Rai Technology University

ENGINEERING MINDS

Managerial Economics

Subject: MANAGERIAL ECONOMICS   **Credits: 4**

SYLLABUS

Basics of Managerial Economics

Introduction to Economics, Basics of Managerial Economics, Introduction to Economics, Nature and Scope of Managerial Economics, Managerial Economics & Economics Related Disciplines Interrelationship with Other Subjects, Economics Tools

Demand Theory

Demand Analysis, Elasticity Concepts, Demand Forecasting, and Importance of Demand forecasting

Cost of Production:

Cost Analysis, Economic of Scale, Cost Reduction and Cost control, Capital Budgeting

Production Theory

Introduction to Production Concept, Production Analysis, Stage of Production, Return to Scale, Supply Analysis

Market Analysis

Introduction to market Structure, Perfect Competition, Monopoly, Oligopoly and Pricing

Suggested Readings:

1. Managerial Economics – Analysis, Problems and Cases, P.L. Mehta, Sultan Chand Sons, New Delhi
2. Managerial Economics – Varshney and Maheshwari, Sultan Chand and Sons, New Delhi
3. Managerial Economics – D. Salvatore, McGraw Hill, New Delhi
4. Managerial Economics – Pearson and Lewis, Prentice Hall, New Delhi
5. Managerial Economics – G.S. Gupta, T M H, New Delhi

 NATURE AND SCOPE OF ECONOMIC ANALYSIS

Structure

1.1 Introduction to Economics

1.2 Concept of Economics in Decision Making

1.3 Scope of Managerial Economics

1.4 Relationship between Managerial Economics and Other Subjects

1.5Tools and Techniques of Decision Making

1.6 Review Questions

1.1 INTRODUCTION TO ECONOMICS

This unit introduces you to the basic concepts of Economics. After going through this unit you will come to know how Economics is helpful for Managers in their Decision making process.

Objectives:
- To analyze the concept of economics- scarcity and efficiency
- Micro Economics and macro economics
- Concept of managerial economics
- How managerial economics differ from economics and its relationship with management

Good morning students, the basic purpose of our studying of economics are the efficient utilization of scarce resources. We always have to make choices amongst various alternatives available for efficient utilization of our scarce resources. The twin theme of economics is scarcity and efficiency. We will discuss this twin theme in detail before coming to managerial economics.

Scarcity and Efficiency: The first question which comes here is what is Economics? Economics is the study of how society chooses to use productive resources that have alternative uses, to produce commodities of various kinds, and to distribute them among different groups.
Two key ideas in economics:
- Scarcity of goods

- Efficient use of resources

❖ **Scarcity of goods**

The word scarce is closely associated with the word limited or economic as opposed to unlimited or free. Scarcity is the central problem of every society.

- Concept lies at the problem of resource allocation and problem of a business enterprise.
- The essence of any economic problem, micro or macro, is the scarcity of resources.
- The managers who decide on behalf of the corporate unit or the national economy always face the economic problem of Scarcity of good quality of materials or skilled technicians

As a Marketing Manager: He may be encountering scarcity of sales force at his command

As a Finance Manager: He may be facing the scarcity of funds necessary for expansion or renovate a program

As a Finance Minister of the Country: His basic problem when he prepares the budget every year is to find out enough revenue resources to finance the necessary expenditure on plans and programs. Thus, we see that Scarcity is a universal phenomenon.

Let us attempt a technical definition of "Scarcity"

- In economic terms it can be termed as " Excess of Demand"
- Any time for any thing if its demand exceeds its supply, that thing is said to be scarce.
- Scarcity is a relative term: Demand in relation to its supply determines the element of scarcity.

Problem:

Unemployment: Scarcity of jobs

Unsold stock of inventory: Scarcity of buyers

Under utilized capacity of plan: Scarcity of   power or other support facilities.

Had there been no scarcities there would not have been any managerial problem. It is only because of this scarcity a manager has to decide on optimum allocation of scarce resources of:

- Man
- Materials
- Money
- Time
- Energy

Thus we see that every business unit or manager must aim at rational but optimum allocation of scarce resources. Optimality lies in finding the best use of scarce resources, given to the constraints.

❖ **Efficiency of Resources**

Economy makes best use of its limited resources. That brings the critical notion of efficiency. Efficiency denotes most effective use of a society's resources in satisfying people's wants and needs.

Consider the Monopoly Situation: In economics we say that an economy is producing efficiently when it cannot make anyone economically better off without making someone else worse off. The essence of economics is to acknowledge the reality of scarcity and then figure out how to organize society in such a way, which produces the most efficient use of resources. Economics can be called as social science dealing with economics problem and man's economic behavior. It deals with economic behavior of man in society in respect of consumption, production; distribution etc. Economics can be called as an unending science. There are almost as many definitions of economy as there are economists. We know that definition of subject is to be expected but at this stage it is more useful to set out few examples of the sort of issues which concerns professional economists.

Example: For e.g. most of us want to lead an exciting life i.e. life full of excitements, adventures etc. but unluckily we do not always have the resources necessary to do everything we want to do. Therefore choices have to be made or in the words of economists "individuals have to decide "how to allocate scarce resources in the most effective ways". For this a body of economic principles and concepts has been developed to explain how people and also business react in this situation. Economics provide optimum utilization of scarce resources to achieve the desired result. It provides the basis for decision making. Economics can be studied under two heads:
1. Micro Economics
2. Macro Economics

Micro Economics: It has been defined as that branch where the unit of study is an individual, firm or household. It studies how individual make their choices about what to produce, how to produce, and for whom to produce, and what price to charge. It is also known as the price theory and is the main source of concepts and analytical tools for managerial decision making. Various micro-economic concepts such as demand, supply, elasticity of demand and supply, marginal cost, various market forms, etc. are of great significance to managerial economics.

Macro Economics: It's not only individuals and forms that are faced with having to make choices. Governments face many such problems. For e.g. How much to spend on health; How much to spend on services; How much should go in to providing social security benefits. This is the same type of problem faced by all of us in our daily lives but in different scales. It studies the economics as a whole. It is aggregative in character and takes the entire economy as a unit of study. Macro economics helps in the area of forecasting. It includes National Income, aggregate consumption, investments, employment etc.

Following are the various economic concepts which are useful for managers for decision making:
- Price elasticity of demand
- Income elasticity of demand
- Cost and output relationship
- Opportunity cost
- Multiplier
- Propensity to consume
- Marginal revenue product
- Production function
- Demand theory
- Theory of firm: price, output and investment decisions
- Money and banking
- Public finance and fiscal and monetary policy
- National income
- Theory of international trade

The Three Problems of Economic Organization: Because of scarcity, all economic choices can be summarized in big questions about the goods and services a society should produce. These questions are:
- What to produce?
- How to produce?
- For whom to produce?

What to Produce?
The first question every society faces is what to produce. Should a society build more roads or schools? Because of scarcity, society can not build everything it wants. Choices have to be made. Once a society determines what to produce it then needs to decide how much should be produced. In a market economy the "what" question is answered in large part by the demand of consumers?

How to Produce?
The next question a society needs to decide after what to produce is how to produce the desired goods and services. Each society must combine available technology with scarce resources to produce desired goods and services. The education and skill levels of the citizens of a society will determine what methods can be used to produce goods and services. For example, does a nation possess the technology and skills to pick grapes with a mechanized harvester, or does it have to pick the grapes by hand?

For whom to produce?
The final question each society needs to ask is for whom to produce. Who is to receive and consume the goods and services produced? Some workers have higher incomes than others. This means more goods and services in a society will be consumed by these wealthy individuals, and less by the poor. Different groups will benefit from the different ways that we choose to spend our money.

Inputs and Outputs: Every economy must make choices about the economy's inputs and outputs.

Inputs: Commodities used to produce goods and services .A economy uses its existing technology to combine inputs to produce outputs.

Output: The various useful goods and services that result from production process that is directly consumed or employs in further production.

Another term for inputs is factors of production:

Factors of Production: It refers to the resources used to produce goods and services in a society. Economists divide these resources into the four categories described below.

- **Land** refers to all natural resources. Such things as the physical land itself, water, soil, timber are all examples of land. The economic return on land is called **rent.** For example, a person could own land and rent it to a farmer who could use it to grow crops. A second resource is labor.
- **Labor** refers to the human effort to produce goods and services. The economic return on labor is called **wages.** Anyone who has worked for a business and collected a paycheck for the work done understands wages. A third factor of production is capital.
- **Capital** is anything that is produced in order to increase productivity in the future. Tools, machines and factories can be used to produce other goods. The field of economics differs from the field of finance and does not consider money to be capital. The economic return on capital is called **interest.**
- Finally, the fourth factor of production is called entrepreneurship. **Entrepreneurship** refers to the management skills, or the personal initiative used to combine resources in productive ways. Entrepreneurship involves the taking of risks. The economic return on entrepreneurship is **profits**

Meaning of Managerial Economics: It is another branch in the science of economics. Sometimes it is interchangeably used with business economics. Managerial economics is concerned with decision making at the level of firm. It has been described as an economics applied to decision making. It is viewed as a special branch of economics bridging the gap between pure economic theory and managerial practices. It is defined as application of economic theory and methodology to decision making process by the management of the business firms. In it, economic theories and concepts are used to solve practical business problem. It lies on the borderline of economic and management. It helps in decision making under uncertainty and improves effectiveness of the organization. The basic purpose of managerial economic is to show how economic analysis can be used in formulating business plans.

Definitions of Managerial Economics: In the words of Mc Nair and Merriam," ME consist of use of economic modes of thought to analyze business situation". According to Spencer and Seigelman it is defined as the integration of economic theory with business practice for the purpose of facilitating decision making and forward planning by the management". Economic provides optimum utilization of scarce resource to achieve the

desired result. ME's purpose is to show how economic analysis can be used formulating business planning.

Managerial Economics = Management + Economics

Management deals with principles which helps in decision making under uncertainty and improves effectiveness of the organization. On the other hand economics provide a set of preposition for optimum allocation of scarce resources to achieve a desired result. Managerial Economics deals with the integration of economic theory with business practices for the purpose of facilitating decision making and forward planning by management. In other words it is concerned with using of logic of economics, mathematics, and statistics to provide effective ways of thinking about business decision

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1.2 CONCEPT OF ECONOMICS IN DECISION MAKING

Students, earlier we had discussed various aspects of economics- scarcity and efficiency and meaning and role of managerial economics. Now we will be discussing the various aspects of decision making.

What do you mean by Decision Making?
Well decision making is not something which is related to managers only or which is related to corporate world, but it is something which is related to everybody's life. Whether a person is working or non working, irrespective of his/her field, decision making is important to everyone. You need to make decision irrespective of the work you are doing. As a student also you have to take so many decisions. Suppose at a particular point of time you want to go for a movie, and at the same point of you want to go for shopping then what you will do. You can't do two things at the same point of time. You have to decide what to do first and what to do next. Therefore decision making can be called as choosing the right option from the given one. To decide is to choose. Whether to do this or to do that is what is decision making.

Decision making is the most important function of business managers. Decision making is the central objective of Managerial Economics. Decision making may be defined as the process of selecting the suitable action from among several alternative courses of action. The problem of decision making arises whenever a number of alternatives are available. Such as:

- What should be the price of the product?
- What should be the size of the plant to be installed?
- How many workers should be employed?
- What kind of training should be imparted to them?
- What is the optimal level of inventories of finished products, raw material, spare parts, etc.?

Therefore we can say that the problem of decision making arises due to the scarcity of resources. We have unlimited wants and the means to satisfy those wants are limited, with the satisfaction of one want, another arises, and here arises the problem of decision

making. While performing his function manager has to take a lot of decisions in conformity with the goal of the firm. Most of the decisions are taken under the condition of uncertainty, and involves risks. The main reasons behind uncertainty and risks are uncertain behavior of the market forces which are as follows:

- The demand and supply
- Changing business environment
- Government policies
- External influence on the domestic market
- Social and political changes
- The maximum use of limited resources.

Now we will discuss various aspects relating to the management decision making or Managerial Decision Making.

- **What Is Management?**
  - ✓ *Management* is the process of coordinating people and other resources to achieve the goals of the organization
  - ✓ .Most organizations use various kinds of resources.

- **Basic Management Functions**
  A number of management functions must be performed if any organization is to succeed.
  - ✓ Establishing Goals and Objectives.
  - ✓ Establishing Plans to Accomplish Goals and Objectives.
  - ✓ Organizing the Enterprise. Leading and Motivating
  - ✓ Controlling Ongoing Activities.

- **Kinds of Managers**
  They can be classified along two dimensions:
  - ✓ Level within the organization which include: Top managers; Middle Managers; First Line Managers.
  - ✓ Area of management which include: Financial Managers; Operations Managers; Marketing Managers; Human Resources Managers; Administrative Managers.

- **What Makes Effective Managers?**
  Key Management Skills. The skills that typify effective managers tend to fall into three categories.
  - ✓ Technical Skills
  - ✓ Conceptual Skills.
  - ✓ Interpersonal Skills.
  - ✓ Managerial Roles.
  - ✓ Decisional Roles
  - ✓ Interpersonal Roles
  - ✓ Informational Roles.

- **Managerial Decision Making**
  Decision-making is the act of choosing one alternative from among a set of alternatives. Managerial decision making involves four steps.
    - ✓ Identifying the Problem or Opportunity
    - ✓ Generating Alternatives.
    - ✓ Selecting an Alternative
    - ✓ Implementing and Evaluating the Solution

Now we will discuss the various factors affecting decision making.

