

The level of National Income and its Distribution

- It is the total amount of **income accruing to a country from economic activities** in a year's time.
- **Higher the national income, higher** will be the **demand** for all normal goods and services.

MV Sir

Propensity to Consume

The **proportion of total income** or of an increase in income that consumers **tend to spend** on goods and services **rather than to save**.

	Poor People	Rich People
Monthly Income	Rs 2,000	Rs 2,00,000
Spending per month	Rs 1,800	Rs 60,000
Propensity to Consume	1800 / 2000 = 90%	60000 / 200000 = 30%
	High	**Low**

MV Sir

c The level of National Income and its Distribution

If wealth is- **Unevenly Distributed**

- It means **few very rich people** while the majority are very poor.
- Under such conditions, the **propensity to consume** of the country will be **relatively less**, because the propensity to consume of the rich people is less than that of the poor people.
- Consequently, the **demand for consumer goods will be comparatively less.**

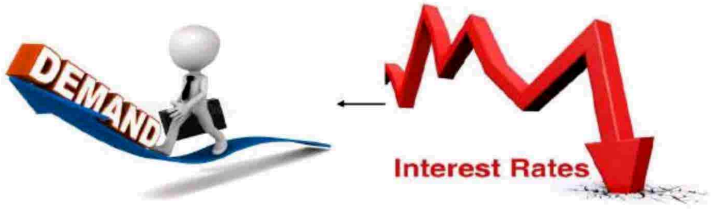
If wealth is- **Evenly Distributed**

- Then the **propensity to consume** of the country as a whole will be **relatively high** indicating **higher demand** for goods.

MV Sir

d Consumer-credit facility and interest rates

- Availability of **credit facilities induces people to purchase more** than what their current incomes permit them.
- Credit facilities mostly determine the **demand for durable goods** which are **expensive and require bulk payments** at the time of purchase.
- **Low rates** of interest **encourage people to borrow** and therefore demand will be more.



MV Sir

Demand Function

- As we know, a **function** is a symbolic statement of a **relationship** between the **dependent** and the **independent** variables.
- The **demand function** states the **relationship** between the **demand** for a product (the dependent variable) and its **determinants** (the independent or explanatory variables). A demand function may be expressed as follows:

Dx = f (Px, M, Py, Pc, T, A)

Where,
Dx = quantity demanded of product X;
M = money income of the consumer;
PC = price of its complementary goods;
A = advertisement expenditure.
Px = price of the commodity;
Py = price of its substitutes;
T = consumer tastes, and preferences;

MV Sir

LAW OF DEMAND

- "Other things being equal, **if the price of a commodity falls**, the **quantity demanded of it will rise** and if the price of a commodity rises, its quantity demanded will decline."
- **Prof. Alfred Marshall** defined the Law as-
"The **greater the amount to be sold**, the **smaller must be the price** at which it is offered in order that it may find purchasers or in other words the **amount demanded increases with a fall in price** and diminishes with a rise in price"

MV Sir

DEMAND SCHEDULE

- A **demand schedule** is a **table** which presents the **different prices of a good** and the **corresponding quantity demanded** per unit of time.
- It is drawn upon the **assumption** that all the **other influences remain unchanged**

Demand Schedule of an individual consumer

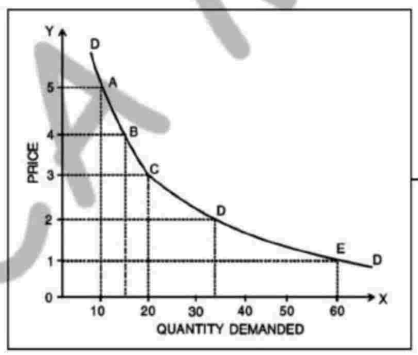
	Price (in Rs.)	Qty Demanded (in units)
A	5	10
B	4	15
C	3	20
D	2	35
E	1	60

- When the price of commodity X is Rs 5 per unit, the consumer purchases 10 units of the commodity.
- When the price falls to Rs 4, he purchases 15 units of the commodity.
- Similarly, when the price further falls, the quantity demanded by him goes on rising until at price Rs 1, the quantity demanded by him rises to 60 units.

- The above table depicts an **inverse relationship** between price and quantity demanded; as the price of the commodity X goes on rising, its demand goes on falling.

DEMAND CURVE

- A **demand curve** is a **graphical presentation of the demand schedule**. It is obtained by plotting **Price on Y-axis** & **Quantity Demanded on X-axis.**
- In the graph below, we have plotted the five points corresponding to each price-quantity combination as per above demand schedule.



- The smooth curve through the points (A,B,C,D & E) is called the **demand curve for commodity 'X'.**
- It has a **negative slope.** The curve shows the quantity of 'X' that a consumer would like to buy at each price; its downward slope indicates that the quantity of 'X' demanded increases as its price falls.
- Briefly put, more of a good will be purchased at lower prices. Thus the **downward sloping demand curve is in accordance with the law of demand** which, as stated above, describes an **inverse price-demand relationship.**

MV Sir

MARKET DEMAND SCHEDULE

- **Market demand** is defined as the **sum of individual demands** for a product at a price per unit of time.
- In other words, it is the **total quantity** that **all consumers** of a commodity are **willing to buy per unit of time** at a given price, all **other things** remaining **constant**.
- When we add up the various quantities demanded by different consumers in the market, we can obtain the market demand schedule, as given below.

Market Demand Schedule

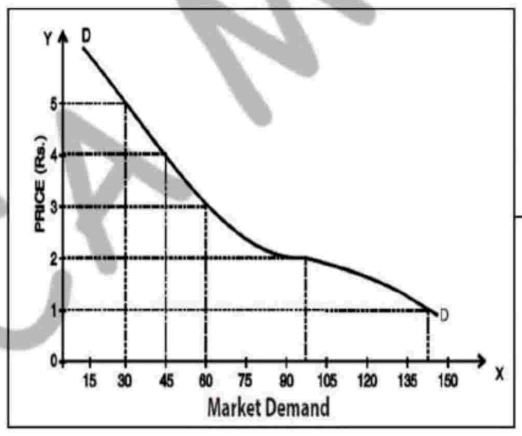
	Price (in Rs.)	Qty Demanded by consumers (in units)			Total Market Demand
		P	Q	R	
A	5	10	8	12	30
B	4	15	12	18	45
C	3	20	17	23	60
D	2	35	25	40	100
E	1	60	35	45	140

- When we **add the quantities demanded at each price by consumers** P, Q and R, we get the total market demand. Thus, when price is Rs 5 per unit, the market demand for commodity 'X' is 30 units (i.e. 10+8+12).
- When price falls to Rs 4, the market demand is 45 units. At Rs 1, 140 units are demanded in the market.
- The market demand schedule **also indicates inverse relationship between price and quantity demanded** of 'X'.

MV Sir

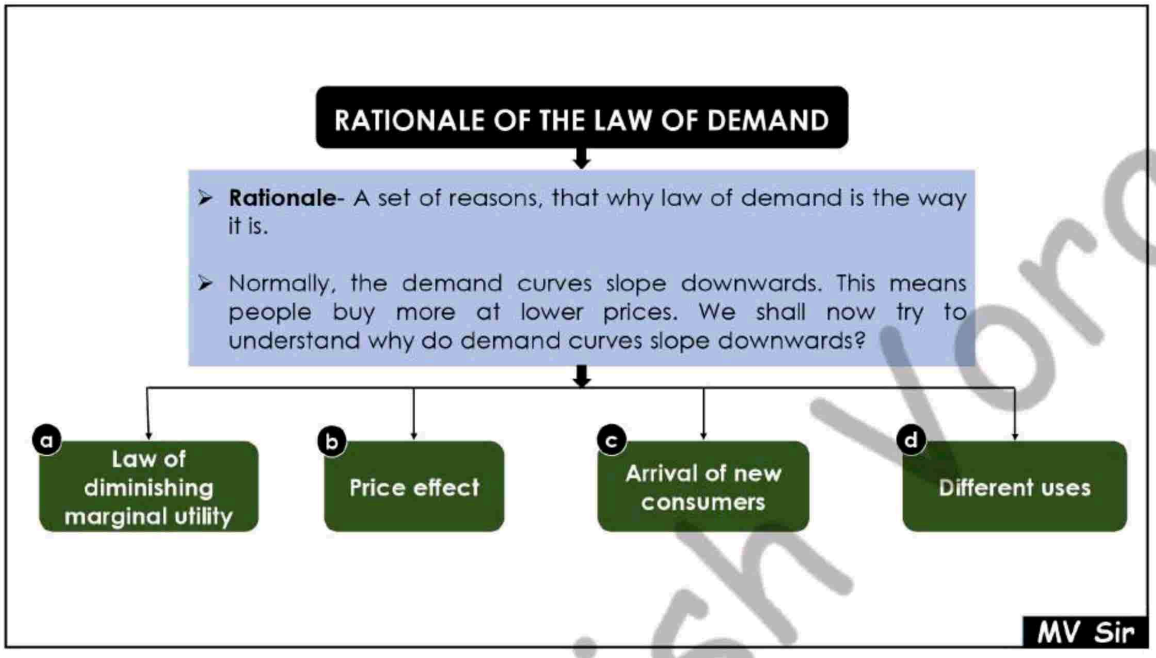
MARKET DEMAND CURVE

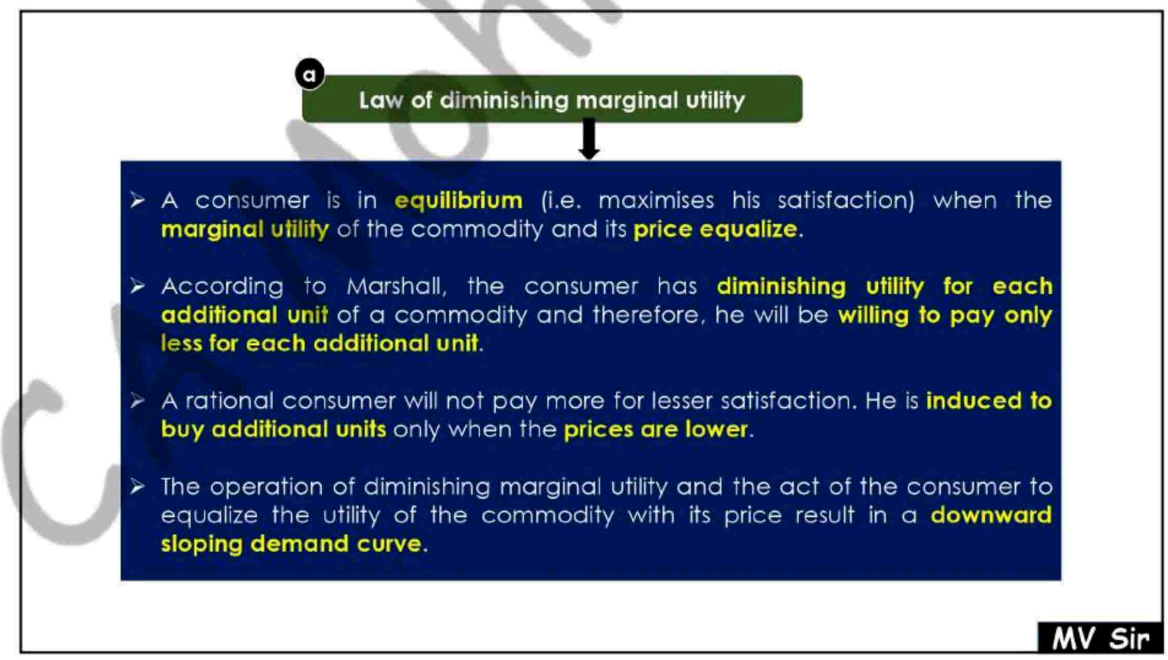
- A **market demand curve** is a **graphical presentation of the market demand schedule**. It is obtained by plotting Price on Y-axis & Total Market Demanded on X-axis.



- The market demand curve, like the individual demand curve, **slopes downwards to the right** because it is nothing but the lateral summation of individual demand curves.
- Besides, **as the price of the good falls**, it is very likely that **new buyers will enter the market** which will further raise the quantity demanded of the good.

MV Sir





b Price effect

- The **total fall in quantity** demanded **due to an increase in price** is termed as **Price effect**. The law of demand can be dubbed as **"Negative Price Effect"** with some exceptions. The price effect manifests itself in the form of income effect and substitution effect. **Hicks and Allen** have explained the law in terms of substitution effect and income effect

a. **Substitution effect**:
When the **price** of a commodity **falls**, it **becomes relatively cheaper** than other commodities. **Assuming** that the **prices of all other commodities remain constant**, it **induces** consumers to **substitute** the commodity **whose price has fallen** for other commodities which have now become relatively expensive. The result is that the **total demand** for the commodity **whose price has fallen increases**. This is called substitution effect.

a. **Income effect**:
When the **price** of a commodity **falls**, the consumer can **buy the same quantity** of the commodity **with lesser money** or he can **buy more** of the same commodity **with the same amount** of money.
In other words, as a result of fall in the price of the commodity, **consumer's real income or purchasing power increases**. This increase in the real income **induces** him to **buy more** of that commodity. Thus, the demand for that commodity (whose price has fallen) increases. This is called income effect.

MV Sir

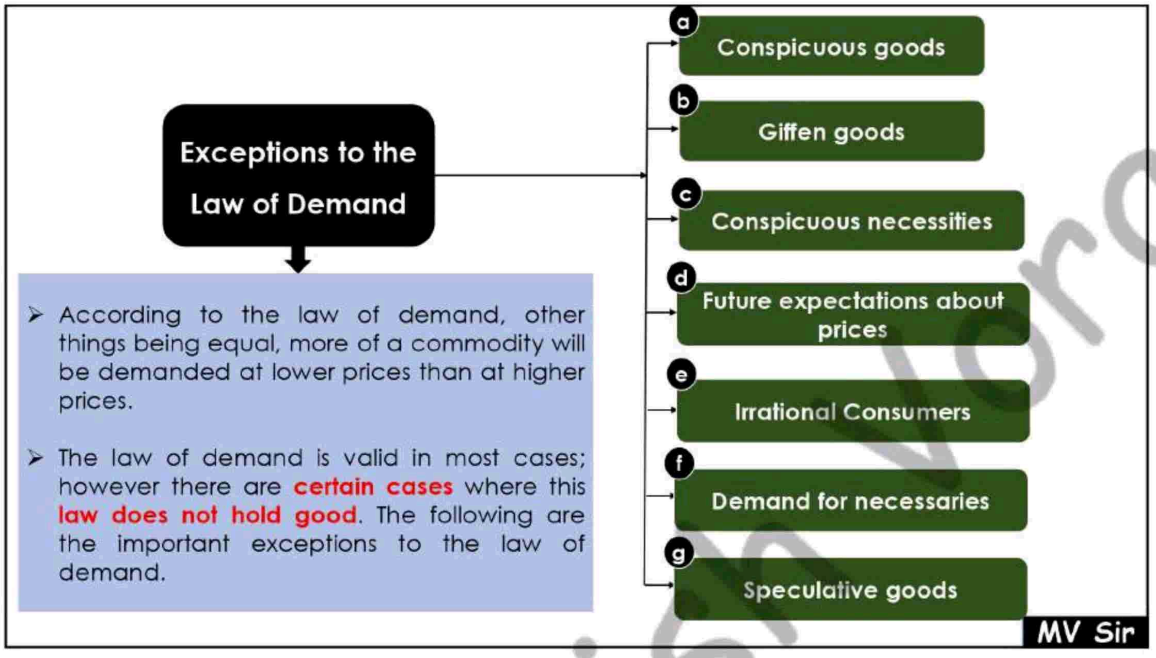
c Arrival of new consumers

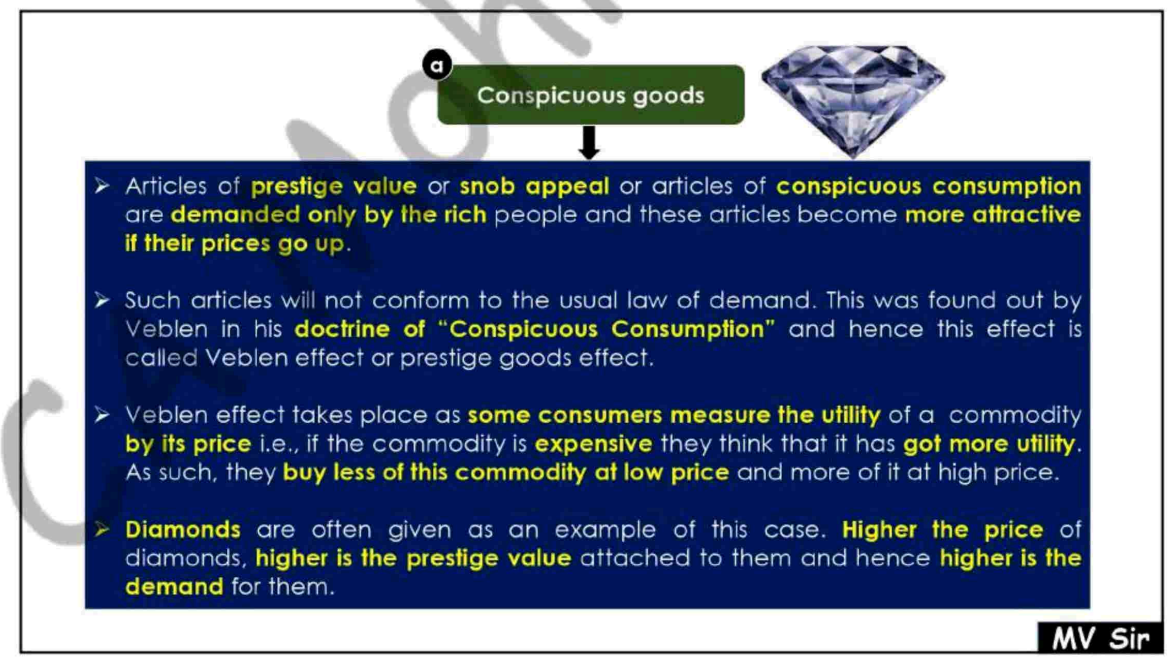
- When the **price** of a commodity **falls**, **more consumers start buying** it because some of those who could not afford to buy it earlier may now be able to buy it. This raises the number of consumers of a commodity at a lower price and hence the demand for the commodity in question.

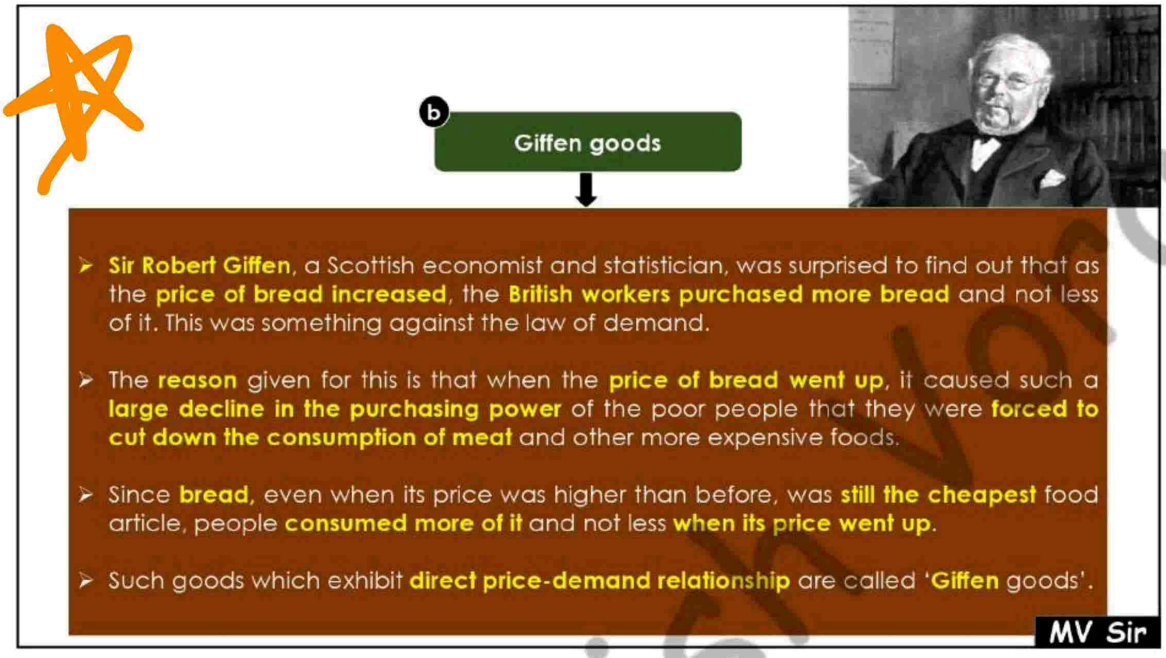
d Different uses

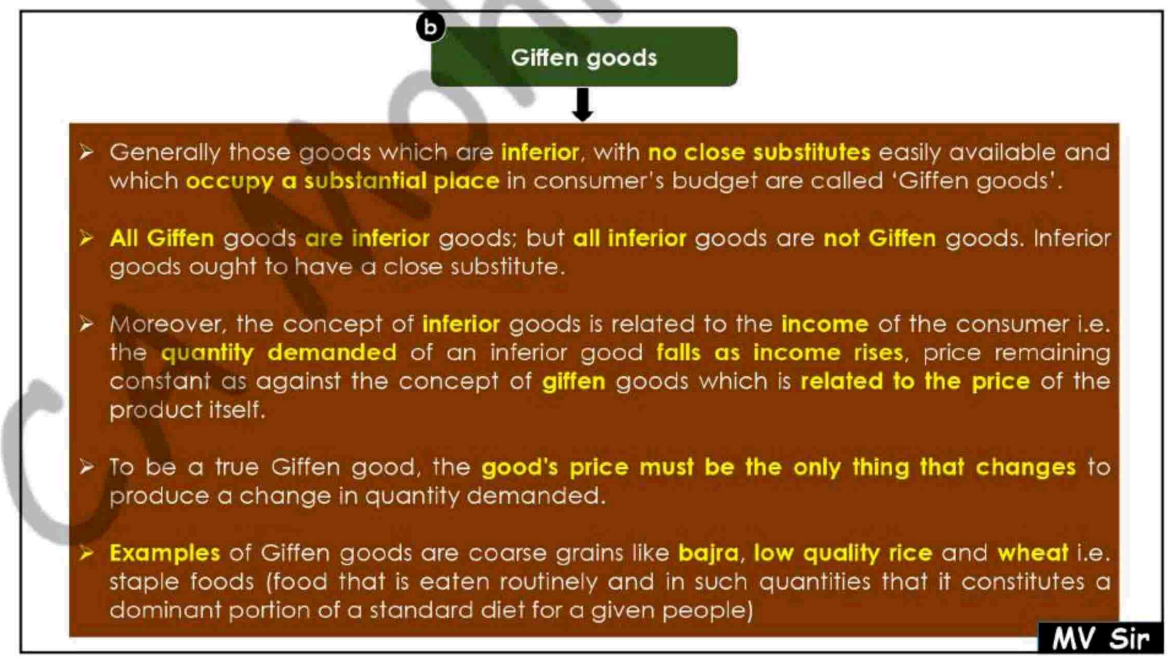
- Certain commodities have **multiple uses**. If their **prices fall**, they will be **used for varied purposes** and therefore their **demand** for such commodities will **increase**.
- When the price of such commodities **are high** (or rises) they will be **put to limited uses only**. Thus, different uses of a commodity make the demand curve slope downwards reacting to changes in price.
- For example **Olive oil** can be used for **cooking** as well as for **cosmetic purposes**. So if the price of olive oil rises we can limit our usage and thus the demand will fall.

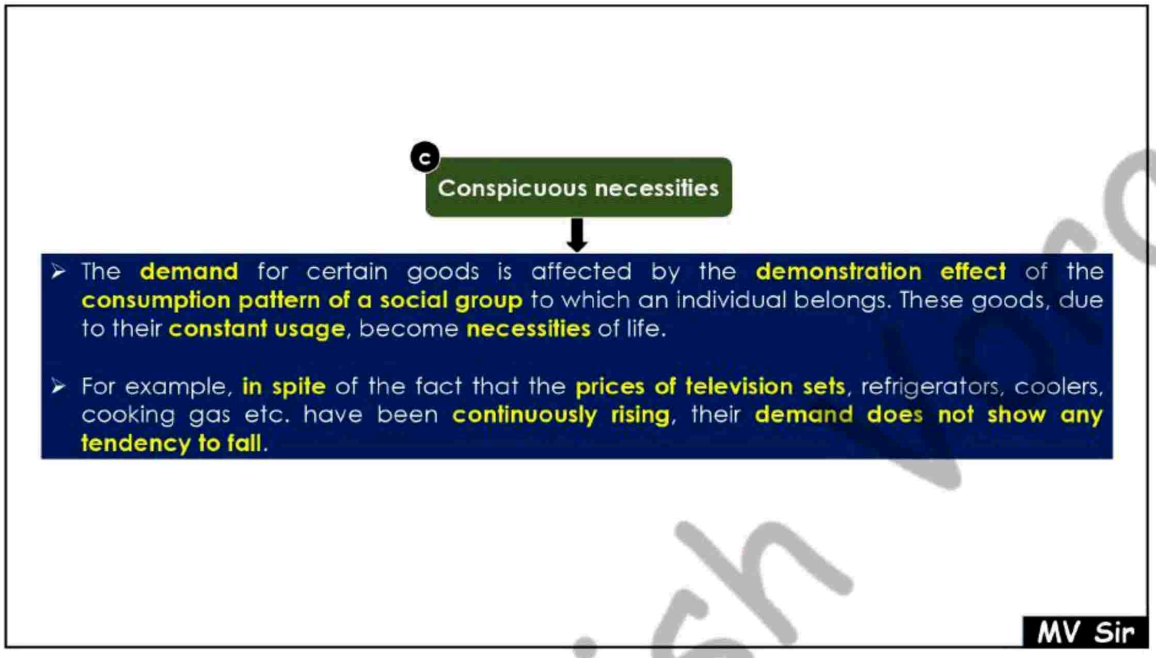
MV Sir

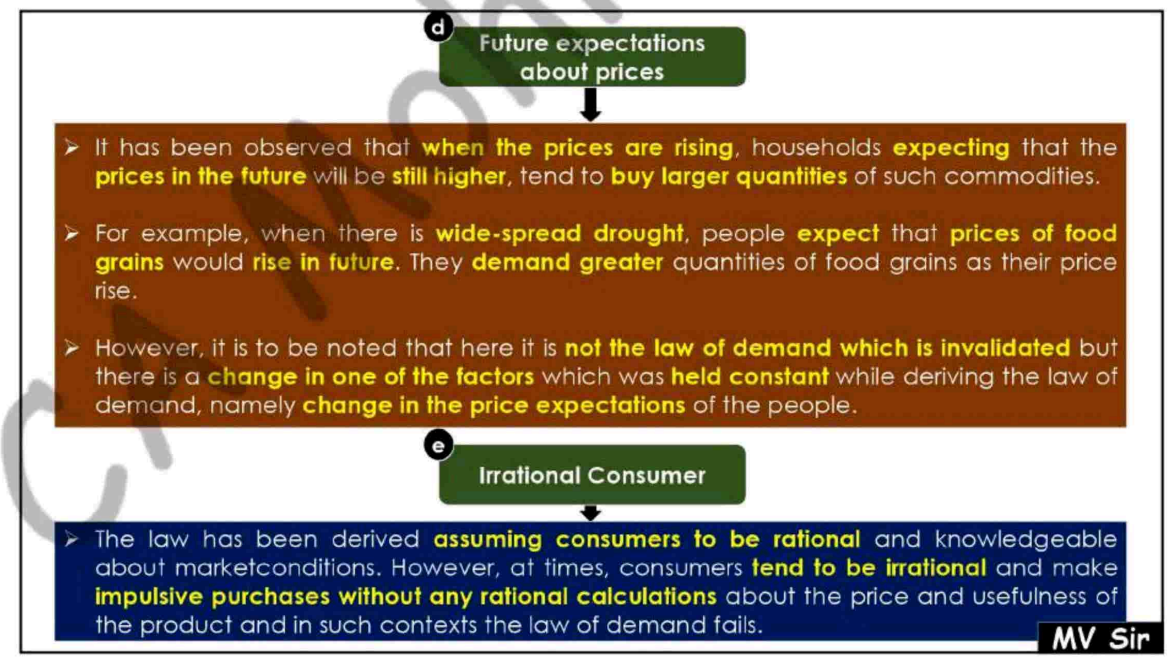












f **Demand for necessaries**

- The law of demand does not apply much in the case of necessaries of life. **Irrespective of price changes**, people have to consume the minimum quantities of necessary commodities.
- Similarly, in practice, a **household may demand larger quantity** of a commodity **even at a higher price** because it may be **ignorant of the ruling price** of the commodity. Under such circumstances, the **law will not remain valid.** For example **Food, power, water, gas.**

g **Speculative goods**

- In the speculative market, particularly in the market for **stocks and shares, more** will be **demanded** when the **prices are rising** and less will be demanded when prices decline.

MV Sir

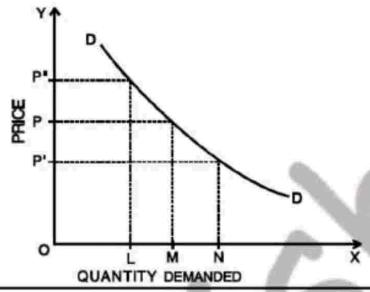
EXPANSION & CONTRACTION OF DEMAND

- The demand schedule, demand curve and the law of demand all show that when the **price** of a commodity **falls**, its **quantity demanded increases, other things being equal.**
- When, as a result of **decrease in price**, the **quantity demanded increases**, in Economics, we say that there is an **expansion of demand** and
- When, as a result of **increase in price**, the **quantity demanded decreases**, we say that there is **contraction of demand**.
- For **example**, suppose the price of **apples** at any time is **Rs 100 per kilogram** and a consumer buys **1 kg** at that price. Now, if **other things** such as income, prices of other goods and tastes of the consumers **remain the same** but the **price of apples falls to Rs 80 per kg** and the **consumer now buys two kg** of apples, we say that there is a **change in quantity demanded** or there is an **expansion of demand**.
- On the contrary, if the price of apples rises to **Rs 150 per kg** and the consumer then buys **only half kg**, we say that there is a **contraction of demand**.

MV Sir

EXPANSION & CONTRACTION OF DEMAND

- The phenomena of expansion and contraction of demand are shown in below Figure.
- The figure shows that when **price is OP**, the **quantity demanded is OM**, given **other things equal**. If, as a result of **increase in price (OP")**, the **quantity demanded falls to OL**, we say that there is '**a fall in quantity demanded**' or '**contraction of demand**' or 'an **upward movement along the same demand curve**'.
- Similarly, as a result of fall in price to OP', the quantity demanded rises to ON, we say that there is '**expansion of demand**' or 'a **rise in quantity demanded**' or 'a **downward movement on the same demand curve.**'



MV Sir

INCREASE & DECREASE IN DEMAND

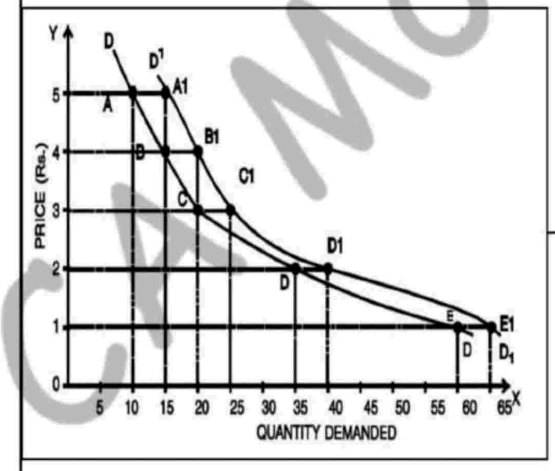
- **Expansion and Contraction** of demand take place as a **result of changes in the price** while all **other determinants** of price viz. income, tastes, propensity to consume and price of related goods **remain constant**.
- The **other factors remaining constant**' means that **the position of the demand curve remains the same** and the consumer moves downwards or upwards on it.
- However **if there is a change in factors other than price** (like consumers' tastes and preferences, income, the prices of the related goods or other factors) on which demand depends.
- The demand for commodity X in the following table shows the **possible effect of an increase in income of the consumer on the quantity demanded** of commodity X.

MV Sir

INCREASE & DECREASE IN DEMAND

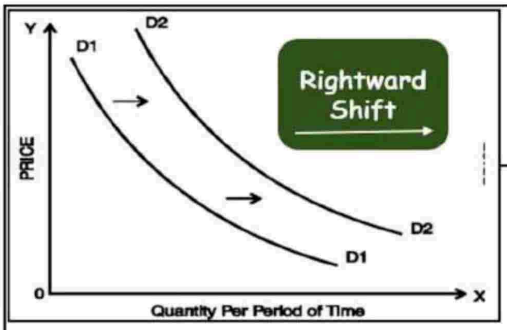
	Price (in Rs.)	Quantity of 'X' demanded when average household income is Rs 20,000 per month	Quantity of 'X' demanded when average household income is Rs 25,000 per month	
A	5	10	15	A1
B	4	15	20	B1
C	3	20	25	C1
D	2	35	40	D1
E	1	60	65	E1

MV Sir

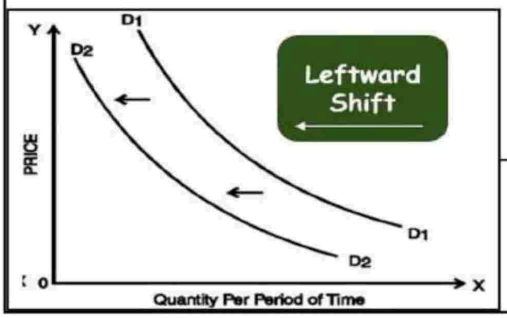


- The above data is plotted in the graph as demand curve D'D' along with the original demand curve DD.
- We say that the **demand curve for X has shifted** [in this case it has **shifted to the right**]. The shift from DD to D'D' indicates an increase in the desire to purchase 'X' at each possible price.
- For example, at the price of Rs 4 per unit, 15 units are demanded when average household income is ` 20,000 per month. When the average household income rises to Rs 25,000 per month, 20 units of X are demanded at price ` 4.
- A **rise in income** thus **shifts the demand curve to the right**, whereas a **fall in income** will have the opposite effect of shifting the demand curve to the **left**.

MV Sir



- A **RIGHTWARD shift in the demand curve** (when **MORE is demanded** at each price) can be **caused by**
  - a rise in income,
  - a rise in the price of a substitute,
  - a fall in the price of a complement,
  - a change in tastes in favour of this commodity,
  - an increase in population, and
  - a redistribution of income to groups who favour this commodity.



- A **LEFTWARD shift in the demand curve** (when **LESS is demanded** at each price) can be **caused by**
  - a fall in income,
  - a fall in the price of a substitute,
  - a rise in the price of a complement,
  - a change in tastes in favour of this commodity,
  - an decrease in population, and
  - a redistribution of income away from groups who favour this commodity.

MV Sir

Movements along the demand curve VS. Shift of demand curve

S. No.	Movement along the demand curve	Shift of demand curve
1.	It indicates **changes in the quantity demanded** because of **price changes**, other factors remaining constant	It indicates that there is a change in demand at each possible price **because one or more other factors have changed**, such as incomes, tastes or the price of some other goods.
2.	When economists refer to- "**Change in quantity demanded**", they mean movement along the same curve (i.e., expansion or contraction of demand).	When economists refer to- "**Increase or a Decrease in demand**", they refer to a shift of the whole curve.

- When **demand increases due to factors other than price**, firms can **sell more at the existing prices** resulting in increased revenue.
- The **objective of advertisement** and all other sales promotion activities by any firm is to **shift the demand curve to the right** and to **reduce the elasticity** of demand. However, the **additional demand is not free of cost** as firms have to incur expenditure on advertisement and sales promotion devices.

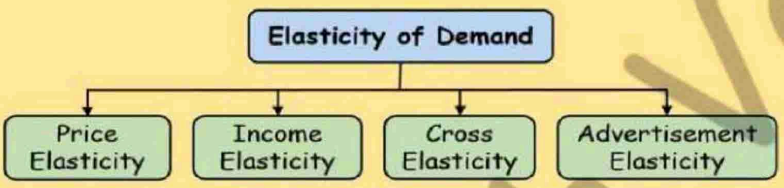
MV Sir

All concepts of elasticity are VERY VERY important.

***

Elasticity of Demand

- Elasticity of demand is defined as the **responsiveness of the quantity demanded** of a good **to changes in one of the variables** on which demand depends.
- More precisely, elasticity of demand is the **percentage change in quantity demanded divided by** the **percentage change in one of the variables** on which demand depends.
- **"BY HOW MUCH DOES DEMAND CHANGE DUE TO A CHANGE IN PRICE?"**



- **Note**: When we talk of "elasticity of demand", unless and until otherwise mentioned, we talk of **price elasticity** of demand.

MV Sir

a Price Elasticity

- Price elasticity of demand expresses the **response of quantity demanded** of a good **to a change in its price**, given the consumer's income, his tastes and prices of all other goods. (i.e. **other things remaining equal**)

$$\text{Price Elasticity} = Ep = \frac{\text{\% Change in Quantity Demanded}}{\text{\% Change in Price}}$$

OR

$$Ep = \frac{\frac{\text{Change in Quantity}}{\text{Original Quantity}} \times 100}{\frac{\text{Change in Price}}{\text{Original Price}} \times 100}$$

OR

$$Ep = \frac{\text{Change in Quantity}}{\text{Original Quantity}} \times \frac{\text{Change in Price}}{\text{Original Price}}$$

$$Ep = \frac{\triangle q}{q} \times \frac{p}{\triangle p} = \frac{\triangle q}{\triangle p} \times \frac{p}{q}$$

Where, Ep = Price Elasticity
q = Quantity
p = Price
$\triangle$ = a very small change

Note:
- Since price and quantity are inversely related, value of price elasticity varies from **minus infinity to approach zero.**
- Price elasticity is negative, but for the sake of convenience, we ignore the negative sign and **consider only the numerical value of the elasticity.**

MV Sir

Solving Practice

Question
The price of a commodity decreases from Rs 8 to Rs 4 and quantity demanded of the good increases from 20 units to 30 units. Find the coefficient of price elasticity.

MV Sir

POINT ELASTICITY

- In point elasticity, we measure elasticity **at a given point** on a demand curve. The concept of point elasticity is used for measuring price elasticity **where the change in price is infinitesimal (very small).**
- Point elasticity makes **use of derivative rather than finite changes** in price and quantity.
- Point elasticity is, therefore, the **product of price quantity ratio at a particular point on the demand curve** and the **reciprocal of the slope of the demand line.**

$$Ep = \frac{-dq}{dp} \times \frac{p}{q}$$

Where, $\frac{-dq}{dp}$ = Derivative of quantity with respect to price at a point on the demand curve.

q = Quantity at that point

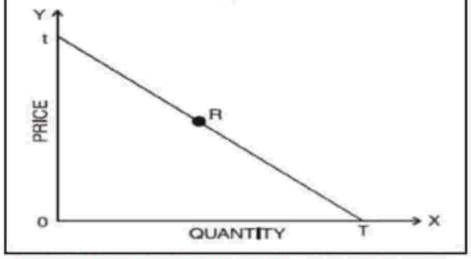
p = Price at that point

MV Sir

GEOMETRIC METHOD OF CALCULATING POINT ELASTICITY

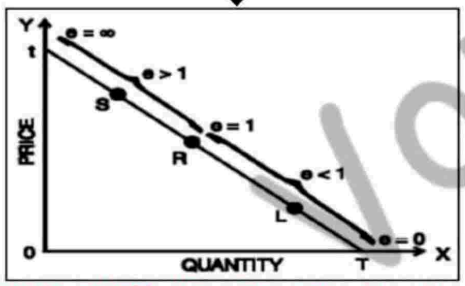
- It is to be noted that elasticity is different at different points on the same demand curve. Given a straight line demand curve "tT", point elasticity at any point say R can be found by using the formula-

$$\frac{RT}{Rt} = \frac{\text{Lower Segment}}{\text{Upper Segment}}$$



Elasticity at a point on the demand curve

Using this formula we can get elasticity at various points on the demand curve



Elasticity at different points on the demand curve

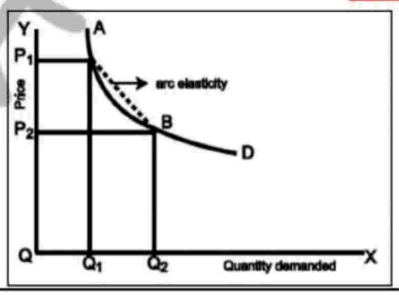
Thus, we see that as we move from T towards t, elasticity goes on increasing. At the mid-point it is equal to one, at point t it is infinity and at T it is zero.

MV Sir

ARC ELASTICITY

- When the price change is somewhat larger or when price elasticity is to be found between two prices [or two points on the demand curve say, A and B in figure given below], the question arises which price and quantity should be taken as base.
- This is because elasticities found by using original price and quantity figures as base will be different from the one derived by using new price and quantity figures.
- Therefore, in order to avoid confusion, generally mid-point method is used i.e. the averages of the two prices and quantities are taken as (i.e. original and new) base. The arc elasticity can be found out by using the formula:

Arc Elasticity



$$Ep = \frac{q_1 - q_2}{q_1 + q_2} \times \frac{p_1 + p_2}{p_1 - p_2}$$

Where, Ep = Arc Elasticity

P_1, q_1 = Original Price & Quantity

P_2, q_2 = New Price & Quantity

MV Sir

Question: Consider the following situations:

1) As a result of a fall in the price of radio from Rs 500 to Rs 400, the quantity demanded increases from 100 radios to 150 radios.

2) As a result of fall in the price of wheat from Rs 20 per kilogram to Rs 18 per kilogram, the quantity demanded increases from 500 kilograms to 520 kilograms.

3) As a result of fall in the price of salt from Rs 9 per kilogram to Rs 7.50, the quantity demanded increases from 1000 kilogram to 1005 kilograms.

S. No.	Name of the Commodity	Calculation of Elasticity $\left[\frac{q_1 - q_2}{q_1 + q_2}\right] \times \left[\frac{p_1 + p_2}{p_1 - p_2}\right]$	Nature of Elasticity
1.	Radios	$\left[\frac{100 - 150}{100 + 150}\right] \times \left[\frac{500 + 400}{500 - 400}\right] = 1.80 > 1$	Elastic
2.	Wheat	$\left[\frac{500 - 520}{500 + 520}\right] \times \left[\frac{20 + 18}{20 - 18}\right] = 0.37 < 1$	Inelastic
3.	Common Salt	$\left[\frac{1000 - 1005}{1000 + 1005}\right] \times \left[\frac{9 + 7.50}{9 - 7.50}\right] = 0.02743 < 1$	Inelastic

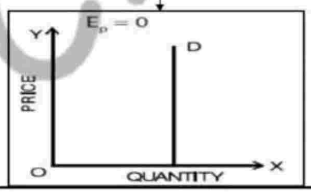
MV Sir

INTERPRETATION OF THE NUMERICAL VALUES OF ELASTICITY OF DEMAND

The numerical value of elasticity of demand can assume any value **between zero and infinity.**

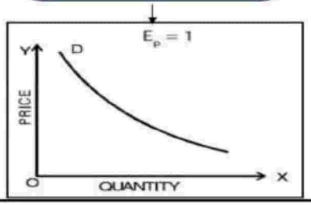
1. Elasticity of Demand = 0

If there is no change at all in the quantity demanded when price changes i.e. when the **quantity demanded does not respond at all to a price change.**



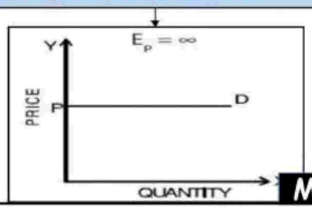
2. Elasticity of Demand = 1

Elasticity is one, or unitary, if the **percentage change in quantity demanded is equal to the percentage change in price.**



3. Elasticity of Demand = ∞

- Elasticity is infinite, when a '**small price reduction raises the demand from zero to infinity.**
- If there is a slight increase in price, they would not buy anything from the particular seller.
- This type of demand curve is found in a **perfectly competitive market.**



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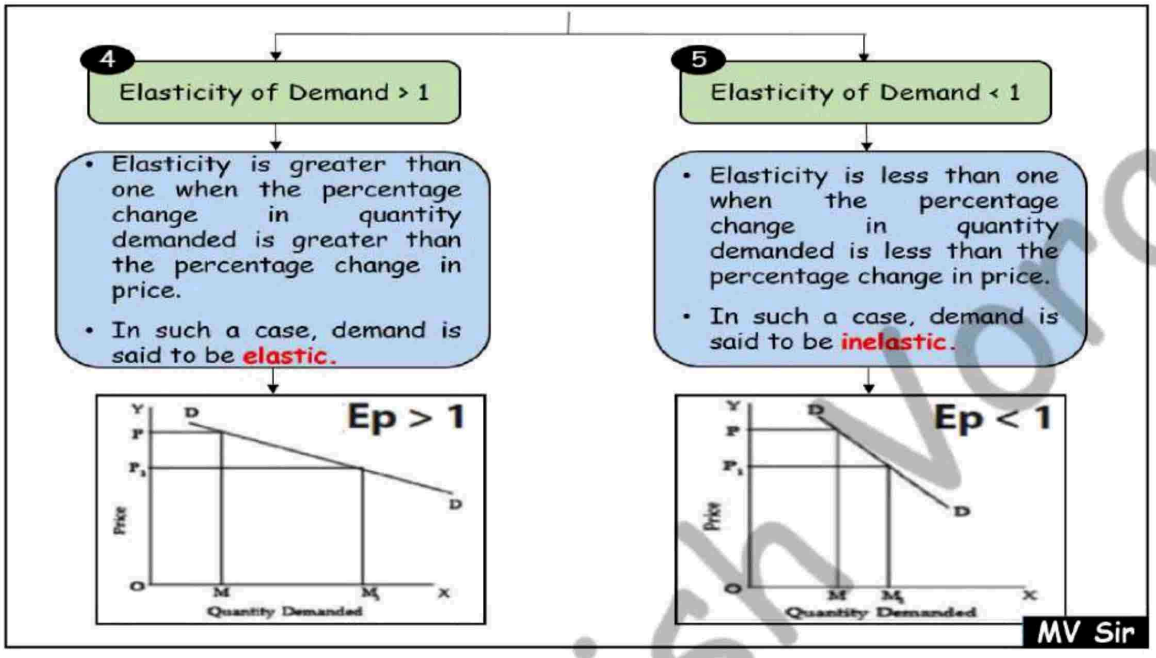
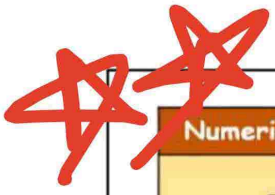




Numerical Value of Elasticity		Verbal Description	Terminology
Zero	0	Quantity demanded does not change as price changes	Perfectly (or completely) inelastic
Greater than zero, but less than one	$0 < \_ < 1$	Quantity demanded changes by a smaller percentage than does price	Inelastic
One	1	Quantity demanded changes by exactly the same percentage as does price	Unit elasticity
Greater than one, but less than infinity	$1 < \_ < \infty$	Quantity demanded changes by a larger percentage than does price	Elastic
Infinity	∞	Purchasers are prepared to buy all they can obtain at some price and none at all at an even slightly higher price	Perfectly (or infinitely) elastic

MV Sir

TOTAL OUTLAY METHOD OF CALCULATING PRICE ELASTICITY

- As the **total expenditure** (Price x Quantity Purchased) made on a commodity is the **total revenue received by the seller** (Price x Quantity Sold), we can say that the price elasticity and total revenue received are **closely related** to each other.
- By analysing the **changes in total expenditure** (or revenue), we can know the price elasticity of demand for the good. However, it should be noted that by this method we can **only say whether the demand for a good is elastic or inelastic**; we **cannot** find out the **exact coefficient** of price elasticity.

The Relationship between Price elasticity and Total Revenue (TR)

Change in Price	Demand		
	Unitary Elastic	Elastic	Inelastic
Price Increase	TR remains same	TR Decreases	TR Increases
Price Decrease	TR remains same	TR Increases	TR Decreases

MV Sir

Total Outlay method of calculating price elasticity

Price Elasticity = 1

- When, as a **result of the change in price** of a good, the **total expenditure** on the good or **total revenue** received from that good **remains the same**, the price elasticity for the good is equal to **unity**.
- Thus, if there is a 100% increase in price of a good and if the price elasticity is unitary, total expenditure of the buyer on the good or the total revenue received from it will remain unchanged.