- **Conditions Affecting Decision Making:** An Ideal Business situation would be the one where
    - ✓ Full Information with managers to make decisions with certainty
    - ✓ An Actual business situation with managers:
    - ✓ Most business are characterized by incomplete or ambiguous information

- **Conditions that affect decision making: (certainty, risk and uncertainty)**
    - ✓ **Certainty**: Situation when decision makers are fully informed about A problem; Alternative solutions; their respective outcomes; Individuals can anticipate, and even exercise some control over events and their outcomes.

    - ✓ **Risk**: Condition when decision makers rely on incomplete, yet reliable information. Manager does not know the certainty the future outcomes associated with alternative courses of action, although he knows the probability associated with each alternative

    - ✓ **Uncertainty:** It is the condition that exists when little or no factual information is available about a problem, its alternative and their respective outcomes. He does not have enough information to determine the probabilities associated with each alternative possible that he may be unable even to define the problem

Hope you all must be clear with the concepts certainty, risk and uncertainty. Now, we will discuss various models of decision making.

- ❖ **Decision Making Models**

  - **The Classical Model:**
    - ✓ Also called rational model
    - ✓ A prescriptive approach that outlines how managers should make decisions.
    - ✓ Assumptions: Manager has complete information about decision situation and operations under condition of certainty; Problem is clearly defined, and the decision – maker has knowledge of all possible alternatives and their outcomes; Through the use of quantitative techniques , rationality and logic ,

the decision maker evaluates the alternatives and selects the optimum alternative .

- **The Administrative Model**
  - ✓ Descriptive approach that outlines how managers actually do make decisions
  - ✓ Also called organizational, neoclassical or behavioral model
  - ✓ Simon recognized that people do not always make decisions with logic and rationality , he introduced two concepts- bounded rationality and satisfying **Bounded rationality:** Means people have limits, or boundaries , to their rationality boundaries exist because people are bound by their own values and skills, incomplete information, own inability due to time , resource and rational decisions lack of time to process complete information about complex decisions , wind up having to make decisions with only partial knowledge about alternative solutions and their outcomes. This leads manager often for go the various steps of decision making in favor of a quicker yet **satisfying**, process satisfying
  - ✓ Assumptions: Manager has incomplete information and operate under condition of risk or uncertainty; Problem not clearly defined, manager has limited knowledge of possible alternatives and their outcomes; Satisfies by choosing the first satisfactory alternative – one that will resolve the problem situation by offering a good solution to the problem

Managerial economics is concerned with decision making at the firm level. Decision making problems faced by business firms:

- To identify the alternative courses of action of achieving given objectives.
- To select the course of action that achieves the objectives in the economically most efficient way.
- To implement the selected course of action in a right way to achieve the business objectives.

The prime function of management is **Decision making** and **forward planning**. Forward planning goes hand in hand with decision making. Forward planning means establishing plans for the future.

1.3 SCOPE OF MANAGERIAL ECONOMICS

Can you tell me what you mean by the scope of the managerial economics? Well scope is something which tells us how far a particular subject will go. As far as Managerial Economic is concerned it is very wide in scope. It takes into account almost all the problems and areas of manager and the firm. Managerial economics deals with Demand analysis, Forecasting, Production function, Cost analysis, Inventory Management, Advertising, Pricing System, Resource allocation etc. Following aspects are to be taken into account while knowing the scope of managerial economics:

- **Demand Analysis and Forecasting:** Unless and until knowing the demand for a product how can we think of producing that product. Therefore demand analysis is something which is necessary for the production function to happen. Demand analysis helps in analyzing the various types of demand which enables the manager to arrive at reasonable estimates of demand for product of his company. Managers not only assess the current demand but he has to take into account the future demand also.
- **Production Function:** Conversion of inputs into outputs is known as production function. With limited resources we have to make the alternative use of this limited resource. Factor of production called as inputs is combined in a particular way to get the maximum output. When the price of input rises the firm is forced to work out a combination of inputs to ensure the least cost combination.
- **Cost analysis:** Cost analysis is helpful in understanding the cost of a particular product. It takes into account all the costs incurred while producing a particular product. Under cost analysis we will take into account determinants of costs, method of estimating costs, the relationship between cost and output, the forecast of the cost, profit, these terms are very vital to any firm or business.
- **Inventory Management:** What do you mean by the term inventory? Well the actual meaning of the term inventory is stock. It refers to stock of raw materials which a firm keeps. Now here the question arises how much of the inventory is ideal stock. Both the high inventory and low inventory is not good for the firm. Managerial economics will use such methods as ABC Analysis, simple simulation exercises, and some mathematical models, to minimize inventory cost. It also helps in inventory controlling.
- **Advertising:** Advertising is a promotional activity. In advertising while the copy, illustrations, etc., are the responsibility of those who get it ready for the press, the problem of cost, the methods of determining the total advertisement costs and budget, the measuring of the economic effects of advertising are the problems of the manager. There's a vast difference between producing a product and marketing it. It is through advertising only that the message about the product should reach the consumer before he thinks to buy it. Advertising forms the integral part of decision making and forward planning.
- **Pricing system:** Here pricing refers to the pricing of a product. As you all know that pricing system as a concept was developed by economics and it is widely used in managerial economics. Pricing is also one of the central functions of an enterprise. While pricing commodity the cost of production has to be taken into account, but a complete knowledge of the price system is quite essential to determine the price. It is also important to understand how product has to be priced under different kinds of competition, for different markets. Pricing equals cost plus pricing and the policies of the enterprise. Now it is clear that the price system touches the several aspects of managerial economics and helps managers to take valid and profitable decisions.
- **Resource allocation:** Resources are allocated according to the needs only to achieve the level of optimization. As we all know that we have scarce resources, and unlimited needs. We have to make the alternate use of the available resources.

For the allocation of the resources various advanced tools such as linear programming are used to arrive at the best course of action.

Nature of Managerial Economics: Managerial economics aims at providing help in decision making by firms. It is heavily dependent on microeconomic theory. The various concepts of micro economics used frequently in managerial economics include Elasticity of demand; Marginal cost; Marginal revenue and Market structures and their significance in pricing policies. Macro economy is used to identify the level of demand at some future point in time, based on the relationship between the level of national income and the demand for a particular product. It is the level of national income only that the level of various products depends. In managerial economics macro economics indicates the relationship between (a) the magnitude of investment and the level of national income, (b) the level of national income and the level of employment, (c) the level of consumption and the level of national income. In managerial economics emphasis is laid on those prepositions which are likely to be useful to management.

1.4 RELATIONSHIP BETWEEN MANAGERIAL ECONOMICS AND OTHER SUBJECTS

After studying the above you will be able to distinguish managerial economics with its related subjects. Managerial economic is not something which is related to economics only, but there are other areas also to which managerial economic is related. Other related subjects of managerial economics are:

- Economics
- Mathematics
- Statistics
- Accounting
- Operation Research
- Computers
- Management

Before knowing the relationship between managerial economics and other related fields it is customary to divide economics into **"positive"** and **"normative"** economics. Economists make a distinction between positive and normative that closely parallels popper's line of demarcation.

Positive Economics: It deals with description and explanation of economic behavior, Economics and Managerial economics. Managerial economics draws on positive economics by utilizing the relevant theories as a basis for prescribing choices. A positive statement is a statement about what is and which contains no indication of approval or disapproval. It's not like that positive statement is always right, positive statement can be wrong. Positive statement is a statement about what exists.

Normative Economics: It is concerned with prescription or what ought to be done. In normative economics, it is inevitable that value judgment are made as to what should and

what should not be done. Managerial economics is a part of normative economics as its focus is more on prescribing choice and action and less on explaining what has happened. It expresses a judgment about whether a situation is desirable or undesirable. The primary task of Managerial economics is to fit relevant data to this framework of logical analysis so as to reach valid conclusion as a basis for action. Another branch of economics which is normative like managerial is public policies analysis which is concerned with the problems of managing the government of a country.

Economic and Managerial Economics: Economics contributes a great deal towards the performance of managerial duties and responsibilities. Just as the biology contributes to the medical profession and physics to engineering, economics contributes to the managerial profession. All other qualifications being same, managers with working knowledge of economics can perform their function more efficiently than those without it.

What is the Basic Function of the Managers of the Business?
As you all know that the basic function of the manager of the firm is to achieve the organizational objectives to the maximum possible extent with the limited resources placed at their disposal. Economics contributes a lot to the managerial economics.

Mathematics and Managerial Economics: Mathematics in Managerial Economics has an important role to play. Businessmen deal primarily with concepts that are essentially quantitative in nature e.g. demand, price, cost, wages etc. The use of mathematical logic in the analysis of economic variable provides not only clarity of concepts but also a logical and systematical framework.

Statistics and Managerial Economics: Statistical tools are a great aid in business decision making. Statistical techniques are used in collecting processing and analyzing business data, testing and validity of economics laws with the real economic phenomenon before they are applied to business analysis. The statistical tools for e.g. theory of probability, forecasting techniques, and regression analysis help the decision makers in predicting the future course of economic events and probable outcome of their business decision. Statistics is important to managerial economics in several ways. Managerial Economics calls for marshalling of quantitative data and reaching useful measures of appropriate relationship involves in decision making. Let me explain it through an example: In order to base its price decision on demand and cost consideration, a firm should have statistically derived or calculated demand and cost function.

Operation Research and Managerial Economics: It's an inter-disciplinary solution finding techniques. It combines economics, mathematics, and statistics to build models for solving specific business problems. Linear programming and goal programming are two widely used Operational Research in business decision making. It has influenced Managerial Economics through its new concepts and model for dealing with risks. Though economic theory has always recognized these factors to decision making in the real world, the frame work for taking them into account in the context of actual problem has been operationalized. The significant relationship between Managerial Economics

and Operational Research can be highlighted with reference to certain important problems of Managerial Economics which are solved with the help of Operational Research techniques, like allocation problem, competitive problem, waiting line problem, and inventory problem.

Management Theory and Managerial Economics: As the definition of management says that it's an art of getting things done through others. Bet now a day we can define management as doing right things, at the right time, with the help of right people so that organizational goals can be achieved. Management theory helps a lot in making decisions. ME has also been influenced by the developments in the management theory. The central concept in the theory of firm in micro economic is the maximization of profits. ME should take note of changes concepts of managerial principles, concepts, and changing view of enterprises goals.

Accounting and Managerial Economics: There exits a very close link between Managerial Economics and the concepts and practices of accounting. Accounting data and statement constitute the language of business. Gone are the days when accounting was treated as just bookkeeping. Now it's far more behind bookkeeping. Cost and revenue information and their classification are influenced considerably by the accounting profession. As a student of MBA you should be familiar with generation, interpretation, and use of accounting data. The focus of accounting within the enterprise is fast changing from the concept of bookkeeping to that of managerial decision making. Mathematics is closely related to Managerial Economics, certain mathematical tools such as logarithm and exponential, vectors, determinants and matrix algebra and calculus etc.

Computers and Managerial Economics: You all know that today's age is known as computer age. Every one of us is totally dependent on computers. These computers have affected each one of us in every field. Managers also have to depend on computers for decision making. Computer helps a lot in decision making. Through computers data which are presented in such a nice manner that it's really very easy to take decisions. There are so many sites which help us in giving knowledge of various things, and in a way helps us in updating our knowledge.

Conclusions: Managerial Economics is closely related to various subjects i.e. Economics, mathematics, statistics, and accountings. Computers etc. a trained managerial economist integrates concepts and methods from all these subjects bringing them to bear on business problem of a firm. In particular all these subjects are getting closed to Managerial Economics and there appears to be trends towards their integration.

1.5 TOOLS AND TECHNIQUES IN DECISION MAKING

After understanding the above you now will be able to know the various tools and techniques of decision making. How these tools and technique are useful for managers in making the right decision. But before knowing the tools and technique of decision making can you answer some of my questions:

- Is decision making a process?

- Are there any particular steps required for decision making?
- Is decision making depends on the condition or situations?
- What are the various conditions affecting decision making?

Factors Influencing Managerial Decision: Now it's clear that managerial decision making is influenced not only by economics but also by several other significant considerations. While economic analysis contributes a great deal to problem solving in an enterprise it is important to remember that three other variables also influences the choices and decision made by the managers. These are as follows:
- Human and behavioral considerations
- Technological forces
- Environmental factors.

Steps in Decision Making: There are certain things which are to be taken into account while making decisions. No matter what's the size of the problem but like every thing decision making should also be in certain steps. Following are the various steps in decision making:
- Establish objectives
- Specify the decision problem
- Identify the alternatives
- Evaluate alternatives
- Select the best alternatives
- Implement the decision
- Monitor the performance

Business decision making is essentially a process of selecting the best out of alternative opportunities open to the firm. The above steps put manager's analytical ability to test and determine the appropriateness and validity of decisions in the modern business world. Modern business conditions are changing so fast and becoming so competitive and complex that personal business sense, intuition and experience alone are not sufficient to make appropriate business decisions. It is in this area of decision making that economic theories and tools of economic analysis contribute a great deal.

Basic Economic Tools in Managerial economics for Decision Making: Economic theory offers a variety of concepts and analytical tools which can be of considerable assistance to the managers in his decision making practice. These tools are helpful for managers in solving their business related problems. These tools are taken as guide in making decision. Following are the basic economic tools for decision making:
- Opportunity cost principle;
- Incremental principle;
- Principle of the time perspective;
- Discounting principle;
- Equimarginal principle.

Opportunity Cost Principle: OC of a decision is the sacrifice of alternatives required by that decision; OC represents the benefits or revenue forgone by pursuing one course of action rather than another; OC are not recorded in the accounting records of the firm, but have to be met if the firm aims at optimization. OC is always higher to Accounting Costs When ever a manager takes or makes a decision, he chooses one course of action, sacrificing the other alternatives. We can evaluate the one chosen in terms of the other (next best) which is sacrificed. All decisions which involve choice must involve opportunity cost principle. OC may be either real or monetary, either implicit or explicit, either non-quantifiable or quantifiable. Decisions involving opportunity cost includes; Make or buy; Breakdown or preventive maintenance of machines; Replacement or new investment decision; direct recruitment from outside or Departmental promotion. Accountant never considers opportunity cost, he considers only explicit costs .Accounting Profit = revenue-recorded costs. Economic profit=revenue − (explicit +implicit costs) i.e. Economic profit= Accounting profit-opportunity costs. For optimal allocation of scarce resources the manager should consider the opportunity costs of using resources, human or non-human, in a given activity; Decision principle should be minimization of opportunity costs, given objectives and constraints. By the opportunity cost of a decision is meant the sacrifice of alternatives required by that decision. For e.g.

- The opportunity cost of the funds employed in one's own business is the interest that could be earned on those funds if they have been employed in other ventures.
- The opportunity cost of using a machine to produce one product is the earnings forgone which would have been possible from other products.
- The opportunity cost of holding Rs. 1000as cash in hand for one year is the 10% rate of interest, which would have been earned had the money been kept as fixed deposit in bank.

It's clear now that opportunity cost requires ascertainment of sacrifices. If a decision involves no sacrifices, its opportunity cost is nil. For decision making opportunity costs are the only relevant costs.

Incremental Principle: It is related to the marginal cost and marginal revenues, for economic theory. Incremental concept involves estimating the impact of decision alternatives on costs and revenue, emphasizing the changes in total cost and total revenue resulting from changes in prices, products, procedures, investments or whatever may be at stake in the decisions. The two basic components of incremental reasoning are

- Incremental cost
- Incremental Revenue

The incremental principle may be stated as under: "A decision is obviously a profitable one if:

- It increases revenue more than costs
- It decreases some costs to a greater extent than it increases others
- It increases some revenues more than it decreases others and
- It reduces cost more than revenues"

Principle of Time Perspective: Managerial economists are also concerned with the short run and the long run effects of decisions on revenues as well as costs. The very important problem in decision making is to maintain the right balance between the long run and short run considerations. Decision making is the task of co-coordinating along the time scale- past, present and future. Whenever a manager confronts a decision environment, he must analyze the present problem with reference to the past data of facts, figures and observation in order to arrive at a decision, contemplating clearly its future implications in terms of actions and reactions likely thereupon. Thus, time dimension is very important. Economist consider time in terms of concepts like: **Temporary run:** the supply of output ; **Fixed short run:** supply can be changed slightly by altering the factor proportion(all factors are not variable) **Long run:** All factors are variables , output level can be adjusted freely. There exist constraints in temporary and short run, but none in long run for a manager, Short run is the (present) period and long run is the future (remote) period. Manager must calculate the opportunity cost if they have to choose between the present and future. His decision principle must take care of both time periods. He can not afford to have a time period which is too short Example:

- He may set a high price for his product today but then he should be prepared to face the declining sales
- Today the advertisement cost might inflate the prices but tomorrow it may increase the revenue flow.
- Management may ignore labor welfare today to reduce costs but in future this may deteriorate industrial relation climate with adverse effect on productivity and profitability

It is important for a manager to take a short and a long view of his decision. For example, suppose there is a firm with a temporary idle capacity. An order for 5000 units comes to management's attention. The customer is willing to pay Rs 4/- unit or Rs.20000/- for the whole lot but not more. The short run incremental cost (ignoring the fixed cost) is only Rs.3/-. There fore the contribution to overhead and profit is Rs.1/- per unit (Rs.5000/- for the lot)

Analysis: From the above example the following long run repercussion of the order is to be taken into account: If the management commits itself with too much of business at lower price or with a small contribution it will not have sufficient capacity to take up business with higher contribution. If the other customers come to know about this low price, they may demand a similar low price. Such customers may complain of being treated unfairly and feel discriminated against. In the above example it is therefore important to give due consideration to the time perspectives. "a decision should take into account both the short run and long run effects on revenues and costs and maintain the right balance between long run and short run perspective".

Discounting Principle: Discounting is both a concept as well as technique borrowed from accountancy. For explanation readopt the opportunity and time perspective. Consider the case of the seller. The seller has to decide between the immediate cash payment of Rs. 1000 by his customer and the future payment of say Rs. 1100 at the end of one year from now.

- Human nature is such that there is time preference for present
- For the seller it is better to get Rs 1000 now and keep it in bank at 10 % rate of interest and realize Rs 1100 thereby.
- Should we say that the present value of future sum of Rs.1100 is just Rs. 1000?
- How have we arrived at this?
- $A_1 = P + rP$, or $P = A_1/(1+r)$
- Second Year , $P = A_2/(1+r)^2$
- If an investment of a sum yields a series of return A_i through i period; i=1n , then in order to calculate its present value, we need to discount $\sum A_I$ with the help of $(1+r)^I$ $P = \sum A_i/(1+r)^I$
- Longer the period, larger the discount factor, $(1+r)^I$ exceeds. Heavy discounting for the distant period makes sense because future is uncertain; distant future involves incalculable risk.
- Discounting enables risk hedging, particularly in context of investment decisions where the return on investment is spread over a number of years in future
- Present value of future return can be estimated by discounting it with the opportunity costs of the safe rate of interest.
- Principle also has applications other than investments wages are equal to the discounted value of the marginal productivity of labor"

Thus one of the fundamental ideas in Economics is that a rupee tomorrow is worth less than a rupee today.

Marginal Principle: Due to scarce resources at the disposable, the manager has to be careful of spending each and every additional unit of resources. In order to decide whether to use an additional man hour or machine hour or not you need to know the additional output expected from there. A decision about additional investment has to be viewed in terms of additional returns from the investment. Economists use the word "Marginal" for additional magnitudes of production or return. Economist often use the terms like
- Marginal output of labor
- Marginal output of machine
- Marginal return on investment
- Marginal revenue of output sold
- Marginal cost of production
- Marginal utility of consumption

1.6 REVIEW QUESTIONS
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1. What is the meaning of managerial economics?
2. What do you mean by decision Making
3. Explain the Nature and Scope of Managerial Economics.
4. Give the relation between Managerial economics and other fields of study.
5. Give a detailed account on the tools and techniques of decision making.

DEMAND AND ITS ATTRIBUTES

Structure

2.1 Demand and its Determinants

    2.1.1 Significance of Demand Analysis
    2.1.2 Concept of Demand
    2.1.3 Demand Function and Demand Curve
    2.1.4 Types of Demand

2.2 Law of Demand

    2.2.1 Characteristics of Law of Demand
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2.3 Utility Approaches to the Theory of Demand

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2.5 Demand Elasticities and Demand Estimates

    2.5.1 Calculating Elasticity Coefficients
    2.5.2 Types of Elasticities
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2.6 Aggregate Demand

2.7 Demand Forecasting

    2.7.1 Concepts of Forecasting
    2.7.2 Need for Demand Forecasting
    2.7.3 Steps in Demand Forecasting
    2.7.4 Techniques of Demand Forecasting
    2.7.5 Complex Statistical Methods

2.8 Review Questions

2.1 DEMAND AND ITS DETERMINANTS

Students why have you selected M.B.A. in your career? It is because M.B.A.'s have great demand in a job market. Thus demand is one of the most critical economic decision variables. Demand reflects the size and the pattern of market. Business activity is always

market-determined. The manufacturers inducement to invest in a given line of production is limited by the size of market. The demand for output and input; the demand for the firm and the industry; the demand by the consumer and stockiest; and similar other demand concepts become therefore, relevant for managerial decision analysis. Even if the firm pursues objectives alternative to profit-maximization, demand concepts still remain relevant. For example, suppose the firm is aiming at 'customer service' not profit. How can it ensure quantity and quality of service, without analyzing what the customer really wants? Suppose, the firm is destined to discharge 'social responsibility' of business. Can this be done without evaluating social preferences? Tastes, preferences and choices are all concepts directly built into the economic concepts of 'demand'.

2.1.1 Significance of Demand Analysis
- Demand is one of the crucial requirements for the functioning of any business enterprise its survival and growth.
- Demand analysis is of profound significance to management. Information on the size and type of demand helps management in planning its requirements of men, materials, machines, money and what have you.

For example, if the demand for a product is subject to temporary business recession, the firm may plan to pile up the stock of unsold products. If the demand for a product shows a trend towards a substantial and sustained increase in the long run, the firm may plan to install additional plant and equipment to meet the demand on a permanent basis. If the demand for a firm's product is falling, while its rival's sale is increasing, the firm needs to plan its sales tactics; the firm may need to undertake some sales promotion activity like advertisement. If the firm's supply of the product is unable to meet its existing demand, the firm may be required to revise its production plan and schedule; or the firm may have to review its purchase plan for inputs and the suppliers' response to input requirements by the firm. In the same way, larger the demand for a firm's product, the higher is the price the firm can change.

The common theme underlying these examples is that the whole range of planning by the firm: production planning, inventory planning, cost budgeting, purchase plan, market research, pricing decision, advertisement budget, and profit plan etc. call for an analysis of demand. In fact, demand analysis is one area of economics that has been used most extensively by business. The decision which management makes with respect to any functional area, always hinges on an analysis of demand. Demand analysis seeks to identify and measure the forces that determine sales; it reflects the market conditions for the firm's product. Once the demand analysis is done, the alternative ways of creating, controlling or managing demand can be inferred.

2.1.2 Concept of Demand
As we have indicated earlier, 'demand' is a technical concept from Economics. Demand for product implies:
- Desires to acquire it,
- Willingness to pay for it, and
- Ability to pay for it.

All three must be checked to identify and establish demand. For example : A poor man's desires to stay in a five-star hotel room and his willingness to pay rent for that room is not 'demand', because he lacks the necessary purchasing power; so it is merely his wishful thinking. Similarly, a miser's desire for and his ability to pay for a car is not 'demand', because he does not have the necessary willingness to pay for a car. One may also come across a well-established person who processes both the willingness and the ability to pay for higher education. But he has really no desire to have it; he pays the fees for a regular cause, and eventually does not attend his classes. Thus, in an economics sense, he does not have a 'demand' for higher education degree/diploma.

It should also be noted that the demand for a product, a commodity or a service, has no meaning unless it is stated with specific reference to the time, its price, price of is related goods, consumers' income and tastes etc. This is because demand, as is used in Economics, varies with fluctuations in these factors. To say that demand for an Atlas cycle in India is 60,000 is not meaningful unless it is stated in terms of the year, say 1983 when an Atlas cycle's price was around Rs. 800, competing cycle's prices were around the same, a scooter's prices was around Rs. 5,000. In 1984, the demand for an Atlas cycle could be different if any of the above factors happened to be different. For example, instead of domestic (Indian), market, one may be interested in foreign (abroad) market as well. Naturally the demand estimate will be different. Furthermore, it should be noted that a commodity is defined with reference to its particular quality/brand; if its quality/brand changes, it can be deemed as another commodity. To sum up, we can say that the demand for a product is the desire for that product backed by willingness as well as ability to pay for it. It is always defined with reference to a particular time, place, and price and given values of other variables on which it depends.

2.1.3 Demand Function and Demand Curve

Demand function is a comprehensive formulation which specifies the factors that influence the demand for the product. What can be those factors which affect the demand?

For example,
$D_x = D (P_x, P_y, Pz, B, W, A, E, T, U)$

D_x stands for demand for item x (say, a car)
P_X, its own price (of the car)
P_y, the price of its substitutes (other brands/models)
P_z, the price of its complements (like petrol)
B, the income (budget) of the purchaser (user/consumer)
W, the wealth of the purchaser
A, the advertisement for the product (car)
E, the price expectation of the user
T, taste or preferences of user
U, all other factors.

Briefly we can state the impact of these determinants, as we observe in normal circumstances:

- Demand for X is inversely related to its own price. As price rises, the demand tends to fall and vice versa.
- The demand for X is also influenced by its related price of goods related to X. For example, if Y is a substitute of X, then as the price of Y goes up, the demand for X also tends to increase, and vice versa. In the same way, if Z goes up and, therefore, the demand for X tends to go up.
- The demand for X is also sensitive to price expectation of the consumer; but here, much would depend on the psychology of the consumer; there may not be any definite relation.
- This is speculative demand. When the price of a share is expected to go up, some people may buy more of it in their attempt to make future gains; others may buy less of it, rather may dispose it off, to make some immediate gain. Thus the price expectation effect on demand is not certain.
- The income (budget position) of the consumer is another important influence on demand. As income (real purchasing capacity) goes up, people buy more of 'normal goods' and less of 'inferior goods'. Thus income effect on demand may be positive as well as negative. The demand of a person (or a household) may be influenced not only by the level of his own absolute income, but also by relative income; his income relative to his neighbor's income and his purchase pattern. Thus a household may demand a new set of furniture, because his neighbor has recently renovated his old set of furniture. This is called 'demonstration effect'.
- Past income or accumulated savings out of that income and expected future income, its discounted value along with the present income, permanent and transitory, all together determine the nominal stock of wealth of a person. To this, you may also add his current stock of assets and other forms of physical capital; finally adjust this to price level. The real wealth of the consumer, thus computed, will have an influence on his demand. A person may pool all his resources to construct the ground floor of his house. If he has access to some additional resources, he may then construct the first floor rather than buying a flat. Similarly one who has a color TV (rather than a black-and-white one) may demand a V.C.R./V.C.P. This is regarded as the real wealth effect on demand.
- Advertisement also affects demand. It is observed that the sales revenue of a firm increases in response to advertisement up to a point. This is promotional effect on demand (sales). Thus, Tastes, preferences, and habits of individuals have a decisive influence on their pattern of demand. Sometimes, even social pressure customs, traditions and conventions exercise a strong influence on demand. These socio-psychological determinants of demand often defy any theoretical construction; these are non-economic and non-market factors highly indeterminate. In some cases, the individual reveal his choice (demand) preferences; in some cases, his choice may be strongly ordered.