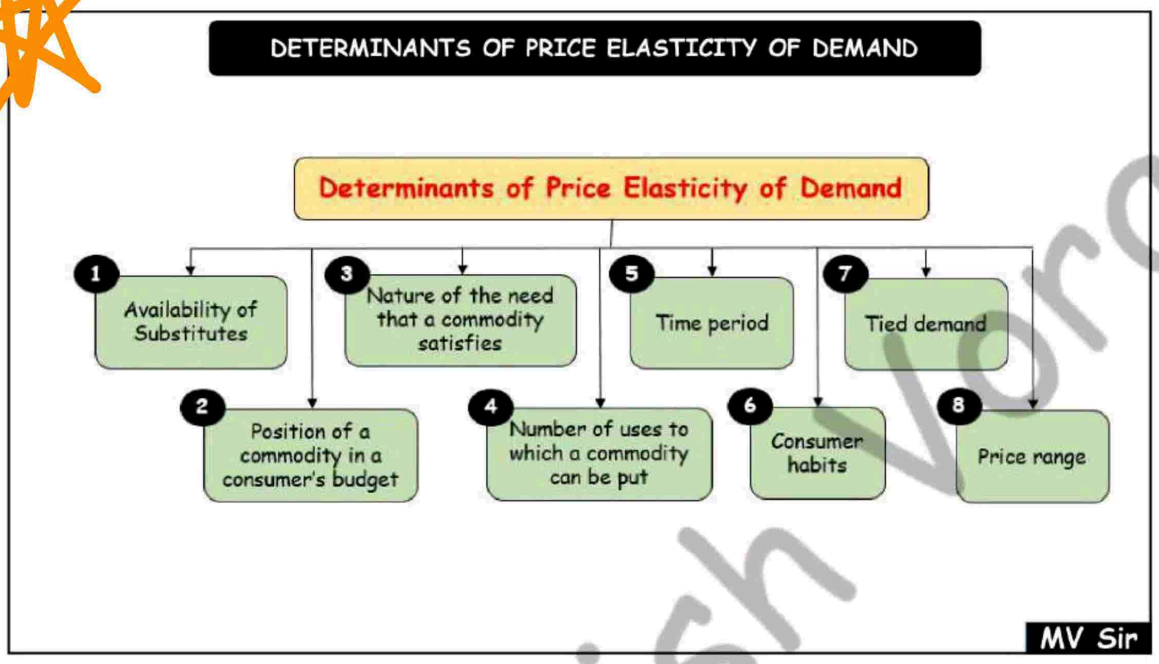
Price Elasticity > 1

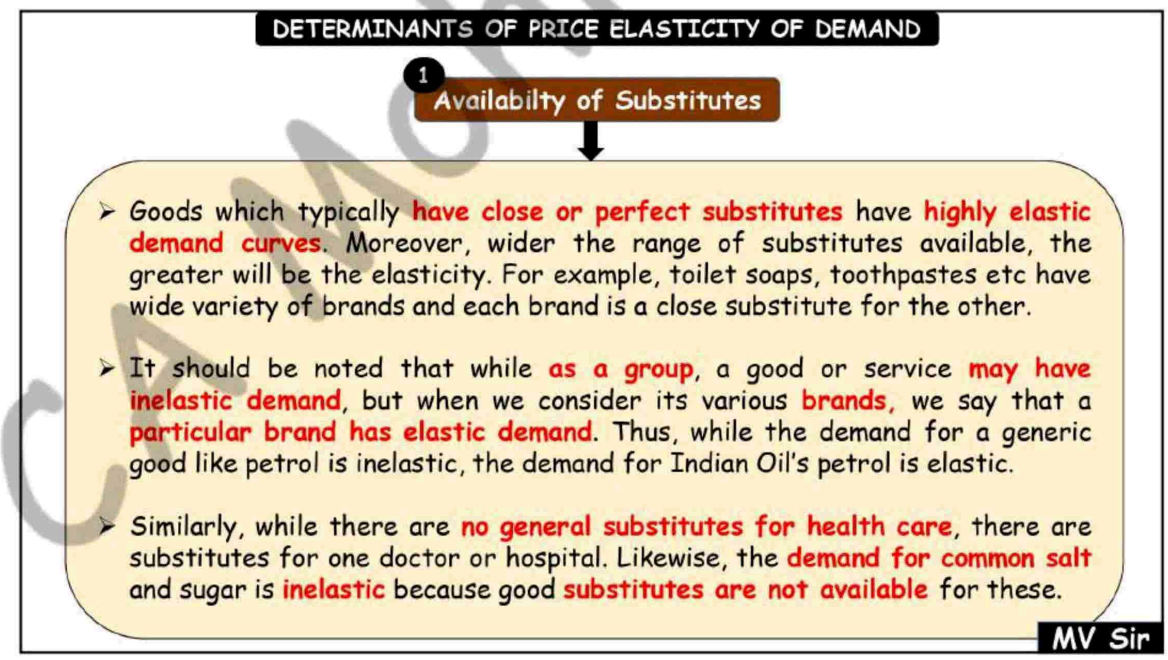
- When, as a result of **increase in the price** of a good, the **total expenditure** made on the good or the **total revenue** received from that good **falls** or when as a result of decrease in price, the total expenditure made on the good or total revenue received from that good increases, we say that price elasticity of demand is **greater than unity**.

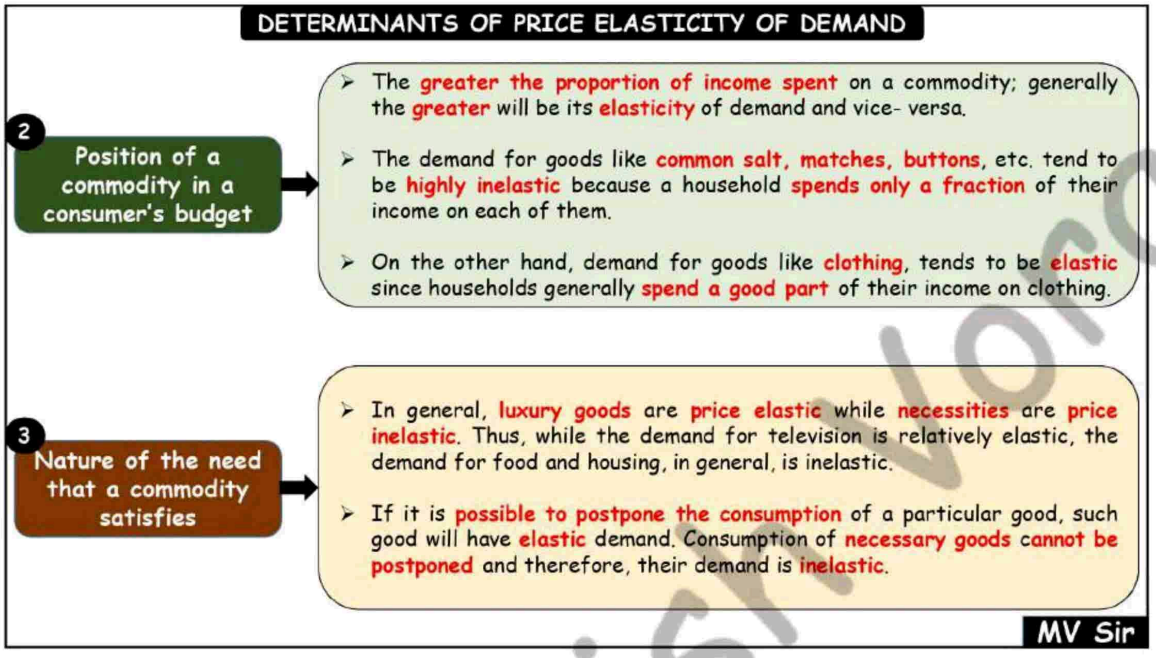
Price Elasticity < 1

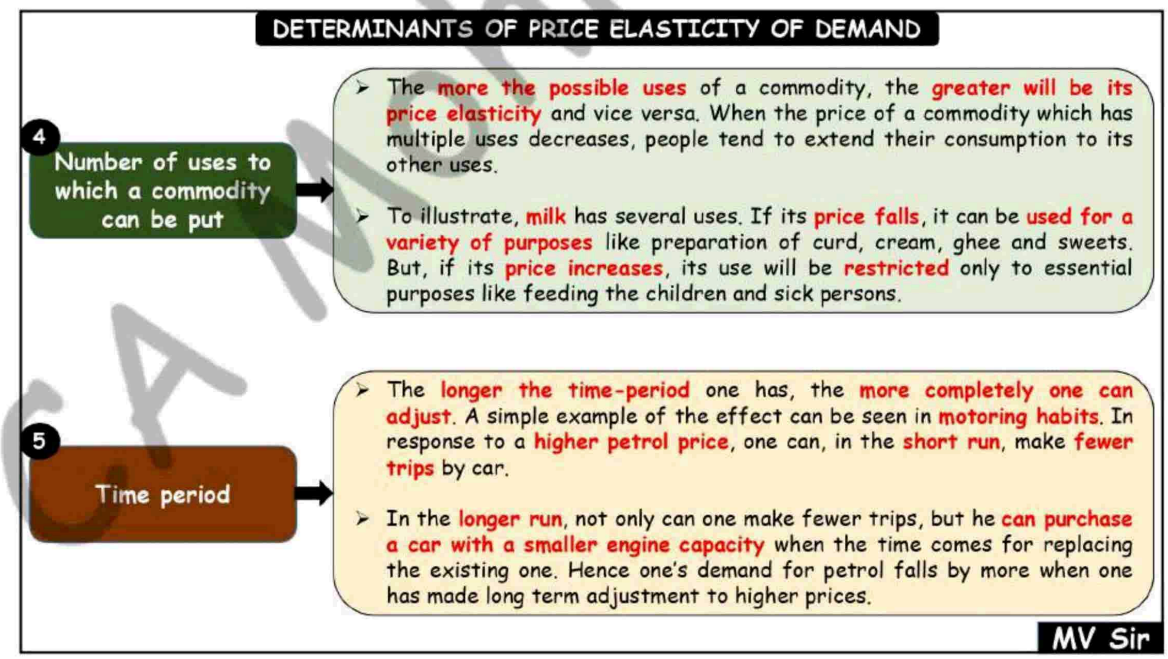
- When, as a result of **increase in the price** of a good, the **total expenditure** made on the good or **total revenue** received from that good increases or when as a result of decrease in its price, the total expenditure made on the good or total revenue received from that good falls, we say that price elasticity of demand is **less than unity**.

MV Sir









DETERMINANTS OF PRICE ELASTICITY OF DEMAND

6 Consumer habits

- If a consumer is a **habitual** consumer of a commodity, no matter how much its price change, the demand for the commodity will be **inelastic**.

7 Tied demand

- The **demand** for those goods which are **tied to others** is normally **inelastic as against** those whose demand is of **autonomous** nature. For example printers and ink cartridges.

8 Price Change

- Goods which are in **very high price range** or in **very low price range** have **inelastic** demand, but those in the **middle range** have **elastic** demand.

MV Sir

b INCOME ELASTICITY OF DEMAND

- Income elasticity of demand is the degree of responsiveness of quantity demanded of a good to changes in the income of consumers. In symbolic form,

$$\text{Income Elasticity} = Ei = \frac{\text{\% Change in Quantity Demanded}}{\text{\% Change in Income}}$$

OR

$$Ei = \frac{\dfrac{\text{Change in Quantity}}{\text{Original Quantity}} \times 100}{\dfrac{\text{Change in Income}}{\text{Original Income}} \times 100}$$

OR

$$Ei = \frac{\text{Change in Quantity}}{\text{Original Quantity}} \times \frac{\text{Change in Income}}{\text{Original Income}}$$

$$Ei = \frac{\triangle q}{q} \times \frac{y}{\triangle y} = \frac{\triangle q}{\triangle y} \times \frac{y}{q}$$

Where, Ei = Income Elasticity
q = Original Quantity
y = Original Income
$\triangle$ = a very small change

MV Sir

INCOME ELASTICITY OF DEMAND

- There is a useful **relationship** between **income elasticity** for a good and the **proportion of income spent** on it. The relationship between the two is described in the following three propositions:

  1. If the proportion of income spent on a good **remains the same** as income increases, then income elasticity for the good is **equal to one**.
  2. If the proportion of income spent on a good **increase as income increases**, then the income elasticity for the good is **greater than one**.
  3. If the proportion of income spent on a good **decrease as income rises**, then income elasticity for the good is **less than one**.

MV Sir

Income Elasticity

Income Elasticity = 0	• It signifies that the **demand** for the good is quite **unresponsive** to changes in income
Income Elasticity > 0 or positive	• An increase in income leads to an increase in demand for the good. This happens in the case of most of the goods and such goods are called **normal goods**. • For all normal goods, income elasticity is positive. However, the **degree of elasticity varies according to the nature** of commodities
Income Elasticity < 0 or negative	• Goods having negative income elasticity are known as **inferior goods** and their demand falls as income increases. The reason is that **when income increases**, consumers choose to **consume superior substitutes**.
Income Elasticity = 1	• When income elasticity of demand is equal to one, the proportion of income spent on goods remains the same as consumer's income increases. This represents a useful **dividing line**.
Income Elasticity > 1	• It shows that the good **bulks larger in consumer's expenditure as he becomes richer**. Such goods are called **luxury goods**.
Income Elasticity < 1	• The good is either **relatively less important** in the consumer's eye **or**, it is a **necessity**.

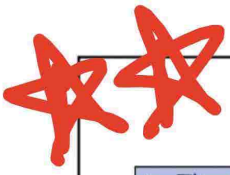
MV Sir

Solving Practice

The following examples will make the above concepts clear:
(a) The income of a household rises by 10%, the demand for wheat rises by 5%.
(b) The income of a household rises by 10%, the demand for T.V. rises by 20%.
(c) The incomes of a household rises by 5%, the demand for bajra falls by 2%.
(d) The income of a household rises by 7%, the demand for commodity X rises by 7%.
(e) The income of a household rises by 5%, the demand for buttons does not change at all.

S. No.	Name of the Commodity	Income-elasticity for the household	Remarks
1.	Wheat	$\frac{5\%}{10\%} = 0.50$ (Ei < 1)	Since 0 < .5 < 1, wheat is a normal good and fulfils a necessity.
2.	T.V.	$\frac{20\%}{10\%} = 2$ (Ei > 1)	Since 2 > 1, T.V. is a luxurious commodity.
3.	Bajra	$\frac{(-)\ 2\%}{5\%} = (-)\ 0.40$ (Ei < 1)	Since -.4 < 0, Bajra is an inferior commodity in the eyes of the household.
4.	X	$\frac{7\%}{7\%} = 1$ (Ei = 1)	Since income elasticity is 1, X has unitary income elasticity.
5.	Buttons	$\frac{0\%}{5\%} = 0$ (Ei = 0)	Buttons have zero income-elasticity.

MV Sir



c CROSS ELASTICITY OF DEMAND

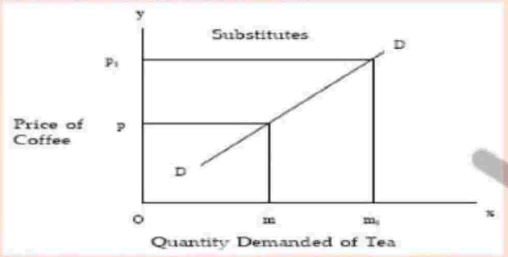
- The **demand** for a particular commodity may **change due to changes in the prices of related goods**. These related goods may be either **complementary** goods or **substitute** goods. This type of relationship is studied under '**Cross Demand**'.
- Cross demand refers to the **quantities** of a commodity or service which will be **purchased with reference to changes in price**, not of that particular commodity, but **of other inter-related commodities**, other things remaining the same.
- It may be defined as the quantities of a commodity that consumers buy per unit of time, at different prices of a 'related article', 'other things remaining the same'. The assumption '**other things remaining the same**' means that the income of the consumer and also the price of the commodity in question will remain constant.

Substitute Products **Complementary Products**

MV Sir

Substitute Products

- In the case of substitute commodities, the cross demand curve **slopes upwards** (i.e. positively) showing that more quantities of a commodity, will be demanded whenever there is a rise in the price of a substitute commodity.
- In below figure, the quantity demanded of **tea** is given on the **X axis**. **Y axis** represents the **price of coffee** which is a substitute for tea.

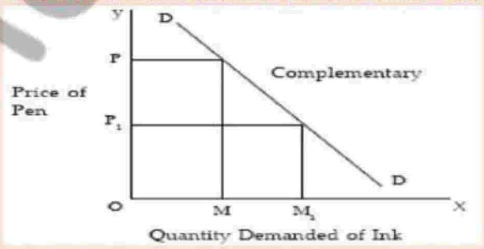


- When the **price of coffee increases**, due to the operation of the law of demand, the demand for coffee falls. The consumers will **substitute tea in the place of coffee**. The **price of tea is assumed to be constant**. Therefore, whenever there is an increase in the price of one commodity, the demand for the substitute commodity will increase.

MV Sir

Complimentary Products

- In the case of complementary goods, as shown in the figure below, a **change in the price of a good** will have an **opposite reaction** on the **demand for the other commodity** which is closely related or complementary.



- For instance, an **increase in demand for pen** will necessarily **increase the demand for ink**. The same is the case with complementary goods such as bread and butter; car and petrol electricity and electrical gadgets etc.
- Whenever there is a **fall in the demand for fountain pens** due to a rise in prices of fountain pens, the **demand for ink will fall**, not because the price of ink has gone up, but because the price of fountain pen has gone up. So, we find that there is an **inverse relationship** between price of a commodity and the demand for its complementary good (**other things remaining the same**).

MV Sir

CROSS ELASTICITY OF DEMAND

- A change in the demand for one good in response to a change in the price of another good represents cross elasticity of demand of the former good for the latter good. Here, we consider the effect of changes in relative prices within a market on the pattern of demand.

$$\text{Cross Elasticity} = Ec = \frac{\text{\% Change in Quantity Demanded of X}}{\text{\% Change in Price of Y}}$$

$$Ec = \frac{\triangle Qx}{Qx} \times \frac{Py}{\triangle Py} = \frac{\triangle Qx}{\triangle Py} \times \frac{Py}{Qx}$$

Where, Ec = Cross Elasticity
Qx = Original Quantity of Commodity X
Py = Original Price of Commodity Y
$\triangle$ = a very small change

MV Sir

Cross Elasticity (Ec)

Ec = Infinity (∞)	• If two goods are **perfect substitutes** for each other, the cross elasticity between them is **infinite**. Greater the cross elasticity, the closer is the substitute.
Ec = 0	• If two goods are totally **unrelated**, cross elasticity between them is **zero**
Ec will be positive	• If two goods are **substitutes** (like **tea and coffee**), the cross elasticity between them is **positive**, that is, in response to a rise in price of one good, the demand for the other good rises.
Ec will be negative	• When two goods are **complementary** (**tea and sugar**) to each other, the cross elasticity between them is **negative** so that a rise in the price of one leads to a fall in the quantity demanded of the other. Higher the negative cross elasticity, higher will be the extent of complementarity.

However, one **need not** base the **classification** of goods on the **basis of the above** definitions. While the goods between which cross elasticity is positive can be called substitutes, the goods between which **cross elasticity is negative** are **not always complementary**. This is because negative cross elasticity is also found when the **income effect of the price change is very strong**.

MV Sir

Solving Practice

Q 1: The price of 1kg of tea is Rs 30. At this price 5 kg of tea is demanded. If the price of coffee rises from Rs 25 to Rs 35 per kg, the quantity demanded of tea rises from 5 kg to 8 kg. Find out the cross price elasticity of tea.

Solution :-

$$\text{Cross elasticity} = \frac{\Delta q_x}{\Delta p_y} \times \frac{p_y}{q_x}$$ Here x = tea, y = coffee

$$= \frac{5-8}{-10} \times \frac{25}{5} = \frac{-3}{-10} \times \frac{25}{5} = +1.5$$

The elasticity of demand of tea is +1.5 showing that the demand of tea is highly elastic with respect to coffee. The positive sign shows that tea and coffee are substitute goods.

Q 2: The price of 1 kg of sugar is Rs 50. At this price 10 kg is demanded. If the price of tea falls from Rs 30 to Rs 25 per kg, the consumption of sugar rises from 10 kg to 12 kg. Find out the cross price elasticity and comment on its value.

Solution:-

$$\text{Cross elasticity} = \frac{\Delta q_x}{\Delta p_y} \times \frac{p_y}{q_x}$$ Here x = Sugar, y = Tea

$$= \frac{2}{-5} \times \frac{30}{10} = (-)1.2$$

Since the elasticity is -1.2 , we can say that sugar and tea are complementary in nature.

d ADVERTISEMENT ELASTICITY OF DEMAND

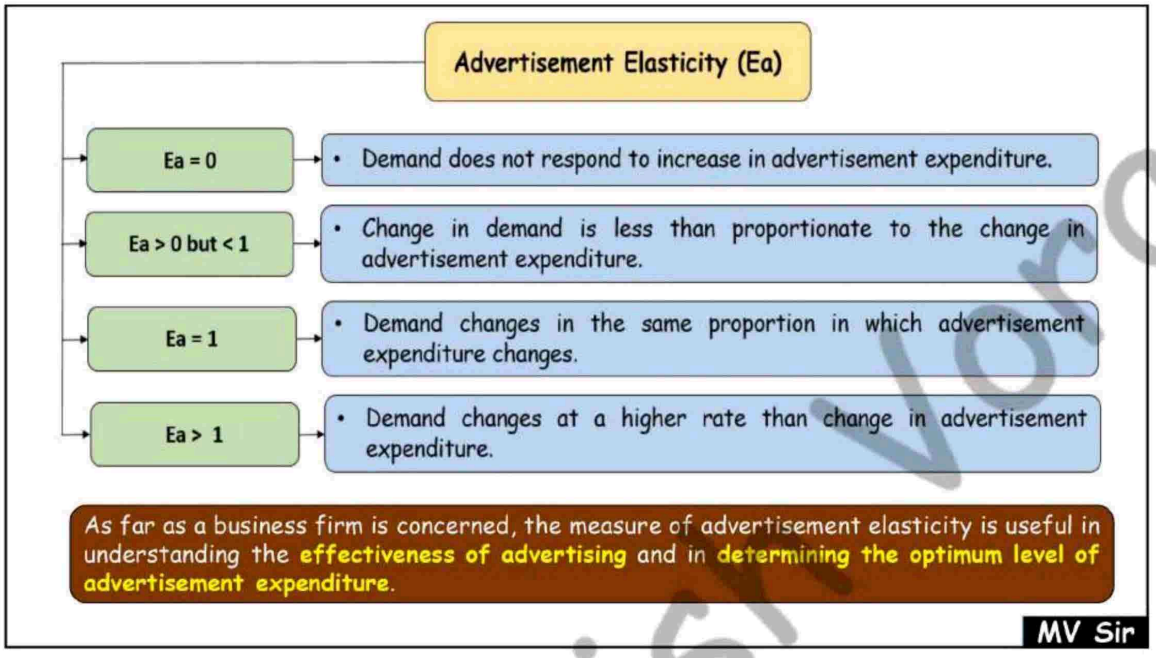
- Advertisement elasticity of sales or promotional elasticity of demand is the responsiveness of a good's demand to changes in firm's spending on advertising. The advertising elasticity of demand measures the percentage change in demand that occurs given a one percent change in advertising expenditure.
- Advertising elasticity measures the effectiveness of an advertisement campaign in bringing about new sales. Advertising elasticity of demand is typically positive. Higher the value of advertising elasticity greater will be the responsiveness of demand to change in advertisement. Advertisement elasticity varies between zero and infinity.

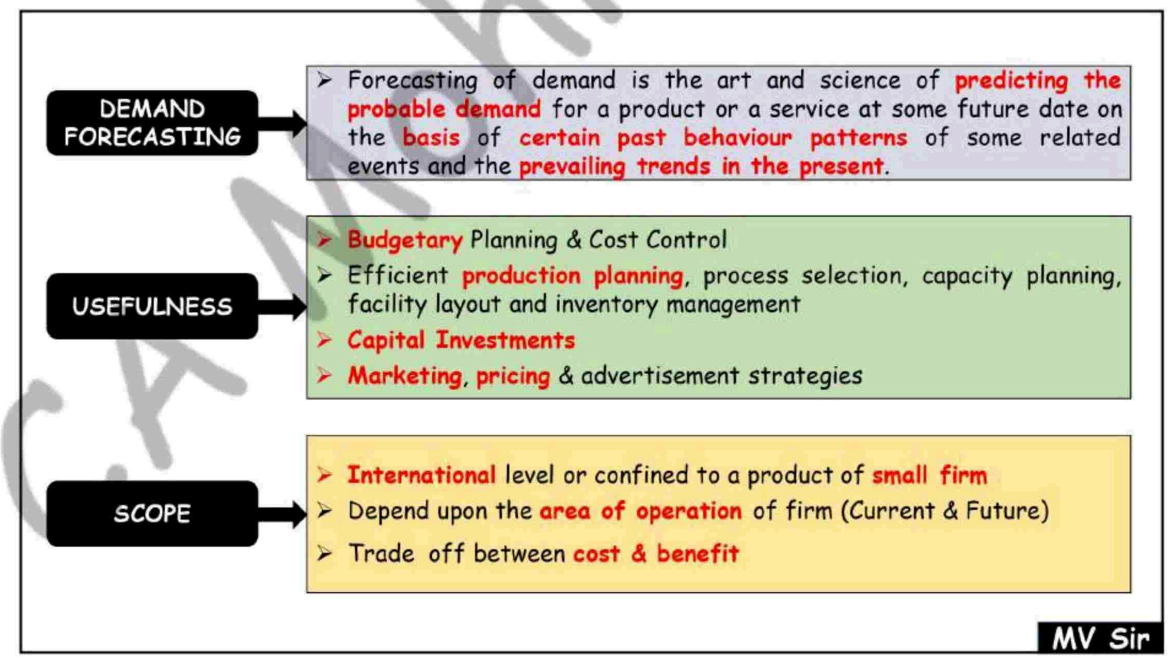
$$\text{Advertisement Elasticity} = Ea = \frac{\text{\% Change in Quantity Demanded}}{\text{\% Change in Spending on advertisement}}$$

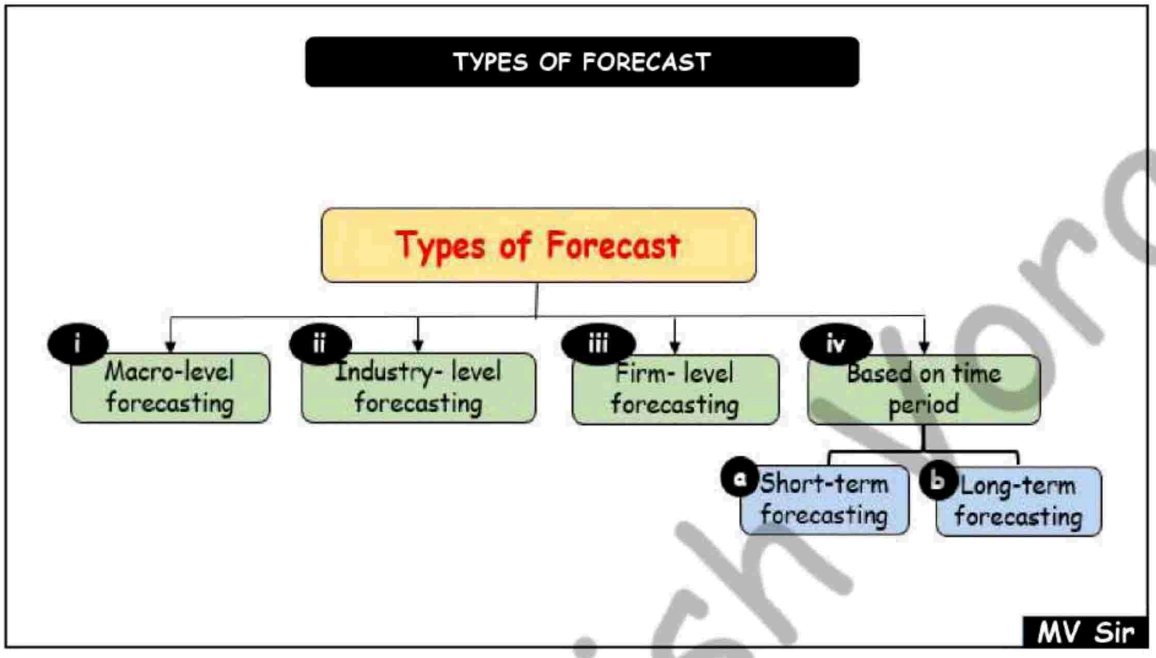
$$Ea = \frac{\triangle Q_d}{Q_d} \times \frac{A}{\triangle A} = \frac{\triangle Q_d}{\triangle A} \times \frac{A}{Q_d}$$

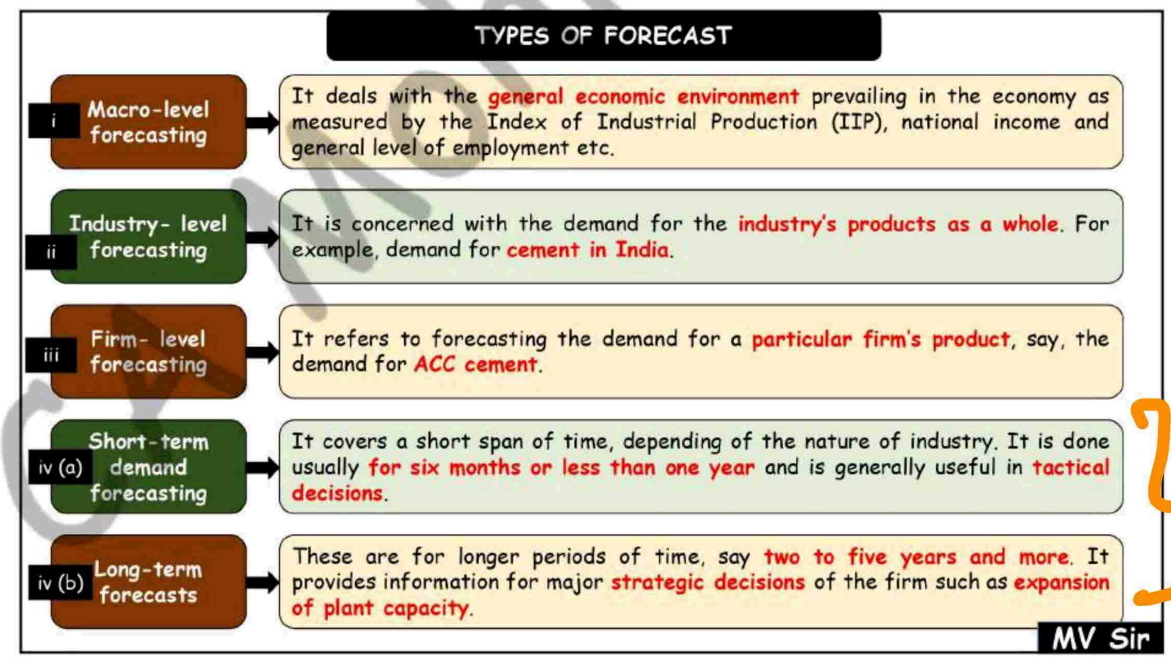
Where, Ea = Advertisement Elasticity
Q_d = Initial Quantity Demanded
A = Initial expenditure on advertisement.
$\triangle$ = a very small change

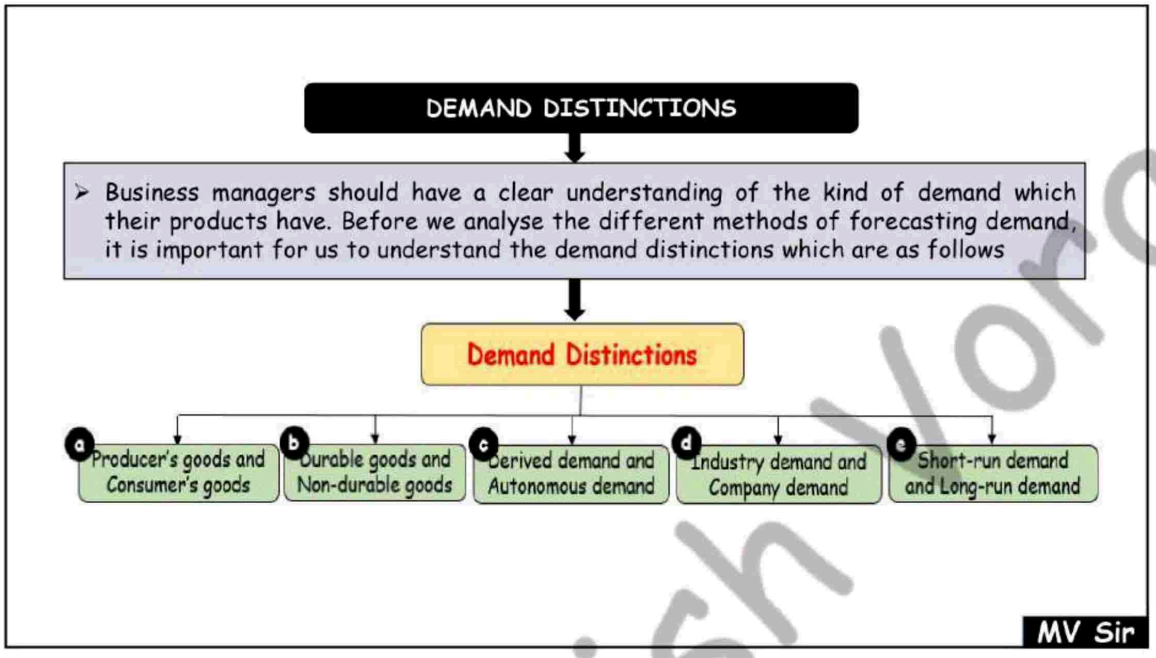
MV Sir

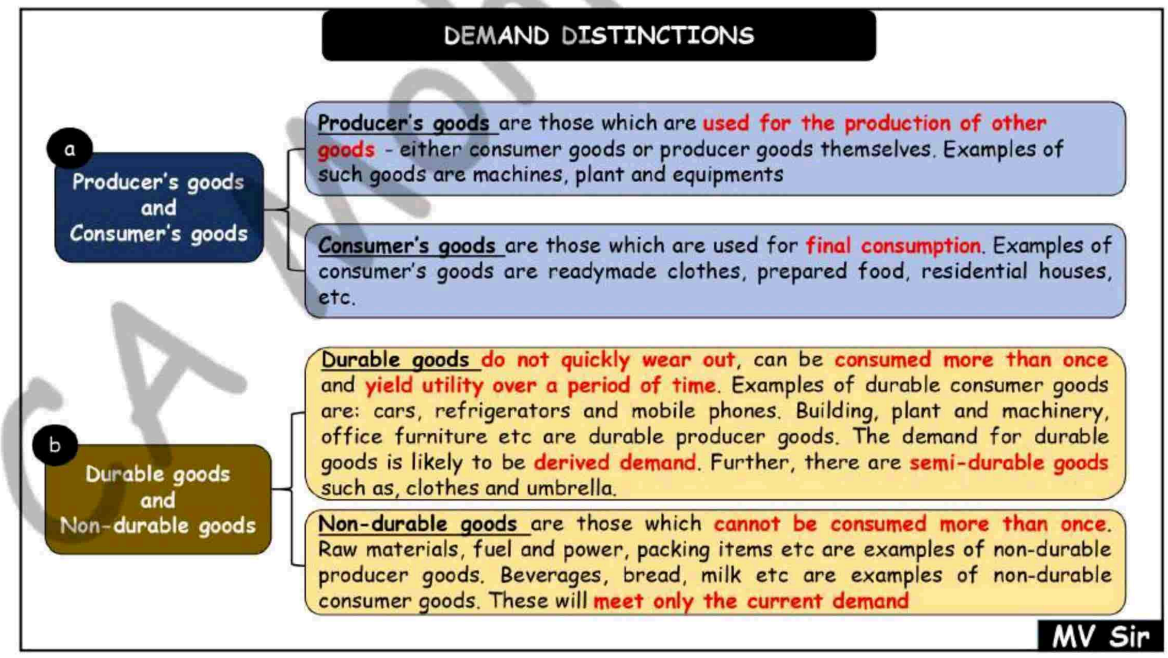


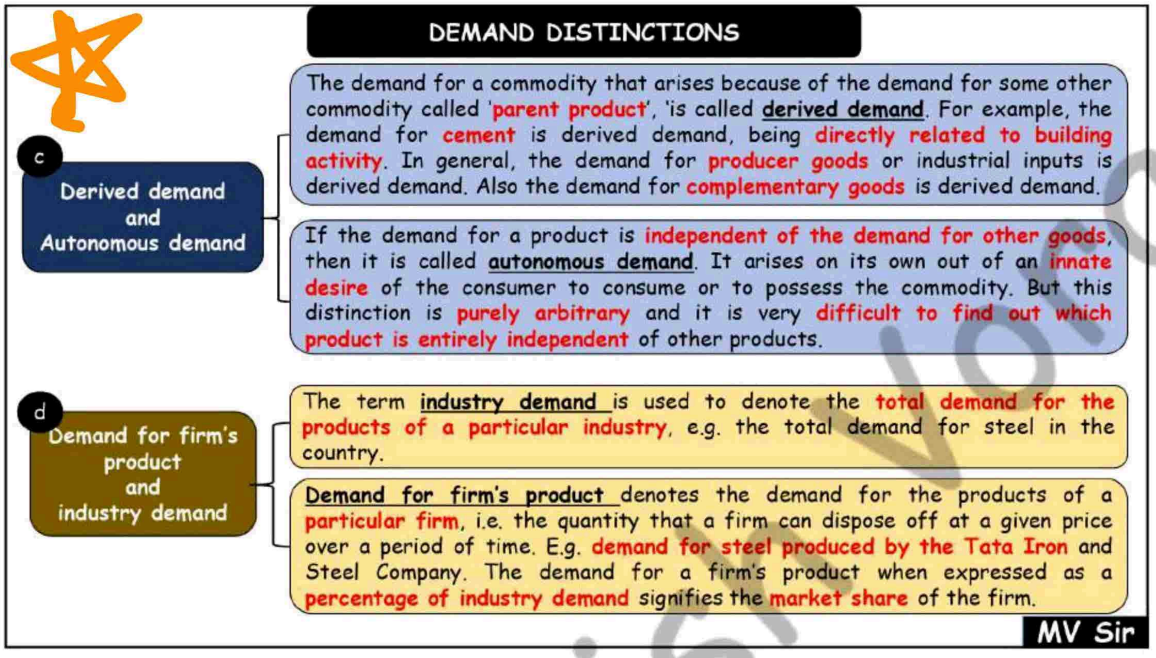


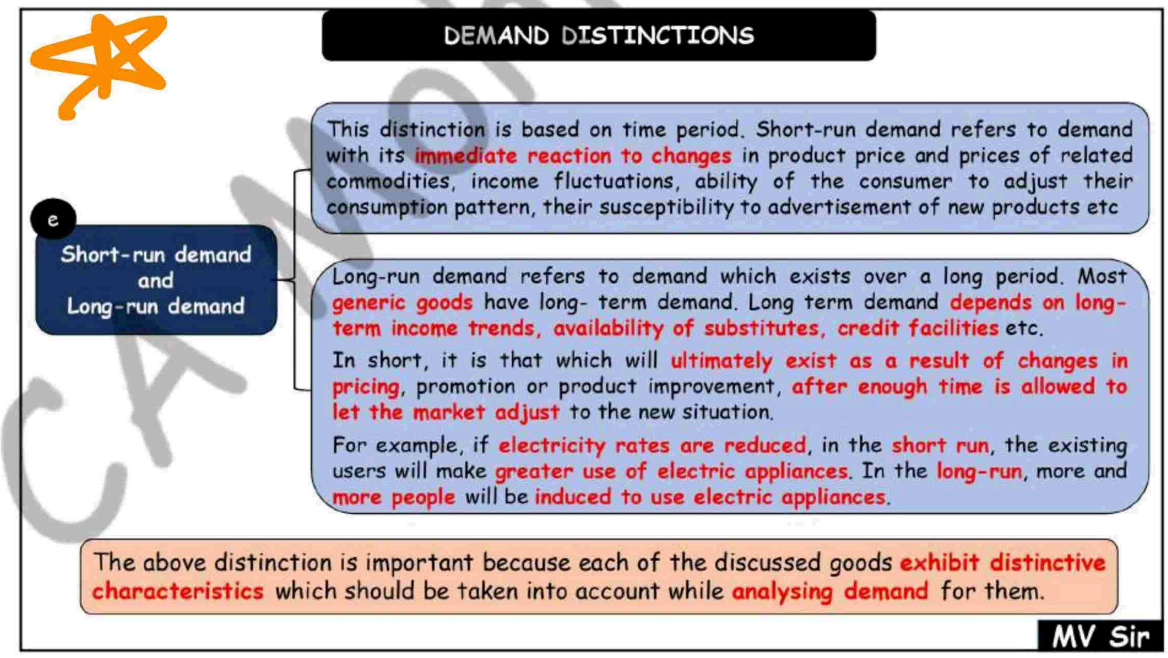


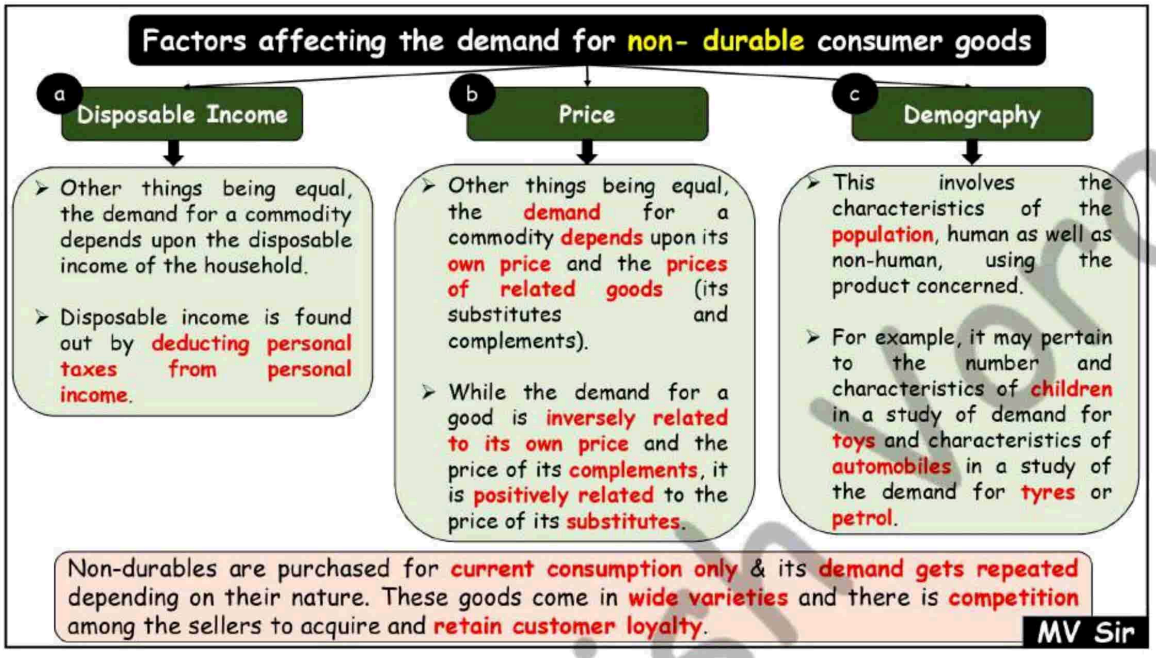


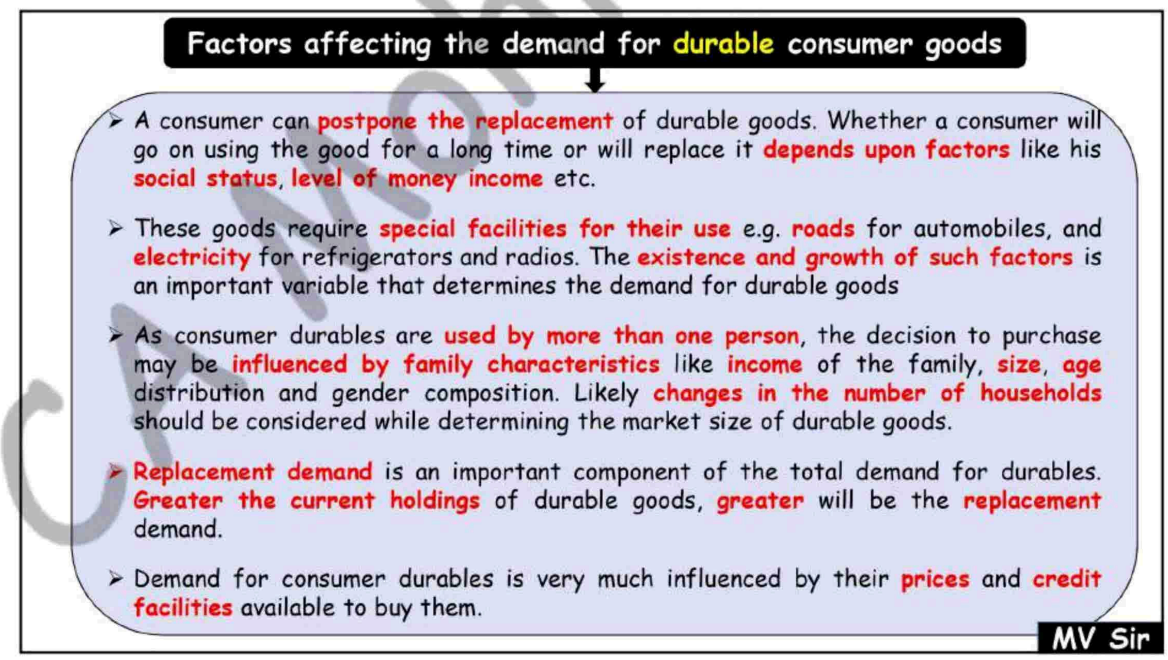










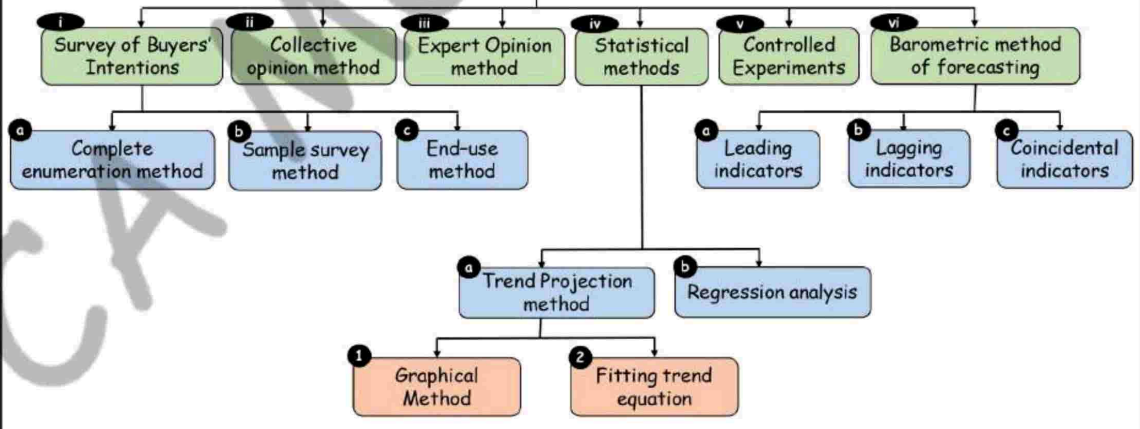


Factors affecting the demand for producer goods

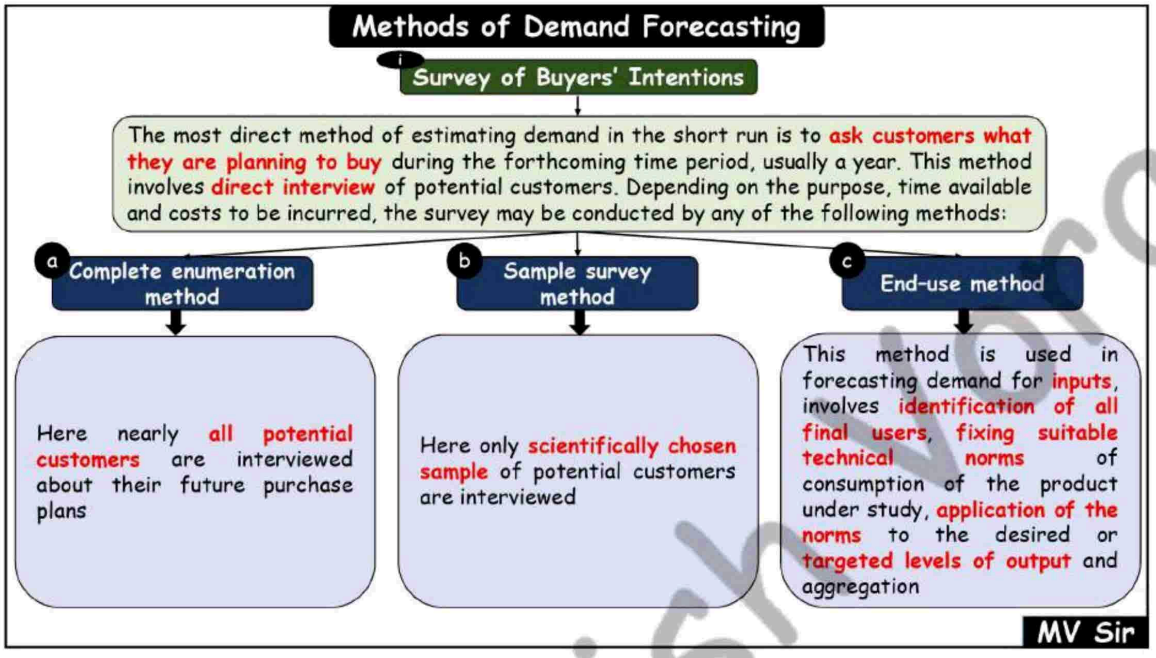
- The demand for producer/capital goods depends upon the **rate of profitability** of user industry and the **size of the market** of the **user industries**. Hence data required for estimating demand for producer goods (capital goods) are:
  - **growth prospects** of the user industries;
  - **norms of consumption of capital goods** per unit of installed capacity.
- An **increase in the price of a substitutable factor of production**, say labour, is likely to **increase** the **demand for capital goods**. On the contrary, an increase in the price of a factor which is complementary may cause a decrease in the demand for capital.
- Higher the **profit making prospects**, greater will be the inducement to demand capital goods. If firms are optimistic about selling a higher output in future, they will have greater incentive to invest in producer goods.
- **Advances in technology** enabling **higher efficiency at reduced cost** on account of higher productivity of capital will have a positive impact on investment in capital goods.
- Investments in producer goods will be **greater** when **lower interest rates prevail** as firms will have lower opportunity cost of investments and lower cost of borrowing.