You may now note that there are various determinants of demand, which may be explicitly taken care of in the form of a demand function. By contrast, a demand curve only considers the price-demand relation, other things (factors) remaining the same. This

relationship can be illustrated in the form of a table called demand schedule and the data from the table may be given a diagrammatic representation in the form of a curve. In other words, a generalized demand function is a multivariate function whereas the demand curve is a single variable demand function.

$D_x = D (P_x)$

In the slope—intercept from, the demand curve which may be stated as

$D_x = \alpha + \beta P_x$, where α is the intercept term and β the slope which is negative because of inverse relationship between D_x and P_x.

Suppose, $\beta = (-) 0.5$, and $\alpha = 10$
Then the demand function is: $D = 10 - 0.5P$

2.1.4 Types of Demand
Till now we may specify demand in the form of a function. Much of this specification and its form depend on the nature of demand itself; its type and determinants. From this standpoint, we can talk about a few other distinct concepts of demand:

Direct and Derived Demands: Direct demand refers to demand for goods meant for final consumption; it is the demand for consumers' goods like food items, readymade garments and houses. By contrast, derived demand refers to demand for goods which are needed for further production; it is the demand for producers' goods like industrial raw materials, machine tools and equipments. Thus the demand for an input or what is called a factor of production is a derived demand; its demand depends on the demand for output where the input enters. In fact, the quantity of demand for the final output as well as the degree of substitutability / complementary between inputs would determine the derived demand for a given input. For example, the demand for gas in a fertilizer plant depends on the amount of fertilizer to be produced and substitutability between gas and coal as the basis for fertilizer production. However, the direct demand for a product is not contingent upon the demand for other products.

Domestic and Industrial Demands: The example of the refrigerator can be restated to distinguish between the demand for domestic consumption and the demand for industrial use. In case of certain industrial raw materials which are also used for domestic purpose, this distinction is very meaningful. For example, coal has both domestic and industrial demand, and the distinction is important from the standpoint of pricing and distribution of coal.

Autonomous and Induced Demand: When the demand for a product is tied to the purchase of some parent product, its demand is called induced or derived. For example, the demand for cement is induced by (derived from) the demand for housing. As stated above, the demand for all producers' goods is derived or induced. In addition, even in the realm of consumers' goods, we may think of induced demand. Consider the complementary items like tea and sugar, bread and butter etc. The demand for butter

(sugar) may be induced by the purchase of bread (tea). Autonomous demand, on the other hand, is not derived or induced. Unless a product is totally independent of the use of other products, it is difficult to talk about autonomous demand. In the present world of dependence, there is hardly any autonomous demand. Nobody today consumes just a single commodity; everybody consumes a bundle of commodities. Even then, all direct demand may be loosely called autonomous.

Perishable and Durable Goods' Demands: Both consumers' goods and producers' goods are further classified into perishable/non-durable/single-use goods and durable/non-perishable/repeated-use goods. The former refers to final output like bread or raw material like cement which can be used only once. The latter refers to items like shirt, car or a machine which can be used repeatedly. In other words, we can classify goods into several categories: single-use consumer goods, single-use producer goods, durable-use consumer goods and durable-use producer's goods.

This distinction is useful because durable products present more complicated problems of demand analysis than perishable products. Non-durable items are meant for meeting immediate (current) demand, but durable items are designed to meet current as well as future demand as they are used over a period of time. So, when durable items are purchased, they are considered to be an addition to stock of assets or wealth. Because of continuous use, such assets like furniture or washing machine, suffer depreciation and thus call for replacement. Thus durable goods demand has two varieties : replacement of old products and expansion of total stock. Such demands fluctuate with business conditions, speculation and price expectations. Real wealth effect influences demand for consumer durables.

New and Replacement Demands: This distinction follows readily from the previous one. If the purchase or acquisition of an item is meant as an addition to stock, it is a new demand. If the purchase of an item is meant for maintaining the old stock of capital/asset, it is replacement demand. Such replacement expenditure is to overcome depreciation in the existing stock. Producers' goods like machines. The demand for spare parts of a machine is replacement demand, but the demand for the latest model of a particular machine (say, the latest generation computer) is a new demand. In course of preventive maintenance and breakdown maintenance, the engineer and his crew often express their replacement demand, but when a new process or a new technique or anew product is to be introduced, there is always a new demand. You may now argue that replacement demand is induced by the quantity and quality of the existing stock, whereas the new demand is of an autonomous type. However, such a distinction is more of degree than of kind. For example, when demonstration effect operates, a new demand may also be an induced demand. You may buy a new VCR, because your neighbor has recently bought one. Yours is a new purchase, yet it is induced by your neighbor's demonstration.

Final and Intermediate Demands: This distinction is again based on the type of goods: final or intermediate. The demand for semi-finished products, industrial raw materials and similar intermediate goods are all derived demands, i.e., induced by the demand for final goods. In the context of input-output models, such distinction is often employed.

Individual and Market Demands: This distinction is often employed by the economist to study the size of the buyers' demand, individual as well as collective. A market is visited by different consumers, consumer differences depending on factors like income, age, sex etc. They all react differently to the prevailing market price of a commodity. For example, when the price is very high, a low-income buyer may not buy anything, though a high income buyer may buy something. In such a case, we may distinguish between the demand of an individual buyer and that of the market which is the market which is the aggregate of individuals. You may note that both individual and market demand schedules (and hence curves, when plotted) obey the law of demand. But the purchasing capacity varies between individuals. For example, A is a high income consumer, B is a middle-income consumer and C is in the low-income group. This information is useful for personalized service or target-group-planning as a part of sales strategy formulation.

Total Market and Segmented Market Demands: This distinction is made mostly on the same lines as above. Different individual buyers together may represent a given market segment; and several market segments together may represent the total market. For example, the Hindustan Machine Tools may compute the demand for its watches in the home and foreign markets separately; and then aggregate them together to estimate the total market demand for its HMT watches. This distinction takes care of different patterns of buying behavior and consumers' preferences in different segments of the market. Such market segments may be defined in terms of criteria like location, age, sex, income, nationality, and so on.

Company and Industry Demands: An industry is the aggregate of firms (companies). Thus the Company's demand is similar to an individual demand, whereas the industry's demand is similar to aggregated total demand. You may examine this distinction from the standpoint of both output and input. For example, you may think of the demand for cement produced by the Cement Corporation of India (i.e., a company's demand), or the demand for cement produced by all cement manufacturing units including the CCI (i.e., an industry's demand). Similarly, there may be demand for engineers by a single firm or demand for engineers by the industry as a whole, which is an example of demand for an input. You can appreciate that the determinants of a company's demand may not always be the same as those of an industry's. The inter-firm differences with regard to technology, product quality, financial position, market (demand) share, market leadership and competitiveness---- all these are possible explanatory factors. In fact, a clear understanding of the relation between company and industry demands necessitates an understanding of different market structures.

2.2 LAW OF DEMAND

Students! You already know the meaning of the term "Demand" and its determinants. Can you recollect the factors which determine the demand? Amongst the entire factors that determine the demand, price is the most important one; because of a commodity is a point at which the demand and supply forces equate each others at a particular level of quantity. For e.g. You have to buy a two wheeler, then a part from other factors like taste,

habits, availability of substitutes; ultimately the price of a particular bike will determine the demand.

Suppose you want to buy mangoes at Rs.100 per dozen you buy 6 dozens. If the price of mangoes increase to 200/- then how much will you buy? Definitely less quantity of goods! What kind of relationship is there between the price and quantity demanded? There is inverse relation. The law of demand states that "Ceteris paribus (other things remaining the same), higher the price, lower the demand and vice versa. "The law is stated primarily in terms of the price and quantity relationship. The quantity demanded is inversely related to its price. Here we consider only two factors i.e. price and quantity demanded. All the other factors which determine are assumed to be constant. Which are those factors?

Assumptions
- Income of the consumer is constant.
- There is no change in the availability and the price of the related commodities (i.e. complimentary and substitutes)
- There are no expectations of the consumers about changes in the future price and income.
- Consumers' taste and preferences remain the same.
- There is no change in the population and its structure.

Illustration

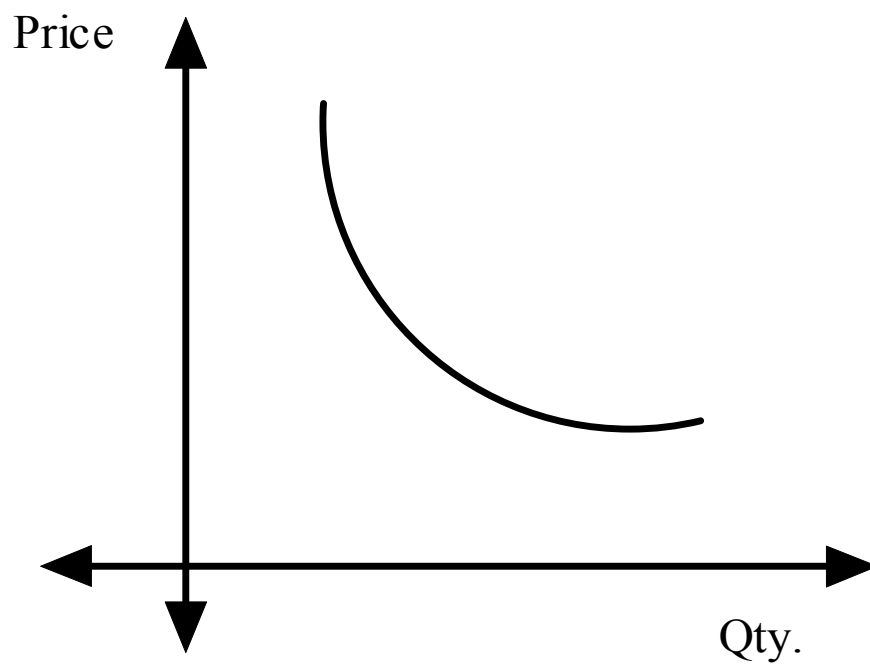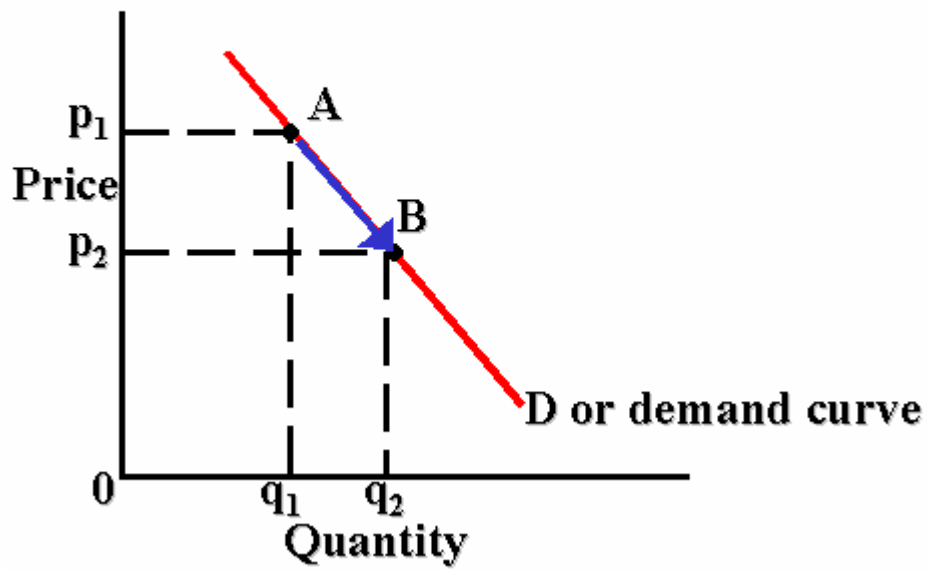| Price (in Rs.)	Quantity Demanded (in Units)
5	80
4	100
3	150
2	200

Change in Quantity Demanded
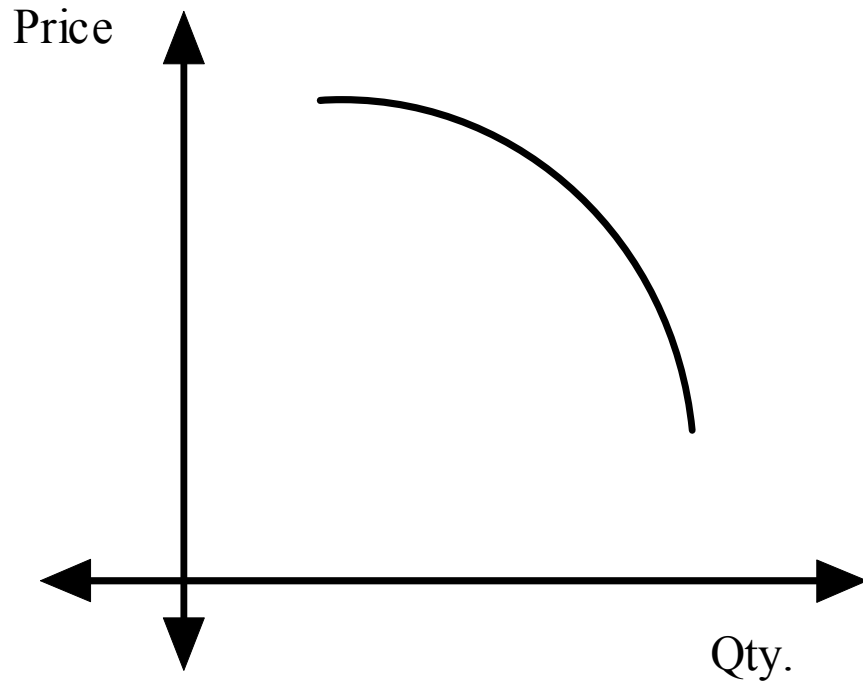

Fig. 2.1 Demand Curve- Downward Sloping.

Fig 2.2 Demand Curve - Upward Sloping.

2.2.1 Characteristics of Law of Demand
So by observing a demand curve the chief characteristics are

- Inverse relationship between the price and the quantity demanded. This is shown by the downward sloping demand curve.
- Price is an independent variable and the demand is dependent. It is the effect of price on demand and not vice versa.
- Reasons underling the law of demand- this inverse relationship can be explained in terms of two reasons, viz.

  1) **Income effect:** the decline in the price of a commodity leads to an equivalent increase in the income of a consumer because he has to spend less to buy the same quantity of goods. The part of the money left can be used for buying some more units of commodity. For e.g. - suppose the price of mangoes falls from Rs.100/- per dozen to 50/- per dozen. Then with the same amount of 100/- you can buy one more dozen, i.e., 2 dozens at Rs. 50/-

  2) **Substitution effect:** When the price of a commodity falls, the consumer tends to substitute that commodity for other commodity which is relatively dearer. For e.g. suppose the price of the Urad Dal falls, it will be used by some people in place of other pulses. Thus the demand will increase.

2.2.2 Exceptions of Law of Demand

Conspicuous Consumption: The goods which are purchased for 'Snob appeal' are called as the conspicuous consumption. They are also called as '**Veblen goods'** because Veblen coined this term. For e.g. diamonds, curios. They are the prestige goods. They would like to hold it only when they are costly and rare. So, what can be the policy implication for the manager of a company who produces it? A producer can take advantage by charging high premium prices.

Speculative Market: In this case the higher the price the higher will be the demand. It happens because of the expectation to increase the price in the future. For e.g. shares, lotteries, gamble and ply-win type of markets.

Geffen's Goods: It is a special type of inferior goods where the increase in the price results into the increase in the quantity demanded. This happens because these goods are consumed by the poor people who would like to buy more if the price increases. For e.g. a poor person who buys inferior quality vegetables. If the price of such vegetable increase then they prefer to buy because they think that it would be of a better quality

Ignorance: Many a times consumer judges the quality of a good from its price. Such consumers may purchase high price goods because of the feeling of possessing a better quality. The exceptional demand curve shows a positive relation between the price and the quantity demanded.

2.3 UTILITY APPROCHES TO THE THEORY OF DEMAND

The approaches to the Theory of Demand are diverse in nature, facilitating a better understanding of the concept of supply and demand on the part of the readers. In fact, different approaches to the Theory of Demand attempt to explain the topic from various aspects and angles, by making an in-depth study on the subject. The Neo-classicists try to explain the Theory of Demand from their own perspective. The Neo-classical approach concentrates on the determination of yields, prices as well as the market distribution of incomes through the methods of supply and demand. These factors are judged on the basis of a theoretical escalation of income-constrained utility by the people, and on the cost-constrained profits of the companies having information and reasons of production on hand. In fact, the traditional economic theories are more neo-classical in their hypotheses on macro-economic levels.

The Theory of Demand can also be explained through the dynamic non-equilibrium approach. Developed from the economic concepts of Kalecki and Keynes, the dynamic non-equilibrium approach to the Demand Theory is explained in terms of static equilibrium. In fact, dynamic non-equilibrium approach is defined in terms of a given production level which matches with the equilibrium point existing between collective supply and demand.

A third method of approaching the Theory of Demand is the compensated demand function. This approach discards the utility function, but believes in the presence of certain hypothetical functional propositions which describe its logical nature. In the light of these properties, the utility functions can be analyzed as compensated demand functions, opening a new horizon for studying the Demand Theory.

The theory of effective demand can also be explained by the Keynesian theories of demand. The most important constituents of effective demand, according to Keynes is government expenditure and investments. Surplus production is mainly generated by the private sector of the economy and in this aspect government expenditure acts as a complementary force.

2.4 CONSUMER EQUILIBRIUM AND DEMAND CURVE

In order to arrive at equilibrium, we need to combine the preference world with the budget world. That is, we need a graph that has both indifference curves and a budget constraint on the same picture. See, our task is simple. Find the bundle that maximizes consumer utility subject to the point being affordable. If all we cared about was finding the highest possible utility level, we would choose some point on an indifference curve way out there on the graph. But, of course, the real world is much more restrictive. We can imagine how nice such a bundle would be, but we are constrained by our budget to live with some bundle that is much less generous.
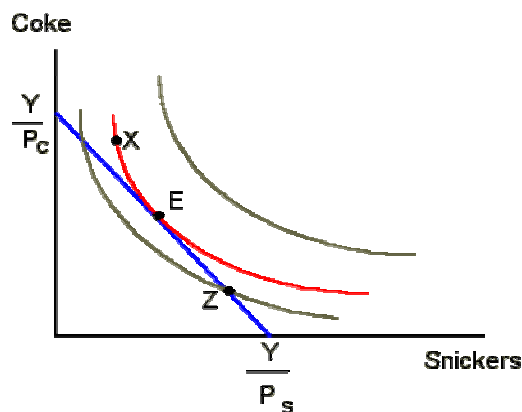

Fig 2.3 Indifference Curves with Budget Constraints

The graph shows the budget constraint. Three of the infinitely possible numbers of indifference curves have been drawn. The one farthest from the origin is clearly a very attractive curve. But, it is not affordable by this consumer. The indifference curve is the highest indifference curve the consumer can reach, given her income. Note that even for this indifference curve the consumer can get just one point along this indifference curve,

the point E. While the consumer values E the same as any other point along the locus, for example X, the other points are outside of the budgetary constraint. The other indifference curve drawn, the one containing point Z, is clearly affordable. The consumer could buy Z and spend all of her money. However, this would NOT be maximizing utility as every point along the red indifference curve, including E, dominates Z in terms of utility. Since E is better *and affordable*, the consumer will clearly **not** want to choose Z.

Of particular importance to us is what happens to equilibrium when there is a price change. Recall, the opening sentence of this lecture site noted that we were interested in formal construction of a demand curve. To do this, we need to play with different possible prices and see how the consumer responds. Suppose we start with the equilibrium E in the above figure. This shows us some original amount of Snickers that we would purchase at the original price. So, we have one price-quantity combination that we could plot on a demand curve. But, to find more of the demand curve, we would need to try different prices. Suppose the price of Snickers were to decline, holding income and the price of Coke constant. This last part is crucial. We need to keep all other factors from changing, as such changes would complicate the phenomenon we are trying to uncover: the effect of changes in the own price of Snickers.
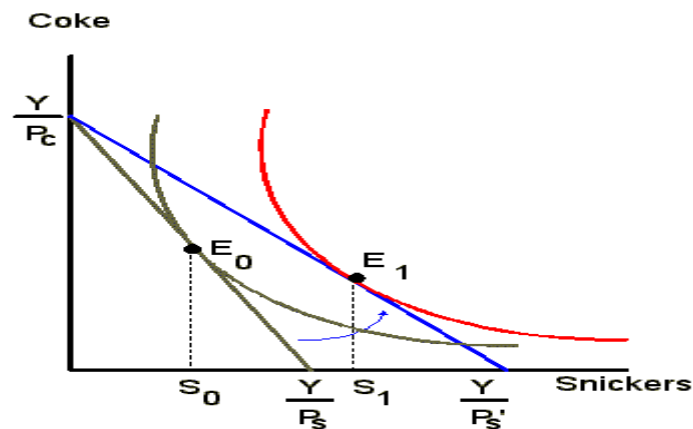

Fig 2.4 Decrease in Price

The price drop swings the budget constraint out. As discussed above, there is no change in the vertical intercept, since income and the price of Coke did not change. However, the drop in the price of Snickers means that the horizontal intercept, the maximum Snickers you could purchase if Snickers is the only thing you spend your money on, has increased. The blue line is this new budget constraint. Of course, given this new budget constraint, there are many points now affordable that the consumer could not purchase before. In fact, we know the consumer will go to the point on the blue line where she is just tangent to the highest indifference curve she can reach. I have shown this indifference curve as the locus. Remember, there are infinitely many indifference curves we could draw; I have just shown the one that is just tangent to the budget constraint.

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At this new equilibrium, E_1, the consumer has increased her consumption of Snickers from S_0 to S_1. (Note that the effect on the purchases of Coke is unimportant. The way I have drawn this, the purchases of Coke have fallen. That need not be the case. Clearly, you can see that the new tangency could have been drawn at some point that was "up and to the right" involving more Snickers and more Coke.). Note, we could have done the same thing with a different example, one where I *raised* the price of Snickers.
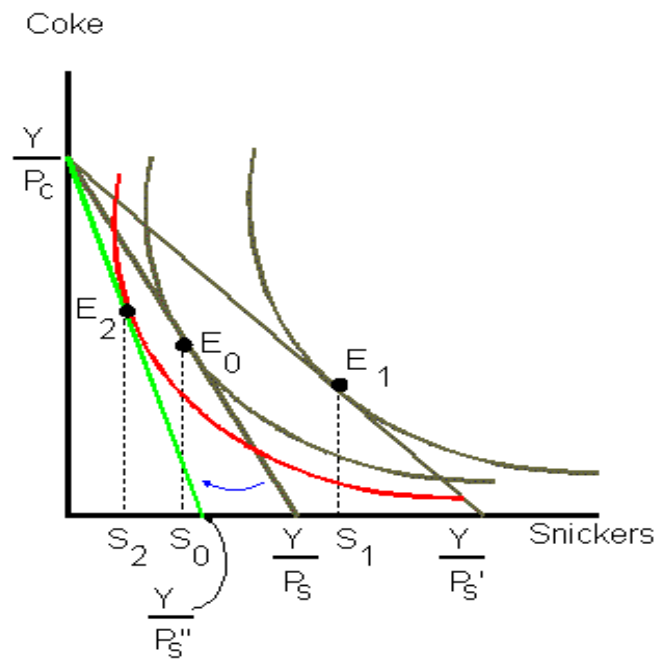

Fig 2.5 Three Different Equilibriums for Three Different Candidate Prices

The new equilibrium has even less Snickers than the original equilibrium. Once again, we really do not care about the impact on Cokes at this point. If you go on to take other Economics courses that type of concern will come to play. Finally, look at what we have produced. Figure above shows three different equilibriums for three different candidate prices for Snickers. Of course, the axes in the above figure show physical units of Snickers plotted against physical units of Coke. There is no axes measuring price explicitly; price is captured in the information of the slope of the budget constraint. As you see, these points trace out what looks like a downward sloping function. In fact, if we were to run more and more price experiments, we would have an increasing number of equilibrium points to transfer. Connecting this locus of points would give us our **Demand Curve**. Obviously, there is no requirement that the curve be linear.
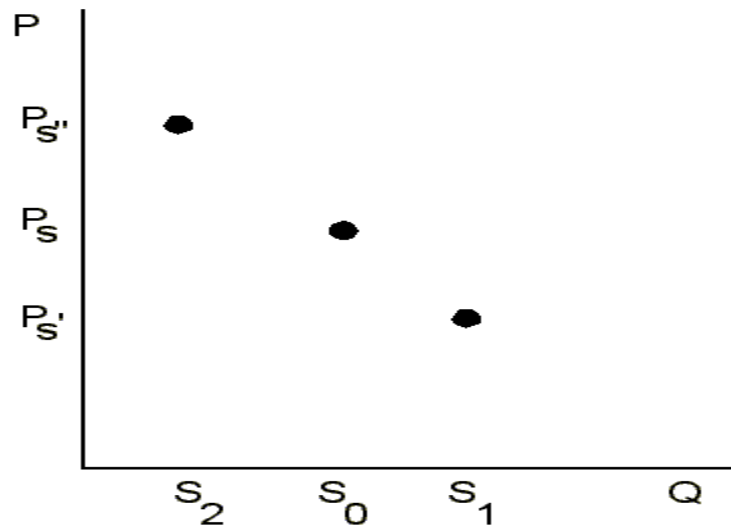
Fig 2.6 Graph Representing Horizontal Axis is still the Quantity of Snickers but the Vertical Axis is now Price of Snickers.