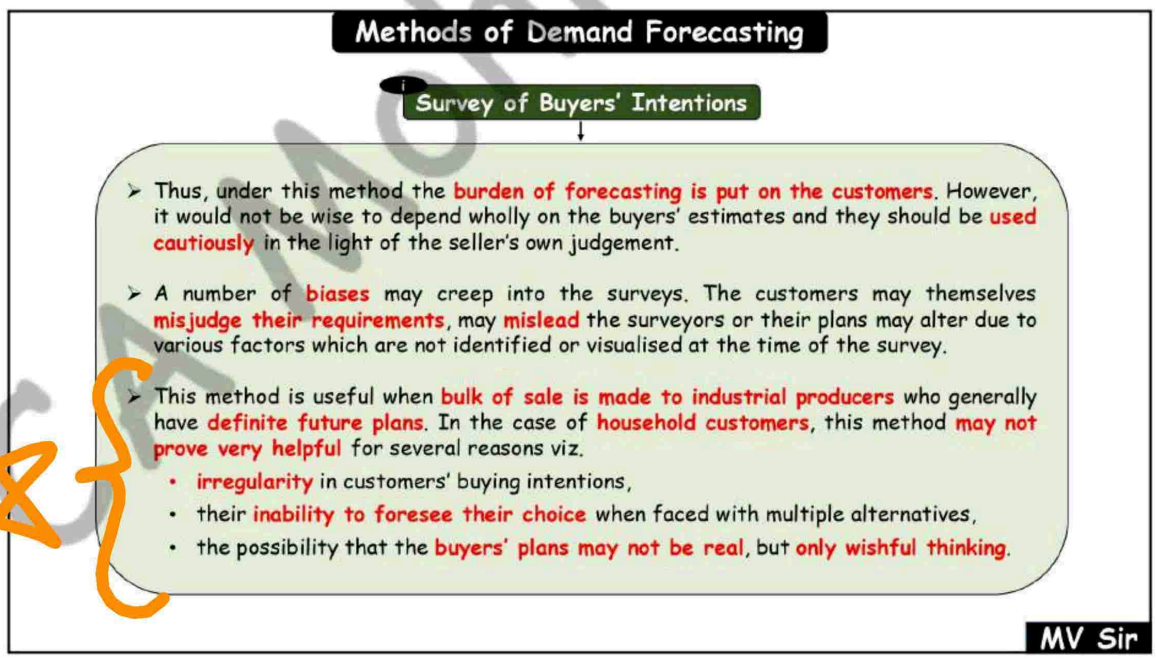
MV Sir

Methods of Demand Forecasting



MV Sir





Methods of Demand Forecasting

ii Collective opinion method

- This method is also known as **sales force opinion method** or **grass roots approach**.
- Under this method, **salesmen** are required to **estimate expected sales** in their respective territories. The **rationale** of this method is that **salesmen being closest to the customers** are likely to have the most intimate feel of the reactions of customers to changes in the market.
- These **estimates** of salesmen are **consolidated to find out the total estimated sales** and then **reviewed** to **eliminate the bias.**
- These revised estimates are **further examined** in the light of **factors** like proposed changes in selling prices, product designs and advertisement programmes, expected changes in competition etc. The **final sales forecast** would emerge after these factors have been taken into account.
- This method is **subjective** as **personal opinions can possibly influence** the forecast.
- Moreover **salesmen** may be **unaware** of the **broader economic changes** which may have profound impact on future demand. Therefore, forecasting could be **useful in the short run**, for long run analysis however, a better technique is to be applied.

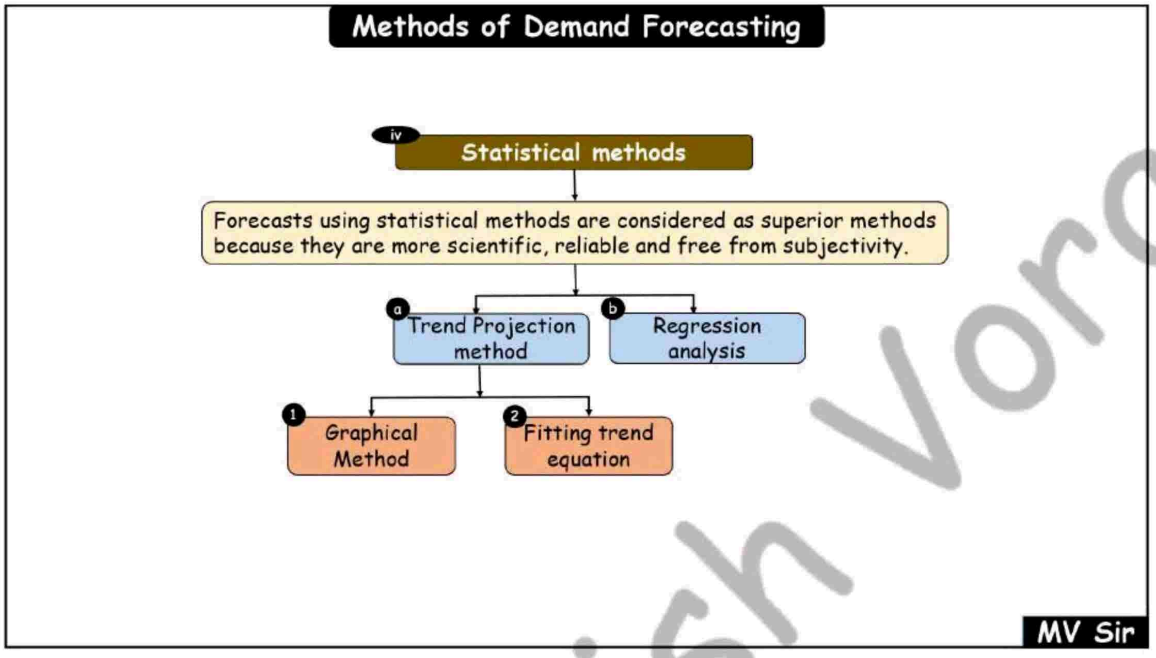
MV Sir

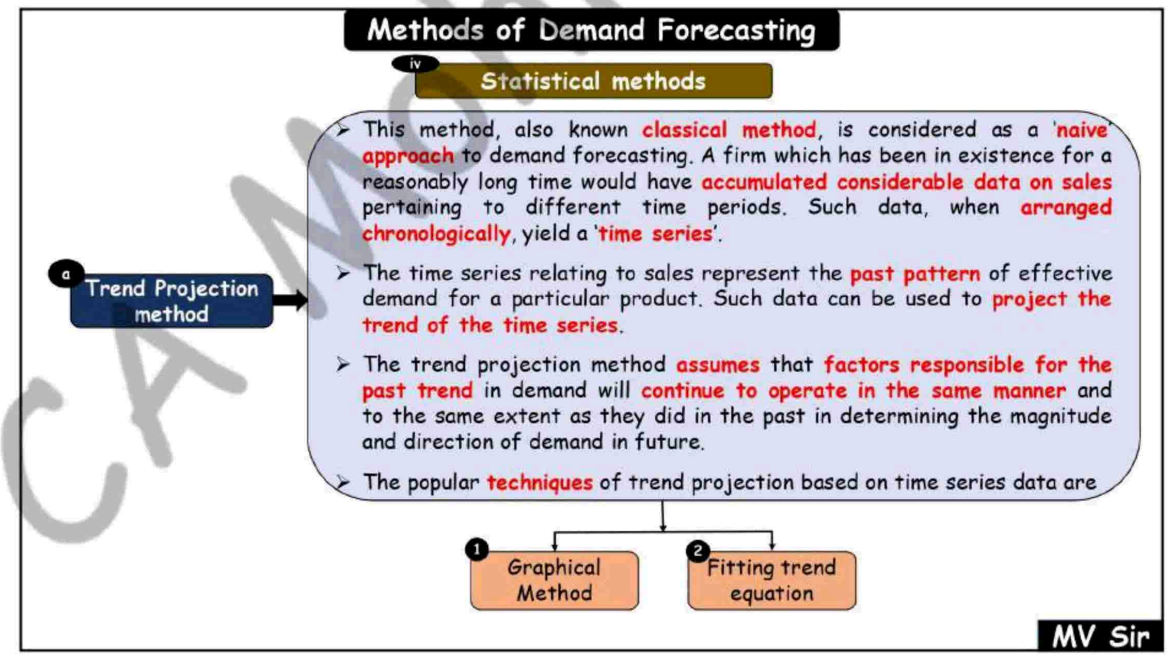
Methods of Demand Forecasting

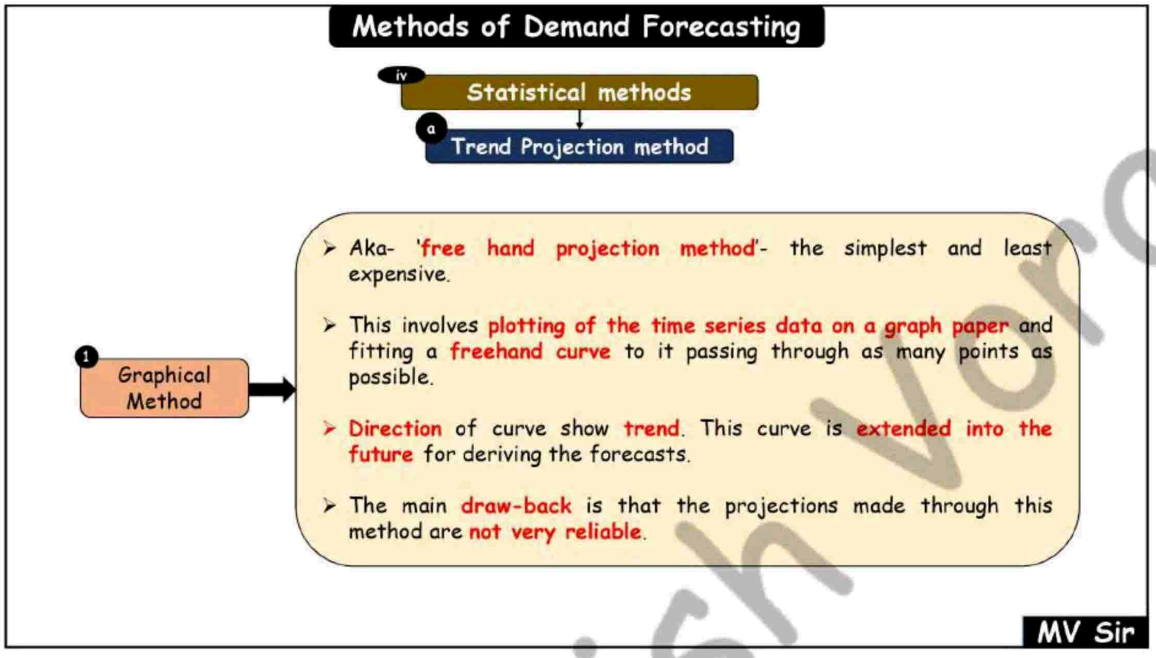
iii Expert Opinion method

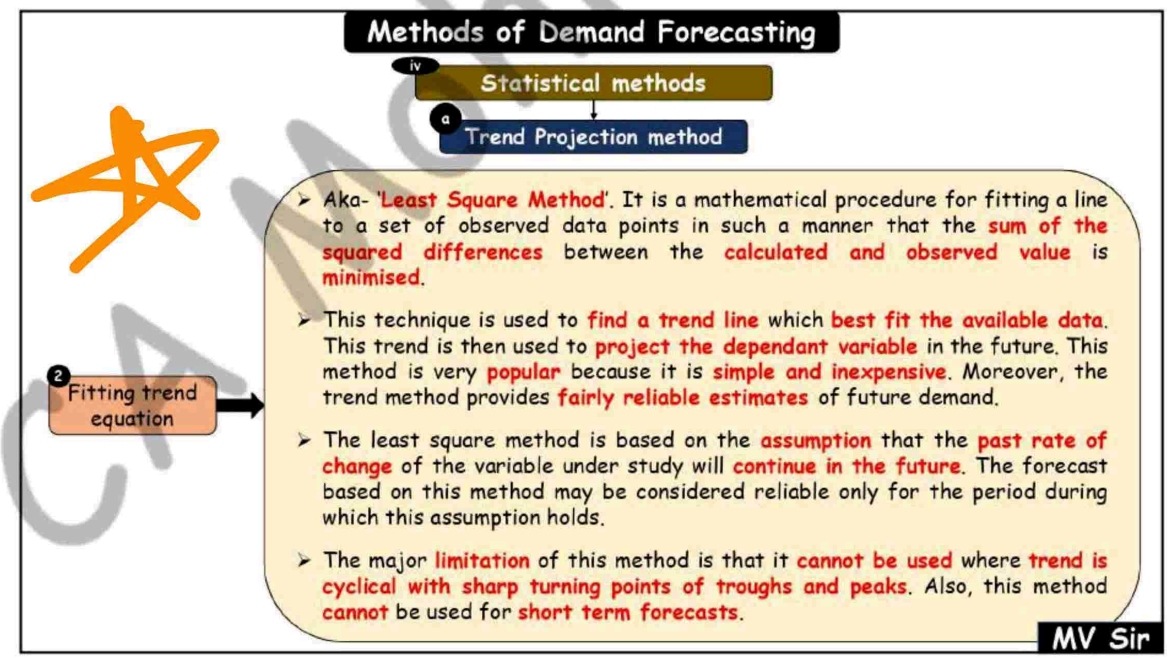
- Under this method **professional market experts** and **consultants** provide reasonably reliable estimates of probable demand in future. Information is elicited from them through appropriately structured unbiased tools of data collection such as **interviews and questionnaires.**
- The **Delphi technique**, developed by Olaf Helmer at the Rand Corporation of the USA, provides a useful way to obtain informed judgments from **diverse experts**. Under this technique firms **solicit the opinion of specialists or experts** through a **series of carefully designed questionnaires.**
- Experts are asked to **provide forecasts** and **reasons** for their forecasts. Experts are provided with information and **opinion feedbacks of others** at different rounds **without revealing the identity** of the opinion provider. These **opinions are then exchanged** among the various experts and the **process goes on until convergence of opinions** is arrived at.
- This method is **best suited** in circumstances where **intractable** (difficult to control) **changes** are occurring and the **relevant knowledge is distributed** among experts.
- Delphi technique is widely accepted due to its **broader applicability** and **ability to address complex questions**. It also has the advantages of **speed and cheapness.**

MV Sir









Methods of Demand Forecasting

iv **Statistical methods**

b **Regression analysis**

- This is the most popular method of forecasting demand. Under this method, a **relationship** is established between the **quantity demanded** (dependent variable) and the **determinants of demand** (independent variables or explanatory variables).
- Once the relationship is established, we derive **regression equation** assuming the relationship to be linear. The equation will be of the form **Y = a + bX**.
- There could also be a **curvilinear relationship** between the dependent and independent variables. Once the regression equation is derived, **the value of Y i.e. quantity demanded can be estimated** for **any given value of X.**

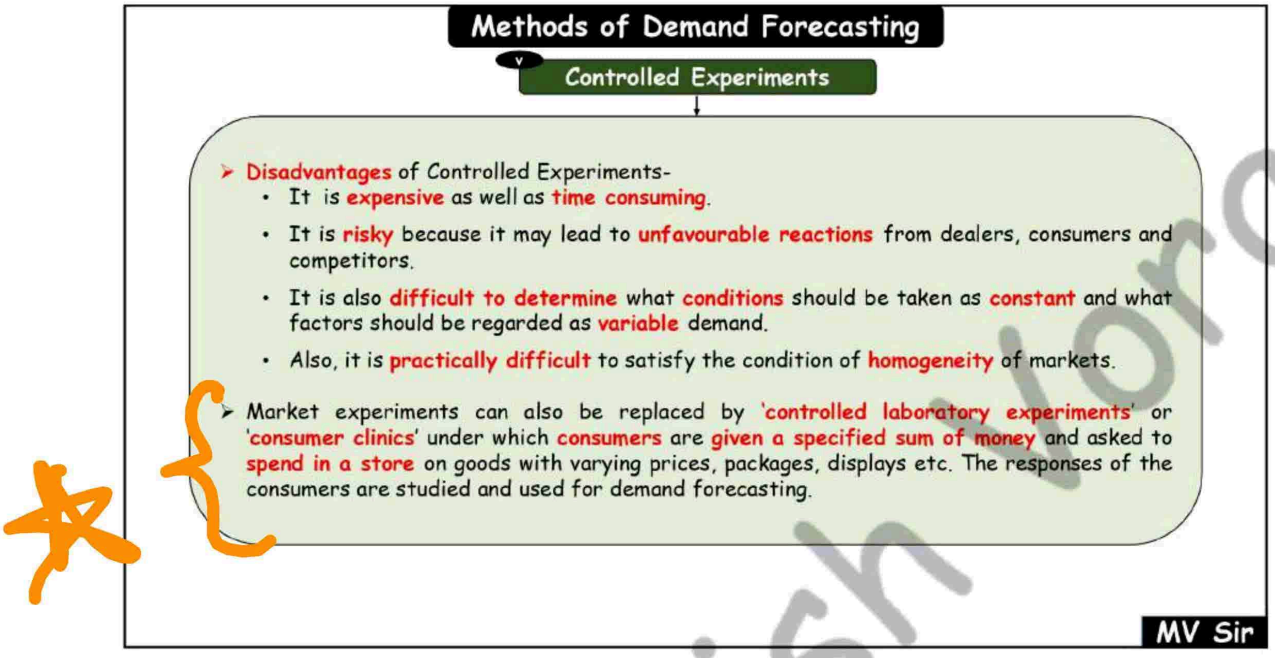
MV Sir

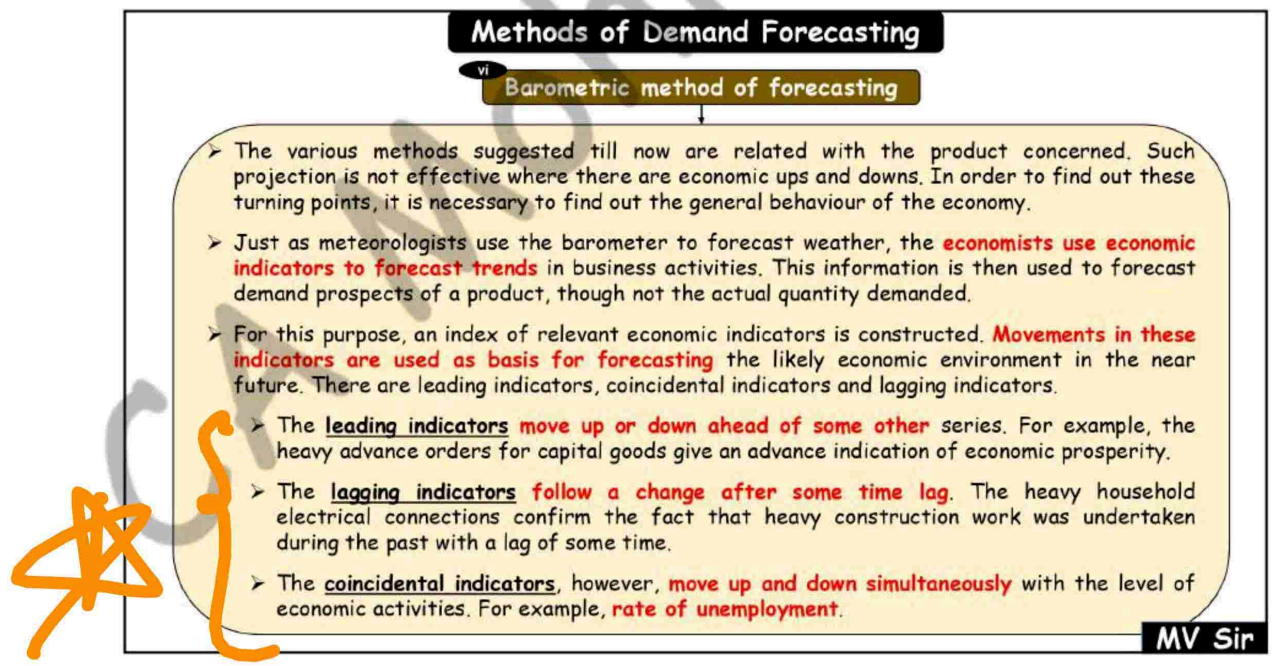
Methods of Demand Forecasting

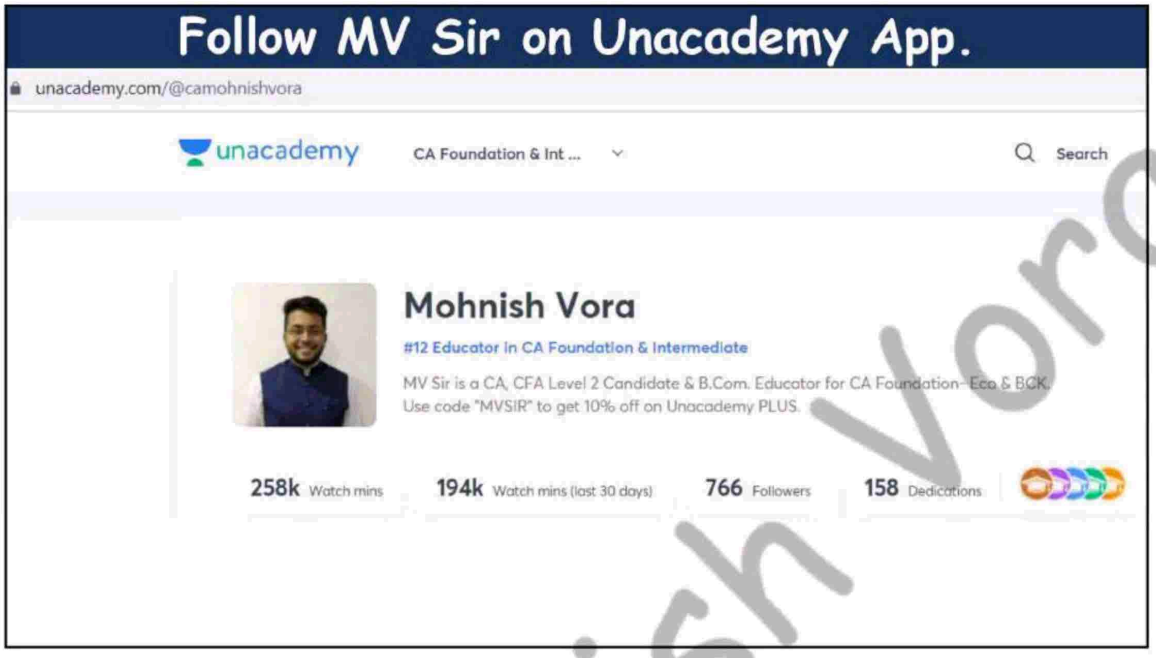
v **Controlled Experiments**

- Under this method, future demand is estimated by **conducting market studies** and **experiments on consumer behaviour** under **actual**, though **controlled**, market conditions. This method is also known as **market experiment method**.
- An effort is made to **vary separately certain determinants** of demand which can be **manipulated**, for example, price, advertising, etc., and conduct the **experiments assuming that the other factors would remain constant.**
- Thus, the **effect of demand determinants on sales can be assessed** by either varying them over **different markets** or by varying them over **different time periods in the same market**. The responses of demand to such changes over a period of time are recorded and are used for assessing the future demand for the product.
- For example, different prices would be associated with different sales and on that basis the price-quantity relationship is estimated in the form of regression equation and used for forecasting purposes. It should be noted however, that the market divisions here must be **homogeneous** with regard to income, tastes, etc.
- **Homogenous market** situation is where the prospective buyers of any product are found to be **uniform** in their needs, habits, choices, nature, etc

MV Sir







Nature of Human Wants

- All **desires, tastes and motives** of human beings are called wants in Economics. Wants may arise due to **elementary and psychological causes**. Since the **resources are limited**, we have to **choose** between the urgent wants and the not so urgent wants.

Characteristic features of WANTS

- Wants are **unlimited** in number. They are never completely satisfied.
- Wants **differ in intensity**. Some are urgent, others are not.
- Each want is **satiable**.
- Wants are **competitive**, because resources are scarce to satisfy all wants.
- Some wants are **complementary**, i.e. satisfied only by using more than one good or group of goods.
- Wants are **alternative**.
- Wants are **affected** by **income, taste, ads and social customs**.
- Wants **vary** with time, place, and person.
- Some wants **recur** again whereas others do not occur again and again.
- Wants may become **habits** and **customs**.
- Wants arise from **multiple causes** such as natural instincts, social obligation and individual's economic and social status..
- Wants are **subjective** and **relative**.

MV Sir

Classification of Wants

a **Necessaries**

Necessaries are those which are essential for living.

a **Necessaries for life or existence**

- Necessaries for life are things necessary to meet the **minimum physiological needs** for the maintenance of life such as minimum amount of food, clothing and shelter.

b **Necessaries for efficiency**

- Man requires something more than the necessities of life to **maintain longevity, energy and efficiency** of work. These are necessaries for efficiency.
- Eg- nourishing food, adequate clothing, clean water, comfortable dwelling, education, recreation etc.

c **Conventional necessaries**

- Conventional necessaries arise either due to **pressure of habit** or due to **compelling social customs and conventions**.
- They are **not necessary** either for **existence or for efficiency**.

MV Sir

Classification of Wants

b **Comforts**

- While necessaries make life possible **comforts make life comfortable and satisfying.** Comforts are **less urgent** than necessaries.
- Tasty and wholesome food, good house, clothes that suit different occasions, audio-visual and labour saving equipments etc. make life more comfortable.

c **Luxuries**

- Luxuries are those wants which are **superfluous and expensive.** They are **not essential for living.**
- Items such as expensive clothing, exclusive motor cars, classy furniture, goods used for vanity etc fall under this category.

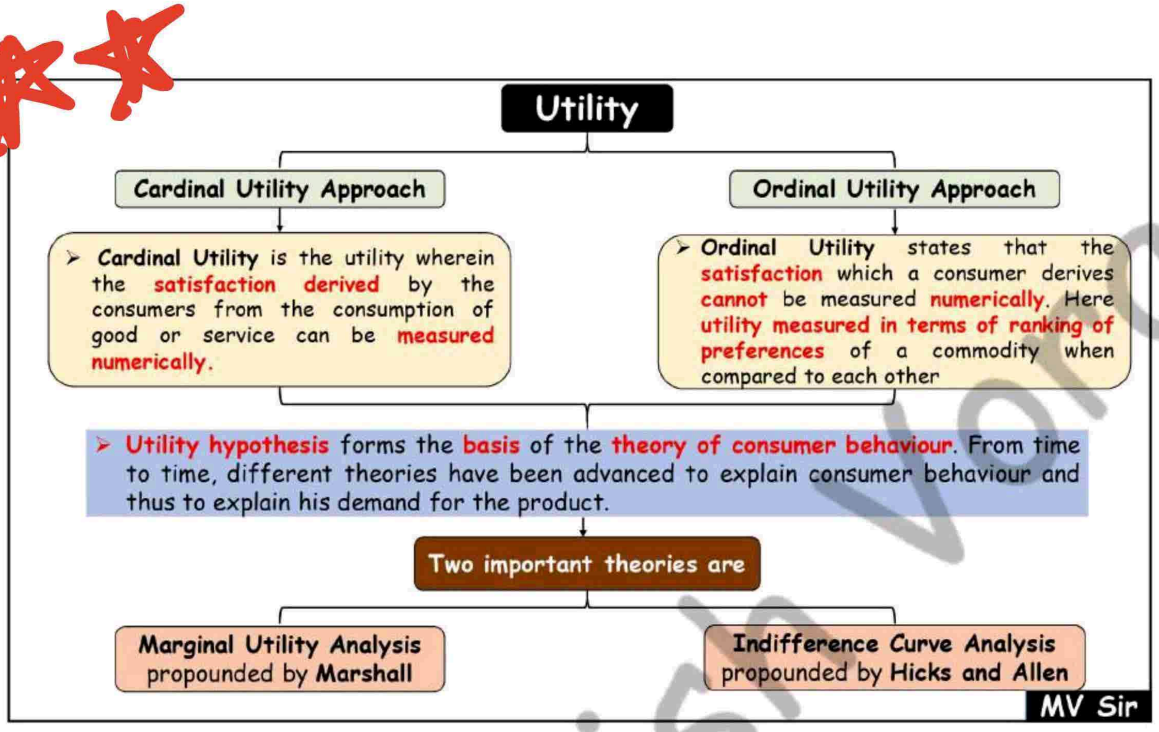
The above **categorization is not rigid** as things which were considered luxuries in the past have become comforts and necessaries today.

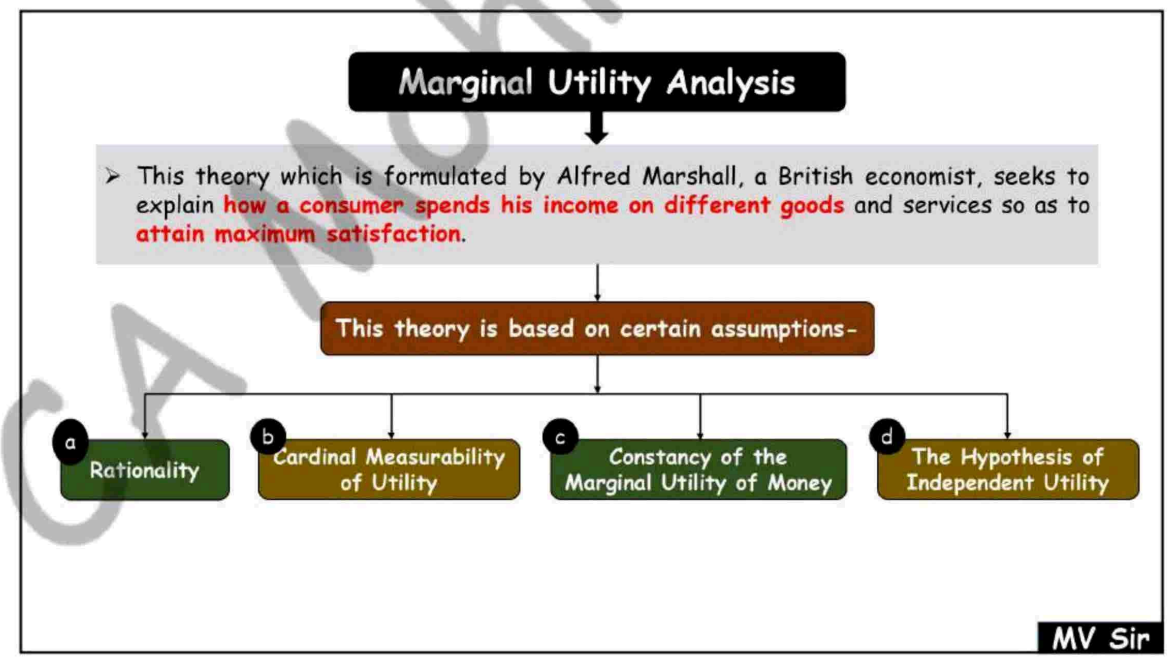
MV Sir

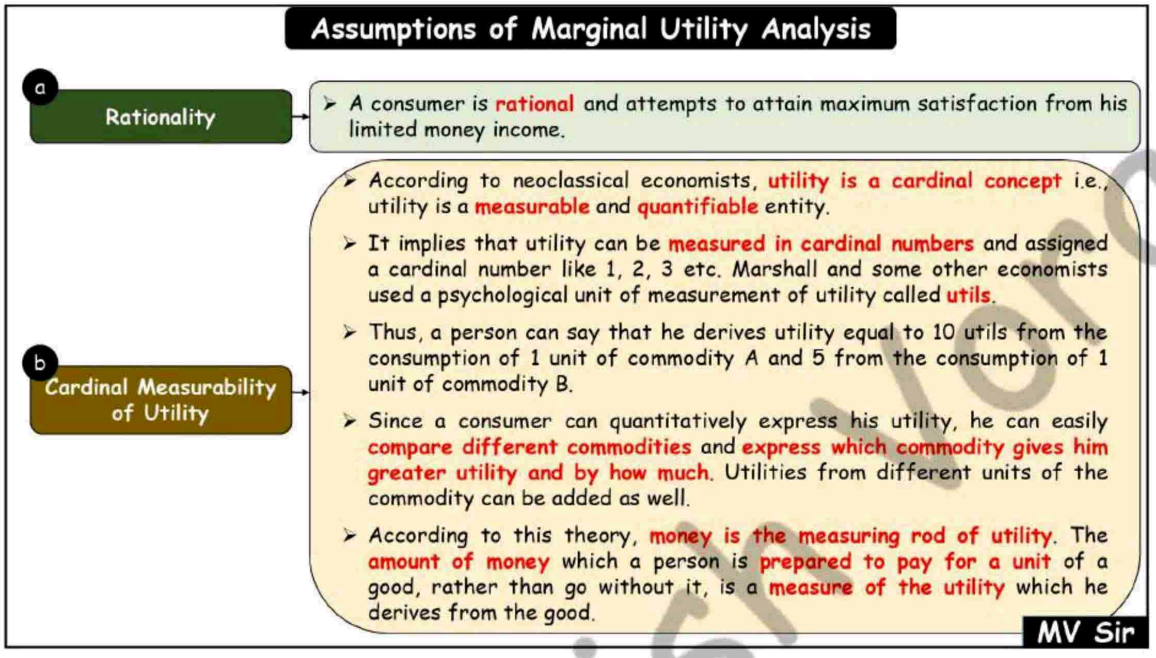
What is Utility ?

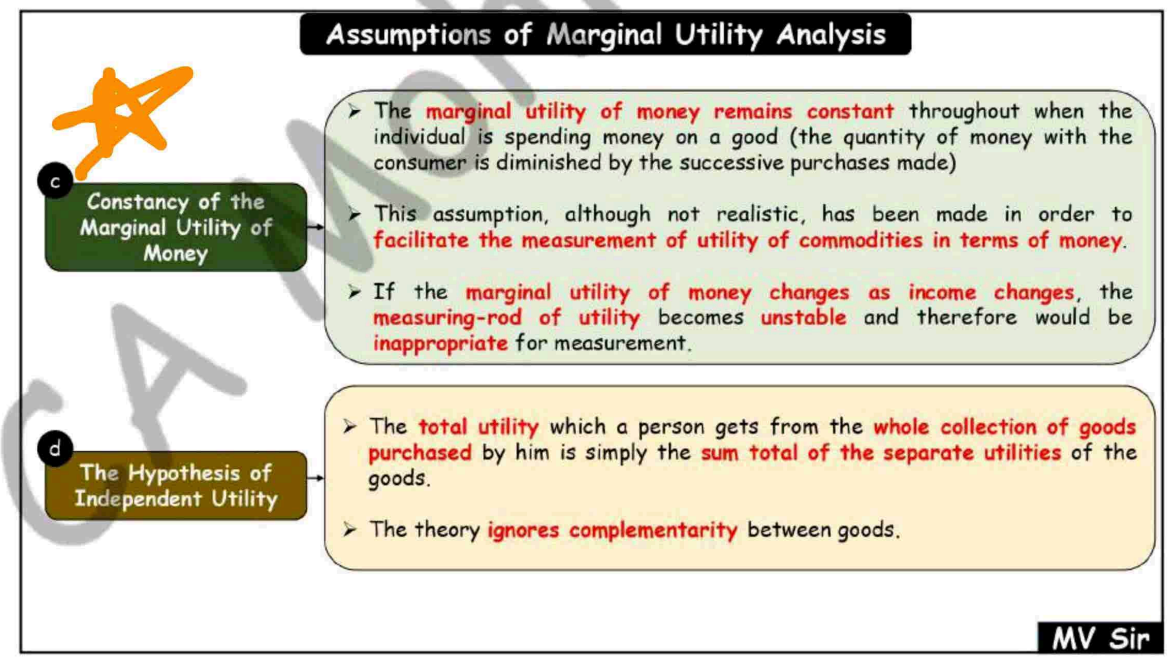
- The concept of utility is used in **neo classical Economics** to explain the operation of the law of demand.
- **Neoclassical economics** is an **approach to economics** focusing on the **determination of goods, outputs**, and income distributions in markets **through supply and demand.**
- **Utility** is the **want satisfying power** of a commodity. It is the **expected satisfaction** to a consumer when he is willing to spend money on a stock of commodity which has the capacity to satisfy his want.
- **Utility** is the **anticipated satisfaction** by the consumer, and **satisfaction is the actual** satisfaction derived.
- A commodity **has utility** for a consumer **even when it is not consumed** .It is a subjective entity and **varies** from person to person.
- A commodity has **different utility** for **the same person** at **different places** or at **different points of time.** It should be noted that utility is **not** the same thing as **usefulness.**
- From the economic standpoint, **even harmful things** like liquor, may be said to **have utility** because people want them. Thus, in Economics, the concept of utility is **ethically neutral.**

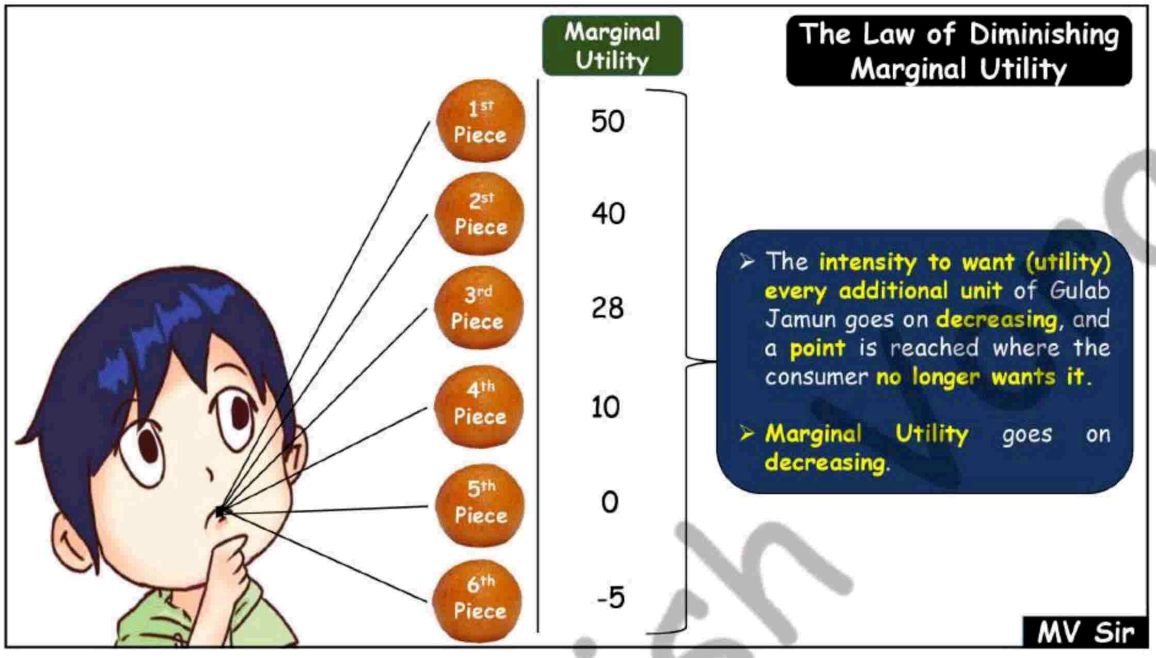
MV Sir

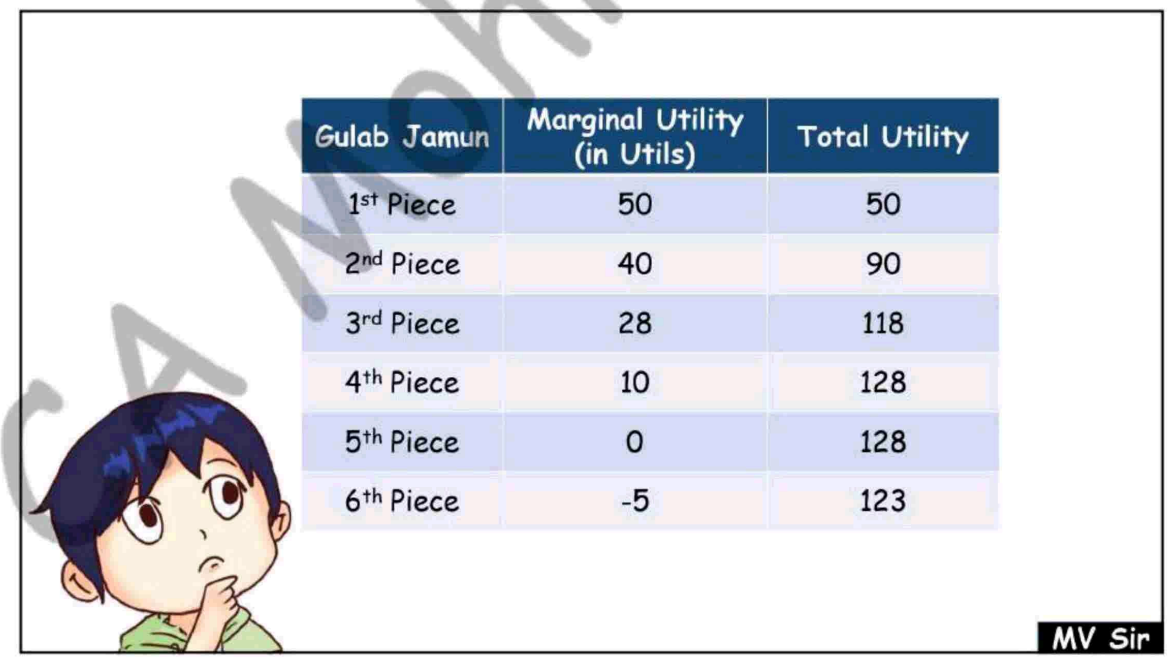












Gulab Jamun	Marginal Utility (in Utils)	Total Utility
1st Piece	50	50
2nd Piece	40	90
3rd Piece	28	118
4th Piece	10	128
5th Piece	0	128
6th Piece	-5	123

Total Utility

- Assuming that utility is measurable and additive, **total utility** may be defined as the sum of utility derived from different units of a commodity consumed by a consumer.
- Total utility is **the sum of marginal utilities** derived from the consumption of different units.

TU= MU1+MU2+.....+MUn

Where MU1, MU2,.....,MUn etc are marginal utilities of the successive units of a commodity.

Marginal Utility

- It is the **addition made to total utility by the consumption of an additional unit** of a commodity.
- In other words, it is the **utility derived from the marginal or one additional unit** consumed or possessed by the individual.
- Marginal utility = the addition made to the total utility by the addition of consumption of one more unit of a commodity.

MUn = TUn - TUn-1

Where,
MUn = is the marginal utility of the nth unit,
TUn = is the total utility of the nth unit, and
TUn-1 = is the total utility of the (n-1)th unit.

MV Sir

The Law of Diminishing Marginal Utility

- This law is based on the fact that while **total wants** of a person are virtually **unlimited**, each single want is **satiable** i.e., each want is capable of being satisfied.
- Since each want is satiable, as a consumer **consumes more and more units** of a good, the **intensity of his want** for the good goes on **decreasing** and a **point** is reached where the consumer **no longer wants it**. Thus, the greater the amount of a good a consumer has, the less an additional unit is worth to him or her.
- **Alfred Marshall** stated the law as follows:

"The additional benefit which a person derives from a given increase in the stock of a thing diminishes with every increase in the stock that he already has."

- In other words, as a consumer **increases the consumption of any one commodity keeping constant** the consumption of **all other** commodities, the **marginal utility** of the **variable commodity** must eventually **decline**.

MV Sir

The Law of Diminishing Marginal Utility

Gulab Jamun	Marginal Utility (MU) (in Utils)	Total Utility (TU) (in Utils)
1st Piece	50	50
2nd Piece	40	90
3rd Piece	28	118
4th Piece	10	128
5th Piece	0	128
6th Piece	-5	123

Observations

1) TU rises as long as MU is positive, but at a diminishing rate because MU is diminishing.
2) Marginal utility diminishes throughout.
3) When marginal utility is zero, total utility is maximum. It is a saturation point.
4) When marginal utility is negative, total utility is diminishing.
5) MU is the rate of change of TU or the slope of TU.
6) MU can be positive ,zero or negative.

MV Sir

Marginal Utility Curve

Gulab Jamun	Marginal Utility (MU) (in Utils)	Total Utility (TU) (in Utils)
1st Piece	50	50
2nd Piece	40	90
3rd Piece	28	118
4th Piece	10	128
5th Piece	0	128
6th Piece	-5	123

MV Sir

The Law of Diminishing Marginal Utility

- The diminishing marginal utility curve applies to almost all commodities **except money, music and hobbies etc.** While this may be true in initial stages, beyond a certain limit these will also be subjected to diminishing utility.
- The Law of diminishing marginal utility helps us to understand **how a consumer reaches equilibrium in case of a single good.**
- As per the law, a **consumer will go on buying** a good **till the marginal utility** of the good **becomes equal to** the **market price**. In other words, the consumer will be in **equilibrium** (will be deriving maximum satisfaction) in respect of the quantity of the good when **marginal utility of the good is equal to its price**. Here his **satisfaction** will be **maximum**.
- What happens when there is a **change in the price** of the good? The **equality** between marginal utility and price is **disturbed** when the **price** of the good **falls**. The **consumer will consume more of the good** so as to **restore the equality** between the marginal utility and price.

MV Sir

Consumer Equillibrium

Gulab Jamun	Marginal Utility (MU) (in Utils)	Price (Rs)
1st Piece	50	10
2nd Piece	40	10
3rd Piece	28	10
4th Piece	10	10
5th Piece	0	10
6th Piece	-5	10

MV Sir

Consumer Equillibrium

Gulab Jamun	Marginal Utility (MU) (in Utils)	Price (Rs)
1st Piece	50	10
2nd Piece	40	10
3rd Piece	28	10
4th Piece	10	10
5th Piece	5	5
6th Piece	0	5
7th Piece	-5	5

MV Sir

The Law of Diminishing Marginal Utility

- On the other hand, when **price** of the good **increases**, he will **buy less** so as to **equate the marginal utility** to the **higher price**.
- We can say that the **downward sloping demand curve** is directly **derived from** the **marginal utility curve**.
- In reality, a **consumer spends** his income on **more than one good**. In such cases, consumer equilibrium is explained with the law of **Equi-Marginal utility**.
- According to this, the consumer will be in **equilibrium** when he is **spending** his money on goods and services in **such a way** that the **marginal utility of each good** is **proportional to its price** and the **last rupee spent on each** commodity **yields him equal marginal utility**.
- The law states that the consumer is said to be at equilibrium, when the following condition is met:

$$(MUx / Px) = (MUy / Py)$$

or

$$(MUx / MUy) = (Px / Py)$$

MV Sir

Limitations of Law of Diminishing Marginal Utility

i	Homogenous units	The different units consumed should be identical in all respects. The habit, taste, temperament and income of the consumer also should remain unchanged.
ii	Standard units of Consumption	The different units consumed should consist of standard units. If a thirsty man is given water by successive spoonfuls, the utility of the second spoonful of water may conceivably be greater than the utility of the first.
iii	Continuous Consumption	There should be no time gap or interval between the consumption of one unit and another unit i.e. there should be continuous consumption.
iv	The Law fails in the case of prestigious goods	The law may not apply to articles like gold, cash, diamonds etc. where a greater quantity may increase the utility rather than diminish it. It also fails to apply in the case of hobbies, alcohol, cigarettes, rare collections etc.
v	Case of related goods	Utility is not independent. The shape of the utility curve may be affected by the presence or absence of articles which are substitutes or complements. Eg- The utility obtained from tea may be seriously affected if no sugar is available.
vi	Unrealistic assumptions	The assumptions of cardinal measurability of utility, constancy of marginal utility of money, continuous consumption and consumer rationality are unrealistic.

MV Sir

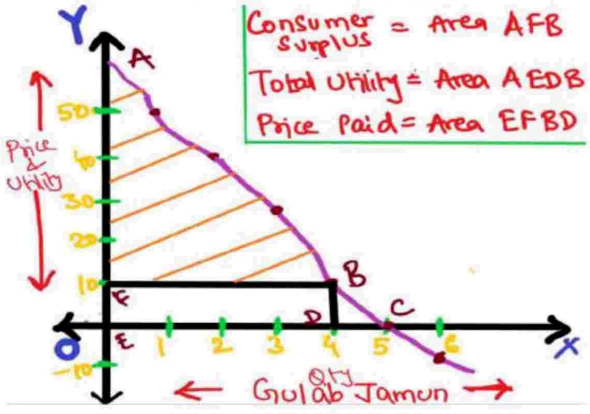
Consumer Surplus

MV Sir

Alfred Marshall defined the concept of consumer's surplus as the "excess of the price which a consumer would be willing to pay rather than go without a thing over that which he actually does pay is called consumer's surplus."

Consumer's Surplus = what a consumer is ready to pay - what he actually pays.

Gulab Jamun	Marginal Utility (in Utils)	Price (Rs)	Consumer Surplus
1st Piece	50	10	40
2nd Piece	40	10	30
3rd Piece	28	10	18
4th Piece	10	10	0
5th Piece	0	10	-
6th Piece	-5	10	-



Consumer Surplus

- The concept of consumer's surplus is **derived from the law of diminishing marginal utility**. As per the law, as we purchase more of a good, its marginal utility goes on diminishing.
- The consumer is in **equilibrium** when the **marginal utility** of a good is **equal to** its **price** i.e., he purchases that many number of units of a good at which marginal utility is equal to price (It is **assumed** that **perfect competition** prevails in the market).
- Since the **price is the same for all units** of the good he purchases, he gets **extra utility for all units consumed** by him **except** for the **one** at the **margin**. This **extra utility or extra surplus** for the consumer is called **consumer's surplus**.

MV Sir

Consumer Surplus

MV Sir

Limitations

1) Consumer's surplus **cannot be measured precisely** as it is difficult to measure the marginal utilities of different units.
2) In the case of **necessaries**, the **marginal utilities** of the earlier units are **infinitely large**. In such case the consumer's surplus is always infinite.
3) The consumer's surplus from a commodity is affected by the **availability of substitutes**.
4) There is **no simple rule for deriving the utility scale** of **prestige** goods (e.g., diamonds).
5) Consumer's surplus **cannot be measured in terms of money** because the marginal utility of money changes as purchases are made and the consumer's stock of money diminishes.
6) The concept can be accepted only if it is assumed that **utility can be measured in terms of money** or otherwise. Many **modern economists** believe that this **cannot be done**.