2.5 DEMAND ELASTICITIES AND DEMAND ESTIMATES

Previously, you have been introduced to demand analysis, wherein you have been told about various influences on the demand for a commodity as well as the alternative ways of explaining consumer's behavior. In particular, you have been exposed to the law of demand, and the demand function (curve) for a commodity. Hence we need to introduce a very significant concept, viz. elasticity of demand. This concept and measure of demand elasticity has a lot of practical use for business manager. Statistically estimated, empirical demand functions give us information on elasticities. Such management information lies at the root of corporate planning and business policy decisions.

Meaning of Elasticity: A demand function explains the nature of relationship between demand for a commodity and its determinants. The concept of elasticity in economics is actually borrowed from physics. In physics, it is supposed to show the reaction of one variable with respect to a change in the other variable on which it is dependent. Elasticity is an index of reaction. In economics, we define the demand elasticity of a commodity with respect to its price because demand depends on price. It indicates the extent to which demand changes when price of the commodity changes. Formally, it is defined as the ratio of the relative variations in the price. In other words, price elasticity of demand is a ratio of two pure numbers; the numerator is the percentage change in quantity demanded and the denominator is the percentage change in the price of the commodity. In fact instead of percentage change, one can also take proportionate change. Denoting elasticity by, we have

$$e = \frac{\Delta Q}{Q} \div \frac{\Delta P}{P}$$

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Where Δ represents any incremental change in Q and P.
Here P = price;
And Q = quantity demanded.

There are three points which must be noted at this stage:

1. You may observe that price elasticity e thus becomes a ratio of marginal demand

$\dfrac{dQ}{dP}$ to average demand $\dfrac{Q}{P}$, should we say that elasticity is an extension of our concepts of incremental and marginal .

2. Elasticity is a unit-less or dimensionless concept. It is just a pure number. Here it can be pointed out that one can use the slope of the demand curve to express how quantity changes when price changes, since the slope measures the rate of change of one variable in relation to another variable. But slope is not a pure number. It is dependent on the units in which the variables are measured. If we change the unit of measurement of the variable, the slope will change (for instance kg. changed into gms.). Hence one cannot use the slope of demand curves to compare across commodities, when they are measured in different units. We need a measure which is free from the units of measurements; elasticity is such a measure.

3. The coefficient of elasticity is ordered according to absolute value as opposed to algebraic value. Hence an elasticity of –2 is greater than an elasticity of –1 even though algebraically the opposite would be true.

Why does Elasticity have a Negative Sign?
If the demand curve slopes downwards from left to right, it follows that if P is greater than zero (i.e. price increases), demand, e will always have a negative value. If you keep this in your mind, you can ignore the negative sign.

2.5.1 Calculation Elasticity Coefficients
There are two measures of elasticity:
- Arc Elasticity
- Point Elasticity

Arc Elasticity: If the data is discrete and therefore incremental changes are measurable.

Point Elasticity: If the demand function is continuous and therefore only marginal changes are calculable.

For Example: Let's see how one can calculate elasticity when the price change is finite (i.e. elasticity measured over a finite stretch of demand curve). The price and quantity situation are given in the following table. We want to calculate elasticity when price changes from Rs.4 to Rs.3 per unit.

Price of Commodity X (in Rs.)	Quantity demanded of Commodity X (in Kg.)
5	10
4	16
3	25
2	30
1	34

When price changes from Rs. 4 to 3, ΔP= Rs. 3 – Rs. 4 = - Re. 1.00 (i.e. the price change is negative since it is a price fall). The change in quantity demanded is ΔQ = 25-16=9 (Quantity change is positive).

$$e= \frac{\Delta Q/Q}{\Delta P/P} = \frac{9/16}{-1/4} = -9/4 = -2.25$$

Now if we calculate the elasticity when price increases from Rs. 3 to Rs. 4 we find that for the same stretch of the demand curve, elasticity would be different.

$$e= \frac{\Delta Q/Q}{\Delta P/P} = \frac{9/25}{+1/3} = -9/25 \times 3 = \frac{-27}{25} = -1.08$$

Here the question arises, how different demand responses for the same range of price change? The answer is that our initial quantity demanded and price has been different. When we calculate for price fall, they are 16 for initial quantity demanded and Rs. 4 for initial price. When we calculate it for price rise they are 25 for initial quantity demanded and Rs. 3 for initial choice. Hence elasticity tends to depend on our choice of the initial situation. However, demand response should be the same for the same finite stretch of the demand curve. To get rid of this dilemma created by the choice of the initial situations, we take the arithmetic mean of the two quantities Q and the mean of the two prices P. This gives us a concept of ARC elasticity of demand.

$$\text{ARC elasticity} = \frac{\Delta O}{Q_0 + Q_1} \quad \frac{P_0 + P_1}{\Delta P}$$

$$\text{Or,} \quad e = \frac{\Delta Q}{\Delta P} \quad \frac{P_0 + P_1}{Q_0 + Q_1}$$

Where Q_0 and Q_1 are the two quantities corresponding to the points on the demand curve. Similarly P_0 and P_1 are the two prices.

ACR elasticity is based on the notion of average. When we make the ARC small (for non linear demand curves). The arc elasticity tends to point towards elasticity (the elasticity which we considered to start with). In other words, the limit of are elasticity as ΔP tends to zero IS point elasticity.

$$\text{i.e. Limit}_{\Delta P \to O} \quad \frac{\Delta Q}{\Delta P} \cdot \frac{Q_0 + Q_1}{P_0 + P_1} = \frac{dQ}{dP} \cdot \frac{P}{Q}$$

For an infinitesimal (very very small) change in price we use point elasticity. However for a finite change in price (however small that change may be). One must always use are elasticity formula.

2.5.2 Types of Elasticities
Now we will discuss the various types of elasticities:

Price Elasticity of Demand: It is the degree of responsiveness of the demand for a commodity to a change in price. This concept was introduced by Alfred Marshall. It is defined as the ratio of the percentage of change in the quantity demanded to a change in price. Symbolically it is expressed as follows: Ed = percentage change in quantity demanded / percentage change in price

Income Elasticity of Demand: This measures the degree of responsiveness of quantity demanded of commodity or goods with respect to a change in the level of income of a consumer, other things remaining constant (like prices etc.) It is given by the ratio ΔQ / ΔR. Where R stands for total income (expenditure). It is the ratio of percentage (or proportionate) change in quantity demanded to a percentage (proportionate) change in consumer's income. For a finite change in income we use are elasticity formula, and for an infinitesimal change in income point elasticity is used.

$$\text{Income elasticity } e_r = \frac{\Delta Q}{Q_o + Q_1} \cdot \frac{R_o + R_1}{\Delta R}$$

Few points about income elasticity must be noted:
Unlike the price elasticity of demand which is always negative, income elasticity is always positive except for inferior goods.

Income Elasticity:
- Income elasticity shows the responsiveness of change in demand to change in income . It is denoted by E_I The co-efficient of E_I tells us about the nature of commodity
- If $0 < E_I \leq 1$ the commodity is a Normal /necessary one $E_I < 0$, the commodity is an Inferior good $E_I > 1$, the commodity is a superior or Luxury good.

Income elasticity and decision making

- During periods of expansion firms selling luxury items find their demand increase at a rate that is faster then the rate of income growth. At the time of recession demand for these goods decrease rapidly
- Basic necessities –food/fuel – sellers of it not benefited as much during periods of economic prosperity, but will also find their markets somewhat recession proof. That is, the change in demand will be less than that in the economy in general.
- Knowledge of income elasticities can be useful in targeting marketing marketing efforts.
- Consider a firm specializing in expensive men's colognes. Because such goods are luxuries, those in high-income groups would be expected to be the prime customers. Thus the firms should concentrate its marketing efforts on media that reach the wealthier segments of the population. E.g., advertising dollars should be spent on space in Esquire and the New Yorker rather than the National Enquirer and Wrestling Today.

Cross Elasticity

- Demand is also influenced by prices of other goods and services.
- The responsiveness of quantity demanded to changes in price of other goods is measured by cross elasticity, which is defined as the % change in the quantity demanded of one good caused by a 1% change in the price of some other good.
- For large changes in the price of Y, Arc cross elasticity is used.
- Point cross elasticity are analogous to the point elasticity
- Cross price elasticity for Substitutes: Negative
- Cross price elasticity for complementary goods is: Positive

Cross Elasticity and Decision Making

- Many large corporations produce several related products. Gillette makes both razors and razor blades. Kinetic sells several competing makes of automobiles. Where a company's products are related, the pricing of one good can influence the demand for another
- Information regarding cross elasticities can aid decision-makers in assessing such impacts.
- Cross elasticity are also useful in establishing boundaries between the industries.

Promotional (Advertising) Elasticity of Demand

Salient features of relationship between advertising and sales are the following:

- Some sales are possible even if there are no advertising
- Beyond the minimum level of sales, there is a direct relationship between advertising expenditure and sales (sales increase with increase in advertisement expenditure and decrease with decrease in advertisement sales)
- Consumers generally need a minimum level of advertisement before they take notice of the presence of the product. So sales do not respond to the same extent as advertisement expenditure. Beyond this initial stage of advertising expenditure, the resulting increase in the sales will be more than proportionate to the increase

in advertisement expenditure. As advertisement expenditure is continued to increase, it will eventually result in less than proportionate increase in sales, and later a stage comes when no further increase in sales is possible with the help of advertisement. If we plot the amount of advertisement expenditure and corresponding sales level, we get an S- shaped curve.

How far the demand for a product will be influenced by advertisement and other promotional activities may be measured by advertising elasticity of demand. Some goods are more responsive to advertising , e.g., cosmetics . Advertising elasticity of demand measures the response of quantity demand to change in expenditure on advertising and other sales promotional activities.

The point formula for calculating advertising elasticity of demand is: $E_a = dq/q \quad da/a$

Arc Formula

$$E_a = \frac{(q_2-q_i)\ (a_2+a_1)}{(q_2+q_1)\ (a_1-a_2)}$$

Factors Influencing Advertising Elasticity of Demand

1. Stage of product Market :
   - It is different for new and old products
   - Also different for established Market and growing Markets

2. Effect of advertising in terms of time:
   - Time lag in response to advertisement varies
   - It may be delayed in some cases, depending upon the general economic environment and the media choosen.
   - It may also depend upon type of product; It takes long for the durable articles; Advertisement by various media and by various firms may have a cumulative effect after some time

3. Influence of advertising by rivals:
   - E_a Depends upon effectiveness of advertisement
   - How much additional output this firm can sell by resorting to advertisement depends upon its own media and the level of advertisement vis-à-vis those of its rival

2.5.3 Determinants of Elasticity
So far we have been mainly concerned with the definition and properties of various concepts of elasticity and their measurement. We now discuss the factors which determine the value of a given elasticity. About the determinants of this elasticity, the following factors are relevant.

The Extent of Substitutability between Goods: Larger the number of substitutes available to a product, the more will be the elasticity of demand; the smaller the number,

the less elastic the demand. For example, consider T.V. set for the first type and salt for the second type.

The Nature of the Goods: The demand for luxury goods in general is more elastic than the demand for necessary goods. For example, consider car in the first category and sugar in the second category.

The Importance of the Goods: A product which accounts for a high percentage of consumer's total expenditure is characterized by high elasticity. You may now examine why salt is inelastic.

The Price of the Product itself: Highly priced goods tend to have elastic demand, while lower-priced goods have less elastic demand. The expression 'highly priced' is normally taken to mean a price at which the quantity that the consumer plans to buy is close to zero. For example, consider a product like refrigerator.

Price Expectation of Buyers: When the price of the goods has fallen and the buyers expect it to fall further, then they will postpone buying the goods and this will make demand less responsive. On the other hand, if they expect price to go up then they will speed up purchase, which will increase elasticity.

Time Allowed for Making Adjustment in Consumption Pattern: In the short-run, it is very difficult to change habits. Hence the short-term demand is less responsive to price change. The longer the time allowed for making adjustment in consumption pattern, the greater will be the elasticity. The consumers in the long-run would look for better substitutes. Hence the elasticity increases in the long-run.

2.5.4 Managerial Uses of Elasticity Concepts

Regarding the importance of the concept of elasticity of demand, it must be pointed out that the concept is useful to the business managers as well as government managers. Elasticity measures help the sales manager in fixing the price of his product. The concept is also important to the economic planners of the country. In trying to fix the production target for various goods in a plan, a planner must estimate the likely demand for goods at the end of the plan. This requires the use of income elasticity concepts. The price elasticity of demand as well as cross elasticity would determine the substitution between goods and hence useful in fixing the output mix in a production period. The concept is also useful to the policy makers of the government, in particular in determining taxation policy, minimum wages policy, stabilization program for agriculture, and price policies for various other goods (where administered prices are used). The managers are concerned with empirical demand estimates because they provide summary information about the direction and proportion of change in demand, as a result of a given change in its explanatory variables. From the standpoint of control and management of external factors, such empirical estimates and their interpretations are therefore, very relevant.

2.6 AGGREGATE DEMAND

In ordinary parlance demand means desire. It becomes effective when income is spent in buying consumption goods and investment goods. Keynes used the term effective demand to denote the total demand for goods and services at various levels of employment. Different levels of employment represent different levels of aggregate demand. Bur there can be a level of employment where aggregate demand equals aggregate supply. This is the point of effective demand In Keynes's words, "The value of D (Aggregate Demand) at the point of Aggregate Demand function, where it is intersected by the Aggregate Supply function, will be called the effective demand." Thus according to Keynes; the level of employment is determined by effective demand which, in turn, is determined by aggregate demand price and aggregate supply price.