Practical Applications

1) A business firm can reflect on the amount of consumer surplus enjoyed by different segments of their customers because **consumers who perceive large surplus** are more likely to **repeat their purchases**.
2) If a business can **identify groups** of **consumers** with **different elasticity of demand** within their market and the market segments which are willing and able to pay higher prices for the same products, then firms can profitably use **price discrimination**.
3) **Large scale investment decisions** involve cost benefit analysis which takes into account the extent of consumer surplus which the projects may fetch.
4) Customers who enjoyed only a small amount of surplus may not be willing to buy products at higher prices. Firms making such decisions should expect to make fewer sales if they **increase prices**.
5) Consumer surplus acts as a **guide to finance ministers** when they decide on the products on which **taxes** have to be imposed. It is always desirable to impose taxes on commodities yielding high consumer's surplus.

INDIFFERENCE CURVE ANALYSIS

- This approach to consumer behaviour is based on **consumer preferences**. It believes that **human satisfaction**, being a **psychological phenomenon**, **cannot be measured quantitatively in monetary terms** as was attempted in Marshall's utility analysis.
- In this approach, it is felt that it is much easier and scientifically more sound to **order preferences than to measure them** in terms of money.
- The **consumer preference** approach is, therefore, an **ordinal concept** based on **ordering of preferences** compared with Marshall's approach of cardinality.

ASSUMPTIONS

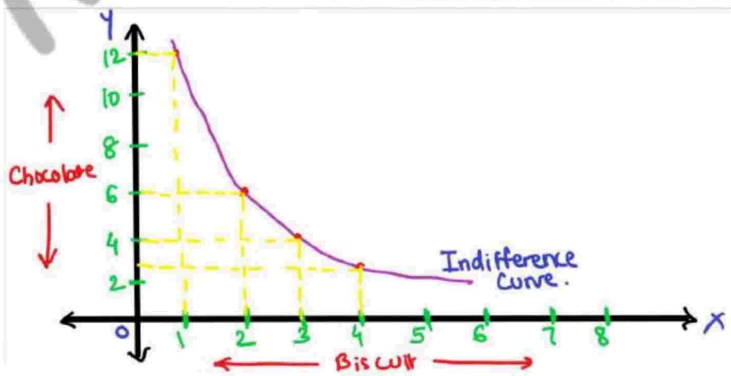
- The consumer is **rational** and **possesses full information** about all the relevant aspects of **economic environment** in which he lives.
- It assumes that **utility** is only **ordinally** expressible. The consumer is capable of **ranking all conceivable combinations** of goods according to the satisfaction they yield. Thus, if he is given various combinations say A, B, & C he can rank them as first preference, second preference and so on. However, if a consumer happens to prefer A to B, he **cannot tell quantitatively** how much he prefers A to B.
- Consumer's choices are assumed to be **transitive**. If the consumer **prefers combination A to B, and B to C,** then he **must prefer** combination **A to C**. In other words, he has a consistent consumption pattern.
- If combination **A** has **more commodities** than combination B, then **A must be preferred** to B.

MV Sir

INDIFFERENCE SCHEDULE

Combination	Biscuit	Chocolate	MRS
A	1	12	
B	2	6	6
C	3	4	2
D	4	3	1

INDIFFERENCE CURVE



MV Sir

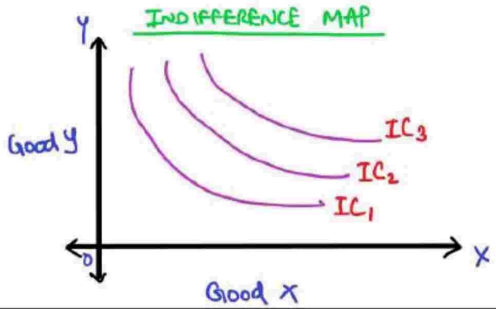
INDIFFERENCE CURVE

- An indifference curve is a curve which represents all those combinations of **two goods** which give same satisfaction to the consumer.
- Since **all the combinations on an indifference curve** give **equal satisfaction** to the consumer, the consumer is **indifferent** among them. In other words, since all the combinations provide the same level of satisfaction the consumer prefers them equally and does not mind which combination he gets.
- If a consumer **equally prefers two product bundles**, then the consumer is **indifferent** between the two bundles. An Indifference curve is also called **iso- utility curve** or **equal utility curve**.

MV Sir

INDIFFERENCE MAP

- An Indifference map represents a **collection of many indifference curves** where **each curve represents a certain level of satisfaction**. In short, a set of indifference curves is called an indifference map.
- An indifference map **depicts the complete picture of consumer's tastes** and preferences.
- It should be noted that while the consumer is indifferent among the combinations lying on the same indifference curve, he certainly **prefers the combinations on the higher indifference curve** to the combinations lying on a lower indifference curve because a **higher indifference curve signifies a higher level of satisfaction**.



MV Sir

MARGINAL RATE OF SUBSTITUTION (MRS)

- Marginal Rate of Substitution (MRS) is the **rate at which a consumer is prepared to exchange goods X and Y.**
- We can define MRS of X for Y as the **amount of Y whose loss can just be compensated by a unit gain of X** in such a manner that the **level of satisfaction remains the same.**
- The marginal rate of substitution of X for Y (MRSxy) is equal to **MUx / MUy**
- **MRS is falling** i.e., as the consumer has more and more units of biscuit, he is prepared to give up less and less units of chocolates. There are **two reasons** for this-

The want for a **particular good is satiable** so that when a consumer has more of it, his **intensity of want** for it **decreases**. Thus, in our example, when the consumer has more units of biscuit, his intensity of desire for additional units of chocolate decreases.

Most goods are **imperfect substitutes** of one another. **MRS** would remain **constant** if they could **substitute** one another perfectly.

MV Sir

PROPERTIES OF INDIFFERENCE CURVE

1. **Indifference curves slope downward to the right**
   - This property implies that the **two commodities can be substituted** for each other and when the **amount of one good** in the combination is **increased**, the amount of the **other good is reduced**. This is essential if the **level of satisfaction** is to **remain the same** on an indifference curve.
2. **Indifference curves are always convex to the origin**
   - It has been observed that as **more and more of one commodity (X) is substituted** for another (Y), the **consumer** is **willing to part with less and less** of the commodity being substituted (i.e. Y). This is called **diminishing marginal rate of substitution.**
   - This happens because the **want** for a particular good is **satiable** and as a person has more and more of a good, his intensity of want for that good goes on diminishing.
   - In other words, the **subjective value attached to the additional quantity** of a commodity **decreases fast** in relation to the other commodity whose total quantity is decreasing. This **diminishing marginal rate** of substitution gives **convex shape** to the indifference curves. However, there are two extreme situations.

- When two goods are **perfect substitutes** of each other, the indifference curve is a **straight line** on which MRS is constant

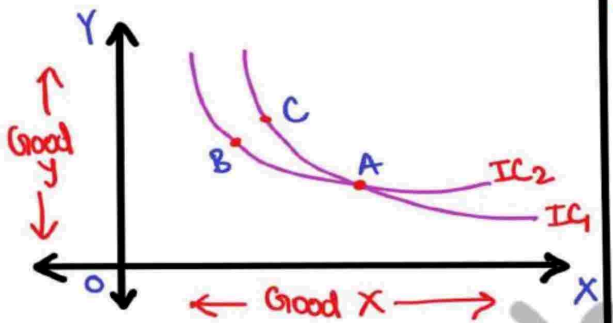
when two goods are **perfect complementary** goods (e.g. printer and cartridge), the indifference curve will consist of **two straight lines with a right angle bent** which is **convex** to the origin, or in other words, it will be **L shaped.**

MV Sir

PROPERTIES OF INDIFFERENCE CURVE

3 Indifference curves can never intersect each other

- No two indifference curves will intersect each other although it is not necessary that they are parallel to each other. In case of **intersection** the **relationship becomes logically absurd** because it would show that **higher and lower levels are equal**, which is **not possible**.



- Combination
A & C → IC1 → Same satisf.
A & B → IC2 → Same satisf.
⇓
Thus, B & C should also give same satisfaction
But it is NOT possible, as both lie on different Indiff. curves.

MV Sir

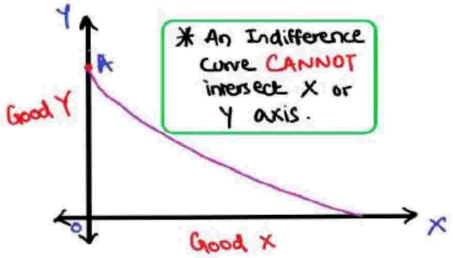
PROPERTIES OF INDIFFERENCE CURVE

4 A higher indifference curve represents a higher level of satisfaction

- This is because combinations lying on a higher indifference curve **contain more of either one or both goods** and **more goods are preferred** to less of them.

5 Indifference curve will not touch either axes

- An indifference curve **never touches the X axis or Y axis**. This is born out of our **assumption** that the consumer is considering **different combination of two commodities** & **wants both commodities** although in smaller or larger quantities
- If an indifference curve touches the Y axis at a point A as shown in below figure, it means that the consumer is satisfied with OA units of y commodity and zero units of x commodity. This is contrary to our **assumption** that the.



* An Indifference Curve CANNOT intersect X or Y axis.

MV Sir

BUDGET CONSTRAINT

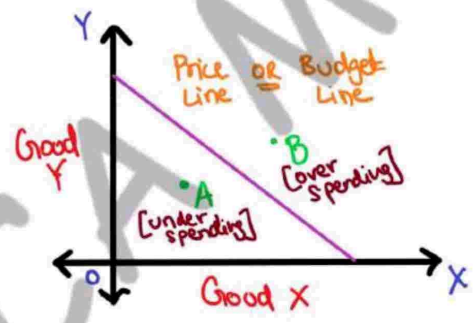
- A higher indifference curve shows a higher level of satisfaction than a lower one. Therefore, a consumer, in his attempt **to maximise satisfaction will try to reach the highest possible indifference curve**.
- But in his pursuit of buying more and more goods and thus obtaining more and more satisfaction, he **has to work under two constraints**:
  1) he has to **pay the prices** for the goods and,
  2) he has a **limited money income** with which to purchase the goods.
- A consumer's **choices are limited by the budget available** to him. As we know, his total expenditure for goods and services can fall short of the budget constraint but may not exceed it.
- Algebraically, we can write the **budget constraint** for two goods X and Y as:

$$[\ P_xQ_x + P_yQ_y\ ] \leq B$$

Where
Px and Py are the prices of goods X and Y and
Qx and Qy are the quantities of goods X and Y chosen and
B is the total money available to the consumer.

MV Sir

BUDGET LINE



- The budget constraint can be explained by the budget line or price line.
- A **budget line** shows all those **combinations of two goods** which the **consumer can buy spending his given money income** on the two goods at their given prices.
- **All those combinations** which are **within the reach** of the consumer (assuming that he **spends all** his money income) will **lie on the budget line**.
- It should be noted that any point **outside** the given price line, say **B**, will be **beyond the reach** of the consumer and any combination lying **within** the line, say **A**, shows **under spending** by the consumer.
- This **slope** of budget line is equal to 'Price Ratio' of two goods. i.e. **Px / Py**

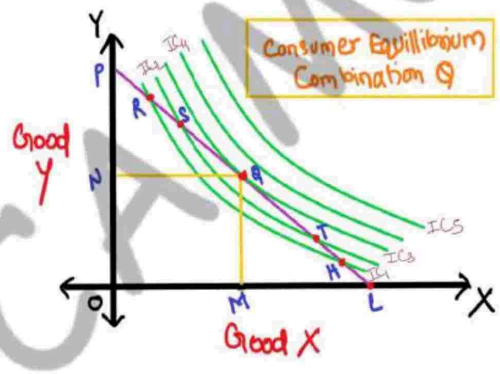
MV Sir

CONSUMER'S EQUILLIBRIUM

- A consumer is in **equilibrium** when he is deriving **maximum possible satisfaction** from the goods and therefore is in no position to rearrange his purchases of goods.
- Here we assume that:
  i. The consumer has a **given indifference map** which shows **his scale of preferences** for various combinations of two goods X and Y.
  ii. He has a **fixed money income** which he has to spend wholly on goods X and Y.
  iii. **Prices** of goods X and Y are given and are **fixed**.
  iv. All **goods** are **homogeneous** and **divisible**, and
  v. The consumer acts '**rationally**' and maximizes his satisfaction.

MV Sir

CONSUMER'S EQUILLIBRIUM



- IC1, IC2, IC3, IC4 and IC5 are shown together with budget line PL for good X and good Y. **Every combination on the budget line PL costs the same.** Thus combinations R, S, Q, T and H cost the same to the consumer.
- The consumer's aim is to maximise his satisfaction and for this, he will **try to reach the highest indifference curve**. Since there is a **budget constraint**, he will be **forced** to **remain on the given budget line**, that is he will have to choose combinations from among only those which lie on the given price line.
- **Combination Q** is the **best choice** because this combination lies not only **on his budget line** but also **puts him on the highest possible indifference curve** i.e., IC3. The consumer can very well wish to reach IC4 or IC5, but these indifference curves are beyond his reach given his money income. Thus, the consumer will be at equilibrium at point Q on IC3.
- We notice that at this point, his **budget line PL is tangent to the indifference curve IC3**. In this equilibrium position (at Q), the consumer will buy OM of X and ON of Y.

MV Sir

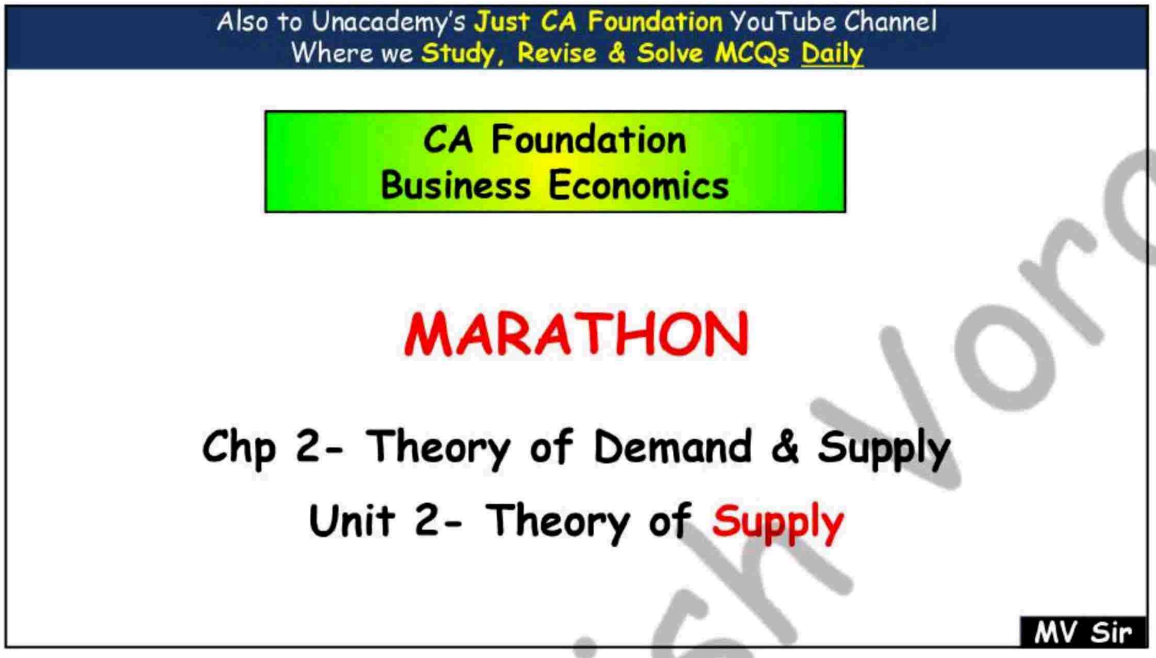
CONSUMER'S EQUILLIBRIUM

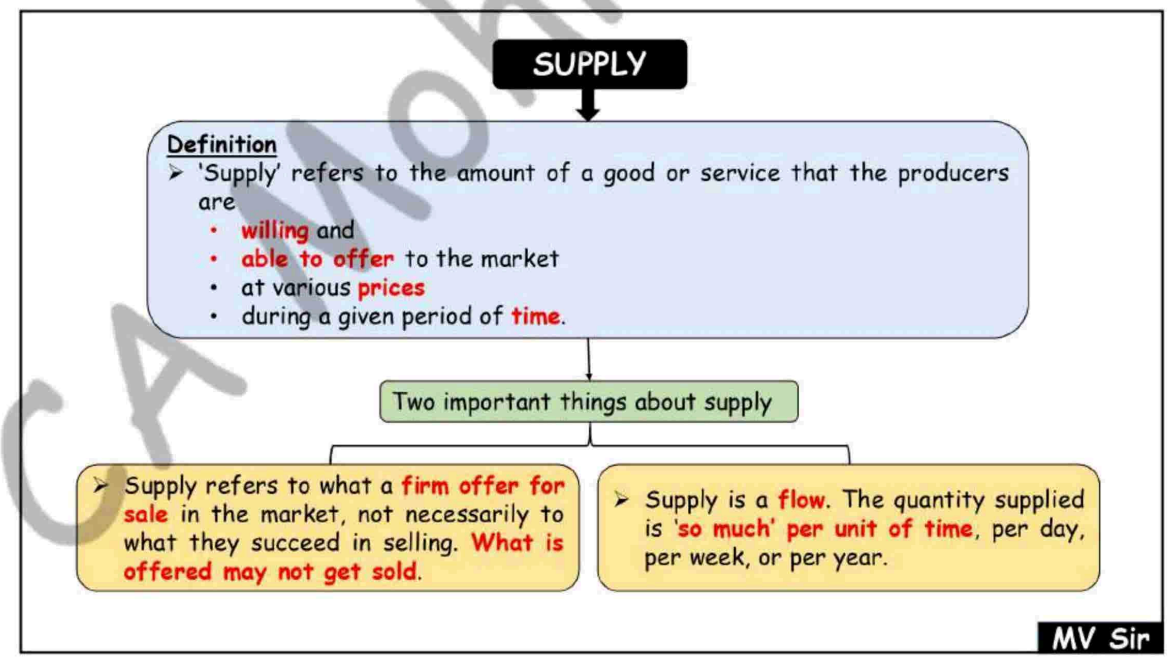
- We have seen that the consumer attains equilibrium at the point where the budget line is tangent to the indifference curve and MUx / Px = MUy /Py
- At the tangency point Q, the slopes of the price line PL and the indifference curve IC3 are equal. The slope of the indifference curve shows the marginal rate of substitution of X for Y (MRSxy) which is equal to [MUx / Muy]. While the slope of the price line indicates the ratio between the prices of two goods i.e., [Px / Py]
- At equilibrium point Q,

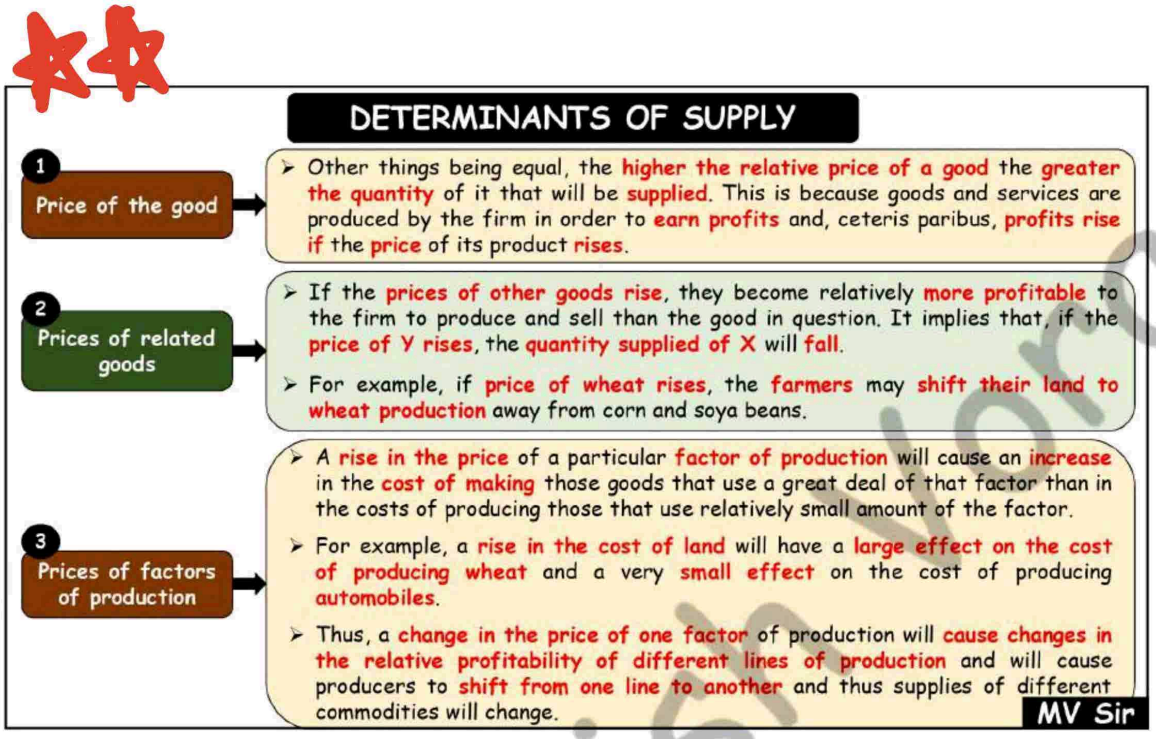
$$MRSxy = [\ MUx\ /\ MUy\ ] = [\ Px\ /\ Py\ ]$$

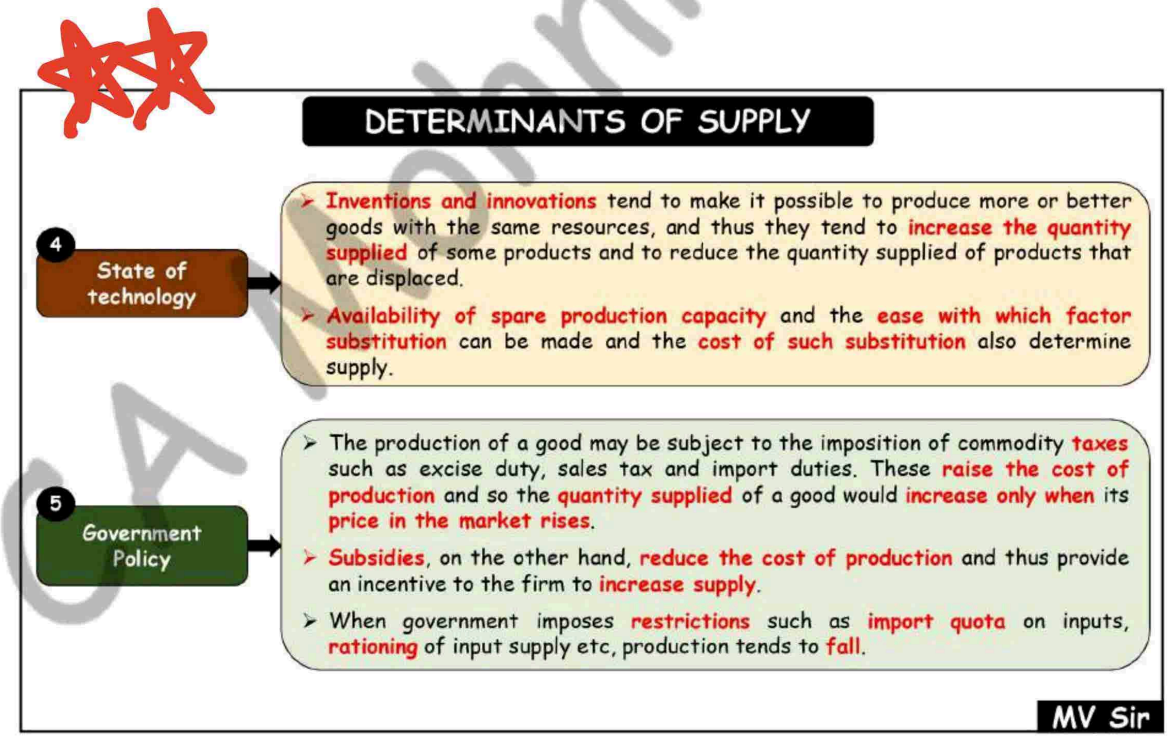
- Thus, we can say that the consumer is in **equilibrium** position when the
  - price line is tangent to the indifference curve **or**
  - when the marginal rate of substitution of goods X and Y is equal to the ratio between the prices of the two goods.
- The **indifference** curve analysis is **superior** to **utility** analysis:
  1) it dispenses with the assumption of measurability of utility
  2) it studies more than one commodity at a time
  3) it does not assume constancy of marginal utility of money
  4) it segregates income effect from substitution effect.

MV Sir









DETERMINANTS OF SUPPLY

6 Nature of competition and size of industry

- Under **competitive conditions**, **supply** will be **more** than that under monopolized conditions. If there are **large number of firms** in the market, supply will be more. Besides, **entry of new firms**, either domestic or foreign, causes the industry **supply curve** to **shift rightwards**.

7 Other Factors

- The quantity supplied of a good also depends upon
  - government's industrial and foreign **policies**,
  - **goals** of the firm,
  - infrastructural **facilities**,
  - **natural factors** such as weather, floods, earthquake and
  - **man-made factors** such as war, labour strikes, communal riots and etc.

MV Sir

LAW OF SUPPLY

- **Other things remaining constant**, the **quantity** of a good produced and offered for sale will **increase as** the **price** of the good **rises** and decrease as the price falls.
- This law is based upon common sense, because the **higher the price** of the good, the **greater the profits** that can be earned and thus **greater the incentives to produce the good** and offer it for sale.
- **Exception** to Law of Supply-
  Agricultural Goods, Future expectation of price, perishable goods etc.
- The **behaviour of supply is affected** by the **time taken** into consideration-
  - In the **short run**, it may **not be easy to increase supply**,
  - In the **long run supply** can be **easily adjusted** in response to changes in price.
- The law of supply can be explained through a **supply schedule** and a **supply curve**.

MV Sir

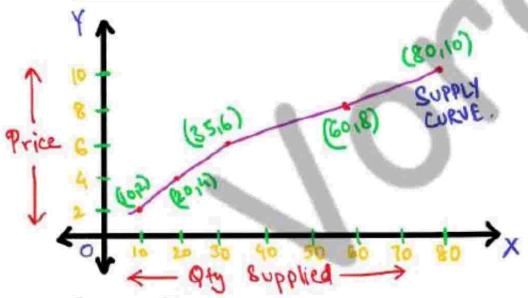
SUPPLY SCHEDULE

A supply schedule is the **tabular presentation** of the **law of supply**. It shows the different prices of a commodity and the corresponding quantities that suppliers are willing to offer for sale.

	Price (Rs)	Qty Supplied (in units)
A	2	10
B	4	20
C	6	35
D	8	60
E	10	80

SUPPLY CURVE

A supply curve is the **graphical presentation of supply schedule**. Here **price** is plotted on the **Y**-axis & **quantity supplied** on the **X**-axis.



- The **market supply**, like market demand, is the sum of supplies of a commodity made by all individual firms or their supply agencies.
- The **market supply curve** for 'X' can be obtained by adding horizontally the supply curves of various firms.

MV Sir

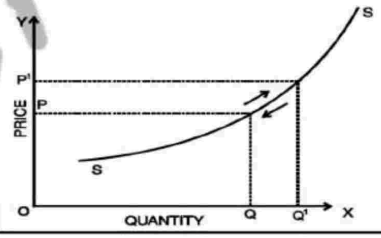
MOVEMENTS ON THE SUPPLY CURVE

- **Expansion of Supply**

When the **supply** of a good **increase** as a result of an **increase in its price**, we say that there is an "increase in the quantity supplied" or there is a "**upward movement on the supply curve**" or "expansion of supply".

- **Contraction of Supply**

When the **supply** of a good **decrease** as a result of an **decrease in its price**, we say that there is an "decrease in the quantity supplied" or there is a "**downward movement on the supply curve**" or "contraction of supply".



MV Sir

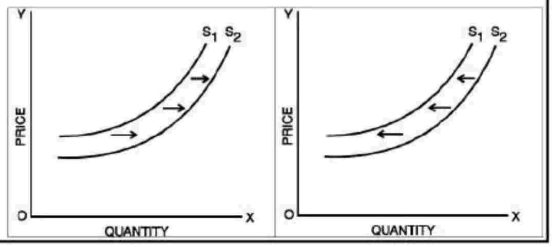
SHIFTS IN THE SUPPLY CURVE

- **Increase in Supply**

When the supply curve bodily **shifts towards the right** as a result of a **change in one of the factors** that influence the quantity supplied **other than** the commodity's **own price**, we say there is an increase in supply.

- **Decrease in Supply**

When these factors cause the **supply curve to shift to the left**, we call it decrease in supply



ELASTICITY OF SUPPLY

- The elasticity of supply is defined as the **responsiveness of the quantity supplied** of a good **to** a **change in its price**.
- Elasticity of supply is measured by dividing the percentage change in quantity supplied of a good by the percentage change in its price i.e.,

$$\text{Supply Elasticity} = Es = \frac{\text{\% Change in Quantity Supplied}}{\text{\% Change in Price}}$$

OR

$$Es = \frac{\dfrac{\text{Change in Qty Supplied}}{\text{Original Qty Supplied}} \times 100}{\dfrac{\text{Change in Price}}{\text{Original Price}} \times 100}$$

OR

$$Es = \frac{\text{Change in Qty Supplied}}{\text{Original Qty Supplied}} \Big/ \frac{\text{Change in Price}}{\text{Original Price}}$$

$$Es = \frac{\triangle q}{q} \times \frac{p}{\triangle p} = \frac{\triangle q}{\triangle p} \times \frac{p}{q}$$

Where, Es = Supply Elasticity
q = Original Quantity
y = Original Price
△ = a very small change

MV Sir

Solving Practice

Question
Suppose the price of commodity X increases from Rs 2,000 per unit to Rs 2,100 per unit and consequently the quantity supplied rises from 2,500 units to 3,000 units. Calculate the elasticity of supply.

Here $\Delta q = 500$ units $\quad \Delta p = ₹\ 100$

$p = ₹\ 2000 \quad q = 2500$ units

$$\therefore E_s = \frac{500}{100} \times \frac{2000}{2500} = 4$$

Elasticity of Supply = 4.

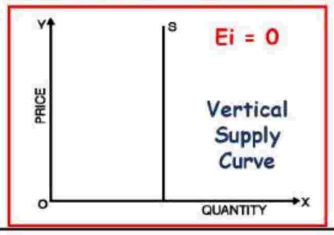
MV Sir

TYPES OF ELASTICITY OF SUPPLY

MV Sir

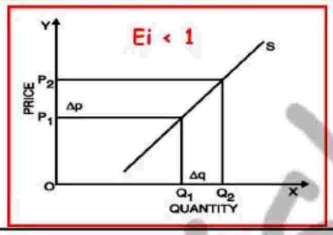
1 Perfectly inelastic supply

If as a result of a **change in price**, the quantity **supplied** of a good **remains unchanged**, we say that the elasticity of supply is **zero or** the good has perfectly inelastic supply.



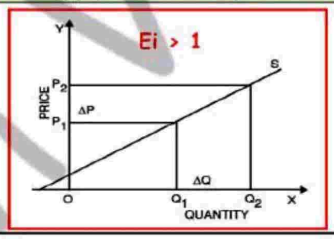
2 Relatively less-elastic supply

If as a result of a change in the price of a good its **supply changes less than proportionately**, we say that the supply of the good is relatively less elastic or elasticity of supply is less than one.



3 Relatively greater-elastic supply

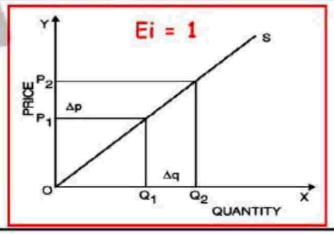
If elasticity of supply is greater than one i.e., when the **quantity supplied of a good changes substantially** in response to a small change in the price of the good we say that supply is relatively elastic.



TYPES OF ELASTICITY OF SUPPLY

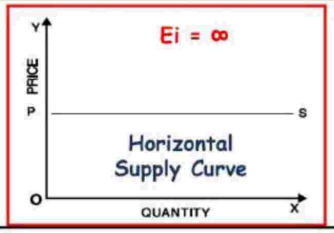
4 Unit-elastic

If the relative change in the **quantity supplied is exactly equal to the relative change in the price**, the supply is said to be unitary elastic. Here the coefficient of elasticity of supply is equal to one.



5 Perfectly elastic supply

When **nothing is supplied** at a **lower price**, but a **small increase** in **price** causes **supply** to **rise** from **zero to an infinitely** large amount indicating that producers will supply any quantity demanded at that price



MV Sir

POINT ELASTICITY OF SUPPLY

- When **elasticity is measured at a given point** on the supply curve, it is called point elasticity.
- The concept of point elasticity is used for measuring price elasticity where the **change in price is infinitesimal**.

$$Es = \frac{dq}{dp} \times \frac{p}{q}$$

Where, $\frac{dq}{dp}$ = Derivative of quantity with respect to price at a point on the Supply curve.

q = Quantity at that point

p = Price at that point

MV Sir

- **Slope** or **Gradient** of a line is a number that describes both the **direction** and the **steepness** of the line
- Slope of the line formula- (Y2 - Y1) / (X2 - X1)

The equation of a line is typically written as

$y = mx + b$

Where, m is the slope & b is the y-intercept

Es = (dq / dp) * (p / q)

(dq / dp) = 1 / Slope

Thus,

Es = (1 / Slope) * (p / q)

MV Sir

[If you know concept of derivatives, then use the below method for $\frac{dq}{dp}$]

Derivative of "q" with respect to "p"

$\frac{dq}{dp} = \frac{d(-100+10p)}{dp} = 0 + 10(1) = 10.$

OR

Solving Practice

The Supply function is given as q = -100 + 10p. Find the elasticity of supply using point method, when price is Rs 15.

Solution: $E_s = \frac{dq}{dp} \times \frac{p}{q}$

- We know, $\frac{dq}{dp} = \frac{1}{\text{Slope}}$ [If you do not know derivative concept, then use this method to find $\frac{dq}{dp}$]
- In order to find slope, we need to convert the given Supply function in "y = mx + b"
- Given Supply function

$q = -100 + 10p$

[x] [y]

$\Rightarrow 10p = q + 100$

$\Rightarrow p = \frac{1}{10}q + 10$

(y) (x)

$\therefore$ Slope $= \frac{1}{10}$

- $\frac{dq}{dp} = \frac{1}{\text{Slope}} = \frac{1}{(1/10)} = 1 \times \frac{10}{1} = 10$
- Now we need to find "q".

$q = -100 + 10p$

$p = ₹15$ (Given)

$\Rightarrow q = -100 + 10(15)$

$\Rightarrow q = 50.$

- $E_s = \frac{dq}{dp} \times \frac{p}{q} = 10 \times \frac{15}{50}$

$\Rightarrow E_s = 3$

MV Sir

ARC ELASTICITY OF SUPPLY

➢ When the **price change is somewhat larger** or when price elasticity is to be found between **two prices**. (Discussed the **derivation of the formula** in **Lec 22** on YouTube)

$$Es = \left[\frac{q_1 - q_2}{q_1 + q_2}\right] \times \left[\frac{p_1 + p_2}{p_1 - p_2}\right]$$

Where, Es = Supply Elasticity

q_1 , q_2 = Two Quantities

p_1 , p_2 = Two Prices

MV Sir

Solving Practice

Find elasticity of supply when p1 = Rs 12, p2 = Rs 15, q1 = 20 units and q2 = 50 units.

$$Es = \frac{20-50}{20+50} \times \frac{12+15}{12-15}$$

$$\frac{30}{70} \times \frac{27}{3} = +3.85$$

MV Sir

EQUILLIBRIUM PRICE

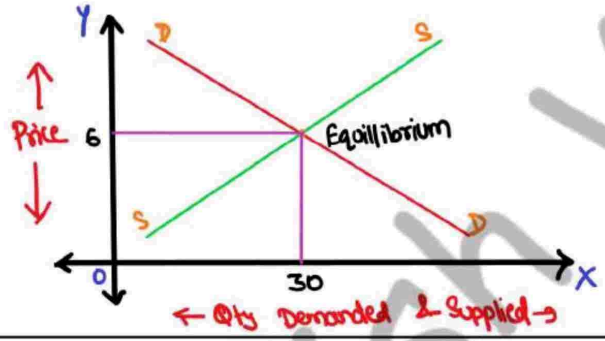
- **Equilibrium** refers to a market situation where **quantity demanded** is **equal** to **quantity supplied**.
- The **intersection** of **demand** and **supply** determines the **equilibrium price**. At this price the amount that the buyers want to buy is equal to the amount that sellers want to sell.
- Only at the equilibrium price, **both** the **buyers** and **sellers** are **satisfied**. Equilibrium price is also called **market clearing price**.
- The **determination of market price** is the **central theme** of micro economic analysis. Hence, micro-economic theory is also called **price theory**.

Price (Rs)	Qty Demanded	Qty Supplied	Impact on Price
12	10	70	Downward
8	15	52	Downward
6	30	30	Equillibrium
3	40	18	Upward
1	65	9	Upward

MV Sir

EQUILLIBRIUM PRICE

- The **equilibrium quantity is 30 units** and these are exchanged at **price Rs 6.**
- If the **price is more than the equilibrium level, excess supply** will **push the price downwards** as there are few takers in the market at this price. There will be excess supply in the market which will **force the sellers to reduce price** if they want to sell off their product. Hence **the price will fall** and **continue** falling down **till the level** where quantity **demanded** becomes **equal** to the quantity **supplied.** Opposite will happen when quantity demanded is more than quantity supplied at a particular price.
- The equilibrium price is determined by the **intersection between demand and supply.** It is also called the **market equilibrium.**



MV Sir

Also to Unacademy's **Just CA Foundation** YouTube Channel
Where we **Study, Revise & Solve MCQs Daily**

CA Foundation
Business Economics

MARATHON

Chp 3- Theory of Production & Cost

Unit 1- Theory of Production

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PRODUCTION

Generally in common parlance **production** indicates an **activity of making something material.**


Growing of Wheat


Manufacturing Cement


Manufacturing Cloth

- But in Economics, **production** denotes the process by which **man utilises resources** to **transform** them into **commodities and services** to make them **satisfy human wants.**
- All the above examples are considered as Production in Economics, but even the following sould be production-

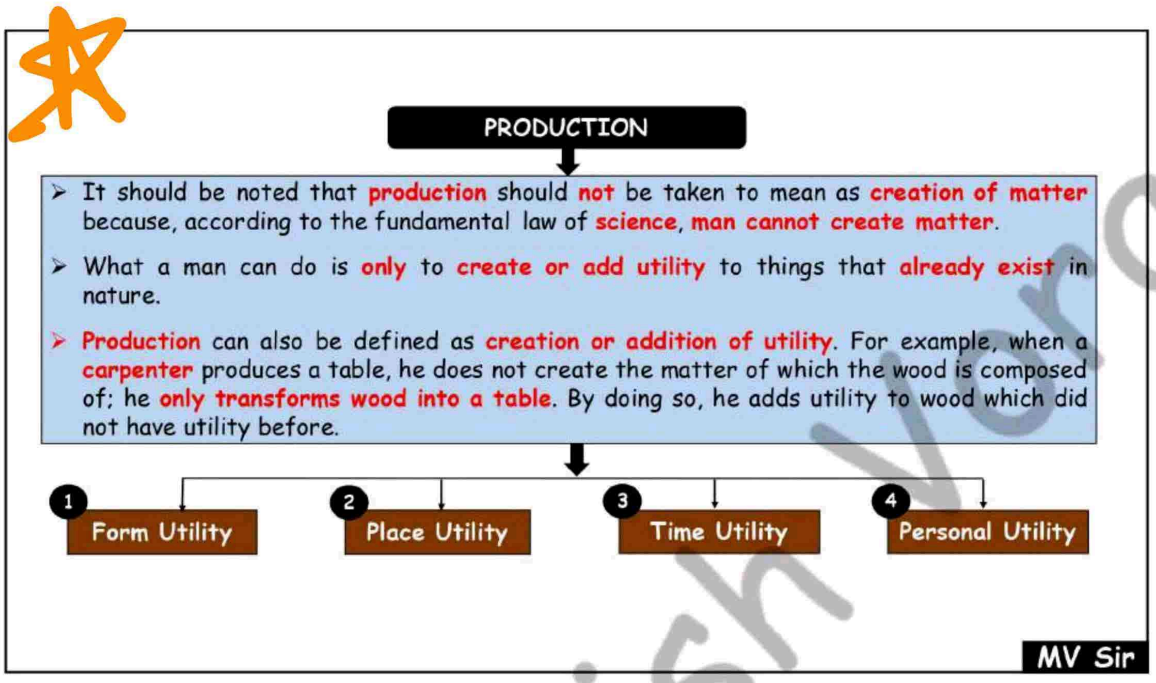

work of Doctors

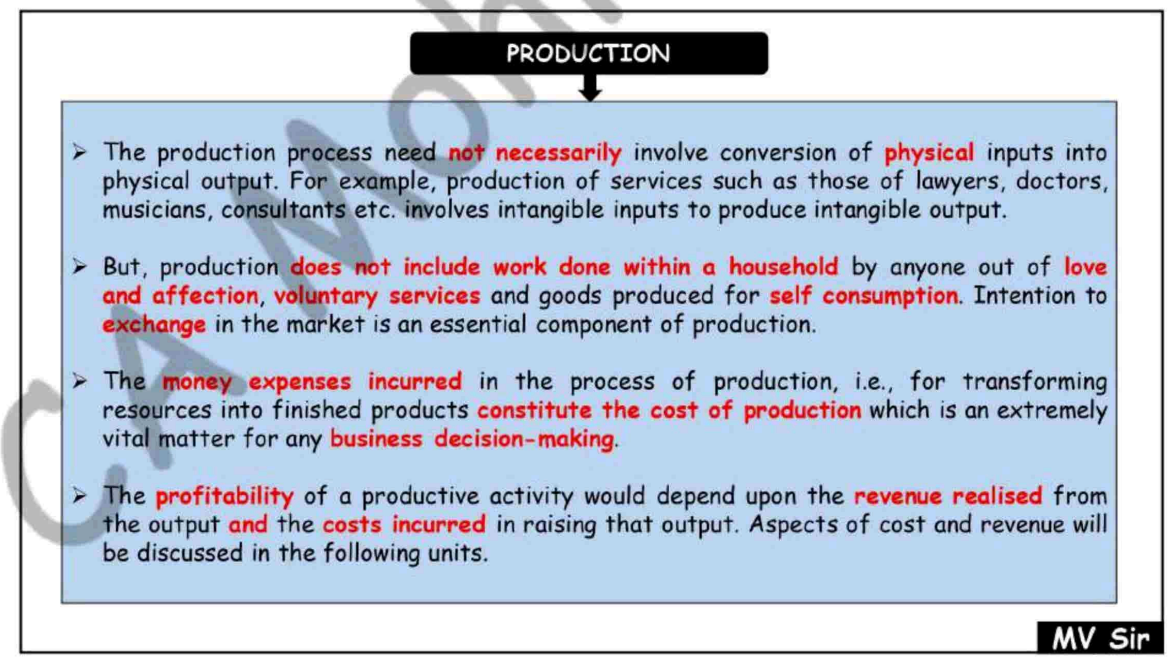

work of Lawyers

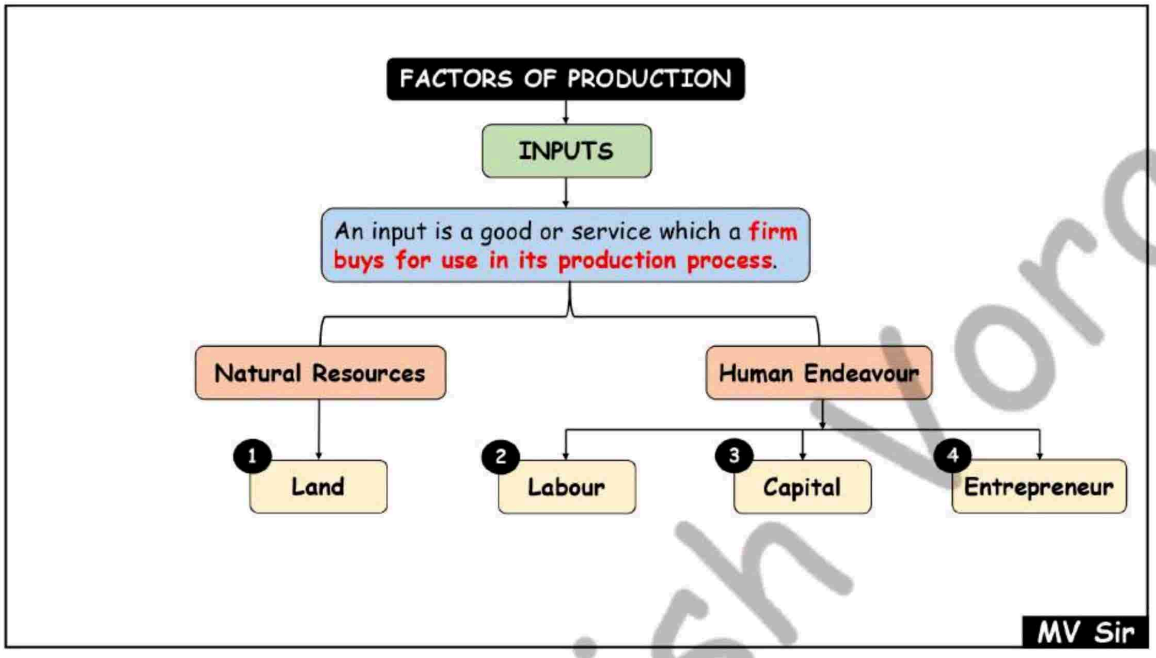

work of Teachers

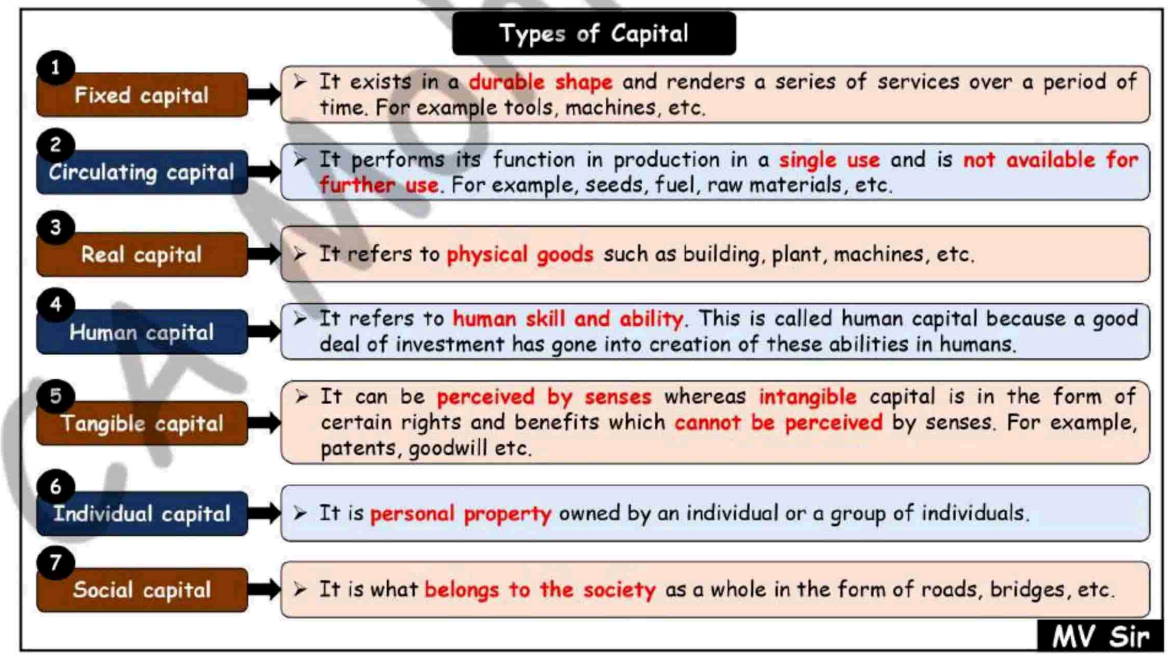

Service by Retail Shops

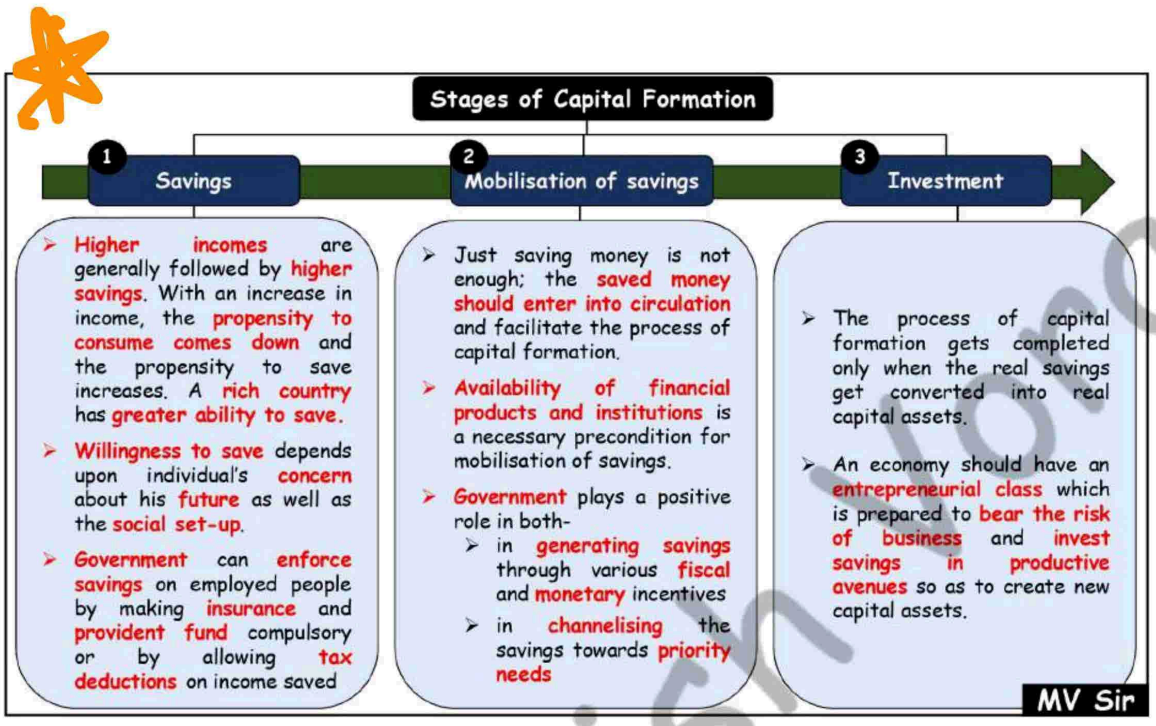
MV Sir

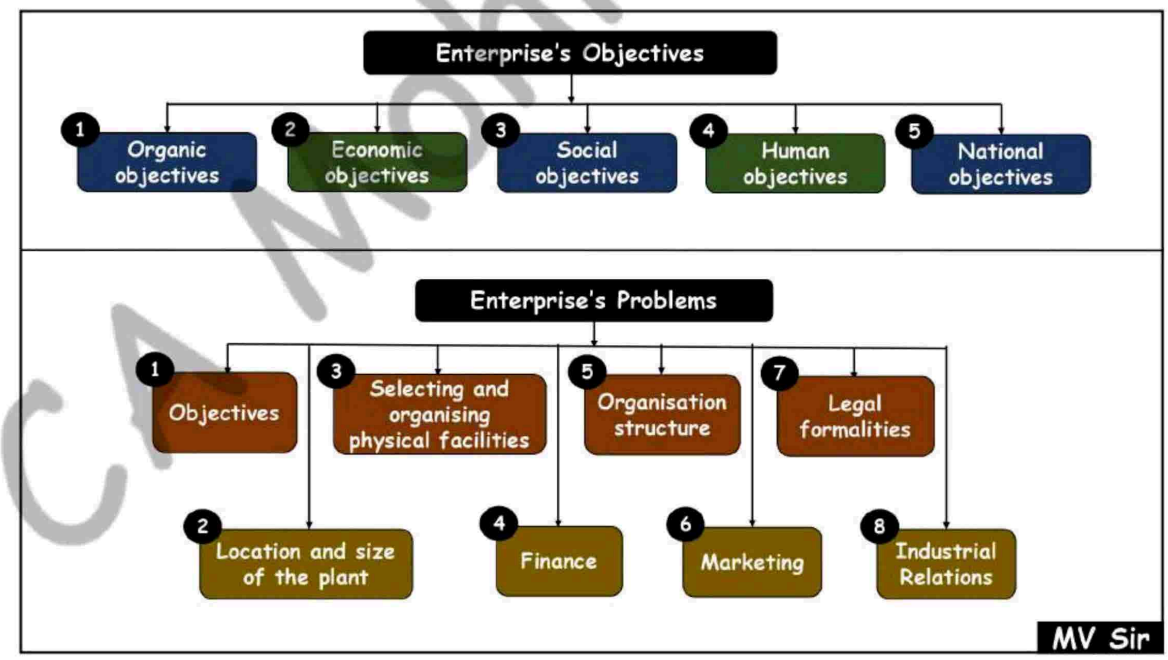












PRODUCTION FUNCTION

- The production function is a statement of the **relationship** between a firm's scarce **resources** (i.e. its **inputs**) and the **output** that results from the use of these resources.
- The production function can be algebraically expressed in the form of an equation in which the **output** is the **dependent variable** and **inputs** are **the independent variables**. The equation can be expressed as:

$$Q = f(a, b, c, d \ldots\ldots n)$$

  - Where 'Q' stands for the rate of output of given commodity and
  - a, b, c, d.....n, are the different factors (inputs) and services used per unit of time.