Aggregate Demand Price: "The aggregate demand price for the output of any given amount of employment is the total sum of money or proceeds, which is expected from the sale of the output produced when that amount of labor is employed". Thus the aggregate demand price for the output of any given amount of employment is the total sum of money or proceeds, which is expected from the sale of the output produced when that amount of labor is employed." us the aggregate demand price is the amount of entrepreneurs expect to get by selling the output produced by the number of men employed. In other words, it refers to the expected revenue from the sale of output produced at a particular level of employment. Different aggregate demand prices relate to different levels of employment in the economy.

A statement showing the various aggregate demand prices at different levels of employment is called the aggregate demand price schedule or aggregate demand function. "The aggregate demand function," according to Keynes, "relates any given level of employment to the expected proceeds from that level of employment." Table below shows the aggregate demand schedule. When 45 lakh people are provided employment the aggregate demand price is Rs.280 crore and when 25 lakh people are provided jobs, it is Rs- 240 crore. According to Keynes the aggregate demand function is an increasing function of the level or employment and is expressed as D = F (N), where D is the proceeds which entrepreneurs expect from the employment of N men.

Aggregate Demand Schedule

Level of Employment (N) (in lakhs)	Aggregate Demand Price (D) (Rs. crore)
20	230
25	240
30	250
35	260
40	270
45	280
50	290

2.7 DEMAND FORECASTING

One of the crucial aspects in which managerial economics differs from pure economic theory lies in the treatment of risk and uncertainty. Traditional economic theory assumes a risk-free world of certainty; but the real world business is full of all sorts of risk and uncertainty. A manager cannot, therefore, afford to ignore risk and uncertainty. The element of risk is associated with future which is indefinite and uncertain. To cope with future risk and uncertainty, the manager needs to predict the future event. The likely future event has to be given form and content in terms of projected course of variables, i.e. forecasting. Thus, business forecasting is an essential ingredient of corporate planning. Such forecasting enables the manager to minimize the element of risk and uncertainty. Demand forecasting is a specific type of business forecasting.

2.7.1 Concepts of Forecasting

The manager can conceptualize the future in definite terms. If he is concerned with future event- its order, intensity and duration, he can predict the future. If he is concerned with the course of future variables- like demand, price or profit, he can project the future. Thus prediction and projection-both have reference to future; in fact, one supplements the other. Suppose, it is predicted that there will be inflation (event). To establish the nature of this event, one needs to consider the projected course of general price index (variable). Exactly in the same way, the predicted event of business recession has to be established with reference to the projected course of variables like sales, inventory etc.

Projection is of two types – forward and backward. It is a forward projection of data variables, which is named forecasting. By contrast, the backward projection of data may be named 'back casting', a tool used by the new economic historians. For practical managers concerned with futurology, what is relevant is forecasting, the forward projection of data, which supports the prediction of an event. Thus, if a marketing manager fears demand recession, he must establish its basis in terms of trends in sales data; he can estimate such trends through extrapolation of his available sales data. This trend estimation is an exercise in forecasting.

2.7.2 Need for Demand Forecasting

Business managers, depending upon their functional area, need various forecasts. They need to forecast demand, supply, price, profit, costs, investment, and what have you. In this unit, we are concerned with only demand forecasting. The reason is, the concepts and techniques of demand forecasting discussed here can be applied anywhere. The question may arise: Why have we chosen demand forecasting as a model? What is the use of demand forecasting?

The significance of demand or sales forecasting in the context of business policy decisions can hardly be overemphasized. Sales constitute the primary source of revenue for the corporate unit and reduction for sales gives rise to most of the costs incurred by the fir. Thus sales forecasts are needed for production planning, inventory planning, and

profit planning and so on. Production itself requires the support of men, materials, machines, money and finance, which will have to be arranged. Thus, manpower planning, replacement or new investment planning, working capital management and financial planning all depend on sales forecasts. Thus demand forecasting is crucial for corporate planning. The survival and growth of a corporate unit has to be planned, and for this sales forecasting is the most crucial activity. There is no choice between forecasting and no-forecasting. The choice exists only with regard to concepts and techniques of forecasting that we employ. It must be noted that the purpose of forecasting in general is not to provide an exact future data with perfect precision, the purpose is just to bring out the range of possibilities concerning the future under a given set of assumptions. In other words, it is not the 'actual future' but the 'likely future' that we build up through forecasts. Such forecasts do not eliminate, but only help you to reduce the degree of risk and uncertainties of the future. Forecasting is a step towards that kind of 'guesstimation'; it is some sort of an approximation to reality. If the likely state comes close to the actual state, it means that the forecast is dependable. A sales forecast is meant to guide business policy decision. Without forecasting, forward planning by a corporate unit will be directionless.

2.7.3 Steps in Demand Forecasting

Demand or sales forecasting is a scientific exercise. It has to go through a number of steps. At each step, you have to make critical considerations. Such considerations are categorically listed below:

Nature of Forecast: To begin with, you should be clear about the uses of forecast data-how it is related to forward planning and corporate planning by the firm. Depending upon its use, you have to choose the type of forecasts: short-run or long-run, active or passive, conditional or non-conditional etc.

Nature of Product: The next important consideration is the nature of product for which you are attempting a demand forecast. You have to examine carefully whether the product is consumer goods or producer goods, perishable or durable, final or intermediate demand, new demand or replacement demand type etc. A couple of examples may illustrate the importance of this factor. The demand for intermediate goods like basic chemicals is derived from the final demand for finished goods like detergents. While forecasting the demand for basic chemicals, it becomes essential to analyze the nature of demand for detergents. Promoting sales through advertising or price competition is much less important in the case of intermediate goods compared to final goods. The elasticity of demand for intermediate goods depends on their relative importance in the price of the final product.

Time factor is a crucial determinant in demand forecasting. Perishable commodities such as fresh vegetables and fruits can be sold over a limited period of time. Here skilful demand forecasting is needed to avoid waste. If there are storage facilities, then buyers can adjust their demand according to availability, price and income. The time taken for such adjustment varies from product to product. Goods of daily necessities that are bought more frequently will lead to quicker adjustments. Whereas in case of expensive

equipment which is worn out and replaced after a long period of time, adaptation of demand will be spread over a longer duration of time.

Determinants of Demand: Once you have identified the nature of product for which you are to build a forecast, your next task is to locate clearly the determinants of demand for the product. Depending on the nature of product and nature of forecasts, different determinants will assume different degree of importance in different demand functions. In the preceding unit, you have been exposed to a number of price-income factors or determinants-own price, related price, own income-disposable and discretionary, related income, advertisement, price expectation etc. In addition, it is important to consider socio-psychological determinants, specially demographic, sociological and psychological factors affecting demand. Without considering these factors, long-run demand forecasting is not possible.

Such factors are particularly important for long-run active forecasts. The size of population, the age-composition, the location of household unit, the sex-composition-all these exercise influence on demand in. varying degrees. If more babies are born, more will be the demand for toys; if more youngsters marry, more will be the demand for furniture; if more old people survive, more will be the demand for sticks. In the same way buyers' psychology-his need, social status, ego, demonstration effect etc. also effect demand. While forecasting, you cannot neglect these factors.

Analysis of Factors &Determinants: Identifying the determinants alone would not do, their analysis is also important for demand forecasting. In an analysis of statistical demand function, it is customary to classify the explanatory factors into (a) **trend factors,** which affect demand over long-run, (b) **cyclical factors** whose effects on demand are periodic in nature, (c) **seasonal factors,** which are a little more certain compared to cyclical factors, because there is some regularly with regard to their occurrence, and (d) **random factors** which create disturbance because they are erratic in nature; their operation and effects are not very orderly. An analysis of factors is specially important depending upon whether it is the aggregate demand in the economy or the industry's demand or the company's demand or the consumers; demand which is being predicted. Also, for a long-run demand forecast, trend factors are important; but for a short-run demand forecast, cyclical and seasonal factors are important.

Choice of Techniques: This is a very important step. You have to choose a particular technique from among various techniques of demand forecasting. Subsequently, you will be exposed to all such techniques, statistical or otherwise. You will find that different techniques may be appropriate for forecasting demand for different products depending upon their nature. In some cases, it may be possible to use more than one technique. However, the choice of technique has to be logical and appropriate; for it is a very critical choice. Much of the accuracy and relevance of the forecast data depends accuracy required, reference period of the forecast, complexity of the relationship postulated in the demand function, available time for forecasting exercise, size of cost budget for the forecast etc.

Testing Accuracy: This is the final step in demand forecasting. There are various methods for testing statistical accuracy in a given forecast. Some of them are simple and inexpensive, others quite complex and difficult. This stating is needed to avoid/reduce the margin of error and thereby improve its validity for practical decision-making purpose. Subsequently you will be exposed briefly to some of these methods and their uses.

2.7.4 Techniques of Demand Forecasting

Broadly speaking, there are two approaches to demand forecasting- one is to obtain information about the likely purchase behavior of the buyer through collecting expert's opinion or by conducting interviews with consumers, the other is to use past experience as a guide through a set of statistical techniques. Both these methods rely on varying degrees of judgment. The first method is usually found suitable for short-term forecasting, the latter for long-term forecasting. There are specific techniques which fall under each of these broad methods. We shall now taker up each one of these techniques under broad category of methods suggested above.

Simple Survey Methods: For forecasting the demand for existing product, such survey methods are often employed. In this set of methods, we may undertake the following exercise.

Experts' Opinion Poll: In this method, the experts on the particular product whose demand is under study are requested to give their 'opinion' or 'feel' about the product. These experts, dealing in the same or similar product, are able to predict the likely sales of a given product in future periods under different conditions based on their experience. If the number of such experts is large and their experience-based reactions are different, then an average-simple or weighted –is found to lead to unique forecasts. Sometimes this method is also called the 'hunch method' but it replaces analysis by opinions and it can thus turn out to be highly subjective in nature.

Reasoned Opinion-Delphi Technique: This is a variant of the opinion poll method. Here is an attempt to arrive at a consensus in an uncertain area by questioning a group of experts repeatedly until the responses appear to converge along a single line. The participants are supplied with responses to previous questions (including seasonings from others in the group by a coordinator or a leader or operator of some sort). Such feedback may result in an expert revising his earlier opinion. This may lead to a narrowing down of the divergent views (of the experts) expressed earlier. The Delphi Techniques, followed by the Greeks earlier, thus generates "reasoned opinion" in place of "unstructured opinion"; but this is still a poor proxy for market behavior of economic variables.

Consumers' Survey- Complete Enumeration Method: Under this, the forecaster undertakes a complete survey of all consumers whose demand he intends to forecast, once this information is collected, the sales forecasts are obtained by simply adding the probable demands of all consumers. For example, if there are N consumers, each demanding D then the total demand forecast is $\sum_{i=1} D_i$

The principle merit of this method is that the forecaster does not introduce any bias or value judgment of his own. He simply records the data and aggregates. But it is a very tedious and cumbersome process; it is not feasible where a large number of consumers are involved. Moreover if the data are wrongly recorded, this method will be totally useless.

Consumer Survey-Sample Survey Method: Under this method, the forecaster selects a few consuming units out of the relevant population and then collects data on their probable demands for the product during the forecast period. The total demand of sample units is finally blown up to generate the total demand forecast. Compared to the former survey, this method is less tedious and less costly, and subject to less data error; but the choice of sample is very critical. If the sample is properly chosen, then it will yield dependable results; otherwise there may be sampling error. The sampling error can decrease with every increase in sample size.

End-use Method of Consumers' Survey: Under this method, the sales of a product are projected through a survey of its end-users. A product is used for final consumption or as an intermediate product in the production of other goods in the domestic market, or it may be exported as well as imported. The demands for final consumption and exports net of imports are estimated through some other forecasting method, and its demand for intermediate use is estimated through a survey of its user industries.

2.7.5 Complex Statistical Methods
We shall now move from simple to complex set of methods of demand forecasting. Such methods are taken usually from statistics. As such, you may be quite familiar with some the statistical tools and techniques, as a part of quantitative methods for business decisions.

Time Series Analysis or Trend Method: Under this method, the time series data on the under forecast are used to fit a trend line or curve either graphically or through statistical method of Least Squares. The trend line is worked out by fitting a trend equation to time series data with the aid of an estimation method. The trend equation could take either a linear or any kind of non-linear form. The trend method outlined above often yields a dependable forecast. The advantage in this method is that it does not require the formal knowledge of economic theory and the market; it only needs the time series data. The only limitation in this method is that it assumes that the past is repeated in future. Also, it is an appropriate method for long-run forecasts, but inappropriate for short-run forecasts. Sometimes the time series analysis may not reveal a significant trend of any kind. In that case, the moving average method or exponentially weighted moving average method is used to smooth the series.

Barometric Techniques or Lead-Lag Indicators Method: This consists in discovering a set of series of some variables which exhibit a close association in their movement over a period or time. It shows the movement of agricultural income (AY series) and the sale of tractors (ST series). The movement of AY is similar to that of ST, but the movement in ST takes place after a year's time lag compared to the movement in AY. Thus if one

knows the direction of the movement in agriculture income (AY), one can predict the direction of movement of tractors' sale (ST) for the next year. Thus agricultural income (AY) may be used as a barometer (a leading indicator) to help the short-term forecast for the sale of tractors. Generally, this barometric method has been used in some of the developed countries for predicting business cycles situation. For this purpose, some countries construct what are known as 'diffusion indices' by combining the movement of a number of leading series in the economy so that turning points in business activity could be discovered well in advance. Some of the limitations of this method may be noted however. The leading indicator method does not tell you anything about the magnitude of the change that can be expected in the lagging series, but only the direction of change. Also, the lead period itself may change overtime. Through our estimation we may find out the best-fitted lag period on the past data, but the same may not be true for the future. Finally, it may not be always possible to find out the leading, lagging or coincident indicators of the variable for which a demand forecast is being attempted.