ASSUMPTIONS

- The relationship between inputs and outputs exists for a **specific period of time**. In other words, Q is not a measure of accumulated output over time.
- It is assumed that there is a **given (constant) "state-of-the-art" in the production technology**. [Any innovation would cause change in the relationship between the given inputs and their output.]
- Whatever input combinations are included in a particular function, the **output** resulting from their utilization is **at the maximum level**.

MV Sir

PRODUCTION FUNCTION

- As per Samuelson, the relationship between the **maximum amount of output** that can be produced and the **input required** to make that output. It is defined for a **given state of technology** i.e., the maximum amount of output that can be produced with given quantities of inputs under a given state of technical knowledge.
- For the purpose of **analysis**, the whole array of inputs in the production function can be reduced to two; **L** and **K**. Restating the equation given above, we get:

$$Q = f(L, K)$$

Where: Q = Output, L= Labour, K= Capital

Short Run Production Function

- In short-run period if the amount of **at least one of the inputs used remains unchanged** during that period.
- Thus, short-run production function shows the **maximum amount** of a good or service that can be produced by a set of inputs, **assuming** that the amount of **at least one of the inputs** used remains **unchanged**.
- In the short run, a firm **cannot install a new capital** equipment to increase production. [Capital is **fixed**]
- This is done when **law of variable proportion** is studied

Long Run Production Function

- The long run is a period of time in which **all factors of production are variable**. [firm will be able to install new machines and capital equipments]
- A longrun production function shows the **maximum quantity** of a good or service that can be produced by a set of inputs, **assuming** that the firm is **free to vary the amount of all the inputs** being used
- The behaviour of production when all factors are varied is the subject matter of the **law of returns to scale**.

MV Sir

COBB-DOUGLAS PRODUCTION FUNCTION

- Paul H. Douglas and C.W. Cobb of the U.S.A. studied the production function of the American manufacturing industries.
- In its original form, this production function applies not to an individual firm but to the whole of manufacturing in the United States. In this case, output is manufacturing production and inputs used are labour and capital.
- Cobb-Douglas production function is stated as:

$$Q = KL^{a} \cdot C^{(1-a)}$$

where 'Q' is output, 'L' the quantity of labour and 'C' the quantity of capital. 'K' and 'a' are positive constants.

- The conclusion drawn from this famous statistical study is that labour contributed about 3/4th and capital about 1/4th of the increase in the manufacturing production.
- Although, the Cobb-Douglas production function suffers from many shortcomings, it is extensively used in Economics as an approximation.

MV Sir

THE LAW OF VARIABLE PROPORTIONS

- In the short run, the input output relations are studied with one variable input (labour) with all other inputs held constant.
- The law states that as we increase the quantity of one input which is combined with other fixed inputs, the marginal physical productivity of the variable input must eventually decline.
- In other words, an increase in some inputs relative to other fixed inputs will, in a given state of technology, cause output to increase; but after a point, the extra output resulting from the same addition of extra input will become less and less.
- The laws of production under these conditions are known under **various names** as-
  - Law of variable proportions (as the behaviour of output is studied by changing the proportion in which inputs are combined)
  - Law of returns to a variable input (as any change in output is taken as resulting from the additional variable input) or
  - Law of diminishing returns (as returns eventually diminish).

MV Sir

PRODUCTION SCHEDULE

Quantity of labour	Total Product (TP)	Average Product (AP)	Marginal Product (MP)	Stages
1	100	100	100	Stage 1
2	210	105	110	
3	330	110	120	
4	440	110	110	
5	520	104	80	Stage 2
6	600	100	80	
7	670	95.70	70	
8	720	90	50	
9	750	83.30	30	
10	750	75	0	
11	740	67.30	-10	Stage 3

MV Sir

TP vs AP vs MP

Total Product (TP)

- Total product (TP) is the **total output** resulting from the **efforts of all the factors of production combined** together at any time.
- If the inputs of all but one factor are held constant, the total product will **vary with the quantity used of the variable factor**.
- The total product goes on rising as more and more units of labour are employed. With 10 units of labour, the total product rises to 750 units. When 11 units of labour are employed, total product falls to 740 units due to negative returns from the 11th unit of labour.

Average Product (AP)

- Average product (AP) is the **total product** per **unit of the variable factor**.
- **Average Product = Total Product / No. of Units of Variable Factor**
- It is shown in previous schedule that When one unit of labour is employed, average product is 100, when two units of labour are employed, average product rises to 105.

Marginal Product (MP)

- Marginal product (MP) is the **change in total product** per **unit change in the quantity of variable factor**. In other words, it is the **addition made to the total production** by an additional unit of input.
- **$MP_n = TP_n - TP_{n-1}$**
- For example, the MP corresponding to 4 units is given as 110 units. This reflects the fact that an increase in labour from 3 to 4 units, has increased output from 330 to 440 units.

MV Sir

Relationship between AP & MP

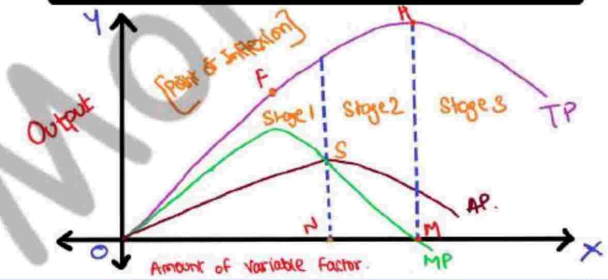
- When **average product rises** as a result of an increase in the quantity of variable input, **marginal product** is **more** than the average product.
- When **average product is maximum**, **marginal product** is **equal** to average product. In other words, the marginal product curve cuts the average product curve at its maximum.
- When **average product falls**, **marginal product** is **less** than the average product.

Assumptions of Law of Variable Proportion

1) The **state of technology** is assumed to be **given and unchanged**. If there is any improvement in technology, then marginal product and average product may rise instead of falling.
2) There must be **some inputs** whose quantity is **kept fixed**. This law does not apply to cases when all factors are proportionately varied.
3) The law **does not apply** to those cases where the **factors must be used in fixed proportions to yield output**. When the various factors are required to be used in fixed proportions, an increase in one factor would not lead to any increase in output i.e., **marginal product of the variable factor will then be zero** and not diminishing.
4) We consider **only physical inputs and outputs (unit terms)** and not economic profitability in monetary terms.

MV Sir

Law of Variable Proportion- Summary



Stages		TP	MP	AP
1	Increasing Returns	• TP increases at increasing rate till POI, • After that it increases with decreasing rate.	• MP rises & is maximum corresponding to POI, and the falls. • MP > AP, throughout.	• AP is rising. • Stage ends= AP is max & AP = MP
2	Diminishing Returns	• TP increases with decreasing rate • Stage ends= TP is max.	• MP is decreasing but positive. • Stage ends= MP is 0	• AP is decreasing but positive.
3	Negative Returns	• TP is decreasing	• MP is decreasing & negaitive.	• AP is decreasing but positive.

MV Sir

Explanation for Stage 1

- In the beginning, the **quantity of fixed factors is abundant** relative to the quantity of the variable factor. As **more units of the variable factor are added** to the constant quantity of the fixed factors, the **fixed factors are more intensively and effectively utilised** i.e., the efficiency of the fixed factors increases as additional units of the variable factors are added to them. This causes the production to increase at a rapid rate.
- For example, if a **machine** can be **efficiently operated when four persons** are working on it and if in the **beginning we are operating it only with three** persons, **production** is bound to **increase** if the **fourth** person is **also put to work** on the machine since the machine will be effectively utilised to its optimum.
- This happens because, in the **beginning some amount of fixed factor remained unutilised** and, therefore, when the variable factor is increased, **fuller utilisation** of the fixed factor becomes possible and it **results in increasing returns**.
- A question arises as to why the fixed factor is not initially taken in a quantity which suits the available quantity of the variable factor. The answer is that, generally, **those factors which are indivisible are taken as fixed. Indivisibility** of a factor means that **due to technological requirements**, a **minimum amount of that factor must be employed** whatever be the level of output. Thus, as more units of the variable factor are employed to work with an indivisible fixed factor, output greatly increases due to fuller utilisation of the latter.
- The **second reason** why we get increasing returns at the initial stage is that as more units of the variable factor are employed, **the efficiency of the variable factor increases**. This is because **introduction of division of labour and specialisation** becomes possible with sufficient quantity of the variable factor and these results in **higher productivity**.

MV Sir

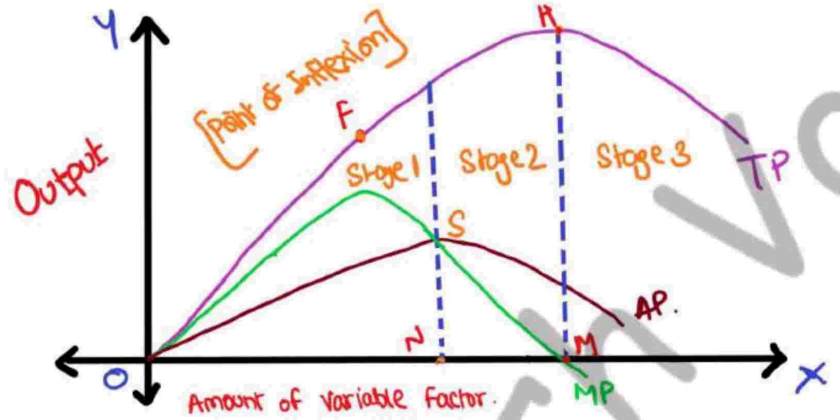
Explanation for Stage 2

- **Why we get diminishing returns** after a certain amount of the variable factor has been added to the fixed quantity of that factor?
  - Increasing returns occur primarily because of more efficient use of fixed factors as more units of the variable factor are combined to work with it. **Once the point is reached** at which the **amount of variable factor is sufficient to ensure efficient utilisation of the fixed factor, any further increases** in the variable factor will cause **marginal and average product** to **decline** because the **fixed factor then becomes inadequate** relative to the quantity of the variable factor.
- Continuing the previous example, when four men were put to work on one machine, the optimum combination was achieved. Now, if the **fifth person is put on the machine**, his **contribution will be nil**. In other words, the marginal productivity will start diminishing.
- The phenomenon of diminishing returns, like that of increasing returns, **rests upon the indivisibility of the fixed factor**. Just as the average product of the variable factor increases in the first stage when better utilization of the fixed indivisible factor is being made, so the **average product** of the variable factor **diminishes** in the **second stage** when the **fixed indivisible factor is being worked too hard**.
- Another reason offered for the operation of the law of diminishing returns is the **imperfect substitutability of one factor for another**. Had the perfect substitute of the scarce fixed factor been available, then the paucity of the scarce fixed factor during the second stage would have been made up by increasing the supply of its perfect substitute with the result that output could be expanded without diminishing returns.

MV Sir

Explanation for Stage 3

- As the amount of the variable factor continues to be increased to a constant quantity of the other, a stage is reached when the total product declines and marginal product becomes negative.
- This is due to the fact that the quantity of the variable factor becomes too excessive relative to the fixed factor so that they get in each other's ways with the result that the total output falls instead of rising. In such a situation, a reduction in the units of the variable factor will increase the total output.



MV Sir

Stage of Operation

An important question is in which stage a rational producer will seek to produce?

- A rational producer will never produce in stage 3 where marginal product of the variable factor is negative. This being so, a producer can always increase his output by reducing the amount of variable factor. Even if the variable factor is free of cost, a rational producer stops before the beginning of the third stage.
- A rational producer will also not produce in stage 1 as he will not be making the best use of the fixed factors and he will not be utilising fully the opportunities of increasing production by increasing the quantity of the variable factor whose average product continues to rise throughout stage 1. Even if the fixed factor is free of cost in this stage, a rational entrepreneur will continue adding more variable factors.
- It is thus clear that a rational producer will never produce in stage 1 and stage 3. These stages are called stages of 'economic absurdity' or 'economic non-sense'.
- A rational producer will always produce in stage 2 where both the marginal product and average product of the variable factors are diminishing. At which particular point in this stage, the producer will decide to produce depends upon the prices of factors. The optimum level of employment of the variable factor (here labour) will be determined by applying the principle of marginalism in such a way that the marginal revenue product of labour is equal to the marginal wages.

MV Sir

RETURNS TO SCALE

- Here we study about **changes in output** when **all factors of production** in a particular production function are **increased together**. In other words, we shall study the behaviour of output in response to a **change in the scale**.
- A change in scale means that **all factors of production** are **increased** or **decreased** in the **same proportion**. Change in scale is different from changes in factor proportions.
- **Changes in output** as a result of the **variation** in **factor** proportions, as seen before, form the subject matter of the **law of variable proportions**.
- On the other hand, the study of **changes in output** as a consequence of **changes in scale** forms the subject matter of **returns to scale**.
- It should be kept in mind that the returns to scale faced by a firm are solely **technologically determined** and are **not influenced by economic decisions** taken by the firm or by **market conditions**.

MV Sir

RETURNS TO SCALE

Constant Returns to Scale

- Constant returns to scale means that with the **increase in the scale in some proportion**, **output increases in the same proportion**.
- If all the inputs are increased by a certain amount (say k) output increases in the same proportion (k). It has been found that an individual firm passes through a long phase of constant returns to scale in its lifetime.
- Constant returns to scale, otherwise called as "**Linear Homogeneous Production Function**", may be expressed as follows:

$$k.Qx = f(kK, kL) = k(K, L)$$

Increasing Returns to Scale

- Increasing returns to scale means that **output increases in a greater proportion** than the **increase in inputs**. When a firm **expands**, increasing returns to scale are obtained in the beginning.
- For example, a wooden box of 3 ft. cube contains 9 times greater wood than the wooden box of 1 foot-cube. But the capacity of the 3 foot- cube box is 27 times greater than that of the one foot cube.
- Another reason for increasing returns to scale is the **indivisibility of factors**. Some **factors** are **available in large and lumpy units** and can, therefore, be **utilised** with **utmost efficiency** at a large output. If all the factors are perfectly divisible, increasing returns may not occur.
- Returns to scale may also increase because of **greater possibilities** of **specialisation** of **land** and **machinery**.

MV Sir

RETURNS TO SCALE

Decreasing Returns to Scale

- When **output increases in a smaller proportion** with an **increase in all inputs**, decreasing returns to scale are said to prevail.
- When a firm **goes on expanding by increasing all inputs**, **decreasing returns** to scale set in. Decreasing returns to scale eventually occur because of **increasing difficulties** of **management**, **coordination** and **control**.
- When the firm has expanded to a very large size, it is **difficult to manage** it with the **same efficiency as before**.

- The **Cobb-Douglas production function**, explained earlier is **used** to **explain "returns to scale"** in production. Originally, Cobb and Douglas assumed that returns to scale are constant.
- The function was constructed in such a way that the exponents summed to **a+1-a=1**. However, later they relaxed the requirement and rewrote the equation as follows:

$$Q = K L^a . C^b$$

Where 'Q' is output, 'L' the quantity of labour and 'C' the quantity of capital, 'K' and 'a' and 'b' are positive constants.

- If **a + b > 1**, **Increasing returns** to scale result i.e. increase in output is more than the proportionate increase in the use of factors (labour and capital).
- **a + b = 1**, **Constant returns** to scale result i.e. the output increases in the same proportion in which factors are increased.
- **a + b < 1**, **decreasing returns** to scale result i.e. the output increases less than the proportionate increase in the labour and capital.

MV Sir

PRODUCTION OPTIMISATION

- Normally, a **profit maximising firm** is interested to know **what combination of factors** of production (or inputs) would **minimise its cost** of production for a given output.
- This can be known by **combining** the firm's production and cost functions, namely **isoquants** and **isocost** lines respectively.

ISOQUANTS

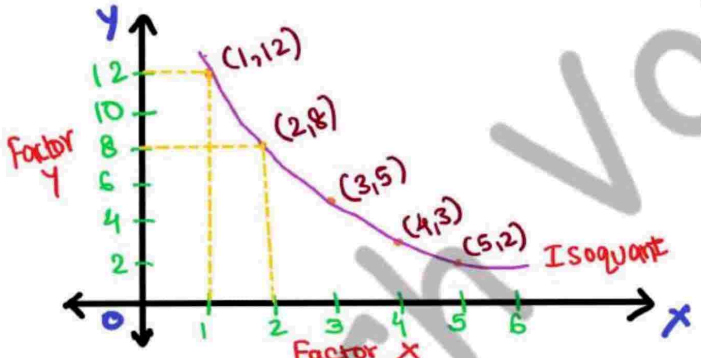
- Isoquants are **similar to indifference curves** in the theory of consumer behaviour.
- An isoquant represents **all those combinations** of **inputs** which are capable of **producing** the **same level of output**.
- Since an isoquant curve represents **all those combination** of inputs which yield an **equal quantity of output**, the producer is indifferent as to which combination he chooses. Therefore,
- Isoquants are also called
  - **equal-product curves**,
  - **production indifference curves** or
  - **iso-product curves**.

MV Sir

ISOQUANT SCHEDULE

Factor combination	Factor X	Factor Y	MRTS
A	1	12	-
B	2	8	4
C	3	5	3
D	4	3	2
E	5	2	1

ISOQUANT or EQUAL PRODUCT CURVE



MV Sir

ISOQUANTS

- Isoquants have properties similar to indifference curves. **Properties** of Isoquants-
  - Isoquants are **negatively sloped**,
  - **convex to the origin** due to diminishing marginal rate of technical substitution (MRTS)
  - While a **curve on the right represents a higher level of output**, that on the left represents a lower level of output.
  - **non intersecting**.
- However, there is one **important difference** between the two:
  - The **level of production** acquired by the producer is **easily quantified** whereas in an indifference curve it is not possible to quantify the level of satisfaction acquired by the consumer.

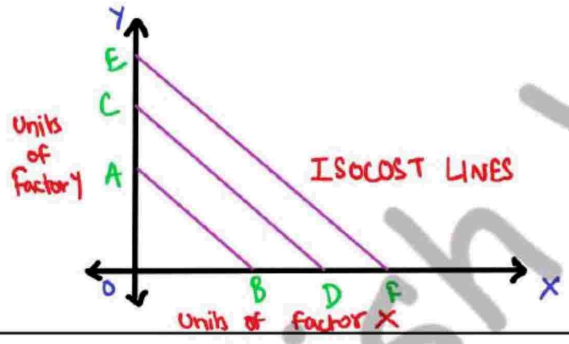
ISOCOST

- **Isocost line**, also known as **Equal-Cost Line** or **budget line** or the **budget constraint line**, shows the various alternative **combinations of two factors** which the **firm can buy with given outlay**.
- Suppose a firm has **Rs. 1,000** to spend on the **two factors X and Y**. If the **price of factor X is Rs. 10** and that of **Y is Rs. 20**, the firm can spend its outlay on X and Y in various ways.
- It can spend the entire amount on X and thus buy 100 units of X and zero units of Y or it can spend the entire outlay on Y and buy 50 units of it with zero units of X factor. In between, it can have any combination of X and Y.
- **Whatever be the combination** of factors the firm chooses, the **total cost** to the firm remains the **same**.
- In other words, **all points on a budget line** would **cost** the firm the **same amount**.

MV Sir

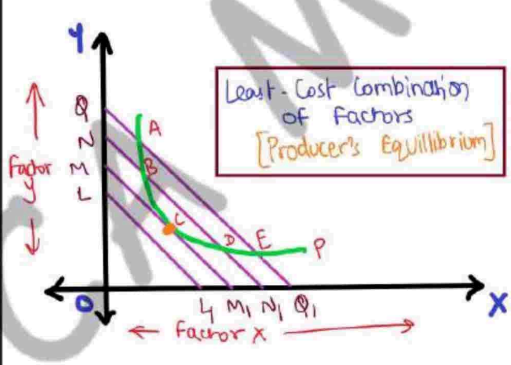
ISOCOST

- We can show the isocost line diagrammatically also. The **X-axis** shows the **units of factor X** and **Y-axis** the **units of factor Y**.
- When the entire Rs 1,000 is spent on factor X, we get OB of factor X and when the entire amount is spent on factor Y we get OA of factor Y . The straight line AB which joins points A and B will pass through **all combinations of factors X and Y** which the **firm can buy with outlay of Rs 1,000**. The line AB is called **isocost line**.
- The below figure shows various isocost lines representing **different combinations of factors** with **different outlays**.



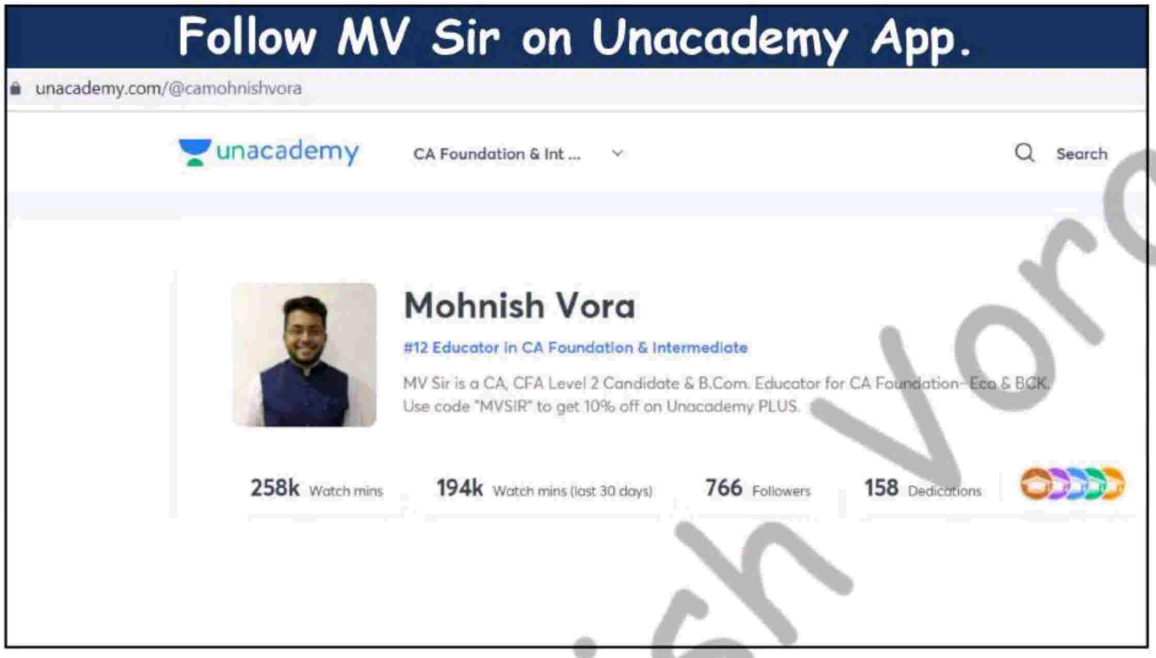
MV Sir

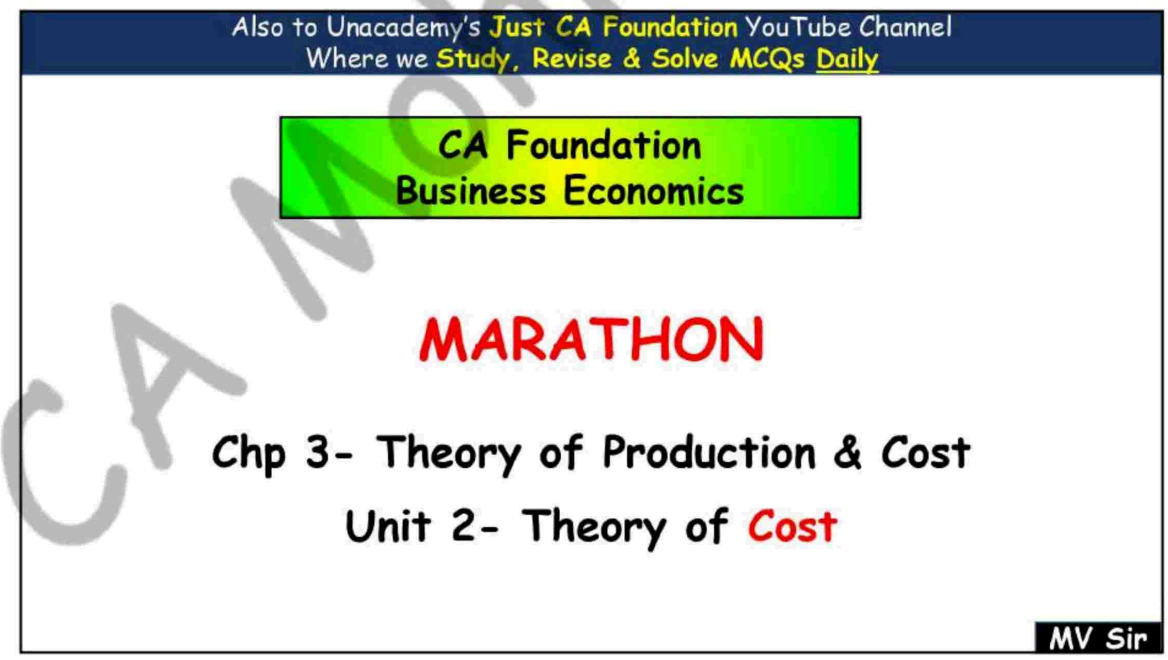
PRODUCTION OPTIMISATION



- **Suppose** the firm has **already decided about the level of output** to be produced. Then the question is with **which factor combination the firm should try to produce** the pre-decided level of output.
- The firm will try to use the **least-cost combination of factors**, which can be found by **super-imposing** the **isoquant** that represents the **pre decided level of output** on the **isocost lines**.
- Suppose the firm has **decided to produce 1,000 units** (represented by **iso-quant P**). These units can be produced **by any factor combination lying on P** such as A, B, C, D, E, etc. The **cost** of producing 1,000 units would be **minimum at the factor combination** represented by **point C** where the **iso-cost line MM1 is tangent to the given isoquant P**.
- At all other points such as **A, B, D, E** the **cost is more** as these **points lie on higher isocost lines** compared to MM1. Thus, the **factor combination** represented by **point C** is the **optimum combination** for the producer. It represents the least-cost of producing 1,000 units of output.
- It is thus clear that the **tangency point** of the given **isoquant** with an **isocost line** represents the **least cost combination of factors** for producing a given output.

MV Sir





COST ANALYSIS

- **Cost Analysis** is the **study of behaviour of cost** in relation to **one or more production criteria**, namely, size of output, scale of operations, prices of factors of production and other relevant economic variables.
- In other words, cost analysis is concerned with the **financial aspects of production relations** as against physical aspects which were considered in production analysis.

COST CONCEPTS

1. Accounting Costs & Economic costs
2. Outlay costs & Opportunity costs
3. Traceable costs & Non-Traceable costs
4. Incremental costs & Sunk costs
5. Historical costs & Replacement costs
6. Private costs & Social costs
7. Fixed Costs, Shut Down Cost & Variable costs

MV Sir

COST FUNCTION

- Cost function refers to the **mathematical relation** between **cost of a product** and the various **determinants of costs**.
- In a cost function, the **dependent variable** is **unit cost or total cost** and the **independent variables** are the **price of a factor**, the **size of the output** or any other relevant phenomenon which has a bearing on cost, such as technology, level of capacity utilization, efficiency and time period under consideration.
- Cost function is a function which is obtained from **production function** and the **market supply of inputs**. It expresses the **relationship** between **costs** and **output**.
- Cost functions are derived from **actual cost data** of the firms and are **presented through cost curves**. The **shape** of the cost curves **depends** upon the **cost function**.
- Cost functions are of two kinds:
  - **short-run** cost functions and
  - **long-run** cost functions.

MV Sir

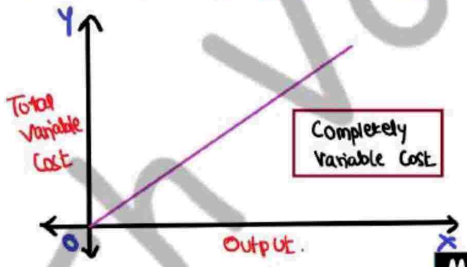
VARIABLE FACTOR & VARIABLE COST

Variable Factors

- A firm can readily employ more workers if it has to increase output. Similarly, it can purchase more raw materials if it has to expand production. Such **factors** which can be **easily varied with a change in the level of output** are called variable factors.

Variable Cost

- Variable costs are those costs which **change with changes in output**.
- These costs include payments such as **wages of casual labour** employed, **prices of raw material**, **fuel** and power used, **transportation** cost etc.
- If a **firm shuts down** for a short period, it **may not use the variable factors** of production and therefore, will not therefore incur any variable cost.
- **Variable cost curve** drawn under the **assumption** that variable costs change **linearly** with changes in output.



MV Sir

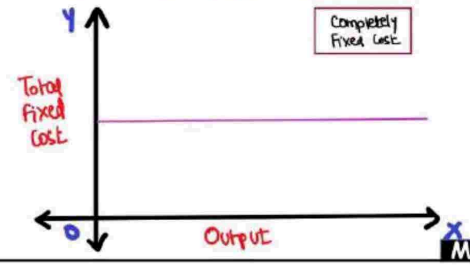
FIXED FACTOR & FIXED COST

Fixed Factors

- Some factors such as **building**, **capital equipment**, or **top management team** which **cannot be so easily varied**.
- It takes time to install new machinery. Similarly, it takes time to build a new factory. Such factors which **cannot be readily varied** and **require a longer period to adjust** are called fixed factors.

Fixed Costs

- Fixed costs are those costs which are **independent of output**, i.e., they do not change with changes in output.
- These costs are a "**fixed amount**" which are incurred by a firm in the short run, **whether** the **output is small or large**.
- Even if the **firm closes down for some time** in the short run **but remains in business**, these costs **have** to be **borne** by it.
- Fixed costs include such charges as **contractual rent**, **insurance fee**, property **taxes**, interest on capital employed, managers' **salary**, watchman's wages etc.



MV Sir

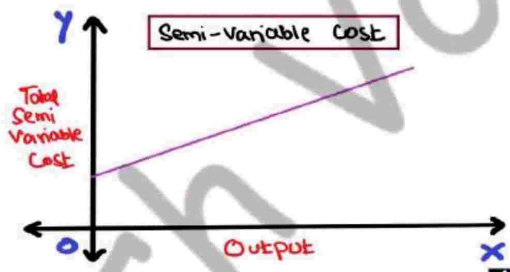
SHORT RUN Vs LONG RUN

- **Short run** is a period of time in which **output can be increased or decreased** by **changing only** the amount of **variable factors** such as, labour, raw materials, etc. In the **short run**, quantities of **fixed factors cannot** be **varied (remain unaltered)** in accordance with changes in output.
- On the other hand, **long run** is a period of time in which the **quantities of all factors** may be **varied**. In other words, all factors become variable in the long run.

SEMI - VARIABLE COST

Semi - Variable Cost

- There are some costs which are **neither perfectly variable, nor absolutely fixed** in relation to the changes in the size of output.
- These are known as semi-variable costs. Example: **Electricity** charges include both a fixed charge and a charge based on consumption, **Postpaid Telephone Bill** etc

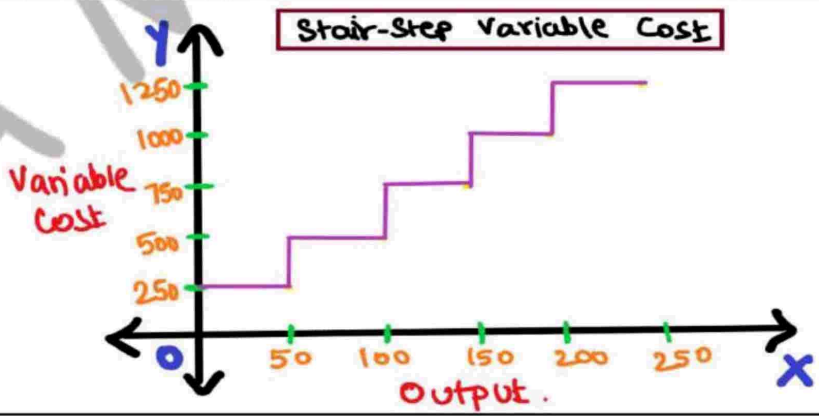


MV Sir

STAIR-STEP VARIABLE COST

Stair-step variable cost

- There are some costs which may **increase in a stair-step fashion**, i.e., they **remain fixed over certain range of output**; but **suddenly jump** to a new higher level when output goes beyond a given limit.
- E.g. One **box** which can accommodate only 50 chocolates. Cost per Box= Rs 250. For 70 or 80 or 90 chocolates, 2 boxes will be required.



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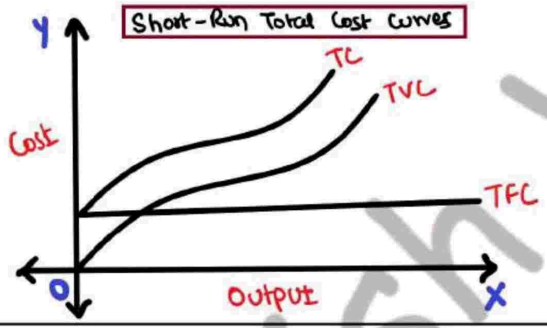
SHORT RUN TOTAL COSTS

- TC = TFC + TVC
- **Total Fixed Cost curve (TFC)**
  - horizontal straight line parallel to X-axis
  - Starts from a point on the Y-axis
- **Total Variable Cost (TVC)**
  - Initially increases at a decreasing rate and then at an increasing rate.
- **Total Cost Curve (TC)**
  - Obtained by adding vertically the TFC curve and the TVC curve.
  - Slopes of TC and TVC are the same
  - At each point the TC & TVC curves have vertical distance equal to total fixed cost.



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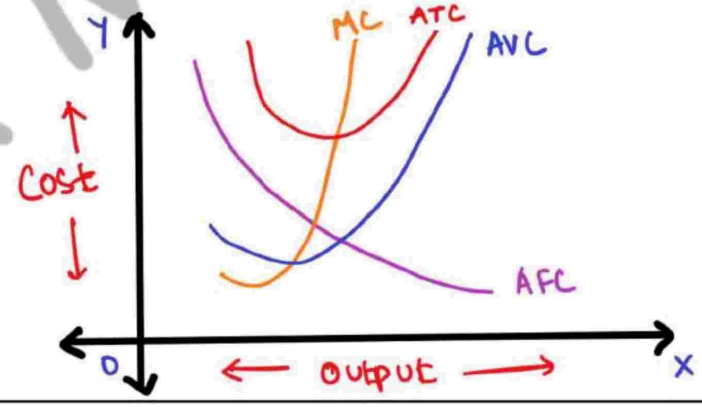
SHORT RUN AVERAGE COSTS

Average Total Cost (ATC)

Average Fixed Cost (AFC) + Average Variable Cost (AVC)



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Average Fixed Cost (AFC)

- AFC is obtained by dividing the total fixed cost by the number of units of output produced. i.e.

AFC = TFC / Q

- Thus, AFC is the fixed cost per unit of output. For example, if a firm is producing with a total fixed cost of Rs 2,000.
  - When output is 100 units, AFC= Rs 20.
  - If output increases to 200 units, AFC= Rs 10.
- Since total fixed cost is a constant amount, average fixed cost will steadily fall as output increases.
- AFC curve will slope downwards throughout its length but will not touch the X-axis as AFC cannot be zero.

Average Variable Cost (AVC)

- AVC is found out by dividing the total variable cost by the number of units of output produced, i.e.

AVC= TVC / Q

- Thus, AVC is the variable cost per unit of output.
- AVC normally falls as output increases from zero to normal capacity output due to occurrence of increasing returns to variable factors.
- But beyond the normal capacity output, average variable cost will rise steeply because of the operation of diminishing returns.
- AVC curve will first fall, then reach a minimum and then rise.

Average Total Cost (ATC)

- **ATC = AFC + AVC**
- It is the total cost divided by the number of units produced, i.e. **ATC = TC / Q**
- In the beginning, both AVC and AFC curves fall, thus, ATC curve will also fall sharply. When AVC curve begins to rise, but AFC curve still falls steeply, ATC curve continues to fall.
- This is because, during this stage, the fall in AFC curve is greater than the rise in the AVC curve, but as output increases further, there is a sharp rise in AVC which more than offsets the fall in AFC.
- Therefore, ATC curve first falls, reaches its minimum and then rises. Thus, the average total cost curve is a "U" shaped curve.

MV Sir

Marginal Cost Curve (MC)

- Marginal cost is the addition made to the total cost by the production of an additional unit of output.

MC = Change in TC / Change in Output

Or

$$MC_n = TC_n - TC_{n-1}$$

- For example,
  - If we are producing 5 units at a cost of Rs 200 and now suppose the 6th unit is produced and the total cost is Rs 250, then the marginal cost is 250 - 200 = Rs 50.
  - Marginal Cost will be Rs 24, if 10 units are produced at a total cost of Rs 320 [(320-200) / (10-5)].
- Marginal Cost is independent of fixed cost. This is because fixed costs do not change with output. It is only the variable costs which change with a change in the level of output in the short run. Therefore, marginal cost is in fact due to the changes in variable costs.
- Marginal cost curve falls as output increases in the beginning. It starts rising after a certain level of output. This happens because of the influence of the law of variable proportions.
- The MC curve becomes minimum corresponding to the point of inflection on the total cost curve. The fact that marginal product rises first, reaches a maximum and then declines ensures that the marginal cost curve of a firm declines first, reaches its minimum and then rises. In other words marginal cost curve of a firm is "U" shaped.

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Short Run Costs Table

Units of output	Total fixed cost	Total variable cost	Total cost	Average fixed cost	Average variable cost	Average total cost	Marginal cost
0	1000	0	1000	-	-	-	-
1	1000	50	1050	1000.00	50.00	1050.00	50
2	1000	90	1090	500.00	45.00	545.00	40
3	1000	140	1140	333.33	46.67	380.00	50
4	1000	196	1196	250.00	49.00	299.00	56
5	1000	255	1255	200.00	51.00	251.00	59
6	1000	325	1325	166.67	54.17	220.83	70
7	1000	400	1400	142.86	57.14	200.00	75
8	1000	480	1480	125.00	60.00	185.00	80
9	1000	570	1570	111.11	63.33	174.44	90
10	1000	670	1670	100.00	67.00	167.00	100
11	1000	780	1780	90.91	70.91	161.82	110
12	1000	1080	2080	83.33	90.00	173.33	300

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➢ The previous table shows that:

1) **Fixed** costs **do not change with increase in output** upto a given level. Average fixed cost, therefore, comes down with every increase in output.
2) **Variable costs increase**, but **not necessarily in the same proportion** as the increase in **output**. In the above case, average variable cost comes down gradually till 4 units are produced. Thereafter it starts increasing.
3) Marginal cost is the additional cost divided by the additional units produced. This also **comes down first and then starts increasing**.

Relationship between Average Cost and Marginal Cost

1) When **average cost falls** as a result of an increase in output, **marginal cost is less than average cost**.
2) When **average cost rises** as a result of an increase in output, **marginal cost is more than average cost**.
3) When **average cost is minimum**, marginal cost is **equal** to the average cost. In other words, marginal cost curve **cuts** average cost curve at its **minimum point** (i.e. optimum point).

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LONG RUN AVERAGE COST CURVE

- **Long run** is a period of time during which the **firm can vary all of its inputs**; unlike short run in which some inputs are fixed and others are variable.
- In the long run the firm can **build any size or scale of plant and therefore, can move from one plant to another**; it can acquire a big plant if it wants to increase its output and a small plant if it wants to reduce its output.
- The long run being a **planning horizon**, the firm plans ahead to build the most appropriate scale of plant to produce the future level of output.
- It should be kept in mind that **once the firm has built a particular scale of plant**, its **production** takes place in the **short run**. Briefly put, the firm actually **operates in the short run** and **plans for the long run**.
- **Long run cost of production** is the **least possible cost** of producing any given level of output **when all individual factors** are **variable**.
- A **long run cost curve** depicts the functional **relationship** between **output** and the **long run cost of production**.

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LONG RUN AVERAGE COST CURVE

- In order to understand how the long run average cost curve is derived, we consider **three short run average cost curves** as shown in next slide. These short run average cost curves (SACs) are also called '**plant curves**'. In the **short run**, the firm can be **operating on any short run average cost curve**, given the size of the plant.
- **Suppose** that there are the **only three plants** which are technically possible. **Given the size** of the plant, the firm will be **increasing or decreasing** its **output** by **changing** the amount of the **variable inputs**.
- But in the **long run**, the firm **chooses** among the **three possible sizes** of plants as depicted by short run average curves (SAC 1, SAC 2, and SAC 3).
- In the **long run**, the firm will **examine** with **which size** of plant or on which short run average cost curve it should operate to produce a given level of output, so that the **total cost is minimum**.
- It will be seen from the diagram that up to **OB** amount of output, the firm will **operate on the SAC 1**, though it could also produce with SAC 2. **Up to OB** amount of output, the production on **SAC 1** results in **lower cost** than on **SAC 2**.
- For example, if the level of **output OA** is produced with SAC 1, it will **cost AL per unit** and if it is produced with **SAC 2** it will **cost AH** and we can see that **AH is more than AL**.
- Similarly, if the firm plans to produce an **output** which is **larger than OB** but **less than OD**, then it will not be economical to produce on SAC 1. For this, the firm will have to **use SAC 2**. Similarly, the firm will use **SAC 3** for output **larger than OD**.
- It is thus clear that, in the **long run**, the firm has a **choice** in the **employment of plant** and it will employ that plant which **yields minimum possible unit cost** for producing a **given output**.

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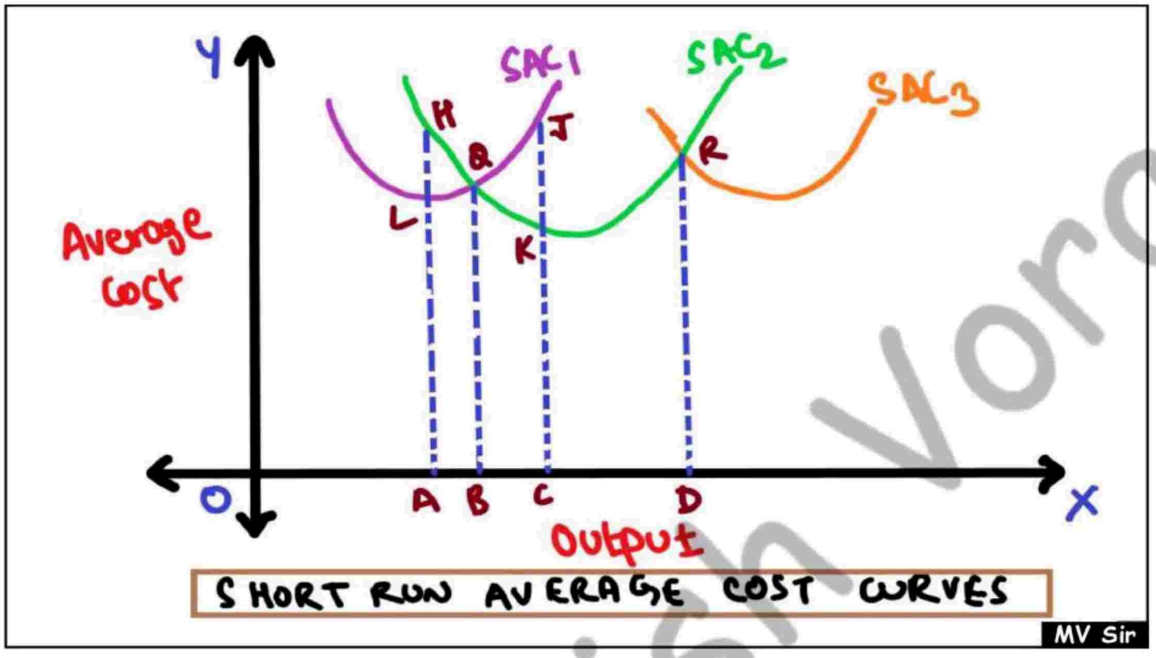

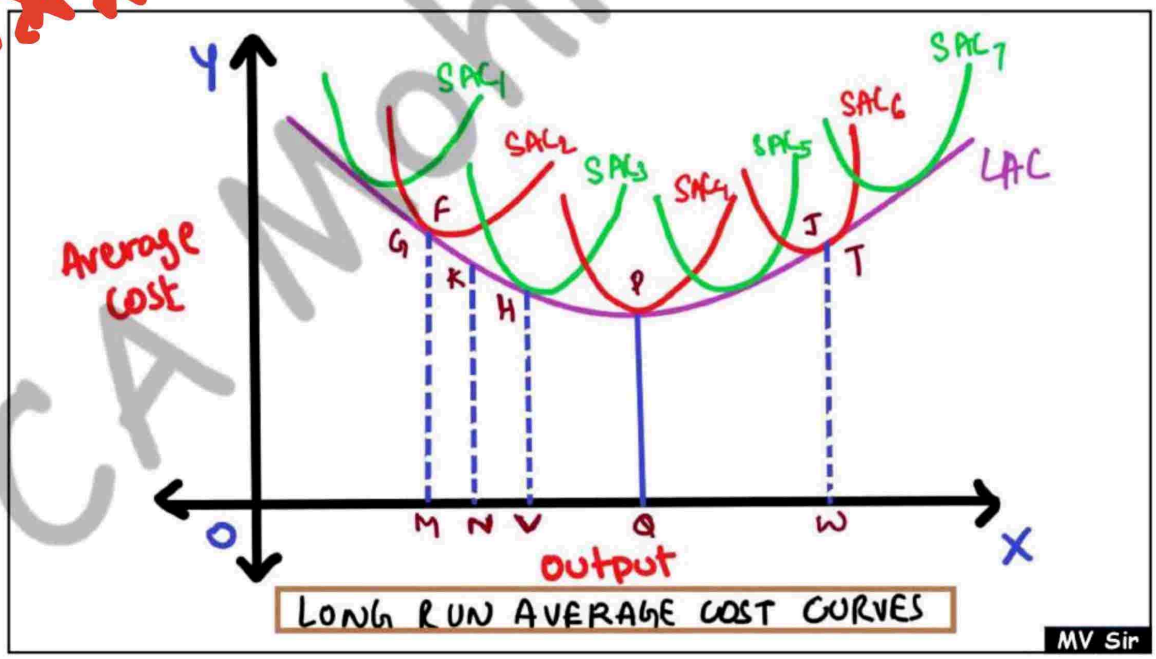

LONG RUN AVERAGE COST CURVE

- **Suppose**, the firm has a choice so that a **plant can be varied by infinitely small gradations** so that there are **infinite number of plants** corresponding to which there are numerous average cost curves. In such a case the **long run average cost curve** will be a smooth **curve enveloping all these short run average cost curves**.
- As shown in previous slide, the long run average cost curve is so drawn as to be **tangent to each of the short run average cost curves**. Every point on the long run average cost curve will be a tangency point with some short run AC curve.
- If a firm **desires** to produce any particular **output**, it then **builds a corresponding plant** and **operates** on the **corresponding short run average cost curve**.
- As shown in the figure, for producing **OM**, the corresponding **point on the LAC curve is G** and the short run average cost curve **SAC 2** is **tangent** to the LAC curve at this point. Thus, if a firm desires to produce output OM, the firm will **construct a plant corresponding to SAC2** and will **operate on this curve at point G**.
- Similarly, the firm will **produce other levels** of output choosing the plant which **suits its requirements** of **lowest possible cost** of production.
- It is clear from the figure that **larger output** can be **produced** at the **lowest cost** with **larger plant** whereas smaller output can be produced at the lowest cost with smaller plants.

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LONG RUN AVERAGE COST CURVE

- For example, to **produce OM**, the firm will be using **SAC 2 only**; if it uses SAC 3, it will result in higher unit cost than SAC 2. But, **larger output OV** can be produced **most economically** with a **larger plant** represented by the **SAC 3**. If we produce OV with a smaller plant, it will result in higher cost per unit.
- Similarly, if we produce **larger output with a smaller plant** it will involve **higher costs** because of its **limited capacity**.
- It is to be noted that **LAC curve** is **NOT** **tangent to the minimum points of the SAC curves**. When the LAC curve is declining, it is tangent to the falling portions of the short run cost curves and when the LAC curve is rising, it is tangent to the rising portions of the short run cost curves.
- Thus, for **producing output less than "OQ"** at the lowest possible unit cost, the firm will construct the relevant plant and **operate it at less than its full capacity**, i.e., at less than its minimum average cost of production. On the other hand, for **outputs larger than OQ** the firm will construct a plant and **operate it beyond its optimum capacity**.
- **"OQ" is the optimum output**. This is because "OQ" is being produced at the **minimum point of LAC and corresponding SAC 4**. Other plants are either used at less than their full capacity or more than their full capacity. Only SAC 4 is being operated at the minimum point.
- The long run average cost curve is often called as **'planning curve'** because a firm **plans to produce any output in the long run** by **choosing a plant** on the LAC curve **corresponding** to the given **output** at the **least possible cost**.

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"U" shape of the long run average cost curve

- LAC curve is a "U" shaped curve. U shaped LAC arises due to **returns to scale**.
- As discussed earlier, when the **firm expands, returns to scale increase. After a range of constant returns** to scale, the **returns to scale finally decrease**. On the same line, the **LAC curve first declines** and then **finally rises**.
- Increasing returns to scale cause fall in the long run average cost and decreasing returns to scale result in rise in long run average cost. **Falling** long run average cost and **increasing economies of scale** result from internal and external economies of scale and **rising** long run average cost and diminishing returns to scale result from internal and external **diseconomies of scale**.
- The long run average cost curve **initially falls** with increase in output and **after a certain point** it **rises** making a **boat shape**. The long-run average cost (LAC) curve is also called the **planning curve** of the firm as it helps in choosing an appropriate a plant on the decided level of output.
- The long-run average cost curve is also called **"Envelope curve"**, because it envelopes or supports a family of short run average cost curves from below.
- A flattened 'U' shaped LAC Curve could exist only when the state of technology remains constant. But, empirical evidence shows **modern firms face 'L-shaped' cost curve** over a considerable quantity of output.
- The L-shaped long run cost curve implies that **initially when the output is increased** due to increase in the **size** of plant (and associated variable factors), **per unit cost falls rapidly due** to economies of scale. The long-run average cost curve **does not increase** even **after a sufficiently large scale of output** as it **continues** to **enjoy economies of scale**.

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SCALE OF PRODUCTION

- **Large-scale production** offers certain advantages which **help in reducing the cost of production**. Economies arising out of large-scale production can be grouped into **two categories**-

Internal Economies

- Internal economies accrue to the firm when it **expands its output**, so that the **cost of production** would **come down** considerably and place the firm in a better position to compete in the market effectively.
- Internal economies arise purely due to **endogenous factors** relating to **efficiency** of the entrepreneur or his **managerial talents** or the **type of machinery** used or the **marketing strategy** adopted. These economies arise **within the firm** and are available exclusively to the expanding firm.

External Economies

- External economies are the **benefits** accruing **to each member firm** of the industry as a result of **expansion** of the **industry**.
- They are **not dependent on the output** level of **individual firms**.
- They are **external** in the sense that they accrue to firms **not out of their internal situation** but **from outside** i.e. due to expansion of the industry.

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Internal Economies and Diseconomies

- We saw that returns to scale increase in the initial stages and after remaining constant for a while, they decrease.
- The above happens because **initially a firm enjoys internal economies** of scale (cost falls) and **beyond a certain limit** it suffers from **internal diseconomies** of scale (cost rises).
- Internal Economies & Diseconomies can be of following kinds-

1. Technical
2. Managerial
3. Commercial
4. Financial
5. Risk bearing

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External Economies

1. Cheaper raw materials and capital equipment
2. Technological external economies
3. Development of skilled labour
4. Growth of ancillary industries
5. Better transportation and marketing facilities
6. Economies of Information

External Diseconomies

- However, external economies may cease if there are certain **disadvantages** which may neutralise the advantages of expansion of an industry. We call them external diseconomies.
- External diseconomies are **disadvantages** that **originate outside the firm**, especially in the input markets.
- An example of external diseconomies is **rise in various factor prices**. When an industry expands the **requirement of various factors** of production, such as raw materials, capital goods, skilled labour etc **increases**. **Increasing demand** for inputs **puts pressure on the input markets**. This may result in an **increase in the prices** of factors of production, especially when they are **short in supply**.
- Moreover, **too many firms in an industry** at one place may also result in **higher transportation cost, marketing cost** and **high pollution control cost**.
- The government may also, through its **location policy, prohibit or restrict** the **expansion** of an industry at a **particular place**.

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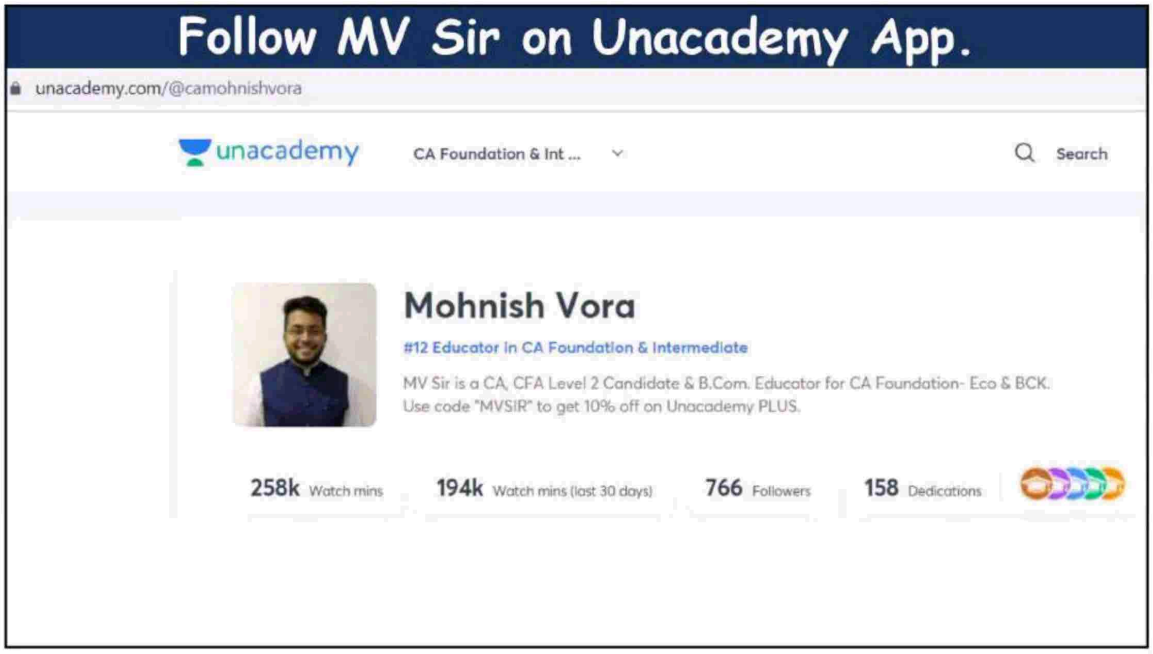
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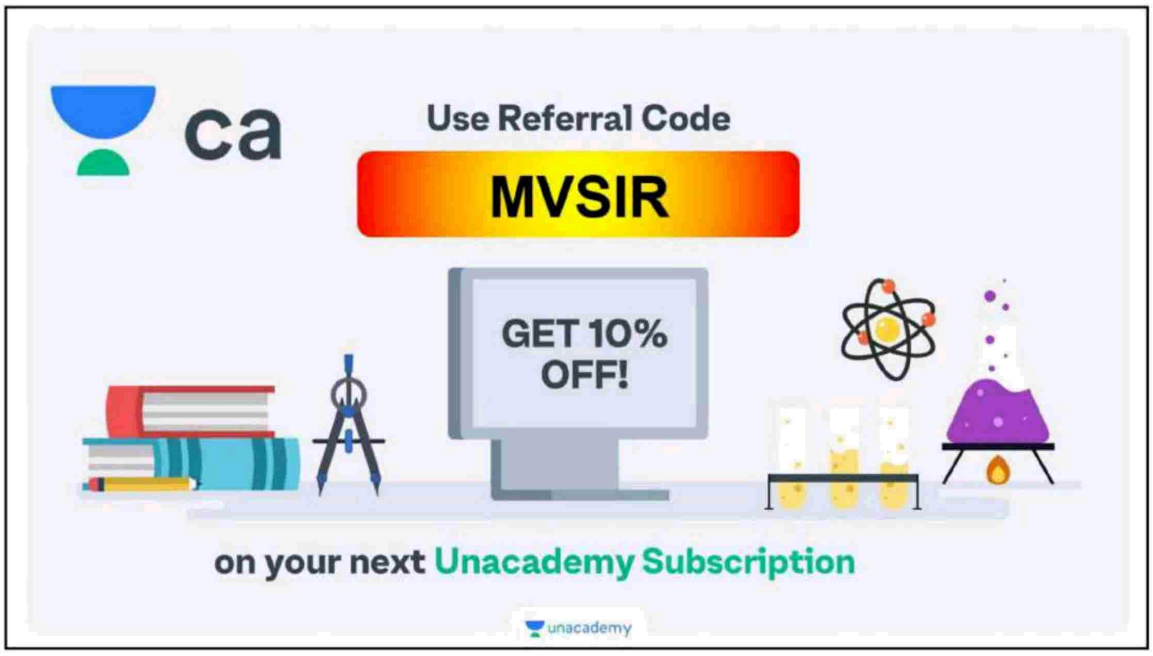
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CHAPTER 4

MEANING AND TYPES OF MARKETS

UNIT 1 : MEANING AND TYPES OF MARKETS

LEARNING OUTCOMES

- Explain the meaning of market in Economics.
- Describe the key characteristics of the four basic market types used in economic analysis.
- Provide explicit real examples of the four types of markets.
- Explain the behavioural principles underlying these markets.

CHAPTER OVERVIEW

1.0 MEANING OF MARKET

We have seen in Chapter 1 that people cannot have all that they want because they need to pay price for goods and services and the resources at their disposal are scarce. We have come across some goods which are free or having zero prices i.e. we need not make any payment for them. Example: air, sunlight etc. These are called free goods. Free goods being abundant in supply does not have scarcity and need no cost to obtain them. In contrast, economic goods are scarce in relation to their demand and have an opportunity cost. Unlike free goods, they are exchangeable in the market and command a price. What do we understand by the term price and why do people pay a price?

In common parlance, price signifies the quantity of money necessary to acquire a good or service. Price connotes money-value i.e. the purchasing power of an article expressed in terms of money. In other words, price expresses the value of a thing in relation to money i.e. the quantity of money for which it will exchange. Value in exchange or exchange value, according to Ricardo, means command over commodities in general, or power in exchange over purchasable commodities in general.

We need to distinguish between two important concepts namely, 'value in use' and 'value in exchange'. Value in use refers to usefulness or utility i.e the attribute which a thing may have to satisfy human needs. Thus, value in exchange or economic value is measured by the most someone is willing to give up in other goods and services in order to obtain a good or service. In a market economy, the amount of currency (e.g. Dollar, Rupees) is a universally accepted measure of economic value, because the number of units of money that a person is willing to pay for something tells how much of all other goods and services they are willing to give up to get that item.

In Economics, we are only concerned with exchange value. Considerations such as sentimental value mean little in a market economy. Sentimental value is subjective and reflects an exaggerated judgment about the worth of a commodity.

Exchange value is determined in the market where exchange of goods and services takes place. In our day to day life, we come across many references to markets such as oil market, wheat market, vegetable market etc. These have connotations of a place where buyers and sellers gather to exchange goods at a price. In Economics, markets are crucial focus of analysis, and therefore we need to understand how this term is used. A market is a collection of buyers and sellers with the potential to trade. The actual or potential interactions of the buyers and sellers determine the price of a product or service.

A market need not be formal or held in a particular place. Second-hand cars are often bought and sold through newspaper advertisements. Second-hand goods may be disposed off by listing it in an online shop or by placing a card in the local shop window. In the present high tech world, goods and services are effortlessly bought and sold online. Online shopping has revolutionized the business world by making nearly everything people want available by the simple click of a mouse button.

While studying about market economy, it is essential to understand how price is determined. Since this is done in the market, we can define the market simply as all those buyers and sellers of a good or service who influence price.

The elements of a market are:

(i) Buyers and sellers;
(ii) A product or service;
(iii) Bargaining for a price;
(iv) Knowledge about market conditions; and
(v) One price for a product or service at a given time.

1.0.0 Classification of Market

Markets are generally classified into product markets and factor markets. Product markets are markets for goods and services in which households buy the goods and services they want from firms. Factor markets, on the other hand, are those in which firms buy the resources they need – land, labour, capital and entrepreneurship- to produce goods and services. While product markets allocate goods to consumers, factor markets allocate productive resources to producers and help ensure that those resources are used efficiently. The prices in factor markets are known as factor prices.

In Economics, generally the classification of markets is made on the basis of

(a) Geographical Area
(b) Time
(c) Nature of transaction
(d) Regulation
(e) Volume of business
(f) Type of Competition.

- **On the basis of geographical area**

From the marketing perspective, the geographical area in which the product sales should be undertaken has vast implications for the firm. On the basis of geographical area covered, markets are classified into:-

Local Markets: When buyers and sellers are limited to a local area or region, the market is called a local market. Generally, highly perishable goods and bulky articles, the transport of which over a long distance is uneconomical' command a local market. In this case, the extent of the market is limited to a particular locality. For example, locally supplied services such as those of hair dressers and retailers have a narrow customer base.

Regional Markets: Regional markets cover a wider area such as a few adjacent cities, parts of states, or cluster of states. The size of the market is generally large and the nature of buyers may vary in their demand characteristics. [Eg- Yeola Tea → Operates in some cities of Maharashtra]

National Markets: When the demand for a commodity or service is limited to the national boundaries of a country, we say that the product has a national market. The trade policy of the government may restrict the trading of a commodity to within the country. For example Hindi books may have national markets in India, outside India one may not have market for Hindi books.

International markets: A commodity is said to have international market when it is exchanged internationally. Usually, high value and small bulk commodities are demanded and traded internationally. For example Gold and Silver are examples of commodities that have international market.

The above classification has become more or less outdated as we find that in modern days even highly perishable goods have international market. [Nowadays fruits & vegetables are also exported from India to other countries.]

- **On the basis of Time**

Alfred Marshall conceived the 'Time' element in markets and on the basis of this, markets are classified into:

Very short period market: Market period or very short period refers to a period of time in which supply is fixed and cannot be increased or decreased. Commodities like vegetables, flower, fish, eggs, fruits, milk, etc., which are perishable and the supply of which cannot be changed in the very short period come under this category. Since supply is fixed, very short period price is dependent on demand. An increase in demand will raise the prices vice versa.

Note: Secular is a descriptive word used to refer to market activities that occur over the long term. Secular trends are not seasonal or cyclical. Instead, they remain consistent over time. It is a market trend that lasts upto 5 to 25 years.

Short-period Market: Short period is a period which is slightly longer than the very short period. In this period, the supply of output may be increased by increasing the employment of variable factors with the given fixed factors and state of technology. Since supply can be moderately adjusted, the changes in the short period prices on account of changes in demand are less compared to market period.

Long-period Market: In the long period, all factors become variable and the supply of commodities may be changed by altering the scale of production. As such, supply may be fully adjusted to changes in demand conditions. The interaction between long run supply and demand determines long run equilibrium price or 'normal price'.

Very long-period or secular period is one when secular movements are recorded in certain factors over a period of time. The period is very long. The factors include the size of the population, capital supply, supply of raw materials etc.

On the basis of Nature of Transactions

a. **Spot or cash Market**: Spot transactions or spot markets refer to those markets where goods are exchanged for money payable either immediately or within a short span of time.

b. **Forward or Future Market**: In this market, transactions involve contracts with a promise to pay and deliver goods at some future date.

On the basis of Regulation

a. **Regulated Market**: In this market, transactions are statutorily regulated so as to put an end to unfair practices. Such markets may be established for specific products or for a group of products. Eg. Stock exchange

b. **Unregulated Market**: It is also called a free market as there are no stipulations on the transactions.

On the basis of volume of Business

a. **Wholesale Market**: The wholesale market is the market where the commodities are bought and sold in bulk or large quantities. Transactions generally take place between traders.

b. **Retail Market**: When the commodities are sold in small quantities, it is called retail market. This is the market for ultimate consumers.

On the basis of Competition

Based on the type of competition markets are classified into a) perfectly competitive market and b) imperfectly competitive market.

We shall study these markets in greater detail in the following paragraphs.

1.1 TYPES OF MARKET STRUCTURES

For a consumer, a market consists of those firms from which he can buy a well-defined product; for a producer, a market consists of those buyers to whom he can sell a single well-defined product. If a firm knows precisely the demand curve it faces, it would know its potential revenue. If it also knows its costs, it can readily discover the profit that would be associated with different levels of output and therefore can choose the output level that maximizes profit. But, suppose the firm knows its costs and the market demand curve for the product but does not know its own demand curve. In other words, it does not know its own total sales. In order to find this, the firm needs to answer the following questions. How many competitors are there in the market selling similar products? If one firm changes its price, will its market share change? If it reduces its price, will other firms follow it or not? There are many other related questions that need to be answered.

Answers to questions of this type will be different in different circumstances. For example, if there is only one firm in the market, the whole of the market demand will be satisfied by this particular firm. But, if there are two large firms in the industry, they will share the market demand in some proportion. A firm has to be very cautious of the reactions of the other firm to every decision it makes. But if there are, say, more than 5,000 small firms in an industry, each firm will be less worried about the reactions of other firms to its decisions because each firm sells only a small proportion of the market. Thus, we find that the market behaviour is greatly affected by the structure of the market. We can conceive of more than thousand types of market structures, but we shall focus on a few theoretical market types which mostly cover a high proportion of cases actually found in the real world. These are:

Perfect Competition: Perfect competition is characterised by many sellers selling identical products to many buyers. [Eg- Vegetable market]

Monopolistic Competition: It differs in only one respect, namely, there are many sellers offering differentiated products to many buyers. [Eg- Toothpaste]

Monopoly: It is a situation where there is a single seller producing for many buyers. Its product is necessarily extremely differentiated since there are no competing sellers producing products which are close substitutes. [Eg- Railways]

Oligopoly: There are a few sellers selling competing products to many buyers. [Eg- Telecom Sector, Airline Sector]

Table 1 summarises the major distinguishing characteristics of these four major market forms.

Table 1 - Distinguishing Features of Major Types of Markets [V. Imp]

Assumption	Market Types			
	Perfect Competition	Monopolistic Competition	Oligopoly	Monopoly
Number of sellers	Very large	Large	Small numbers	One
Product differentiation	None	Slight	None to substantial	Extreme
Price elasticity of demand of a firm	Infinite	Large	Small	Small
Degree of control over price	None	Some	Some	Very considerable

Before discussing each market form in greater detail, it is worthwhile to know the concepts of total, average and marginal revenue and the behavioural principles which apply to all market conditions.

1.2 CONCEPTS OF TOTAL REVENUE, AVERAGE REVENUE AND MARGINAL REVENUE

Total Revenue: If a firm sells 100 units for ₹ 10 each, what is the amount which it realises? It realises ₹ 1,000 (100 x 10), which is nothing but the total revenue for the firm. Thus, we may state that total revenue or the total expenditure incurred by the purchasers of the firm's product refers to the amount of money which a firm realises by selling certain units of a commodity. Symbolically, total revenue may be expressed as $TR = P \times Q$.

Where, TR is total revenue

P is price

Q is quantity of a commodity sold.

This may be represented by the following diagrams. In figure A, when the product of the price is ₹ 30, the quantity sold is 40 units. The total revenue is P x Q = ₹ 1200. Panel B shows the total revenue curve of a competitive firm having a perfectly elastic demand curve. Since the firm can sell any quantity at market determined prices, the TR curve is linear and starts from the origin. The TR curve of a firm which has a downward sloping demand curve is shown in figure 2.

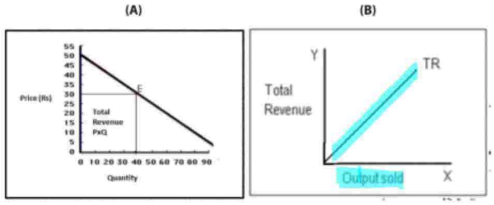


Figure 1: Total Revenue

Average Revenue: Average revenue is the revenue earned per unit of output. It is nothing but price of one unit of output because price is always per unit of a commodity. For this reason, average revenue curve is also the firms demand curve. Symbolically, average revenue is:

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

Where AR is average revenue

TR is the total revenue

Q is quantity of a commodity sold

$$\text{Or } AR = \frac{P \times Q}{Q}$$

$$\text{Or } AR = P$$

If, for example, a firm realises total revenue of ₹ 1,000 by the sale of 100 units, it implies that the average revenue is ₹ 10 (1,000/100) or the firm has sold the commodity at a price of ₹ 10 per unit.

Marginal Revenue: Marginal revenue (MR) is the change in total revenue resulting from the sale of an additional unit of the commodity. Thus, if a seller realises ₹ 1,000 while selling 100 units and ₹ 1,200 while selling 101 units, we say that the marginal revenue is ₹ 200. We can say that MR is the rate of change in total revenue resulting from the sale of an additional unit of output. $MR = \frac{\Delta TR}{\Delta Q}$

Where MR is marginal revenue

TR is total revenue

Q is quantity of a commodity sold

$MR_n = TR_n - TR_{n-1}$

Δ stands for a small change

For one unit change in output

$MR_n = TR_n - TR_{n-1}$

Where TR is the total revenue when sales are at the rate of n units per period.

TR_{n-1} is the total revenue when sales are at the rate of (n – 1) units per period.

In order to understand the above concepts clearly, look at Table -2. In column 1, the number of units sold of commodity X is given. Column 2 shows the total revenue fetched by selling different units. Column 3 shows average revenue which is nothing but price per unit. Column 4 shows marginal revenue which is addition to the total revenue by the sale of an additional unit of output.

Table 2: Total Revenue, Average Revenue and Marginal Revenue

Units	Total Revenue	Average Revenue	Marginal Revenue
1	10	10	10
2	18	9	8
3	24	8	6
4	28	7	4
5	30	6	2
6	30	5	0
7	28	4	-2
8	24	3	-4
9	18	2	-6
10	10	1	-8

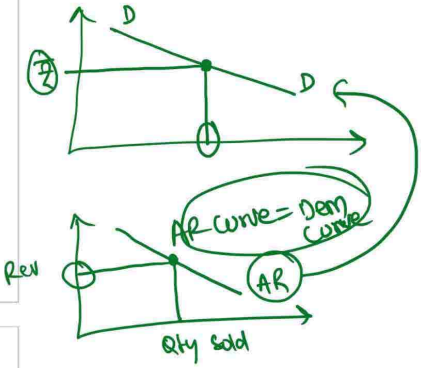
Note that the total revenue is maximum when 5 units of X are sold. It stays constant for one more unit and then begins to fall. Average revenue keeps on falling showing inverse relationship between price and quantity demanded. It represents demand function of X to the firm. Marginal revenue keeps on falling and after becoming zero it becomes negative. Also note that TR at any particular level of output is the sum of marginal revenues till that level of output.

The question which arises is: why is the marginal revenue due to the third unit (₹ 6) not equal to price of ₹ 8 at which the third unit is sold. The answer is that when price is reduced for selling an additional unit, the two units which could be sold for ₹ 9 before will have to be sold at the reduced price of ₹ 8 per unit. The total loss on previous two units due to price fall will be equal to ₹ 2. Thus, for any falling average revenue (or price) schedule, marginal revenue is always less than the price. In the case of constant average revenue (or price) schedule, the marginal revenue is equal to average revenue (or uniform price). If TR stands for total revenue and q stands for output, marginal revenue (MR) can be expressed as:

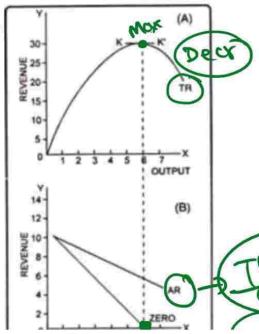
$$MR = dTR/dq$$

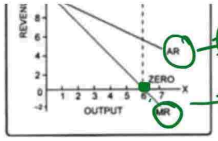
dTR/ dq indicates the slope of the total revenue curve.

When the demand curve of the firm is a normal downward sloping one, there is a well defined relationship between average revenue, marginal revenue and total revenue. This can be shown by the following figure presenting total revenue (TR), average revenue (AR) and marginal revenue (MR) curves. The average revenue curve in panel B is sloping downwards depicting the inverse relationship between price and quantity demanded. MR curve lies below AR curve showing that marginal revenue declines more rapidly than average revenue. Total revenue increases as long as marginal revenue is positive and declines (has a



negative slope) when marginal revenue is negative. Total revenue curve initially increases at a diminishing rate due to diminishing marginal revenue and reaches maximum and then it falls. When marginal revenue becomes zero, the total revenue is maximum and the slope of TR is zero.





TR/Q = 0

-ve

Fig. 2: Total Revenue, Average Revenue and Marginal Revenue Curves of a Firm which has downward Sloping Demand Curve

It may be noted that in all forms of imperfect competition, the average revenue curve of an individual firm slopes downwards as in these market forms, when a firm increases the price of its product, its quantity demanded decreases and vice versa. Under perfect competition, however, since the firms are price takers, the average revenue (or price) curve or demand curve is perfectly elastic. Perfectly elastic average revenue curve means that an individual firm has constant average revenue (or price). When price remains constant, marginal revenue will be equal to average revenue and thus AR curve and MR curve will coincide and will be horizontal curves as shown in figure 3. below.

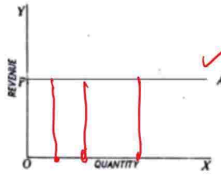
Output	Price / AR	TR	MR
1	10	10	
2	10	20	10
3	10	30	10
4	10	40	10

Perfect comp ✓

MR = AR

AR Curve = Dem Curve = MR Curve ✓

in every market form



AR and MR Curves under Perfect Competition

Fig 3: Average Revenue and Marginal Revenue Curves of a Perfectly Competitive Firm

1.2.0 RELATIONSHIP BETWEEN AR, MR, TR AND PRICE ELASTICITY OF DEMAND

It is to be noted that marginal revenue, average revenue and price elasticity of demand are uniquely related to one another through the formula:

$$MR = AR \times \frac{e-1}{e}$$ Where e = price elasticity of demand

Thus if e = 1, $MR = AR \times \frac{1-1}{1} = 0$

and if e > 1, MR will be positive

and if e < 1, MR will be negative

In a straight line downward falling demand curve, we know that the coefficient of price elasticity at the middle point is equal to one. It follows that the marginal revenue corresponding to the middle point of the demand curve (or AR curve) will be zero. On the upper portion of the demand curve, where the elasticity is more than one, marginal revenue will be positive and on the lower portion of the demand curve where elasticity is less than one, marginal revenue will be negative. These can be shown in diagram next page:

$$MR = AR \times \frac{e-1}{e}$$

OR

$$= AR \times \left(1 - \frac{1}{e}\right)$$

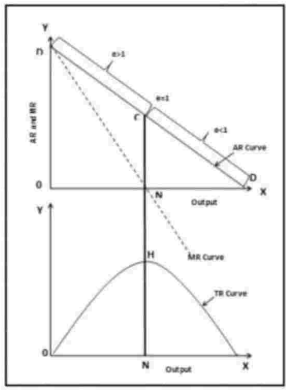


Fig.4: Relationship between AR, MR, TR and Price Elasticity of Demand

In fig. 4, DD is the AR or demand curve. At point C, elasticity is equal to one. Corresponding to C on the AR curve, the marginal revenue is zero. Thus, MR curve is touching X-axis at N (corresponding to C on the AR curve). At a greater quantity than ON, the elasticity of the AR curve is less than one and the marginal revenue is negative. Negative marginal revenue means MR curve goes below the X-axis to the fourth quadrant. Marginal revenue being negative means that total revenue will diminish if a quantity greater than ON is sold. Total revenue will be rising up to ON output since up to this the marginal revenue remains positive. It follows that total revenue will be maximum where elasticity is equal to one. Thus, TR is shown to be at its highest level at ON level of output (corresponding to the point C on AR curve). Beyond ON Level of output, the TR curve has a negative slope.

1.2.1 BEHAVIOURAL PRINCIPLES

Principle 1- A firm should not produce at all if its total variable costs are not met.

It is a matter of common sense that a firm should produce only if it will do better by producing than by not producing. The firm always has the option of not producing at all. If a firm's total revenues are not enough to make good even the total variable costs, it is better for the firm to shut down. In other words, a competitive firm should shut down if the price is below AVC. In that case, it will minimise loss because then its total cost will be equal to its fixed costs and it will have an operating loss equal to its fixed cost. The sunk fixed cost is irrelevant to the shutdown decision because fixed costs are already incurred. This means that the minimum average variable cost is equal to the shut-down price, the price at which the firm ceases production in the short run. Shutting down is temporary and does not necessarily mean going out of business.

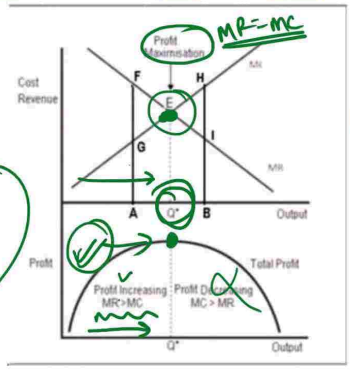
If price (AR) is greater than minimum AVC, but less than minimum ATC, the firm covers its variable cost and some but not all of fixed cost. If price is equal to minimum ATC, the firm covers both fixed and variable costs and earns normal profit or zero economic profit. If price is greater than minimum ATC, the firm not only covers its full cost, but also earns positive economic profit or super normal profit.

Principle 2 - The firm will be making maximum profits by expanding output to the level where marginal revenue is equal to marginal cost.

In other words, it will pay the firm to go on producing additional units of output so long as the marginal revenue exceeds marginal cost i.e., additional units add more to revenues than to cost. At the point of equality between marginal revenue and marginal cost, it will earn maximum profits.

The above principle can be better understood with the help of figure 5 which shows a set of hypothetical marginal revenue and marginal cost curves. Marginal revenue curve slopes downwards and marginal cost curve slopes upwards. They intersect each other at point E (MC= MR) which corresponds to output Q.* Up to Q* level of output, marginal revenue is greater than marginal cost and at output level *Q they are equal. The firm will be maximizing profits at E (or at Q* level of output). For all levels of output less than Q*, additional units of output add more to revenue than to cost (as their MR is more than MC) and thus it will be profitable for the firm to produce them. The firm will be foregoing profit equal to the area EFG if it stops at A. Similarly profits will fall, if a greater output than OQ is produced as they will add more to cost than to revenues. On the units from Qth to Bth, the firm will be incurring a loss equal to the area EHI.

the units from Qth to Bth, the firm will be incurring a loss equal to the area EHI.



MR > MC ⇓ increase our output

MR < MC ↓

Fig: 5: Equilibrium of the Firm: Maximization of Profits

To conclude, the firm will maximize profits at the point at which marginal revenue is equal to marginal cost.

SUMMARY

- Economic goods are scarce in relation to their demand and have an opportunity cost. Unlike free goods, they are exchangeable in the market and command price.
- Price connotes money-value i.e. the purchasing power of an article expressed in terms of money.
- Value in exchange or exchange value, according to Ricardo, means command over commodities in general, or power in exchange over purchasable commodities in general.
- Market is the whole set of arrangements for buying and selling of a commodity or service. Here buyers and sellers bargain over a commodity for a price.
- The elements of a market are: buyers and sellers, a product or service, bargaining for a price, knowledge about market conditions and one price for a product or service at a given time.
- Markets are generally classified into product markets and factor markets.
- The factors which determine the type of market are: nature of commodity, size of production and extent of demand.
- Markets can be classified on the basis of area, time, nature of transaction, regulation, volume of business and types of competition.
- On the basis of area: markets are classified into four i.e. local, regional, national and international.
- On the basis of time: markets are classified into four i.e. very short period or market period, short period, long period and very long period or secular period.
- On the basis of nature of transaction: markets are classified into spot market and future market.
- On the basis of regulation: markets are classified into regulated and unregulated markets.
- On the basis of volume of business: markets are classified into wholesale and retail markets.
- On the basis of competition: On the basis of competition we have perfectly competitive market and imperfect market. The imperfect market is further divided into monopoly, monopolistically competitive market and oligopoly market.
- Total revenue refers to the amount of money which a firm realizes by selling certain units of a commodity.
- Average revenue is the revenue earned per unit of output.
- Marginal revenue is the change in total revenue resulting from the sale of an additional unit of the commodity.
- Marginal revenue, average revenue and price elasticity of demand are uniquely related to one another

  $MR = AR \times \frac{e-1}{e}$ Where e = price elasticity of demand.
- Total revenue will be maximum where elasticity is equal to one.
- If a firm's total revenues are not enough to make good even the total variable costs, it is better for the firm to shut down. In other words, a competitive firm should shut down if the price is below AVC.
- At the point of equality between marginal revenue and marginal cost, a firm will earn maximum profits.

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Business Economics

MARATHON

Chp 4- Meaning And Types Of Markets

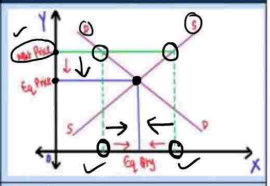
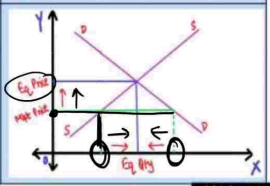
Unit 2- Determination Of Prices

MV Sir

Solve Unit 2 MCQs, by making diagrams [graphs]

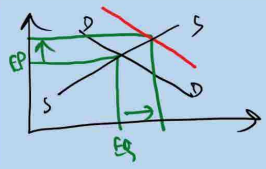
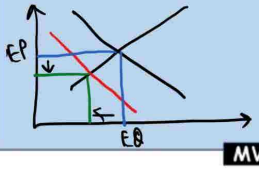
MCQs will become CHILLTU [Easy] then.

SUMMARY

S. No.	Situation	Effect		Diagram
1.	Market Price > Equi Price i.e., Qty Supplied > Qty Demanded (Surplus)	Downward Pressure on Price	Qty Supplied decreases & Qty Demanded increases — Upto Equillibrium	
2.	Market Price < Equi Price i.e., Qty Supplied < Qty Demanded (Shortage)	Upward Pressure on Price	Qty Supplied increases & Qty Demanded decreases — Upto Equillibrium	

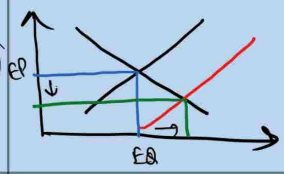
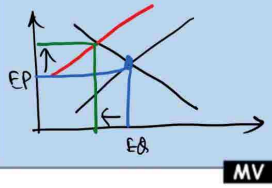
MV Sir

SUMMARY

S. No.	Situation	Effect		Diagram
		Equi Price	Equi Qty	
3.	Increase in Demand	Increase	Increase	
4.	Decrease in Demand	Decrease	Decrease	

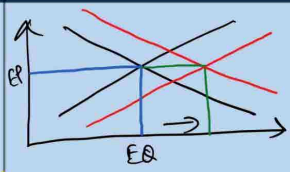
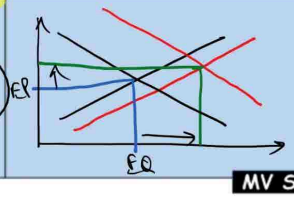
MV Sir

SUMMARY

S. No.	Situation	Effect		Diagram
		Equi Price	Equi Qty	
5.	Increase in Supply	Decrease	Increase	
6.	Decrease in Supply	Increase	Decrease	

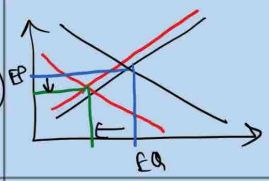
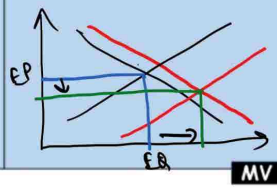
MV Sir

SUMMARY

S. No.	Situation	Effect		Diagram
		Equi Price	Equi Qty	
7.	Increase in Demand is equal to Increase in Supply	Remains Same	Increase	
8.	Increase in Demand is greater than Increase in Supply	Increase	Increase	

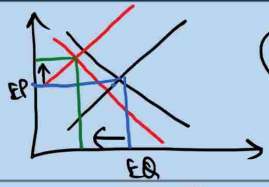
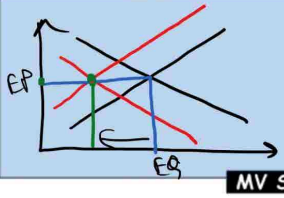
MV Sir

SUMMARY

S. No.	Situation	Effect		Diagram
		Equi Price	Equi Qty	
9.	Decrease in Demand is greater than Decrease in Supply	Decrease	Decrease	
10.	Increase in Supply is greater than Increase in Demand	Decrease	Increase	

MV Sir

SUMMARY

S. No.	Situation	Effect		Diagram
		Equi Price	Equi Qty	
11.	Decrease in Supply is greater than Decrease in Demand	Increase	Decrease	
12.	Decrease in Supply is equal to Decrease in Demand	Remains same	Decrease	

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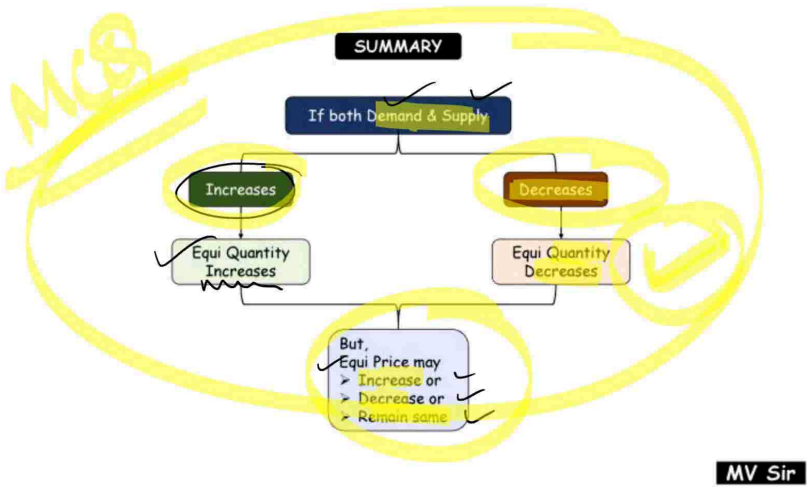
SUMMARY
If both Demand & Supply
Increases
Decreases
Equi Quantity Increases
Equi Quantity Decreases
But,
Equi Price may
➢ Increase or
➢ Decrease or
➢ Remain same

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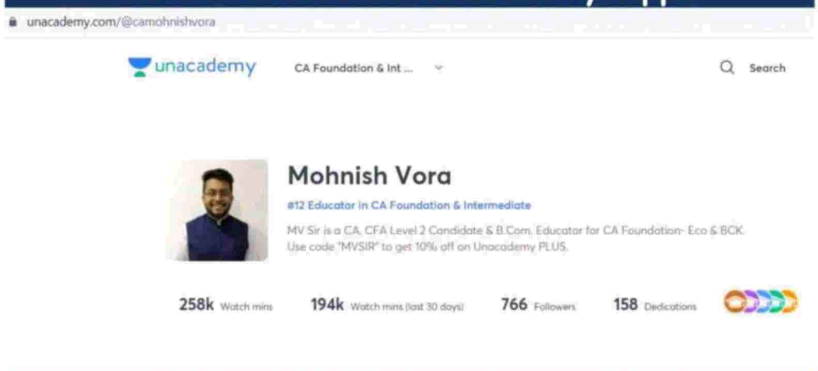


5 Min ka Break toh banta hai ☺

UNIT – 3: PRICE-OUTPUT DETERMINATION UNDER DIFFERENT MARKET FORMS

LEARNING OUTCOMES

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

- Describe the characteristics of different market forms namely perfect competition, monopoly, monopolistic competition and oligopoly and cite the main differences among them.
- Explain how equilibrium price and quantity of output are determined both in the short run and in the long run in different markets.
- Describe what happens in the long run in markets where firms are either incurring losses or are making economic profits.
- Illustrate the welfare implications of each of the market forms.

The price of a commodity and the quantity exchanged per time period depend on the market demand and supply functions and the market structure. The market structure characterises the way the sellers and buyers interact to determine equilibrium price and quantity. The existence of different forms of market structure leads to differences in demand and revenue functions of the firms. The market structure mostly determines a firm's power to fix the price of its product. The level of profit maximising price is generally different in different kinds of markets due to differences in the nature of competition. As such, a firm has to closely watch the nature of the market before determining its equilibrium price and output. In this unit, we shall discuss the nature of four of the most important market structures namely, perfect competition, monopoly, monopolistic competition and oligopoly and how these market structures operate to determine short-run and long-run equilibrium price and quantity. We shall start our analysis with perfect competition.

3.0 PERFECT COMPETITION

3.0.0 Features

Suppose you go to a vegetable market and enquire about the price of potatoes from a shopkeeper. He says potatoes are for ₹ 20 per kg. In the same way, you enquire from many shopkeepers and you get the same answer. What do you notice? You notice the following facts:

(i) There are large number of buyers and sellers in the potatoes market.

(ii) All the shopkeepers are selling potatoes at ₹ 20 per kg.

(iii) Product homogeneity i.e. all the sellers are selling almost the same quality of potatoes in the sense that you cannot judge by seeing the potatoes from which farmer's field do they come from. Such type of market is known as perfectly competitive market.

In general, a perfectly competitive market has the following characteristics:

(i) There are large number of buyers and sellers who compete among themselves. The number is so large that the share of each seller in the total supply and the share of each buyer in the total demand is too small that no buyer or seller is in a position to influence the price, demand or supply in the market.

(ii) The products supplied by all firms are identical or are homogeneous in all respects so that they are perfect substitutes. Thus, all goods must sell at a single market price. No firm can raise the price of its product above the price charged by other firms without losing most or all of its business. Buyers have no preference as between different sellers and as between different units of commodity offered for sale; also sellers are quite indifferent as to whom they sell. For example, most agricultural products, cooking gas, and raw materials such as copper, iron, cotton, and sheet steel etc. are fairly homogeneous. In addition, all consumers have perfect information about competing prices.

(iii) Every firm is free to enter the market or to go out of it. There are no legal or market related barriers to entry and also no special costs that make it difficult for a new firm either to enter an industry and produce, if it sees profit opportunity or to exit if it cannot make a profit.

If the above three conditions alone are fulfilled, such a market is called pure competition. The essential feature of pure competition is the absence of the element of monopoly. Consequently, business combinations of monopolistic nature are not possible. In addition to the above stated three features of 'pure competition'; a few more conditions are attached to perfect competition. They are:

(iv) There is perfect knowledge of the market conditions on the part of buyers and sellers. Both buyers and sellers have all information relevant to their decision to buy or sell such as the quantities of stock of goods in the market, the nature of products and the prices at which transactions of purchase and sale are being entered into.

(v) Perfectly competitive markets have very low transaction costs. Buyers and sellers do not have to spend much time and money finding each other and entering into transactions.

(vi) Under prefect competition, all firms individually are price takers. The firms have to accept the price determined by the market forces of total demand and total supply. The assumption of price taking applies to consumers as well. When there is perfect knowledge and perfect mobility, if any seller tries to raise his price above that charged by others, he would lose his customers.

While there are few examples of perfect competition which is regarded as a myth by many, the agricultural products, financial instruments (stock, bonds, foreign exchange), precious metals (gold, silver, platinum) approach the condition of perfect competition.

3.0.1 Price Determination under Perfect Competition

Equilibrium of the Industry: An industry in economic terminology consists of a large number of independent firms. Each such unit in the industry produces a homogeneous product so that there is competition amongst goods produced by different units. When the total output of the industry is equal to the total demand, we say that the industry is in equilibrium; the price then prevailing is equilibrium price. A firm is said to be in equilibrium when it is maximising its profits and has no incentive to expand or contract production.

As stated above, under competitive conditions, the equilibrium price for a given product is determined by the interaction of the forces of demand and supply for it as is shown in figure 14.

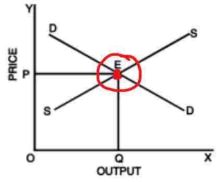


Fig. 14: Equilibrium of a competitive industry

In Fig. 14, OP is the equilibrium price and OQ is the equilibrium quantity which will be sold at that price. The equilibrium price is the price at which both demand and supply are equal and therefore, no buyer who wanted to buy at that price goes dissatisfied and none of the sellers is dissatisfied that he could not sell his goods at that price. It may be noticed that if the price were to be fixed at any other level, higher or lower, demand remaining the same, there would not be equilibrium in the market. Likewise, if the quantities of goods were greater or smaller than the demand, there would not be equilibrium in the market.

Equilibrium of the Firm: The firm is said to be in equilibrium when it maximizes its profit. The output which gives maximum profit to the firm is called equilibrium output. In the equilibrium state, the firm has no incentive either to increase or decrease its output.

Firms in a competitive market are price-takers. This is because there are a large number of firms in the market who are producing identical or homogeneous products. As such these firms cannot influence the price in their individual capacities. They have to accept the price determined through the interaction of total demand and total supply of the commodity which they produce.

This is illustrated in the following figure:

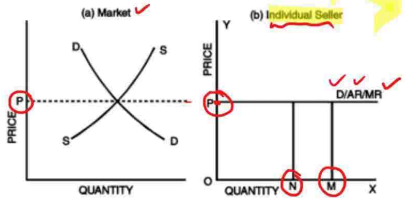


Fig. 15: The firm's demand curve under perfect competition

The market price OP is fixed through the interaction of total demand and total supply of the industry. Firms have to accept this price as given and as such they are price-takers rather than price-makers. They cannot increase the price above OP individually because of the fear of losing its customers to other firms. They do not try to sell the product below OP because they do not have any incentive for lowering it. They will try to sell as much as they can at price OP.

As such, P-line acts as demand curve for the firm. Because it is a price taker, the demand curve D facing an individual competitive firm is given by a horizontal line at the level of market price set by the industry. In other words, the demand curve of each firm is perfectly (or infinitely) elastic. The firm can sell as much or as little output as it likes along the horizontal price line. Since price is given, a competitive firm has to adjust its output to the market price so that it earns maximum profit. Let us continue our example on page 4.163 in which demand and supply schedules for the industry were as follows:

Table 4: Equilibrium price for industry

Price (₹)	Demand (units)	Supply (units)
1	60	5
2	35	35
3	20	45
4	15	55
5	10	65

Equilibrium price for the industry is determined through the interaction of demand and supply is ₹ 2 per unit. The individual firms will accept ₹ 2 per unit as the price and sell different quantities at this price. Let us consider the case of firm 'X'. Firm X's quantity sold, total revenue, average revenue and marginal revenue are as given in Table 4.

Table 5: Trends in Revenue of a Competitive Firm

Price (₹)	Quantity Sold	Total Revenue	Average Revenue	Marginal Revenue
2	8	16	2	2
2	9	18	2	2
2	10	20	2	2
2	11	22	2	2
2	12	24	2	2

Firm X's price, average revenue and marginal revenue are equal to ₹ 2. Thus, we see that in perfectly competitive market a price-taking firm's average revenue, marginal revenue and price are equal. As a result, when the firm sells an additional unit, its total revenue increases by an amount equal to its price.

AR = MR = Price.

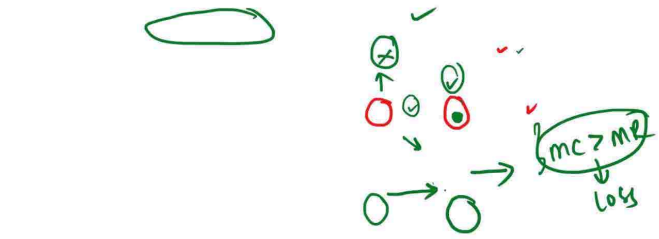
Conditions for equilibrium of a firm: As discussed earlier, a firm, in order to attain equilibrium position, has to satisfy two conditions as below: (Note that because competitive firms take price as fixed, this is a rule for setting output, not price).

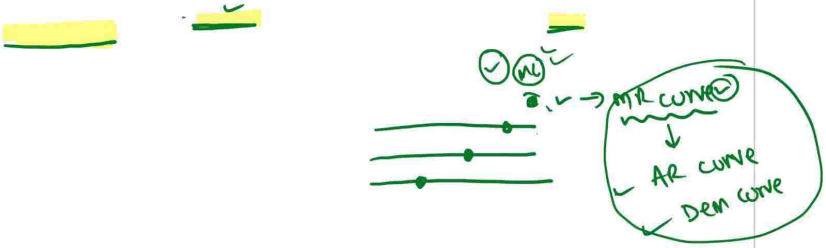
(i) The marginal revenue should be equal to the marginal cost. i.e. MR = MC. If MR is greater than MC, there is always an incentive for the firm to expand its production further and gain by selling additional units. If MR is less than MC, the firm will have to reduce output since an additional unit adds more to cost than to revenue. Profits are maximum only at the point where MR = MC. Because the demand curve facing a competitive firm is horizontal, so that MR = *P*, the general rule for profit maximization can be simplified. A perfectly competitive firm should choose its output so that marginal cost equals price.

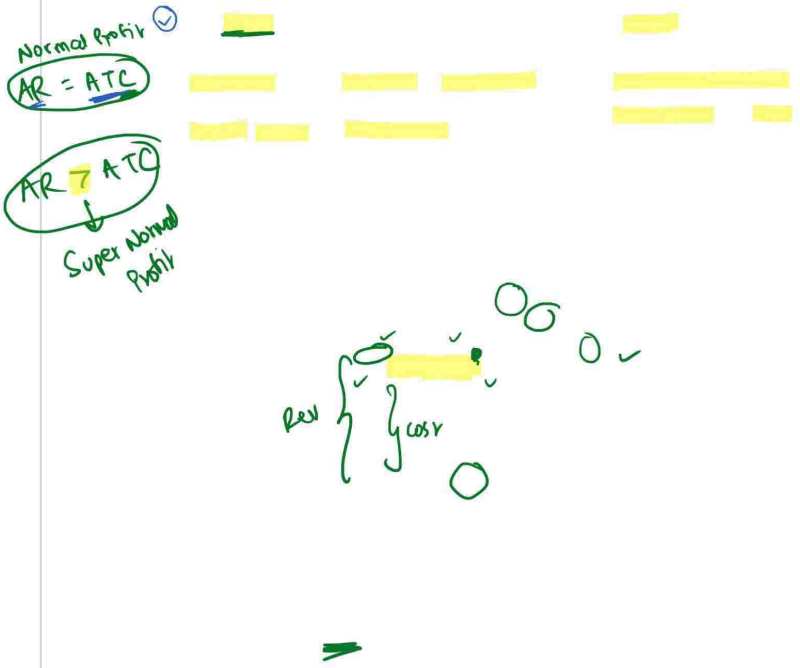
(ii) The MC curve should cut MR curve from below. In other words, MC should have a positive slope.

Short-Run Profit Maximization by a Competitive Firm

We shall begin with the short-run output decision and then move on to the long run. In the short run, a firm operates with a fixed amount of capital and must choose the levels of its variable inputs so as to maximize profit.


MC > MR
Loss


MC
MR curve
AR curve
Dem curve


Normal Profit
AR = ATC
AR > ATC
Super Normal Profit
Rev
cost

Normal profits: When a firm just meets its average total cost, it earns normal profits. Here AR = ATC.

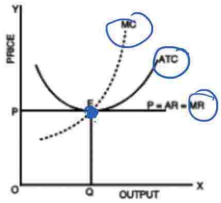


Fig. 19: Short run equilibrium of a competitive firm: Normal profits

The figure shows that MR = MC at E. The equilibrium output is OQ. At this level of output, price or AR covers full cost (ATC). Since AR = ATC or OP = EQ, the firm is just earning normal profits. Applying TR – TC, we find that TR – TC = zero or there is zero economic profit.

Losses: The firm can be in an equilibrium position and still makes losses. This is the situation when the firm is minimising losses. For all prices above the minimum point on the *AVC* curve, the firm will stay open and will produce the level of output at which *MR = MC*. When the firm is able to meet its variable cost and a part of fixed cost, it will try to continue production in the short run. If it recovers a part of the fixed costs, it will be beneficial for it to continue production because fixed costs (such as costs towards plant and machinery, building etc.) are already incurred and in such case it will be able to recover a part of them. But, if a firm is unable to meet its average variable cost, it will be better for it to shutdown. This shutdown may be temporary. When the market price rises, the firm resumes production.

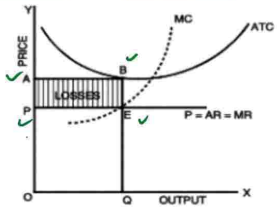


Fig. 20: Short run equilibrium of a competitive firm: Losses

In figure 20, E is the equilibrium point and at this point AR = EQ and ATC = BQ since BQ>EQ, the firm is having per unit loss equal to BE and the total loss is ABEP.

ILLUSTRATION

"Tasty Burgers" is a small kiosk selling Burgers and is a price-taker. The table below provides the data of 'Tasty Burgers' output and costs in Rupees.

Quantity	Total Cost	Fixed Cost	Variable Cost	Average Variable Cost	Average Fixed Cost	Marginal Cost
0	100					
10	210					
20	300					
30	400					
40	540					
50	790					
60	1060					

Q1. If burgers sell for ₹ 14 each, what is Tasty Burgers' profit maximizing level of output?

Q2. What is the total variable cost when 60 burgers are produced?

Q3. What is average fixed cost when 20 burgers are produced?

Q4. Between 10 to 20 burgers, what is the marginal cost?

Let us try to solve each of these questions.

First of all it is better to fill the blanks in the Table.

Since the total cost when zero product is produced is ₹ 100, the total fixed cost of "Tasty Burgers" will be ₹ 100/-.

We fill the data now:

Quantity	Total Cost	Fixed Cost	Variable Cost	Average Variable Cost	Average Fixed Cost	Marginal Cost	Marginal Cost (Per unit)
0	100	100	-	-	-	-	-
10	210	100	110	11	10.0	110	11
20	300	100	200	10	5.0	90	9
30	400	100	300	10	3.33	100	10
40	540	100	440	11	2.50	140	14
50	790	100	690	13.80	2.0	250	25
60	1060	100	960	16	1.66	270	27

Now let us answer the questions.

Ans 1: The price of Burger is ₹ 14. Since it is given that "Tasty Burger" is price-taker, it is a perfectly competitive firm. In a perfectly competitive market all the products are sold at the same price, that means AR = MR. In order to find out the profit maximizing level of output, MR should be equal to MC. Here AR = MR = ₹ 14. From the table we can see that MR (14) = MC (14) when 40 burgers are produced. Therefore, the profit maximising level of output of burgers is 40 units.

Ans 2 : The Total Variable Cost at 60 burgers is ₹ 960.

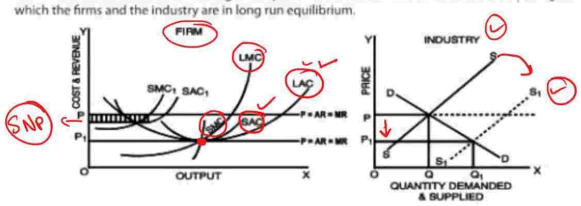
Ans 3: The Average Fixed Cost at 20 burgers is ₹ 5.

Ans 4: Between 10 to 20 burgers, the Marginal Cost is ₹ 9.

3.0.4 Long Run Equilibrium of a Competitive Firm

In the short run, one or more of the firm's inputs are fixed. In the long run, firms can alter the scale of operation or quit the industry and new firms can enter the industry. In a market with entry and exit, a firm enters when it believes that it can earn a positive long run profit and exits when it faces the possibility of a long-run loss. Firms are in equilibrium in the long run when they have adjusted their plant so as to produce at the minimum point of their long run ATC curve, which is tangent to the demand curve defined by the market price. In the long run, the firms will be earning just normal profits, which are included in the ATC. If they are making supernormal profits in the short run, new firms will be attracted into the industry; this will lead to a fall in price (a down ward shift in the individual demand curves) and an upward shift of the cost curves due to increase in the prices of factors as the industry expands. These changes will continue until the ATC is tangent to the demand curve. If the firms make losses in the short run, they will leave the industry in the long run. This will raise the price and costs may fall as the industry contracts, until the remaining firms in the industry cover their total costs inclusive of normal rate of profit.

In figure 21, we show how firms adjust to their long run equilibrium position. As in the short run, the firm faces a horizontal demand curve. If the price is OP, the firm is making super-normal profits working with the plant whose cost is denoted by SAC_1. If the firm believes that the market price will remain at OP, it will have incentive to build new capacity and it will move along its LAC. At the same time, new firms will be entering the industry attracted by the excess profits. As the quantity supplied in the market increases, the supply curve in the market will shift to the right and price will fall until it reaches the level of OP_1 (in figure 21a) at which the firms and the industry are in long run equilibrium.



(a) (b)

Fig. 21: Long run equilibrium of the firm in a perfectly competitive market

The condition for the long run equilibrium of the firm is that the marginal cost should be equal to the price and the long run average cost i.e. LMC = LAC = P.

The firm adjusts its plant size so as to produce that level of output at which the LAC is the minimum possible. At equilibrium, the short run marginal cost is equal to the long run marginal cost and the short run average cost is equal to the long run average cost. Thus, in the long run we have,

$$SMC = LMC = SAC = LAC = P = MR$$

This implies that at the minimum point of the LAC, the corresponding (short run) plant is worked at its optimal capacity, so that the minima of the LAC and SAC coincide. On the other hand, the LMC cuts the LAC at its minimum point and the SMC cuts the SAC at its minimum point. Thus, at the minimum point of the LAC the above equality is achieved.

3.0.5 Long Run Equilibrium of the Industry

A long-run competitive equilibrium of a perfectly competitive industry occurs when three conditions hold:

1. All firms in the industry are in equilibrium i.e. all firms are maximizing profit.
2. No firm has an incentive either to enter or exit the industry because all firms are earning zero economic profit or normal profit.
3. The price of the product is such that the quantity supplied by the industry is equal to the quantity demanded by consumers.

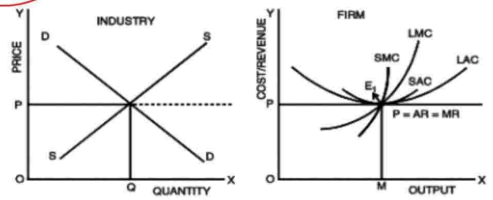


Fig. 22: Long run equilibrium of a competitive industry and its firms

Figure 22 shows that in the long-run AR = MR = LAC = LMC at E_1. In the long run, each firm attains the plant size and output level at which its cost per unit is as low as possible. Since E_1 is the minimum point of LAC curve, the firm produces equilibrium output OM at the minimum (optimum) cost. A firm producing output at optimum cost is called an optimum firm. In the long run, all firms under perfect competition are optimum firms having optimum size and these firms charge minimum possible price which just covers their marginal cost.

Thus, in the long run, under perfect competition, the market mechanism leads to optimal allocation of resources. The optimality is shown by the following outcomes associated with the long run equilibrium of the industry:

(a) The output is produced at the minimum feasible cost.
(b) Consumers pay the minimum possible price which just covers the marginal cost i.e. MC = AR (P = MC)
(c) Plants are used to full capacity in the long run, so that there is no wastage of resources i.e. MC = AC.
(d) Firms earn only normal profits i.e. AC = AR.
(e) Firms maximize profits (i.e. MC = MR), but the level of profits will be just normal.
(f) There is optimum number of firms in the industry.

In other words, in the long run,

LAR = LMR = P = LMC = LAC and there will be optimum allocation of resources.

It should be remembered that the perfectly competitive market system is a myth. This is because the assumptions on which this system is based are never found in the real world market conditions.

3.1 MONOPOLY

The word 'Monopoly' means "alone to sell". Monopoly is a situation in which there is a single seller of a product which has no close substitute. Pure monopoly is never found in practice. However, in public utilities such as transport, water and electricity, we generally find a monopoly form of market.

3.1.0 Features of Monopoly Market

The following are the major features of the monopoly market:

(1) **Single seller of the product:** In a monopoly market, there is only one firm producing or supplying a product. This single firm constitutes the industry and as such there is no distinction between firm and industry in a monopolistic market. Monopoly is characterized by an absence of competition.

(2) **Barriers to Entry:** In a monopolistic market, there are strong barriers to entry. The barriers to entry could be economic, institutional, legal or artificial.

(3) **No close-substitutes:** A monopoly firm has full control over the market supply of a product or service. A monopolist is a price maker and not a price taker. The monopolist generally sells a product which has no close substitutes. In such a case, the cross elasticity of demand for the monopolist's product and any other product is zero or very small. The price elasticity of demand for monopolist's product is also less than one. As a result, the monopolist faces a steep downward sloping demand curve.

(4) **Market power:** A monopoly firm has market power i.e. it has the ability to charge a price above marginal cost and earn a positive profit.

While to some extent all goods are substitutes for one other, there may be essential characteristics in a good or group of goods which give rise to gaps in the chain of substitution. If one producer can so exclude competition that he controls the supply of a good, he can be said to be 'monopolist' – a single seller.

3.1.1 How do monopolies arise?

The fundamental cause of monopoly is barriers to entry; in effect other firms cannot enter the market. A few reasons for occurrence and continuation of monopoly are:

1) Strategic control over a scarce resources, inputs or technology by a single firm limiting the access of other firms to these resources.
2) Through developing or acquiring control over a unique product that is difficult or costly for other companies to copy.
3) Governments granting exclusive rights to produce and sell a good or a service.
4) Patents and copyrights given by the government to protect intellectual property rights and to encourage innovation.
5) Business combinations or cartels (illegal in most countries) where former competitors cooperate on pricing or market share.
6) Extremely large start-up costs even to enter the market in a modest way and requirement of extraordinarily costly and sophisticated technical know-how discourage firms from entering the market.
7) Natural monopoly arises when there are very large economies of scale. A single firm can produce the industry's whole output at a lower unit cost than two or more firms could. It is often wasteful (for consumers and the economy) to have more than one such supplier in a region because of the high costs of duplicating the infrastructure. For e.g. telephone service, natural gas supply and electrical power distribution.

8) Enormous goodwill enjoyed by a firm for a considerably long period create difficult barriers to entry.

9) Stringent legal and regulatory requirements effectively discourage entry of new firms without being specifically prohibited.

10) Firms use various anti-competitive practices often referred to as predatory tactics, such as limit pricing or predatory pricing intended to do away with existing or potential competition.

In real life, pure monopolies are not common because monopolies are either regulated or prohibited altogether. But, one producer may dominate the supply of a good or group of goods. Earlier, in public utilities, e.g. transport, water, electricity generation etc. monopolistic markets existed so as to reap the benefits of large scale production. But these markets have been deregulated and opened to competition over a period of time. In India, Indian Railways has monopoly in rail transportation. There is government monopoly over production of nuclear power.

3.1.2 Monopolist's Revenue Curves

In the absence of government intervention, a monopolist is free to set any price it desires and will usually set the price that yields the largest possible profit. Since the monopolist firm is assumed to be the only producer of a particular product, its demand curve is identical with the market demand curve for the product. The market demand curve, which exhibits the total quantity of a product that buyers will offer to buy at each price, also shows the quantity that the monopolist will be able to sell at every price that he sets. If we assume that the monopolist sets a single price and supplies all buyers who wish to purchase at that price, we can easily find his average revenue and marginal revenue curves.

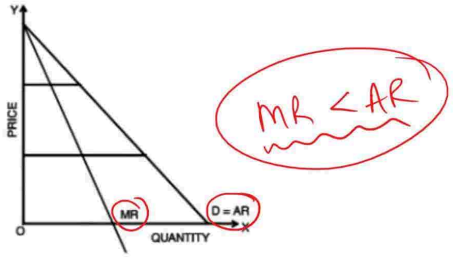


Fig. 23: A monopolist's demand curve and marginal revenue curve

Suppose the straight line in Fig. 23 is the market demand curve for a particular product 'A'. Suppose M/s. X and Co. is the only producer of the product A so that it faces the entire market demand. The firm faces a downward sloping demand curve, because if it wants to sell more it has to reduce the price of the product.

We have tabulated hypothetical values of price and quantity in Table 6 and have computed the amounts of average, total and marginal revenue corresponding to these levels.

Table 6 Average revenue, Total revenue and Marginal revenue for a Monopolist

Quantity sold	Average Revenue (₹) (AR = P)	Total Revenue (₹) (TR)	Marginal Revenue (₹) (MR)
0	10.00	0	
1	9.50	9.50	9.50
2	9.00	18.00	8.50
3	8.50	25.50	7.50
4	8.00	32.00	6.50
5	7.50	37.50	5.50
6	7.00	42.00	4.50
7	6.50	45.50	3.50
8	6.00	48.00	2.50
9	5.50	49.50	1.50
10	5.00	50.00	.50
11	4.50	49.50	(-).50

If the seller wishes to charge ₹ 10 he cannot sell any unit as no buyer would be willing to buy at such a high price. Alternatively, if he wishes to sell 10 units, his price cannot be higher than ₹ 5. Because the seller charges a single price for all units he sells, average revenue per unit is identical with price, and thus the market demand curve is the average revenue curve for the monopolist.

In perfect competition, average and marginal revenue are identical, but this is not the case with monopoly since the monopolist knows that if he wishes to increase his sales he will have to reduce the price of the product. Consider the example given. If the seller wishes to sell 3 units, he will have to reduce the price from ₹ 9 to ₹ 8.50. The third unit is sold for ₹ 8.50 only. This adds ₹ 8.50 to the firm's revenue. But, in order to sell the 3rd unit, the firm had to lower the price of all 3 units from ₹ 9 to ₹ 8.50. It thus receives ₹ .50 less on each of the 2 units it could have sold for ₹ 9. The marginal revenue over the interval from 2 to 3 units is thus ₹ 7.50 only. Again, if he wishes to sell 4 units, he will have to reduce the price from ₹ 8.50 to ₹ 8. The marginal revenue here will be ₹ 6.50 only. It must reduce price to sell additional output. So the marginal revenue on its additional unit sold is lower than the price, because it gets less revenue for previous units as well (it has to reduce price to the same amount for all units). The relationship between AR and MR of a monopoly firm can be stated as follows:

(i) AR and MR are both negatively by sloped (downward sloping) curves.

(ii) The slope of the MR curve is twice that of the AR curve. MR curve lies half-way between the AR curve and the Y axis. i.e. it cuts the horizontal line between Y axis and AR into two equal parts.

(iii) AR cannot be zero, but MR can be zero or even negative.

Monopolies are mainly of two types: Simple monopoly where the monopolist charges uniform price from all buyers and discriminating monopoly where the monopolist charges different prices from different buyers of the same good or service. We shall look into equilibrium of a simple monopolist.

3.1.3 Profit maximisation in a Monopolised Market: Equilibrium of the Monopoly Firm

Firms in a perfectly competitive market are price-takers so that they are only concerned about determination of output. But this is not the case with a monopolist. A monopolist has to determine not only his output but also the price of his product. As under perfect competition, monopolists' decisions are based on profit maximisation hypothesis. Although cost conditions, i.e. AC and MC curves, in competitive and monopoly markets are generally identical, revenue conditions differ. Since a monopolist faces a downward sloping demand curve, if he raises the price of his product, his sales will go down. On the other hand, if he wants

to increase his sales volume, he will have to be content with lower price. A monopolist will try to reach the level of output at which profits are maximum i.e. he will try to attain the equilibrium level of output. Since firm and industry are identical in a monopoly setting equilibrium of the monopoly firm signifies equilibrium of the industry. We shall discuss how a monopoly firm decides its output and price in the short run and in the long run.

Short run Equilibrium

Conditions for equilibrium: The twin conditions for equilibrium in a monopoly market are the same as that of a firm in a competitive industry. Graphically, we can depict these conditions in figure 24.

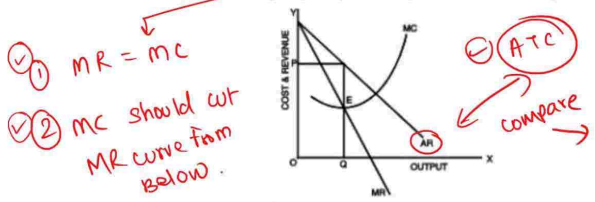


Fig. 24: Equilibrium of a monopolist (Short run)

The figure shows that MC curve cuts MR curve at E. That means, at E, the equilibrium output is OQ. The ordinate EQ extended to the demand curve (AR curve) gives the profit maximising equilibrium price OP. Thus the determination of output simultaneously determines the price which a monopolist can charge.

In order to know whether the monopolist is making profits or losses in the short run, we need to introduce the average total cost curve. The following figure shows two possibilities for a monopolist firm in the short run.

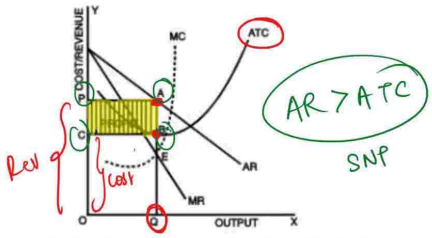


Fig. 25: Firm's equilibrium under monopoly: Maximisation of profits

Figure 25 shows that MC cuts MR at E to give equilibrium output as OQ. At OQ, the price charged is OP. At output level OQ, the price per unit is QA (=OP) and the cost per unit is BQ. Therefore, the economic profit per unit given by AR – ATC is AB (AQ-BQ). The total profit is ABCP.

Can a monopolist incur losses? One of the misconceptions about a monopoly firm is that it makes profits at all times. It is to be noted that there is no certainty that a monopolist will always earn an economic or supernormal profit. It all depends upon his demand and cost conditions. If a monopolist faces a very low demand for his product and the cost conditions are such that ATC >AR, he will not be making profits, rather, he will incur losses. Figure 26 depicts this position.

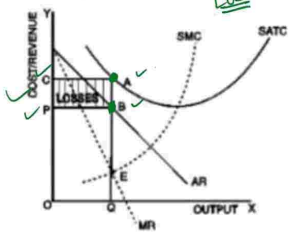


Fig. 26: Equilibrium of the monopolist: Losses in the short run

In the above figure, MC cuts MR at E. Here E is the point of loss minimisation. At E, the equilibrium output is OQ and the equilibrium price is OP. The average total cost (SATC) corresponding to OQ is QA. Cost per unit of output i.e. QA is greater than revenue per unit which is BQ. Thus, the monopolist incurs losses to the extent of AB per unit or total loss is ABPC. Whether the monopolist stays in business in the short run depends upon whether he meets his average variable cost or not. If he covers his average variable cost and at least a part of fixed cost, he will not shut down because he contributes something towards fixed costs which are already incurred. If he is unable to meet his average variable cost even, he will shutdown.

Long Run Equilibrium: Long run is a period long enough to allow the monopolist to adjust his plant size or to use his existing plant at any level that maximizes his profit. In the absence of competition, the monopolist need not produce at the optimal level. He can produce at a sub-optimal scale also. In other words, he need not reach the minimum of LAC curve; he can stop at any point on the LAC where his profits are maximum.

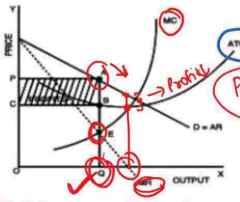


Fig. 27: Long run equilibrium of a monopolist

However, one thing is certain, the monopolist will not continue if he makes losses in the long run. He will continue to make super normal profits even in the long run as entry of outside firms is blocked.

3.1.4 Price Discrimination

Consider the following examples.

The family doctor in your neighbourhood charges a higher fee from a rich patient compared to the fee charged from a poor patient even though both are suffering from viral fever. Why?

Electricity companies sell electricity at a cheaper rate for home consumption in rural areas than for industrial use. Why?

The above cases are examples of price discrimination. What is price discrimination? Price discrimination occurs when a producer sells a specific commodity or service to different buyers at two or more different prices for reasons not associated with differences in cost.

Price discrimination is a method of pricing adopted by a monopolist in order to earn abnormal profits. It refers to the practices of charging different prices for different units of the same commodity.

Further examples of price discrimination are:

- Railways separate high-value or relatively small-bulk commodities which can bear higher freight charges from other categories of goods.
- Some countries dump goods at low prices in foreign markets to capture them.
- Some universities charge higher tuition fees from evening class students than from other scholars.
- A lower subscription is charged from student readers in case of certain journals.
- Lower charges on phone calls at off peak time.

Price discrimination cannot persist under perfect competition because the seller has no influence over the market determined price. Price discrimination requires an element of monopoly so that the seller can influence the price of his product.

Conditions for price discrimination: Price discrimination is possible only under the following conditions:

I. The seller should have some control over the supply of his product i.e. the firm should have price-setting power. Monopoly power in some form is necessary (not sufficient) to discriminate price.

II. The seller should be able to divide his market into two or more sub-markets.

III. The price-elasticity of the product should be different in different sub-markets. The monopolist fixes a high price for his product for those buyers whose price elasticity of demand for the product is less than one. This implies that, when the monopolist charges a higher price from them, they do not significantly reduce their purchases in response to high price.

IV. It should not be possible for the buyers of low-priced market to resell the product to the buyers of high-priced market i.e there must be no market arbitrage.

- More Elasticity → Less Price
- Less Elasticity → More Price (Inelastic)

Thus, we note that a discriminating monopolist charges a higher price in a market which has a relatively inelastic demand. The market which is highly responsive to price changes is charged less. On the whole, the monopolist benefits from such discrimination.

A numerical example will help you understand price-discrimination more clearly.

Suppose the single monopoly price is ₹ 30 and the elasticities of demand in markets A and B are respectively 2 and 5. Then,

MR in market A = $AR_A\left(\frac{e-1}{e}\right)$

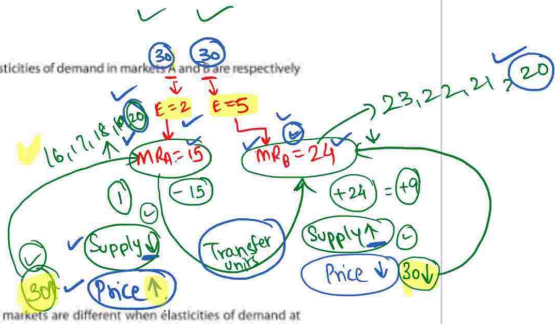
$= 30\left(\frac{2-1}{2}\right)$

$= 15$

MR in market B = $AR_B\left(\frac{e-1}{e}\right)$

$= 30\left(\frac{5-1}{5}\right)$

$= 24$



It is thus clear that the marginal revenues in the two markets are different when elasticities of demand at the single price are different. Further, we see that the marginal revenue in the market in which elasticity is high is greater than the marginal revenue in the market where elasticity is low. Therefore, it is profitable for the monopolist to transfer some amount of the product from market A where elasticity is less and therefore marginal revenue is low, to market B where elasticity is high and marginal revenue is large. Thus, when the monopolist transfers one unit from A to B, the loss in revenue (₹ 15) will be more than compensated by gain in revenue (₹ 24). On the whole, the gain in revenue will be ₹ 9 (24-15). It is to be noted that when some units are transferred from A to B, the price in market A will rise and it will fall in B. This means that the monopolist is now discriminating between markets A and B. Again, it is to be noted that there is a limit to which units of output can be transferred from A to B. Once this limit is reached and once a point is reached when the marginal revenues in the two markets become equal as a result of transfer of output, it will no longer be profitable to shift more output from market A to market B. When this point of a equality is reached, the monopolist will be charging different prices in the two markets – a higher price in market A with lower elasticity of demand and a lower price in market B with higher elasticity of demand.

Objectives of Price discrimination:

(a) to earn maximum profit

(b) to dispose off surplus stock

(c) to enjoy economies of scale

(d) to capture foreign markets and → [China → India → Dump]

(e) to secure equity through pricing.

Price discrimination may take place for reasons such as differences in the nature and types of persons who buy the products, differences in the nature of locality where the products are sold and differences in the income level, age, size of the purchase, time of purchase.

Price discrimination may be related to the consumer surplus enjoyed by the consumers. Prof. Pigou classified three degrees of price discrimination. Under the first degree price discrimination, the monopolist separates the market into each individual consumer and charges them the price they are willing and able to pay and thereby extract the entire consumer surplus. Doctors, lawyers, consultants etc., charging different fees, prices decided under 'bid and offer' system, auctions, and through negotiations are examples of first degree price discrimination.

Under the second degree price discrimination, different prices are charged for different quantities of sold. The monopolist will take away only a part of the consumers' surplus. The two possibilities are: a) Different consumers pay different price if they buy different quantity. Larger quantities are available at lower unit price. For example, a family pack of soaps or biscuits tends to cost less per kg than smaller packs. b) Each consumer pays different price for consecutive purchases. For example, suppliers of services such as telephone, electricity, water, etc., sometimes charge higher prices when consumption exceeds a particular limit.

Under the third degree price discrimination, price varies by attributes such as location or by customer segment. Here the monopolist will divide the consumers into separate sub-markets and charge different prices in different sub-markets. Examples: Dumping, charging different prices for domestic and commercial uses, lower prices in railways for senior citizens, etc.

Equilibrium under price discrimination

Under simple monopoly, a single price is charged for the whole output; but under price discrimination the monopolist will charge different prices in different sub-markets. First of all, the monopolist has to divide his total market into various sub-markets on the basis of differences in elasticity of demand. For the sake of making our analysis simple we shall explain a case where the total market is divided into two sub-markets.

In order to reach the equilibrium position, the discriminating monopolist has to make three decisions:

1) How much total output should he produce?
2) How the total output should be distributed between the two sub-markets? and
3) What prices he should charge in the two sub-markets?

The same marginal principle will guide his decision to produce a total output as that which guides a perfect competitor or a simple monopolist. In other words, the discriminating monopolist will compare the marginal revenue with the marginal cost of the output. But he has to find out first, the aggregate marginal revenue of the two sub-markets taken together and compare this aggregate marginal revenue with marginal cost of the total output. Aggregate marginal revenue curve is obtained by summing up laterally the marginal revenue curves of the sub-markets.

In figure 28, MR_a is the marginal revenue curve in sub-market A corresponding to the demand curve D_a. Similarly, MR_b is the marginal revenue in sub-market B corresponding to the demand curve D_b. Now, the aggregate marginal revenue curve AMR, which has been shown in Panel (iii) of figure 28 has been derived by adding up laterally MR_a and MR_b. The marginal cost curve of the monopolist is shown by the curve MC in Panel (iii) of figure 28.

The discriminating monopolist will maximize his profits by producing the level of output at which marginal cost curve (MC) intersects the aggregate marginal revenue curve (AMR). It is manifest from the diagram (iii) that profit maximizing output is OM, for only at OM aggregate marginal revenue is equal to the marginal cost of the whole output. Thus, the discriminating monopolist will decide to produce OM level of output.

Once the total output to be produced has been determined, the next task for the discriminating monopolist is to distribute the total output between the two sub-markets. He will distribute the total output OM in such a way that the marginal revenues in the two sub-markets are equal. The marginal revenues in the two sub-markets must be equal if the profits are to be maximized. If he is so allocating the output into two markets that the marginal revenues in the two are not equal, then it will pay him to transfer some amount from the sub-market in which the marginal revenue is less to the sub-market in which the marginal revenue is greater. Only when the marginal revenues in the two markets are equal, it will be unprofitable for him to shift any amount of the good from one market to the other.

For the discriminating monopolist to be in equilibrium it is essential not only that the marginal revenues in the two sub-markets should be the same but that they should also be equal to the marginal cost of the whole output. Equality of marginal revenues in the two markets with marginal cost of the whole output ensures that the amount sold in the two sub-markets will together be equal to the whole output OM which has been fixed by equalizing aggregate marginal revenue with marginal cost. It will be seen from figure (iii) that at equilibrium output OM, marginal cost is ME.

Now, the output OM has to be distributed in the two markets in such a way that the marginal revenue from them should be equal to the marginal cost (ME) of the whole output. It is clear form the diagram (i) that OM_1 must be sold in the sub-market A, because marginal revenue M_1E_1 at amount OM_1 is equal to marginal cost ME. Similarly, OM_2 must be sold in sub-market B, since marginal revenue M_2E_2 of amount OM_2 is equal to the marginal cost ME of the whole output. To conclude, demand and cost conditions being given, the discriminating monopolist will produce total output OM and will sell amount OM_1 in sub-market A and amount OM_2 in sub-market B. It should be noted that the total output OM will be equal to $OM_1 + OM_2$.

Another important thing which the discriminating monopolist has to discover is what prices will be charged in the two sub-markets. It is clear from the demand curve that amount OM_1 of the good can be sold at price OP_1 in sub-market A. Therefore, price OP_1 will be set in sub-market A. Like wise, amount OM_2 can be sold at price OP_2 in sub-market B. Therefore, price OP_2 will be set in sub-market B. Further, it should be noted that price will be higher in market A where the demand is less elastic than in market B where the demand is more elastic. Thus, price OP_1 is greater than the price OP_2.

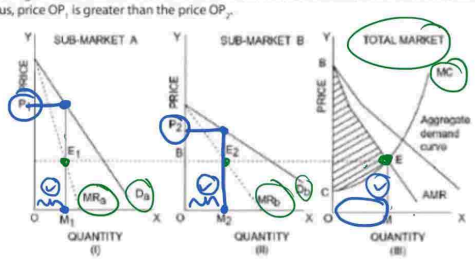


Fig. 28: Fixation of total output and price in the two sub-markets by the discriminating monopolist

Price discrimination is usually resorted to by a monopolist to secure higher profit and to acquire and sustain monopoly power. There is loss of economic welfare as the price paid is higher than marginal cost. Price discrimination also results in reduced consumer surplus. However, there are some favourable outcomes as well. The increase in revenue due to price discrimination will enable some firms to stay in business who otherwise would have made a loss. By peak load pricing, firms having capacity constraints will be able to spread its demand to off-peak times resulting in better capacity utilization and reduction in costs of production. Many essential services (e.g. railways) cannot be profitably run unless price discrimination is followed. Some consumers, especially, poor consumers, will benefit from lower prices as they would not have been able to purchase the good or service if uniform high prices are charged for all consumers.

3.1.5 Economic effects of monopoly

1) Monopoly is often criticized because it reduces aggregate economic welfare through loss of productive and allocative efficiency.
2) Monopolists charge substantially higher prices and produce lower levels of output than would exist if the product were produced by competitive firms.
3) Monopolists earn economic profits in the long run which are unjustifiable.
4) Monopoly prices exceed marginal costs and therefore reduces consumer surplus. There is a transfer of income from the consumers to the monopolists. Not only that consumers pay higher prices, but they would also not be able to substitute the good or service with a more reasonably priced alternative.
5) Monopoly restricts consumer sovereignty and consumers' opportunities to choose what they desire.
6) Monopolists may use unjust means for creating barriers to entry to sustain their monopoly power. They often spend huge amount of money to maintain their monopoly position. This leads increases average total cost of producing a product.
7) A monopolist having substantial financial resources is in a powerful position to influence the political process in order to obtain favourable legislation.
8) Very often, monopolists do not have the necessary incentive to introduce efficient innovations that improve product quality and reduce production costs.
9) Monopolies are able to use their monopoly power to pay lower prices to their suppliers.
10) The economy is also likely to suffer from 'X' inefficiency, which is the loss of management efficiency associated with markets where competition is limited or absent.

Since monopolies are exploitative and generate undesirable outcomes in the economy, a number of steps are taken by governments to prevent the formation of monopolies and to regulate them if they are already present.

3.2 IMPERFECT COMPETITION-MONOPOLISTIC COMPETITION

Consider the market for soaps and detergents. Among the well known brands on sale are Lux, Vivel, Cinthol, Dettol, Liril, Pears, Lifebuoy Plus, Dove etc. Is this market an example of perfect competition? Since all the soaps are almost similar, one might think that this is an example of perfect competition. But, on a close inspection we find that though these products are technically and functionally similar, each seller produces and sells a product which is different from those of his competitors. For example, whereas Lux is claimed to be a beauty soap, Liril is associated more with freshness. Dettol soap is placed as antiseptic and Dove claims to ensure young smooth skin. The practice of product and service differentiation gives each seller a chance to attract business to himself on some basis other than price. This is the monopolistic part of the market situation. Thus, this market contains features of both the markets discussed earlier – monopoly and perfect competition. In fact, this type of market is more common than pure competition or pure monopoly. The industries in monopolistic competition include clothing, manufacturing and retail trade in large cities. There are many hundreds of grocery shops, shoe stores, stationery shops, restaurants, repair shops, laundries, manufacturers of women's dresses and beauty parlours in a medium sized or large city.

3.2.0 Features of Monopolistic Competition

(i) ***Large number of sellers:*** In a monopolistically competitive market, there are large number of independent firms who individually have a small share in the market.

Toothpaste
- Colgate → Strong teeth →
- Pepsodent → Dhishoom
- Vicco → Walnut
- Close up → → Fancied

(ii) *Product differentiation:* In a monopolistic competitive market, the products of different sellers are differentiated on the basis of brands. Because competing products are close substitutes, demand is relatively elastic, but not perfectly elastic as in perfect competition. Firms use size, design, colour, shape, performance, features and distinctive packaging and promotional techniques to make their products different. Such differentiation may be true or fancied. Brands are generally so much advertised that a consumer starts associating the brand with a particular manufacturer and a type of brand loyalty is developed. Product differentiation gives rise to an element of monopoly to the producer over the competing products. Because of absence of perfect substitutability, the producer of an individual brand can raise the price of his product knowing that he will not lose all the customers to other brands. However, since all brands are close substitutes of one another, the seller who increases the price of the product will lose some of his customers to his competitors. Thus, this market is a blend of monopoly and perfect competition.

(iii) *Freedom of entry and exit:* Barriers to entry are comparatively low and new firms are free to enter the market if they find profit prospects and existing firms are free to quit.

(iv) *Non-price competition:* In a monopolistically competitive market, firms are often in fierce competition with other firms offering a similar product or service, and therefore try to compete on bases other than price, for example: they indulge in aggressive advertising, product development, better distribution arrangements, efficient after-sales service and so on. A key base of non-price competition is a deliberate policy of product differentiation. Sellers attempt to promote their products not by cutting prices but by incurring high expenditure on publicity and advertisement and other sales promoting techniques. This is because price competition may result in price – wars which may throw a few firms out of market or reduce the profit margins.

3.2.1 Price-output determination under monopolistic competition: Equilibrium of a firm

In a monopolistically competitive market, since the product is differentiated, each firm does not face a perfectly elastic demand for its products. Each firm makes independent decisions about price and output. Each firm is a price maker and is in a position to determine the price of its own product. As such, the firm is faced with a downward sloping demand curve for its product. Generally, the less differentiated the product is from its competitors, the more elastic this curve will be.

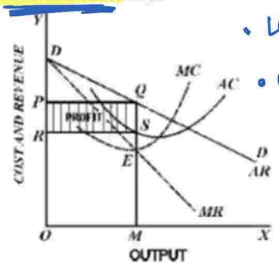


Fig. 29: Short run equilibrium of a firm under monopolistic competition: Supernormal profits

Perfect comp & Monopolistic → Because of this itself → firms earn only NORMAL PROFITS in long run.

- Less differentiated → more similar → Elastic
- More differentiated → Less similar → Inelastic.

The firm depicted in figure 29 has a downward sloping but flat demand curve for its product. The firm is assumed to have U-shaped short run cost curves.

Conditions for the Equilibrium of an individual firm: The conditions for price-output determination and equilibrium of an individual firm may be stated as follows:

(i) MC = MR

(ii) MC curve must cut MR curve from below.

Figure 29 shows that MC cuts MR curve at E. At E, the equilibrium price is OP and the equilibrium output is OM. Since per unit cost is SM, per unit supernormal profit (i.e. price - cost) is QS (or PR) and the total supernormal profit is PQSR.

It is also possible that a monopolistically competitive firm may incur losses in the short run. This is shown in fig. 30. The figure shows that per unit cost (HN) is higher than price OT (or KN) of the product of the firm and the loss per unit is KH (HN-KN). The total loss is GHKT.

What about long run equilibrium of the firm? If the firms in a monopolistically competitive industry earn supernormal profits in the short run, there will be an incentive for new firms to enter the industry. As more firms enter, profits per firm will go on decreasing as the total demand for the product will be shared among a larger number of firms. This will happen till all supernormal profits are wiped away and all firms earn only normal profits. Thus, in the long run all firms under monopolistic competition will earn only normal profits.

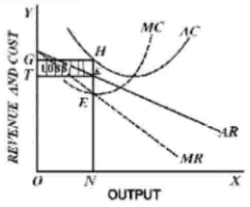


Fig. 30: Short run equilibrium of a firm under Monopolistic Competition – With losses

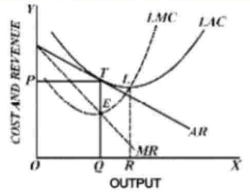


Fig. 31: The long-term equilibrium of a firm in monopolistic competition

Figure 31 shows the long run equilibrium of a firm in a monopolistically competitive market. The average revenue curve touches the average cost curve at point T corresponding to quantity Q and price P. At equilibrium (i.e. MC= MR) supernormal profits are zero, since average revenue equals average costs. All firms are earning zero economic profits or just normal profits.

In case of persisting losses, in the long run, the loss making firms will exit from the market and this will go on till the remaining firms make normal profits only.

It is to be noted that an individual firm which is in equilibrium in the long run, will be operating at levels at which it does not fully realize economies of large scale production. In other words, the plants are not used to optimum capacity. However, any attempt to produce more to secure the advantage of least cost production will be irrational since the price reduction to sell the larger output will exceed the cost reduction made possible. If output is increased up to R in the above figure, we find that average total cost will be greater than average revenue. Thus, a monopolistically competitive firm which is in equilibrium in the long run is at a position where it has excess capacity. That is, it is producing a lower quantity than its full capacity level. The firm in figure 31 could expand its output from Q to R and reduce average costs. But it does not do so because in doing so, the firm would reduce average revenue more than it reduces average costs. It implies that, firms in monopolistic competition are not of optimum size and there exists excess capacity (QR in our example above) of production with each firm.

The following table presents a comparison of the three market forms we have discussed so far:

Table 7 Comparison of Perfect Competition, Monopoly and Monopolistic Competition

Perfect Competition	Monopoly	Monopolistic Competition
Large number of buyers and large number of firms in the industry	Single seller, no difference between firm and industry	Large number of buyers and large number of firms in the industry
Homogenous products which are perfect substitutes	No close substitutes	Differentiated products which are close substitutes, but not perfect substitutes
Insignificant market share	Command over the whole market	Each firm is small relative to the market
Competition among firms is perfect	Absence of competition	Imperfect competition
Complete absence of monopoly	High degree of monopoly power prevails	Some degree of monopoly power due to product differentiation
Free entry and exit	Strong barriers to entry	Free entry and exit
Price-taker	Price maker	Some control over price
Price is equal to marginal cost	Price is higher than marginal cost	Price is higher than marginal cost
Price less than other market forms	High equilibrium price	Price is high compared to perfect competition
Demand curve is infinitely elastic	Downward sloping and highly inelastic demand curve	Downward sloping and more elastic demand curve
MR and AR represented by the same curve	MR starts at the same point as AR, and is twice steep when compared to AR	MR starts at the same point as AR, and is twice steep when compared to AR
TR straight line positively sloping through the origin	TR inverted U shaped	TR inverted U shaped

Perfect Competition	Monopoly	Monopolistic Competition
No price discrimination-same price for all units	Can practice price discrimination by selling a product at different prices	Depends on the extent of monopoly power the firm has
No supernormal profits in the long run	Supernormal profits both in the short run and long run	No supernormal profits in the long run
No selling costs	Generally low selling costs, only for informing the consumers	Due to severe competition, selling costs are vital to persuade buyers
Price being given, decides only quantity of output	Decides on both price and output	Decides on both price and output
Product is produced at the minimum average cost	Produced at the declining portion of average cost curve	Produced at the declining portion of average cost curve
Equilibrium quantity is highest and produced at least cost	Equilibrium quantity less than other market forms	Equilibrium quantity less than optimal, there is excess capacity
No consumer exploitation	Consumers can be exploited by charging high prices	Consumers are influenced through price and non price competition
Efficient allocation of resources	Inefficient allocation of resource	Inefficient allocation of resource
No wastage of resources	Wastage of resource	Huge wastage of resources for advertisements

3.3 OLIGOPOLY [Few Sellers]

We have studied price and output determination under three market forms, namely, perfect competition, monopoly and monopolistic competition. However, in the real world economies we find that many of the industries are oligopolistic. Oligopoly is an important form of imperfect competition. Oligopoly is often described as 'competition among the few'. Prof. Stigler defines oligopoly as that "situation in which a firm bases its market policy, in part, on the expected behaviour of a few close rivals". In other words, when there are few (two to ten) sellers in a market selling homogeneous or differentiated products, oligopoly is said to exist. Oligopolies mostly arise due to those factors which are responsible for the emergence of monopolies. Unlike monopoly where a single firm enjoys absolute market power, under oligopoly a few firms exercise their power to keep possible competitors out.

Consider the example of cold drinks industry or automobile industry. There are a handful firms manufacturing cold drinks in India. Similarly, there are a few firms in the automobile industry in India. Airlines industry, petroleum refining, power generation and supply in most of the parts of the country, mobile telephony and Internet service providers are other examples of oligopolistic market. These industries exhibit some special features which are discussed in the following paragraphs.

Types of Oligopoly:

Pure oligopoly or perfect oligopoly occurs when the product is homogeneous in nature, e.g. Aluminium industry. This type of oligopoly tends to process raw materials or produce intermediate goods that are used as inputs by other industries. Notable examples are petroleum, steel, and aluminium. Differentiated or imperfect oligopoly occurs when goods sold is based on product differentiation, e.g. Talcum powder.

Open and closed oligopoly: In an open oligopoly market new firms can enter the market and compete with the existing firms. But, in closed oligopoly entry is restricted.

Collusive and Competitive oligopoly: When few firms of the oligopoly market come to a common understanding or act in collusion with each other either in fixing price or output or both, it is collusive oligopoly. When there is absence of such an understanding among the firms and they compete with each other, it is called competitive oligopoly.

Partial or full oligopoly: Oligopoly is partial when the industry is dominated by one large firm which is considered or looked upon as the leader of the group. The dominating firm will be the price leader. In full oligopoly, the market will be conspicuous by the absence of price leadership.

Syndicated and organized oligopoly: Syndicated oligopoly refers to that situation where the firms sell their products through a centralized syndicate. Organized oligopoly refers to the situation where the firms organize themselves into a central association for fixing prices, output, quotas, etc.

3.3.0 Characteristics of Oligopoly Market

The oligopolistic industry is dominated by a small number of large firms, each of which is comparatively large relative to the total size of the market. These large firms exercise considerable control over the market. An oligopoly market may have a large number of firms along with very large firms, but most of the market share will be enjoyed by the few large firms and therefore they conquer and retain market control. There are strong barriers to entry (refer barriers to entry discussed under monopoly).

Strategic Interdependence: The most important feature of oligopoly is interdependence in decision-making of the few firms which comprise the industry. Since there are only few sellers, there will be intense competition among them. Under oligopoly, each seller is big enough to influence the market. A firm has to necessarily respond to its rivals actions, and simultaneously the rivals also respond to the firm's actions. This is because when the number of competitors is few, any change in price, output or product by a firm will have direct effect on the fortunes of the rivals who will then retaliate by changing their own prices, output or advertising technique as the case may be. It is, therefore, clear that an oligopolistic firm must consider not only the market demand for its product, but also the reactions of other firms in the industry to any major decision it takes. An oligopoly firm that does not consider its rivals' behaviour or incorrectly assumes them is likely to suffer a setback in its profits.

Importance of advertising and selling costs: A direct effect of interdependence of oligopolists is that the firms have to employ various aggressive and defensive marketing weapons to gain greater share in the market or to maintain their share. For this, firms have to incur a good deal of costs on advertising and other measures of sales promotion. Therefore, there is great importance for advertising and selling costs in an oligopoly market. It is to be noted that firms in such type of market avoid price cutting and try to compete on non-price basis because if they start undercutting one another, a type of price war will emerge which will drive a few of them out of the market as customers will try to buy from the seller selling at the cheapest price.

Group behaviour : The theory of oligopoly is a theory of group behaviour, not of mass or individual behaviour and to assume profit maximising behaviour on the oligopolists' part may not be very valid. There is no generally accepted theory of group behaviour. The firms may agree to pull together as a group in promotion of their common interest. The group may or may not have a leader. If there is a firm which acts as a leader, it has to get others to follow it. These are some of the concerns of the theory of group behaviour. But one thing is certain. Each oligopolist closely watches the business behaviour of the other oligopolists in the industry and designs his moves on the basis of some assumptions of how they behave or are likely to behave.

3.3.1 Price and output decisions in an oligopolistic market

Oligopoly, in fact, describes the operation of a number of large corporations in the world. The operations of these markets are characterized by strategic behaviour of a small number of rival firms. As mentioned above,

the extent of power as well as profits depends to a great extent on how rival firms react to each other's decisions. If the behaviour is less competitive, that is, if the rival firms behave in a cooperative manner, firms will enjoy market power and can charge prices above marginal cost.

An oligopolistic firm has to behave strategically when it makes a decision about its price. It has to consider whether rival firms will keep their prices and quantities constant, when it makes changes in its price and/or quantity. When an oligopolistic firm changes its price, its rival firms will retaliate or react and change their prices which in turn would affect the demand of the former firm. Therefore, an oligopolistic firm cannot have sure and determinate demand curve, since the demand curve keeps shifting as the rivals change their prices in reaction to the price changes made by it. Now when an oligopolist does not know his demand curve, what price and output he will fix cannot be ascertained by economic analysis. However, economists have established a number of price-output models for oligopoly market depending upon the behaviour pattern of other firms in the market. Different oligopoly settings give rise to different optimal strategies and diverse outcomes. Important oligopoly models are:

(i) It is assumed by some economists that oligopolistic firms ignore their interdependence and make their decisions independently. When interdependence is ignored, the demand curve becomes definite and the equilibrium output is found out by equating marginal cost and marginal revenue.

(ii) Some economists assume that an oligopolist is able to predict the reaction pattern of his competitors and on the basis of his prediction; he makes decisions relating to price and quantity. In Cournot model, the firms' control variable is output in contrast to price. They do not collude. In Stackelberg's model, the leader commits to an output before all other firms. The rest of the firms are followers and they choose their outputs so as to maximize profits, given the leader's output. According to Bertrand model, price is the control variable for firms and each firm independently sets its price in order to maximize profits.

(iii) The third approach is that oligopolists enter into agreement and try to pursue their common interests. They jointly act as a monopoly organization and fix their prices in such a manner that their joint profits are maximized. They will then share the profits, market or output among them as agreed. Entering into collusion or forming a cartel is generally considered illegal because it restricts trade and creates situations which are close to monopoly. However, in reality, we find a number of cartels operating in the world economy who collude formally or in a tacit manner. Organisation of Petroleum Exporting Countries (OPEC) is the best example of such type of agreement among oligopolists.

3.3.2 Price Leadership

Cartels are often formed in industries where there are a few firms, all of which are similar in size. A group of firms that explicitly agree (collude) to coordinate their activities is called a cartel. Most cartels have only a subset of producers. If the participating producers stick to the cartel's agreements, the cartel will have high market power and earn monopoly profits especially when the demand for the product is inelastic.

But it is possible that there is a dominant or a large firm surrounded by a large number of small firms. If these firms are numerous or too unreliable, the large firm has to decide how to set its price, taking into account the behaviour of these fringe firms. One strategy is to adopt a 'live and let live philosophy'. Specifically, the dominant firm accepts the presence of fringe firms and sets the price to maximize its profit, taking into account the fringe firms' behaviour. This is called price-leadership by dominant firm. Another type of price leadership is by a low cost firm. Here, the price leader sets the price in such a manner that it allows some profits to the followers also. Then there could be barometric price leadership under which an old, experienced, largest or most respected firm acts as a leader and assesses the market conditions with regard to the demand, cost, competition etc. and makes changes in price which are best from the view point of all the firms in the industry. Whatever price is charged by the price leader is generally accepted by the follower firms.

Thus we find that fixing of price under oligopoly is very tricky affair and involves a number of assumptions regarding the behaviour of the oligopolistic group.

3.3.3 Kinked Demand Curve

It has been observed that in many oligopolistic industries prices remain sticky or inflexible for a long time. They tend to change infrequently, even in the face of declining costs. Many explanations have been given for this price rigidity under oligopoly and the most popular explanation is the kinked demand curve hypothesis given by an American economist Paul A. Sweezy. Hence this is called Sweezy's Model.

The demand curve facing an oligopolist, according to the kinked demand curve hypothesis, has a 'kink' at the level of the prevailing price. It is because the segment of the demand curve above the prevailing price level is highly elastic and the segment of the demand curve below the prevailing price level is inelastic. A kinked demand curve dD with a kink at point P is shown in Fig. 32.

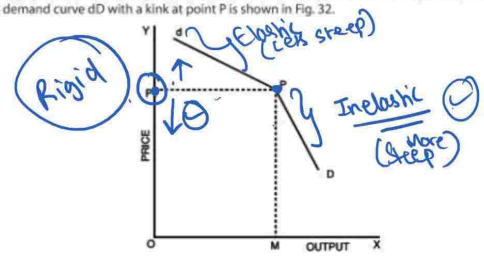


Fig. 32: Kinked Demand Curve under oligopoly

The prevailing price level is MP and the firm produces and sells output OM. Now the upper segment dP of the demand curve dD is relatively elastic and the lower segment PD is relatively inelastic. This difference in elasticities is due to the particular competitive reaction pattern assumed by the kinked demand curve hypothesis. This assumed pattern is :

Each oligopolist believes that if it lowers the price below the prevailing level its competitors will follow him and will accordingly lower prices, whereas if it raises the price above the prevailing level, its competitors will not follow its increase in price.

This is because when an oligopolistic firm lowers the price of its product, its competitors will feel that if they do not follow the price cut, their customers will run away and buy from the firm which has lowered the price. Thus, in order to maintain their customers they will also lower their prices. The lower portion of the demand curve PD is price inelastic showing that very little increase in sales can be obtained by a reduction in price by an oligopolist. On the other hand, if a firm increases the price of its product, there will a substantial reduction in its sales because as a result of the rise in its price, its customers will withdraw from it and go to its competitors which will welcome the new customers and will gain in sales. These happy competitors will have therefore no motivation to match the price rise. The oligopolist who raises its price will lose a great deal and will therefore refrain from increasing price. This behaviour of the oligopolists explains the elastic upper portion of the demand curve (dP) showing a large fall in sales if a producer raises his price. Briefly put, the effect of a price cut on the quantity demanded of the product of an oligopolistic firm depends upon

whether its rivals retaliate by cutting their prices. Similarly, the effect of a price increase on the quantity demanded of the oligopolistic firm's product depends upon whether its rivals respond by raising their prices as well.

Each oligopolist will, thus, adhere to the prevailing price seeing no gain in changing it and a kink will be formed at the prevailing price. Thus, rigid or sticky prices are explained by the kinked demand curve theory. Oligopolistic firms often have a strong desire for price stability. Although costs or demand change, oligopolistic firms are reluctant to modify the price set by it.

3.3.4 Other important market forms

Other important market forms are:

Duopoly, a subset of oligopoly, is a market situation in which there are only two firms in the market.

Monopsony is a market characterized by a single buyer of a product. or service and is mostly applicable to factor markets in which a single firm is the only buyer of a factor.

Oligopsony is a market characterized by a small number of large buyers and is mostly relevant to factor markets.

Bilateral monopoly is a market structure in which there is only a single buyer and a single seller i.e. it is a combination of monopoly market and a monopsony market.

SUMMARY

- The features of various types of market form are summarised in the table given below:

Classification of Market Forms

Form of Market Structure	Number of Firms	Nature of product	Price Elasticity of Demand of a firm	Degree of Control over price
(a) Perfect competition	Large number of firms	Homogeneous	Infinite	None
(b) Monopoly	One	Unique product without close substitute	Small	Very Considerable
(c) Imperfect Competition				
i) Monopolistic Competition	Large number of firms	Differentiated products	Large	Some
ii) Oligopoly	Few Firms	Homogeneous or differentiated product	Small	Some

Perfect Competition

- A market is said to be perfectly competitive if it has large number of buyers and sellers, homogeneous product, free entry and exit, perfect mobility of factors of production, perfect knowledge about the market conditions, insignificant transaction costs, no government interference and absence of collusion.
- A firm is in equilibrium when it's MC = MR and MC curve cuts the MR curve from below.

- In the short run, firms may be earning normal profits, supernormal profits or making losses at the equilibrium price.
- In the long-run all the supernormal profits or losses get wiped away with entry or exit of the firms from the industry and all firms earn only normal profit.
- in the long run, in perfect competition, the market mechanism leads to an optimal allocation of resources.

Monopoly

- Monopoly is an extreme form of imperfect competition with a single seller of a product which has no close substitute.
- Since the monopolist firm is the only producer of a particular product, its demand curve is identical with the market demand curve for the product.
- Since a monopoly firm has market power it has the ability to charge a price above marginal cost and earns a positive economic profit.
- The fundamental cause of monopoly is barriers to entry; in effect other firms cannot enter the market.
- In the long-run, the supernormal profit will be continued because entry is restricted.
- One of the important features of monopoly is price discrimination, i.e. charging different prices for the same product from different buyers.
- Price charged will be higher in the market where the demand is less elastic and lower in the market where the demand is more elastic.
- Under the first degree price discrimination, the monopolist separates the market into each individual consumer and charges them the price they are willing and able to pay and thereby extract the entire consumer surplus.
- Under the second degree price discrimination different prices are charged for different quantities of sold.
- Under the third degree price discrimination, price varies by attributes such as location or by customer segment.
- In the absence of competition, the monopolist need not produce at the optimal level.
- Since monopolies are exploitative and generate undesirable outcomes in the economy, a number of steps are taken by governments to regulate and to prevent the formation of monopolies.
- In real life, pure monopolies are not common because monopolies are either regulated or prohibited altogether.

Imperfect Competition

- Imperfect competition is an important category wherein the individual firm exercises control over the price to a smaller or larger degree depending upon the degree of imperfection present.

Monopolistic Competition

- It refers to the market situation in which many producers produce goods which are close substitutes of one another.

- The essential feature of monopolistic competition is the existence of large number of firms, product differentiation, non price competition, high selling costs and freedom of entry and exit of firms.
- In monopolistic competition, the features of monopoly and perfect competition are partially present.
- Demand curve is highly elastic and a firm enjoys some control over the price.
- Firms in monopolistic competition are not of optimum size and there exists excess capacity with each firm.

Oligopolistic Competition

- Oligopoly is also referred to as 'competition among the few' as a few big firms produce and compete in this market.
- There are different types of oligopoly like pure and differentiated oligopoly, open and closed oligopoly, collusive and competitive oligopoly, partial and full oligopoly and syndicated and organized oligopoly.
- The main characteristics of oligopoly are strategic interdependence, importance of advertising and selling costs and group behaviour. Different oligopoly settings give rise to different optimal strategies and diverse outcomes.
- Price-leadership can be by dominant firm, a low cost firm or it can be barometric price leadership.
- A group of firms that explicitly agree (collude) to coordinate their activities is called a cartel.
- Paul A. Sweezy propounded the kinked demand curve model of oligopoly. The price will be kept unchanged for a long time due to fear of retaliation and price tend to be sticky and inflexible.
- Other important market forms are : Duopoly, Monopsony, Oligopsony and Bilateral monopoly.

MULTIPLE CHOICE QUESTIONS

1. In the table below what will be equilibrium market price?

Price (₹)	Demand (tonnes per annum)	Supply (tonnes per annum)
1	1000	400
2	900	500
3	800	600
4	700	700
5	600	800
6	500	900
7	400	1000
8	300	1100

(a) ₹ 2
(b) ₹ 3
(c) ₹ 4
(d) ₹ 5

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Business Economics

MARATHON

Chp 5- Business Cycles

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Introduction

1) During 1920s, UK saw **rapid growth in Gross Domestic Product (GDP)**, production levels and living standards. The growth was fuelled by **new technologies** and **production processes** such as the assembly line. The economic growth also caused an unprecedented **rise in stock market values**. (Boom)
2) **China's** recent **economic slowdown** and financial mayhem are fostering a cycle of **decline and panic** across much of the world, as countries of nearly every continent see escalating **risks of prolonged slumps, political disruption and financial losses**. (Recession)

- We have seen in chapter 1 that Economics is concerned with **fluctuations in economic activities**. The economic history of nearly all countries point towards the fact that they have gone through fluctuations in economic activities i.e. there have been **periods of prosperity alternating** with **periods of economic downturns**.
- These **rhythmic fluctuations** in **aggregate economic activity** that an economy experiences **over a period of time** are called **business cycles** or **trade cycles**. A trade cycle is composed of periods of **good trade** characterised by rising prices and low unemployment percentage, altering with periods of **bad trade** characterised by falling prices and high unemployment percentages.
- In other words, business cycle refers to **alternate expansion and contraction** of overall business activity as manifested in **fluctuations in measures of aggregate economic activity**, such as, gross national product, employment and income.
- A characteristic of these economic fluctuations is that they are **recurrent and occur periodically**. That is, they **occur again and again** but **not always at regular intervals, nor** are they of the **same length**.
- It has been observed that some business cycles have been long, lasting for several years while others have been short ending in two to three years

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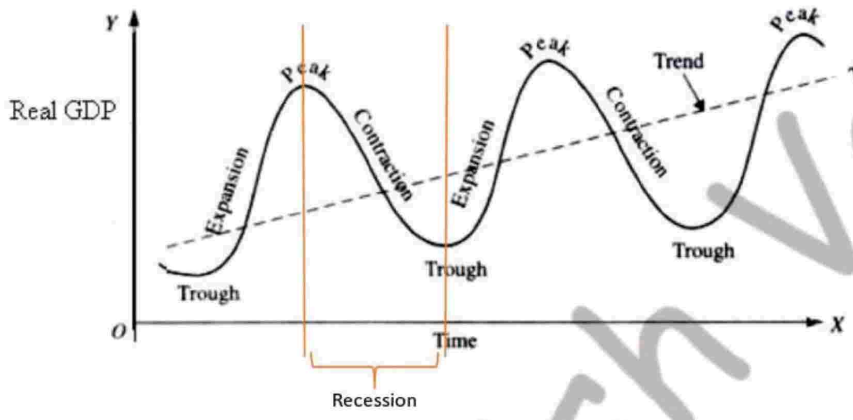
Phases of Business Cycles

- **Expansion** (aka Boom or Upswing)
- **Peak** (aka Boom or Prosperity)
- **Contraction** (aka Downswing or Recession)
- **Trough** (aka Depression)



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Phases of Business Cycles

1 Expansion (aka Boom or Upswing)

- The expansion phase is characterised by **increase** in **national output, employment, aggregate demand, capital and consumer expenditure, sales, profits, rising stock prices and bank credit**. This state continues till there is **full employment of resources** and **production** is at its **maximum** possible level using the available productive resources.
- **Involuntary unemployment** is almost **zero** and whatever unemployment is there is either **frictional** (i.e. due to change of jobs, or suspended work due to strikes or due to imperfect mobility of labour) or **structural** (i.e. unemployment caused due to structural changes in the economy). Prices and costs also tend to rise faster.
- Good amounts of **net investment occur**, and **demand** for all types of goods and services **rises**. There is altogether **increasing prosperity** and people enjoy **high standard of living** due to **high levels of consumer spending, business confidence, production, factor incomes, profits and investment**. The growth rate **eventually slows down** and reaches its **peak**.

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Phases of Business Cycles

2 Peak (aka Boom or Prosperity)

- The term peak refers to the **top** or the **highest point** of the business cycle. In the later stages of expansion, **inputs are difficult to find** as they are **short of their demand** and therefore **input prices increase**. (Since more and more companies want inputs but supply is not enough)
- **Output prices also rise** rapidly leading to **increased cost of living** and **greater strain on fixed income earners**. Consumers begin to **review their consumption expenditure** on housing, durable goods etc. Actual **demand stagnates**.
- This is the **end of expansion** and it occurs when **economic growth** has reached a point where it will **stabilize** for a short time and then **move in the reverse direction**.

Consumers begin to review their consumption expenditure

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Phases of Business Cycles

3 Contraction (aka Downswing or Recession)

- The economy **cannot continue to grow endlessly**. As mentioned above, once peak is reached, increase in demand is halted and starts decreasing in certain sectors.
- During contraction, there is **fall** in the levels of **investment** and **employment**. **Producers do not instantaneously recognize the pulse** of the economy and **continue anticipating higher levels of demand**, and therefore, **maintain** their **existing** levels of **investment** and production.
- The consequence is a discrepancy or **mismatch** between **demand** and **supply**. **Supply far exceeds demand**. Initially, this happens only in few sectors and at a slow pace, but rapidly spreads to all sectors.
- **Producers** being **aware of the fact** that they have indulged in **excessive investment** and over production, respond by **holding back future investment** plans, **cancellation** and **stoppage** of **orders for equipments** and all types of **inputs** including **labour**.
- This in turn generates a **chain of reactions** in the **input markets** and **producers** of **capital goods and raw materials** in turn respond by **cancelling and curtailing their orders**. This is the turning point and the **beginning of recession**.

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Phases of Business Cycles

3 Contraction (aka Downswing or Recession)

- **Decrease in input demand** pulls **input prices down**; **incomes** of wage and interest earners gradually **decline** resulting in **decreased demand for goods** and services. **Producers lower their prices** in order to **dispose off their inventories** and for meeting their financial obligations.
- **Consumers**, in their turn, **expect further decreases in prices** and **postpone** their purchases. With reduced consumer spending, **aggregate demand falls**, generally causing **fall in prices**. The **discrepancy** between **demand** and **supply** gets **widened** further. This process gathers speed and **recession** becomes severe.
- **Investments** start **declining**; **production** and **employment decline** resulting in further decline in incomes, **demand** and **consumption** of both **capital goods** and **consumer goods**.
- Business firms become **pessimistic** about the future state of the economy and there is a **fall in profit expectations** which induces them to **reduce investments**.
- **Bank credit shrinks** as borrowings for investment declines, **investor confidence is at its lowest**, **stock prices fall** and **unemployment increases** because of fall in wage rates.
- The process of recession is **complete** and the **severe contraction** in the economic activities pushes the economy into the phase of **depression**.

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Phases of Business Cycles

4 Trough (aka Depression)

- Depression is the **severe form of recession** and is characterized by **extremely sluggish** economic activities.
- During this phase of the business cycle, **growth rate becomes negative** and the level of **national income** and **expenditure declines** rapidly.
- Demand for products and services decreases, **prices are at their lowest** and decline rapidly forcing firms to shutdown several production facilities. Since companies are **unable to sustain their work force**, there is **mounting unemployment** which leaves the consumers with **very little disposable income**.
- A typical feature of depression is the **fall in the interest rate**. With lower rate of interest, people's **demand for holding liquid money** (i.e. in cash) **increases**.
- Despite lower interest rates, the **demand for credit declines** because **investors' confidence has fallen**. Often, it also happens that the availability of credit also falls due to **possible banking or financial crisis**.
- Industries, especially **capital and consumer durable goods industry**, **suffer** from **excess capacity**. Large number of **bankruptcies** and **liquidation** significantly reduce the magnitude of trade and commerce.
- At the depth of depression, **all economic activities touch the bottom** and the phase of **trough** is reached. It is a very **agonizing** period causing lots of **distress** for all. The great depression of 1929-33 is still cited for the enormous misery and human sufferings it caused.

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Phases of Business Cycles

Recovery

- The economy **cannot continue to contract endlessly**. It reaches the lowest level of economic activity called trough and then starts recovering.
- Trough generally lasts for some time and **marks the end of pessimism** and the **beginning of optimism**. This reverses the process.
- The process of **reversal** is **initially felt in the labour market**. Pervasive unemployment **forces the workers to accept wages lower** than the prevailing rates.
- The producers **anticipate lower costs** and **better business** environment. A time comes when **business confidence takes off** and gets better, consequently they **start to invest again** and to build stocks; the **banking system starts expanding credit**; **technological advancements** require **fresh investments** into new types of machines and capital goods; **employment increases**, **aggregate demand picks up** and **prices** gradually **rise**. Besides, price mechanism acts as a self-correcting process in a free enterprise economy. The **spurring of investment** causes **recovery** of the economy. This acts as a **turning point** from **depression to expansion**.
- As investment rises, production increases, **employment improves**, **income improves** and **consumers** begin to **increase their expenditure**. Increased spending causes **increased aggregate demand** and in order to fulfil the demand more goods and services are produced. **Employment of labour increases**, unemployment falls and **expansion takes place** in the economic activity.

- It is to be reemphasized that **no** economy follows a **perfectly timed cycle** and that the business cycles are **anything but regular**. They **vary** in **intensity** and **length**.
- There is **no set pattern** which they follow. Some cycles may have longer periods of boom, others may have longer period of depression.

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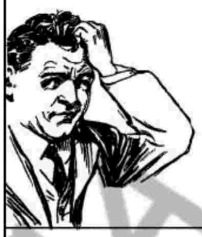
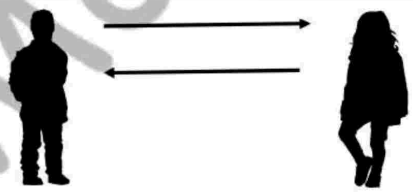
Indicators

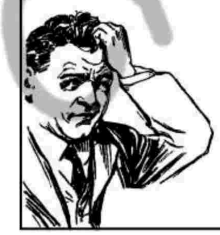
It is very **difficult to predict** the **turning points** of business cycles. Economists use **changes in a variety of activities** to **measure** the business cycle and to **predict** where the economy is headed towards. These are called **indicators**

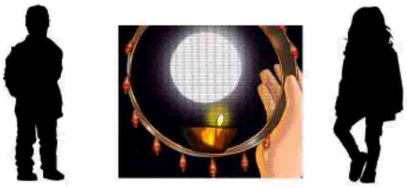




Something is going to happen in future.

Leading Indicator

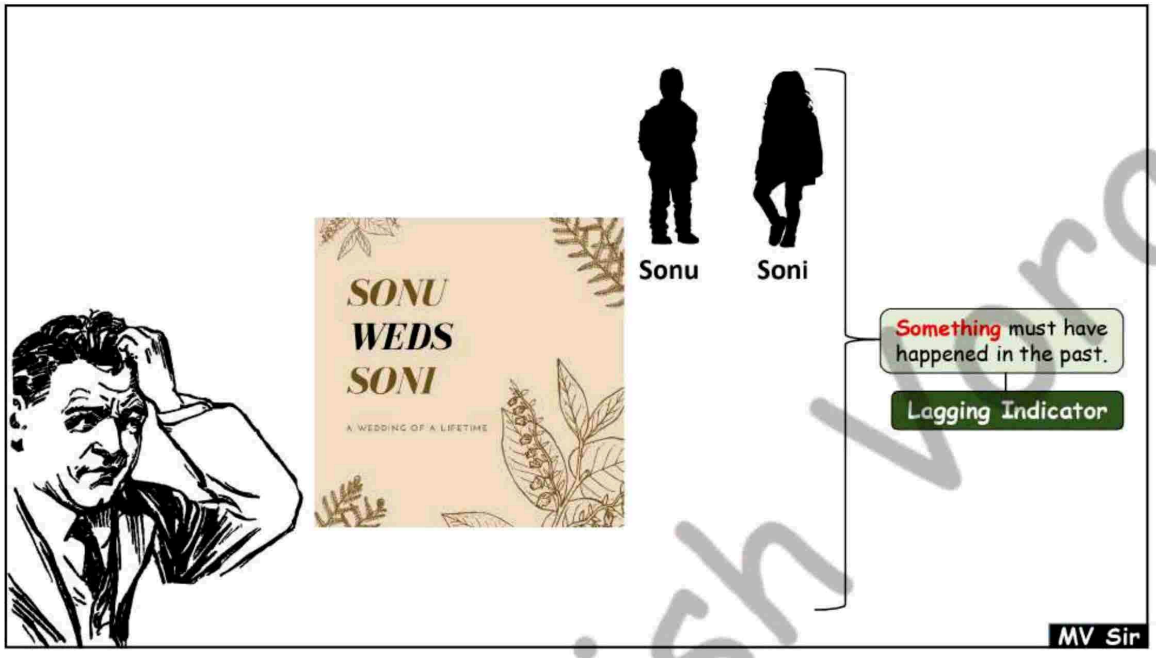




Something is happening currently.

Coinicident Indicator

MV Sir



Indicators

- It is very **difficult to predict** the **turning points** of business cycles. Economists use **changes in a variety of activities** to **measure** the business cycle and to **predict** where the economy is headed towards. These are called **indicators**

1. Leading Indicator
2. Lagging Indicator
3. Coinicident Indicator

1 Leading Indicator

- A leading indicator is a measurable economic factor that **changes before the economy starts to follow a particular pattern or trend**. In other words, those variables that change before the real output changes are called 'Leading indicators'.
- Leading indicators often change **prior** to large economic adjustments.
- Examples- Changes in stock prices, profit margins and profits, indices such as housing, interest rates and prices are generally seen as precursors of upturns or downturns. Similarly, **value of new orders** for consumer goods, **new orders for plant and equipment**, **building permits for private houses**, fraction of companies reporting slower deliveries, index of consumer confidence and money growth rate are also used for tracking and forecasting changes in business cycles.
- Leading indicators, though widely used to predict changes in the economy, are **not always accurate**. Even experts **disagree on the timing** of these so-called leading indicators. It may be weeks or months after a stock market crash before the economy begins to show signs of receding. Nevertheless, it **may never happen**.

MV Sir

2 Lagging Indicator

- Lagging indicators **reflect** the **economy's historical performance** and changes in these **indicators** are **observable only after an economic trend** or pattern has already occurred. In other words, variables that change after the real output changes are called 'Lagging indicators'.
- If **leading indicators** signal the **onset** of business cycles, **lagging indicators confirm** these trends. Lagging indicators consist of measures that change after an economy has entered a period of fluctuation.
- Some examples of lagging indicators are **unemployment**, **corporate profits**, **labour cost per unit of output**, interest rates, the consumer price index and commercial lending activity

3 Coincident Indicator

- A third type of indicator is coincident indicator. Coincident economic indicators, also called **concurrent indicators**, **coincide or occur simultaneously** with the business-cycle movements.
- Since they coincide fairly closely with changes in the cycle of economic activity, they **describe** the **current state** of the **business cycle**.
- In other words, these indicators give information about the **rate of change** of the expansion or contraction of an economy more or less **at the same point of time it happens**.
- A few examples of coincident indicators are **Gross Domestic Product**, **industrial production**, **inflation**, personal income, retail sales and financial market trends such as stock market prices.

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Features Of Business Cycles

1. Business cycles **occur periodically** although they **do not exhibit the same regularity**. The **duration** & **intensity** of these cycles **vary**.
2. Business cycles have **distinct phases** of expansion, peak, contraction and trough. These phases **seldom display smoothness and regularity**. The **length** of each phase is **also not definite**
3. Business cycles generally **originate** in **free market economies**. They are **pervasive** (spreads widely) as well. **Disturbances in one or more sectors** get easily **transmitted** to all **other** sectors.
4. Although all sectors are adversely affected by business cycles, some sectors such as **capital goods** industries, **durable consumer goods** industry etc, are **disproportionately affected**. Moreover, compared to agricultural sector, the **industrials sector** is **more prone** to the adverse effects of trade cycles.
5. Business cycles are exceedingly **complex** phenomena; they **do not have uniform characteristics and causes**. They are **caused** by **varying factors**. Therefore, it is **difficult** to make an **accurate prediction** of trade cycles before their occurrence.
6. **Repercussions** of business cycles get simultaneously **felt** on nearly **all economic variables** viz. output, employment, investment, consumption, interest, trade and price levels.
7. Business cycles are **contagious** and are **international** in character. They **begin in one country** and mostly **spread to other countries** through trade relations. For example, the great depression of 1930s in the USA and Great Britain affected almost all the countries, especially the capitalist countries of the world.
8. Business cycles have **serious consequences** on the **well being** of the society.

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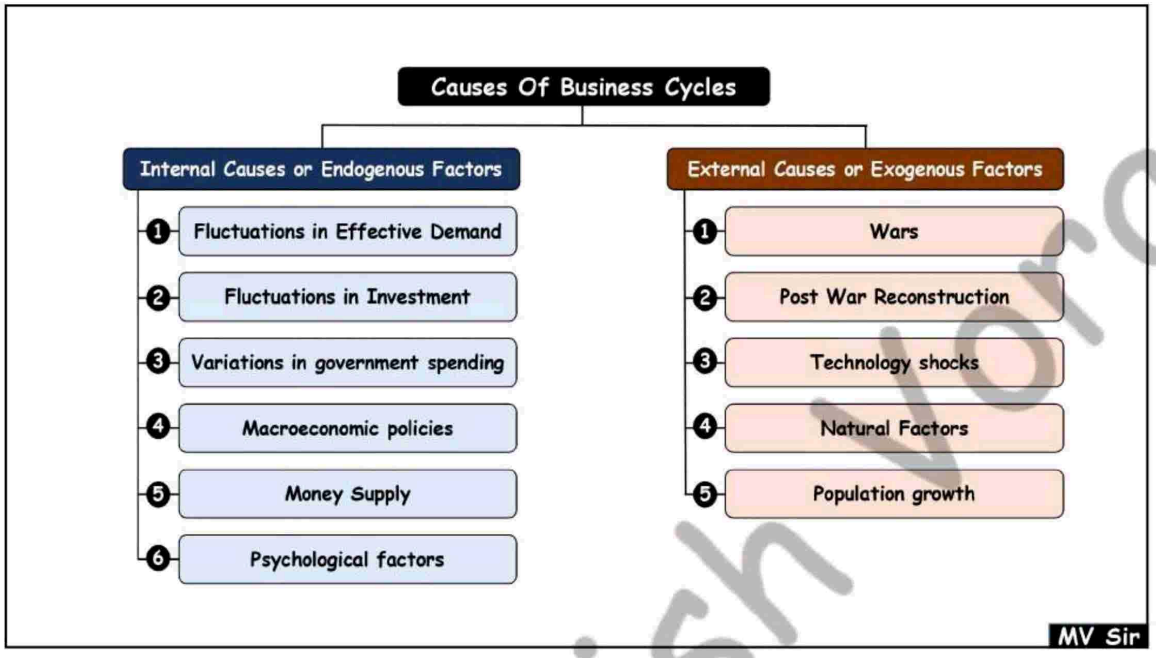

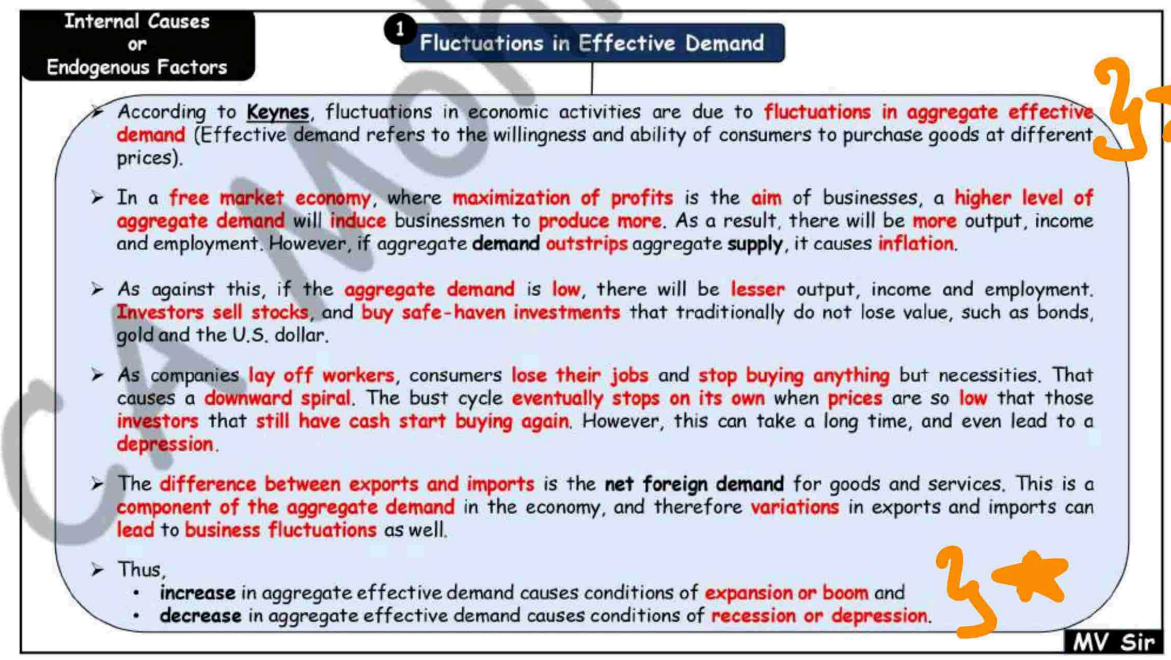

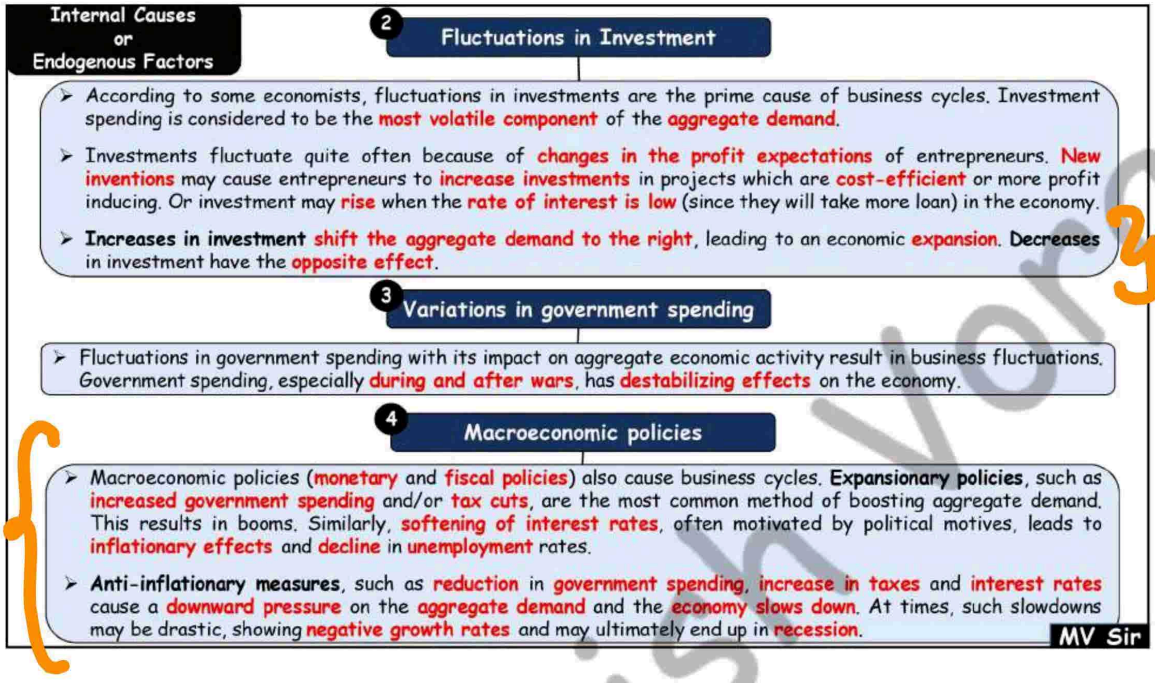

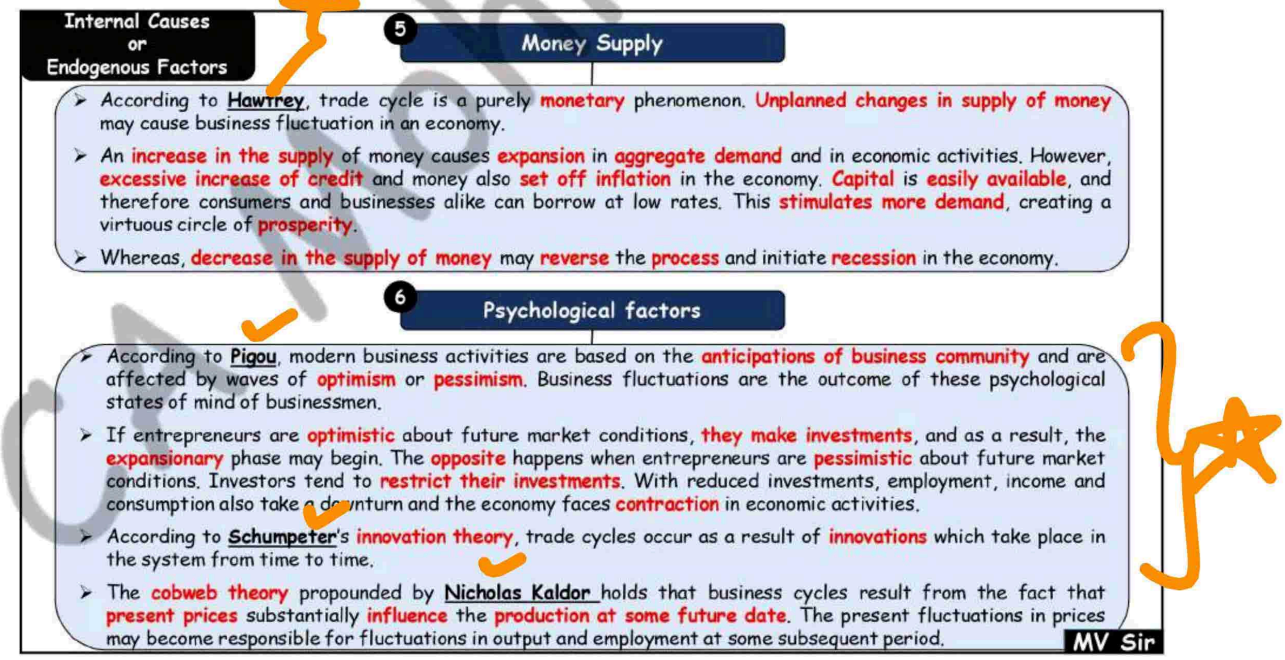

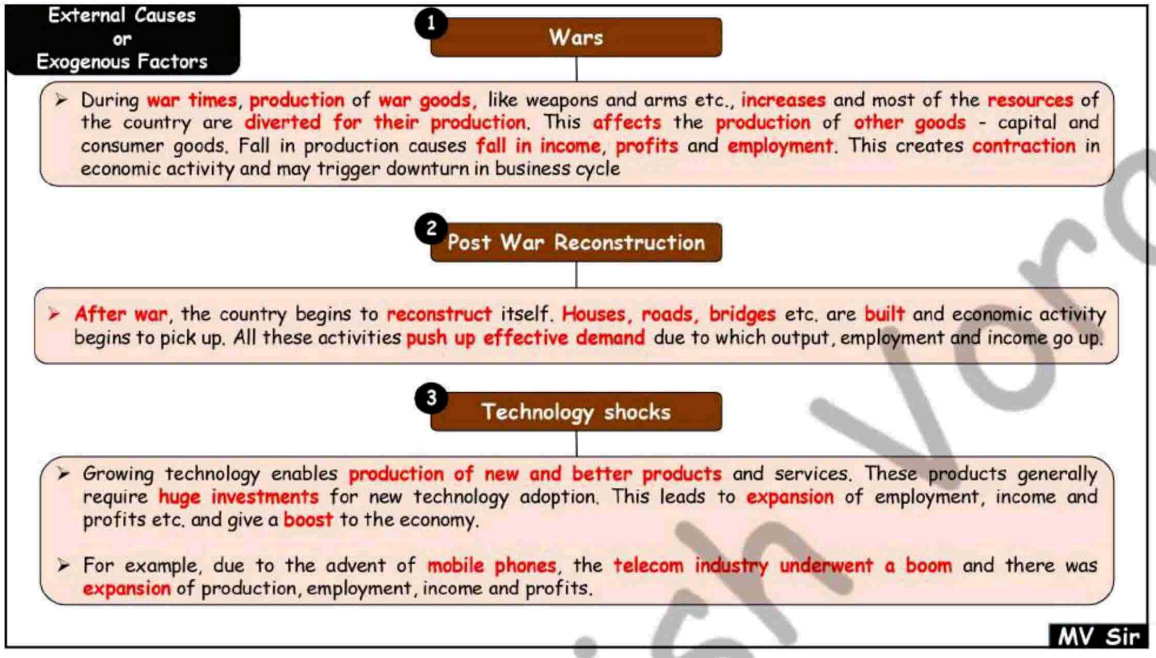

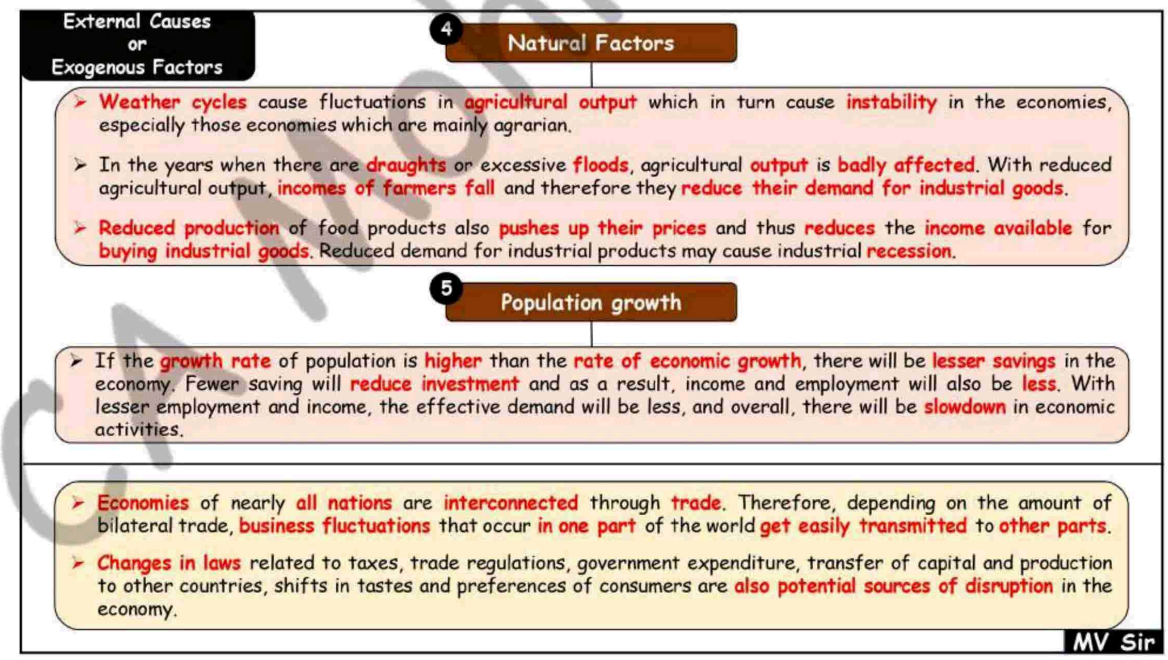

Relevance of Business Cycles in Business Decision Making

- Business cycles affect all aspects of an economy. Understanding the business cycle is important for businesses of all types as they affect the demand for their products and in turn their profits which ultimately determines whether a business is successful or not. Knowledge regarding business cycles and their inherent characteristics is important for a businessman to frame appropriate policies.
- For example, the period of prosperity opens up new and superior opportunities for investment, employment and production and thereby promotes business. In contrast, a period of recession or depression reduces business opportunities and profits. A profit maximising firm has to consider the nature of the economic environment while making business decisions, especially those related to forward planning.
- Business cycles have tremendous influence on business decisions. The **stage of the business cycle** is crucial while making managerial decisions regarding expansion or down-sizing. Businesses have to advantageously respond to the need to alter production levels relative to demand. Different phases of the cycle require fluctuating levels of input use, especially labour input. Firms should exercise the capability to expand or rationalize production operations so as to suit the stage of the business cycle. Business managers need to work effectively to arrive at sound strategic decisions in complex times across the whole business cycle, managing through boom, downturn, recession and recovery.
- **Economy-wide trends** can have significant impact on all types businesses. However, it should be kept in mind that business cycles do not affect all sectors uniformly. Some businesses are more vulnerable to changes in the business cycle than others.

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Relevance Of Business Cycles In Business Decision Making

- Businesses whose fortunes are closely linked to the rate of economic growth are referred to as "**cyclical" businesses**. These include **fashion retailers, electrical goods, house-builders, restaurants**, advertising, overseas tour operators, construction and other infrastructure firms. During a boom, such businesses see a strong demand for their products but during a slump, they usually suffer a sharp drop in demand.
- It may also happen that some businesses actually benefit from an economic down turn. This happens when their products are perceived by customers as representing good value for money, or a cheaper alternative compared to more expensive products.
- Overcoming the effects of economic downturns and recessions is one of the major challenges of sustaining a business in the long-term.
- The phase of the business cycle is important for a new business to decide on entry into the market. The stage of business cycle is also an important determinant of the success of a new product launch.
- Surviving the sluggish business cycles require businesses to plan and set policies with respect to product, prices and promotion.
- In general, economic forecasts are not perfectly reliable. Neither, of course, are the hunches and intuitions of entrepreneurs. Understanding what phase of the business cycle an economy is in and what implications the current economic conditions have for their current and future business activity, helps businesses to better anticipate the market and to respond with greater alertness. However, taken together and applied carefully, economic forecasts can help business firms to prepare for changes in the direction of the economy either prior to or soon after these changes occur.

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Examples of Business Cycles

1 Great Depression of 1930

- The world economy suffered the **longest, deepest, and the most widespread depression** of the 20th century during 1930s. It started in the US and became worldwide. The **global GDP fell by around 15%** between 1929 and 1932. Production, employment and income fell.
- As far as the **causes** of Great Depression are concerned, there is **difference of opinion** amongst economists. While British economist **John Maynard Keynes** regarded **lower aggregate expenditures** in the economy to be the cause of massive decline in income and employment, monetarists opined that the Great Depression was caused by the **banking crisis** and **low money supply**.
- Many other economists blamed **deflation, over-indebtedness, lower profits** and **pessimism** to be the main causes of Great Depression. Whatever may be the cause of the depression, it caused **wide spread distress** in the world as production, employment, income and expenditure fell.
- The **economies** of the world began **recovering** in **1933**. Increased money supply, huge international inflow of gold, increased governments' spending due to World War II etc., were some of the factors which helped economies slowly come out of recession and enter the phase of expansion and upturn.

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Examples of Business Cycles

2 Information Technology bubble burst of 2000

- Information Technology (IT) bubble or **Dot.Com bubble** roughly covered the period 1997-2000. During this period, many **new Internet-based companies** (commonly referred as dot-com companies) were started.
- The **low interest rates** in 1998-99 **encouraged** the **start-up internet companies** to **borrow** from the markets. Due to rapid growth of internet and seeing **vast scope** in this area, **venture capitalists invested huge amount** in these companies.
- Due to **over-optimism** in the market, **investors were less cautious**. There was a **great rise in their stock prices** and in general, it was noticed, that **companies** could cause their stock prices to **increase** by **simply adding an "e-" prefix** to their name or a **".com" to the end**.
- These companies **offered** their services or end products **for free** with the expectation that they **could build enough brand awareness** to **charge profitable rates** for their services **later**. As a result, these companies saw high growth and a type of **bubble developed**.
- The **"growth over profits"** mentality led some companies to **engage in lavish internal spending**, such as **elaborate business facilities**. These companies **could not sustain long**. The **collapse** of the bubble took place during **1999-2001**.
- Many dot-com companies **ran out of capital** and were **acquired or liquidated**. Nearly **half** of the dot -com companies were either **shut down** or were **taken over** by other companies. **Stock markets crashed** and slowly the economies began feeling the **downturn** in their economic activities.

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Examples of Business Cycles

3 Global Economic Crisis (2008-09)

- The recent global economic crisis owes its origin to US financial markets. Following Information Technology bubble burst of 2000, the US economy went into recession. In order to take the economy out of recession, the US Federal Reserve (the Central Bank of US) reduced the rate of interest. This led to large liquidity or money supply with the banks.
- With lower interest rates, credit became cheaper and the households, even with low creditworthiness, began to buy houses in increasing numbers. Increased demand for houses led to increased prices for them.
- The rising prices of housing led both households and banks to believe that prices would continue to rise. Excess liquidity with banks and availability of new financial instruments led banks to lend without checking the creditworthiness of borrowers. Loans were given even to sub-prime households and also to those persons who had no income or assets.
- Houses were built in excess during the boom period and due to their oversupply in the market, house prices began to decline in 2006. Housing bubble got burst in the second half of 2007.
- With fall in prices of houses which were held as mortgage, the sub - prime households started defaulting on a large scale in paying off their instalments. This caused huge losses to the banks.
- Losses in banks and other financial institutions had a chain effect and soon the whole US economy and the world economy at large felt its impact.

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For Knowledge Purpose

Inflation	Inflation is a general increase in the prices of goods and services in an economy over some period of time.
Cost-Push Inflation	Cost-push inflation is the decrease in the aggregate supply of goods and services stemming from an increase in the cost of production
Demand-Pull Inflation	It can be caused by an expanding economy, increased government spending, or overseas growth. It occurs when aggregate demand grows faster than aggregate supply.
Stagflation	Stagflation is high inflation coupled with low growth and a steadily high rate of unemployment.
Deflation	Deflation is the opposite of inflation. It designates falling prices of goods and services in the economy
Disinflation	Disinflation is a decrease in the rate of inflation. A slowdown in the rate of increase of the general price level of goods and services in a nation's gross domestic product over time.
Hyperinflation	Hyperinflation is a situation where the prices of goods and services rise uncontrollably over a defined time period. It leads to very high and typically accelerating inflation. It quickly erodes the real value of the local currency, as the prices of all goods increase

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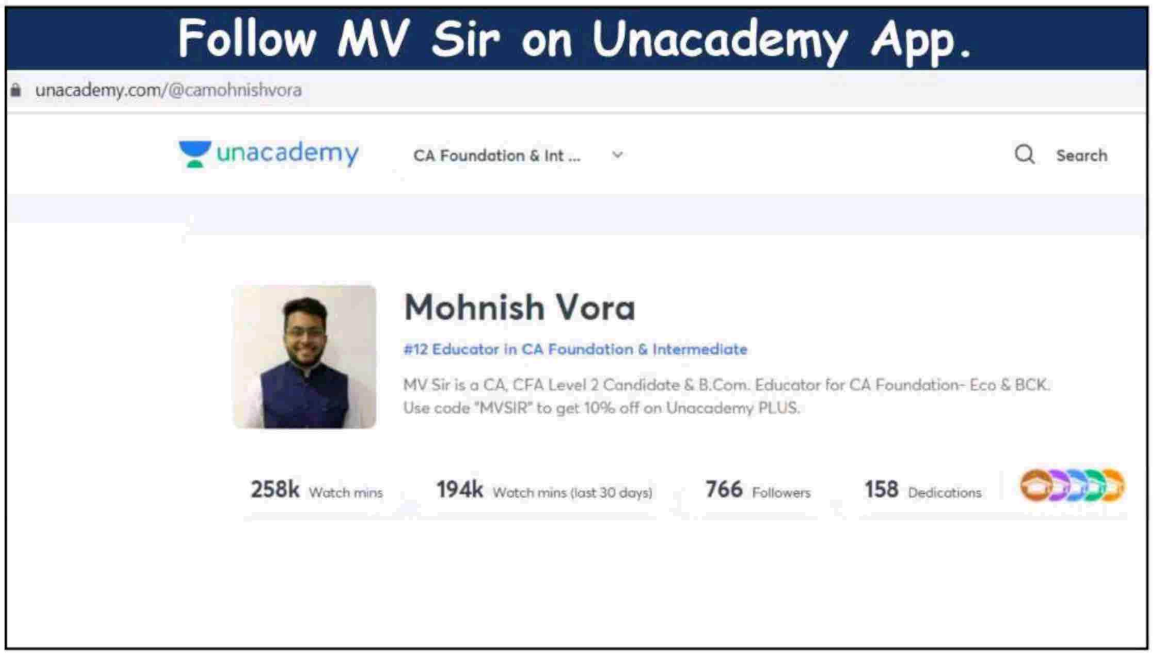
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