Correlation and Regression: These involve the use of econometric methods to determine the nature and degree of association between/among a set of variables. Econometrics, you may recall, is the use of economic theory, statistical analysis and mathematical functions to determine the relationship between a dependent variable (say, sales) and one or more independent variables (like price, income, advertisement etc.). The relationship may be expressed in the form of a demand function, as we have seen earlier. Such relationships, based on past data can be used for forecasting. The analysis can be carried with varying degrees of complexity. Here we shall not get into the methods of finding out 'correlation coefficient' or 'regression equation'; you must have covered those statistical techniques as a part of quantitative methods. Similarly, we shall not go into the question of economic theory. We shall concentrate simply on the use of these econometric techniques in forecasting. We are on the realm of multiple regression and multiple correlation. The form of the equation may be:

$$D_X = a + b_1 A + b_2 P_X + b_3 P_y$$

You know that the regression coefficients b_1, b_2, b_3 and b_4 are the components of relevant elasticity of demand. For example, b_1 is a component of price elasticity of demand. The reflect the direction as well as proportion of change in demand for x as a result of a change in any of its explanatory variables. For example, $b_2 < 0$ suggest that D_X and P_X are inversely related; $b_4 > 0$ suggest that x and y are substitutes; $b_3 > 0$ suggest that x is a normal commodity with commodity with positive income-effect. Given the estimated value of and b_i, you may forecast the expected sales (D_X), if you know the future values of explanatory variables like own price (P_X), related price (P_y), income (B) and advertisement (A). Lastly, you may also recall that the statistics R2 (Co-efficient of determination) gives the measure of goodness of fit. The closer it is to unity, the better is the fit, and that way you get a more reliable forecast. The principle advantage of this method is that it is prescriptive as well descriptive. That is, besides generating demand forecast, it explains why the demand is what it is. In other words, this technique has got both explanatory and predictive value. The regression method is neither mechanistic like the trend method nor subjective like the opinion poll method. In this method of

forecasting, you may use not only time-series data but also cross-section data. The only precaution you need to take is that data analysis should be based on the logic of economic theory.

Simultaneous Equations Method: Here is a very sophisticated method of forecasting. It is also known as the 'complete system approach' or 'econometric model building'. In your earlier units, we have made reference to such econometric models. Presently we do not intend to get into the details of this method because it is a subject by itself. Moreover, this method is normally used in macro-level forecasting for the economy as a whole; in this course, our focus is limited to micro elements only. Of course, you, as corporate managers, should know the basic elements in such an approach. The method is indeed very complicated. However, in the days of computer, when package programs are available, this method can be used easily to derive meaningful forecasts. The principle advantage in this method is that the forecaster needs to estimate the future values of only the exogenous variables unlike the regression method where he has to predict the future values of all, endogenous and exogenous variables affecting the variable under forecast. The values of exogenous variables are easier to predict than those of the endogenous variables. However, such econometric models have limitations, similar to that of regression method. Thus we may conclude that each and every method has its own merits and demerits and we need to bare in mind this when we select a particular tool.

2.8 REVIEW QUESTIONS

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1. How is Consumption different from demand?
2. Give some examples of exceptional demand curve and classify these commodities.
3. How is the slope of demand curve different from price elasticity of demand?
4. Why does the government prefer to levy an excise tax on commodities which are less elastic in demand?
5. Why are the market researchers interested in price elasticity of demand?
6. If you are the program manager, which concepts of elasticity do you need and why?

SUPPLY AND PRODUCTION ANALYSIS

Structure

3.1 The Principle of Supply

    3.1.1 Difference between Stock and Supply
    3.1.2 Factors on which Supply of Commodity Depends
    3.1.3 Law of Supply
    3.1.4 Elasticity of Supply

3.2 Aggregate Supply

3.3 Cost and Output Relationship

    3.3.1 Various Types of Cost
    3.3.2 Relationship between Production and Cost
    3.3.3 Short Run Cost Functions
    3.3.4 Long Run Cost Functions

3.4 Production Concept and Analysis

    3.4.1 Production Function
    3.4.2 Isoquants
    3.4.3 Total, Average and Marginal Products
    3.4.4 Elasticity of Production

3.5 Production Process

3.6 Review Questions

3.1 THE PRINCIPLE OF SUPPLY

Friends after knowing the meaning and purpose of demand and law of demand, elasticity of demand, I think you should know what supply is. Producers are going to produce on the basis of demand only. Goods are needed to be supplied to meet the demand for the product.

3.1.1 Difference between Stock & Supply

Like the term 'demand', the term 'supply' is also often misused in the ordinary language. Supply of a commodity is often confused with the 'stock' of that commodity available with the producers. Stock 'of a commodity, more or less, will equal the total quantity produced during a period less the quantity already sold out. But we know that the

producers do not offer whole of their stocks for sale in the market. A part of industrial produces is kept back in godowns and is offered for sale in the market when it can fetch better prices. In other words, the amount offered for sale may be less (or at the most in rare circumstances equal to) than the stocks of the commodity. The term 'supply' shows a relationship between quantity and price. By supply we mean various quantities of a commodity which producers will offer for sale at a particular time at various corresponding prices. In simple words, supply (like demand) refers to the quantity of commodity offered for sale at some price during a given period of time.

3.1.2 Factors on Which Supply of a Commodity Depends

It is also known as the determinants of supply. The Important determinants of supply can be grouped together in a supply function as follows:

$$S_N = f(P_N, P_R, F, T, G)$$

Supply function describes the functional relationship between supply of a commodity (say N) and other determinants of supply, i.e., price of the commodity (P_N), price of a related commodity (P_R), prices of the factors of production (F), technical know-ho" (T) and goals or general objectives of the Producer. Each of the_ factors influences supply in a different' way. To isolate the effect of other factors we take these other factors as constant while considering the relationship between supply and one of the above variables. For example, if we want to study the relationship between price and supply of commodity, N, we shall assume other factors P_R, F, T and G to remain constant or unchanged. We study below these relationships.

Price of the Commodity: This is expressed as S_N ft P_N, i. e. other things being equal, supply of commodity N depends upon the price of commodity N. This sort of relationship is studied in what has' come to be popularly known as the Law of Supply'. It implies that if the price of a commodity goes up, its supply shall expand and vice versa.

Prices of Related Goods: This is expressed as $S_N = f(P_R)$, i. e., other things being equal, supply of commodity N depends upon the prices of the related goods. If the price of a substitute goes up, producers would, be tempted to divert their available resources to the production of that substitute.

Prices of Factors of Production: This is expressed as S_N f(F), i, e, other things being equal, supply of a commodity depends upon the prices of factors of production. A rise in the price of one factor of production, will cause a consequent increase in the cost of producing those commodities which use a great deal of that factor and only a small increase in the costs of producing those commodities that use a small amount of the factor.

State of Technology: This is expressed as $S_N = f(T)$, i.e., the supply of a commodity depends upon the state of technology. Over the time the technical know-how changes. Goals of firms, expressed as S_N , i. e., other things being equal the supply of a commodity depends upon the, goals of firms producing that commodity. Ordinarily; every firm tries to attain maximum profits.

Natural Factors: The supply of the agricultural' goods to a great extent depends upon the natural conditions. Adequate rain, fertility of land irrigation facilities, favorable climatic conditions etc., help in raising the supply of agricultural produce. Contrary to that, heavy rains, floods, drought conditions, etc., adversely affect the agricultural production.

Means of Transportation and Communication: Proper development of means of transportation and communication helps in maintaining adequate supply of the commodities. In case of short Supply, goods can be rushed from the, surplus areas to the deficient areas. But if the developed means of transportation are used to export goods, it will create scarcity of goods .In the domestic market.

Taxation Policy: Imposition of heavy taxes on a commodity discourages its production, and as a remit its supply diminishes. On the other, hand, tax concessions of various kinds induce producers to raise the supply.

Future Expectations of Rise in Prices: If the producers expect, an increase in the price in the near future, then they will curtail the current supply, so as to offer more goods in future at higher prices.

3.1.3 Law of Supply

It's different from law of demand. Law of supply explains the relationship between price of a commodity and its quantity supplied. Price and supply are directly related. A rise in price induces producers to supply more quantity or the commodity and a fall Prices, makes them reduce the supply. The higher is the price of the commodity the larger is the profit that can be earned, and, thus the greater is the incentive to the producer to produce more of the commodity and offer It in the Market. Likewise at lower prices, profit margin shrinks and hence producers reduce the sale.

Supply Schedule and Supply Curve: Law of supply can be illustrated with the help of a, schedule and supply curve. A supply schedule is a tabular statement that gives a full account of supply of any given commodity in a given market at a given time. It states what the volume of goods offered for sale would be at each of a series of prices. Supply schedule is of two types:
- Individual Supply schedule,
- Market supply schedule.

Individual Supply Schedule: It states the quantities of a commodity a producer would offer for sale at various prices. Suppose M/s. A.B.C. Ltd. is willing to sell 10,000 units of their product per week at price of Rs- 4 each. If the price goes up to Rs. 5 each, they may be willing to sell 12,000 units, and at Rs. 6 each, 15,000 units. With the increase in price, the quantity supplied increases and vice versa. A market supply schedule furnishes exactly the same information.

A Market Supply Schedule: It is a given commodity is the sum of individual supply for all those firms which are engaged in the production of a given commodity during a given period. The market supply curve can be obtained by aggregating the individual supply curves of the commodity. The market supply curve also shows the same relationship between the price and the quantity supplied the quantity supplied increases proportionately with the increase in the/price

Activity
Qs=20p-100
So that at the price Rs. 10/ per unit quantity supplied equals 20 x 10 - 100=100 at the price Rs 9 per unit 80 units will be supplied; Similarly different quantities corresponding to different prices can be calculated.

Shift in Supply: Movement along the same supply curve represents contraction or expansion in supply as a result of a change in the price of a commodity. A shift in supply curve occurs when the producers are wi1ling to offer more or less of a commodity because of reasons other than the price of the commodity. For example, an innovation or the discovery of a cheap raw material may result in increased supplies of a given commodity. Increase in the supply of plastic footwear in recent years is glaring illustration. This change in supply which occurs because of a change in any of the determinants of supply, other than the price, is known as increase or decrease in supply. Increase in demand also increases the price the quantity sold and purchased also increases. Fall in demand brings down the equilibrium price and the quantity sold and purchased also declines.

Increase in Supply: Shift in the supply curve to the right (increase in supply) brings down the equilibrium price; the amount sold and purchased increases.

Activity:
Mathematically, the effect of the shift in demand can be presented as follows: Suppose, the original demand equation is Qd=110-lOp and, the original supply equation is Q=10p-l00. The equilibrium price and the equilibrium quantity will be 7 and 40 respectively. Suppose, the new demand equation, exhibiting an increases in demand is
Qd=140 - 10p and the supply equation remains unchanged. The new equilibrium will be determined as fol1ows:

140 - 10p=20p-100

Or

30p=240.

p=8
Substituting p=8 to either the demand or supply equation we get the equilibrium quantity as 60.

Mathematically, this effect can be shown as follows: Suppose the supply equation changes to Qs=20p – 40 and the demand equation remains unchanged Qd=110 - 10p

Shift in the supply curve to left (fall in supply) increases the equilibrium price. The quantity sold and purchased diminishes.

Simultaneous change in the Demand and the Supply: So far we have been discussing the effect of change either in demand or in supply on the equilibrium price and the quantity sold and purchased. It is also possible that demand and supply may change simultaneously. We may discuss the change in both the demand and the supply as follows:
- If the increase or decrease in the demand and the supply is pf equal magnitude, then the price at old and new equilibrium will remain equal.
- If the increase in the demand is of greater magnitude than in supply, then the new equilibrium price will be higher than the old equilibrium price, and vice versa.
- If the supply increases in greater proportion than the demand, the new equilibrium price will be lower than the old equilibrium price.

It may be observed in all the conditions that the price mechanism brings demand and supply in equilibrium.
The new equilibrium price will be
110-10p=20p-40
Or 30p= 150
Or p=5
Substituting p=5 in either of the equations we get the equilibrium quantity as 60, i.e. increase in supply leads to a fall in price, but the quantity demanded and supplied increase.

3.1.4 Elasticity of Supply
Like demand, quantity supplied of different commodities responds in different proportions to the price changes. For example, if the price of wheat rises the farmers may be tempted to sell more in the market, and keep less for themselves. On the other hand, if the price of cars rises, the car manufacturers may not probably be in a position to offer more cars for sale, because they may not be keeping stocks of cars. Similarly, supply of cloth may increase in response to the increase in prices and so on. Elasticity of supply of a commodity measures changes in the quantity supplied as a result of a change in the price of commodity. Elasticity of supply is measured as a percentage change in amount supplied divided by the percentage change in price of the commodity. In short,

Es= Percentage change in quantity supplied.
        Percentage change in price

Es= $(\Delta q / q) \times (p / \Delta p)$ OR $(\Delta q/\Delta p) \times (p/q)$

Where p and q are the original price and quantity supplied respectively, and Δp and Δq the change in price and quantity supplied. This method of measurement of the elasticity of supply can be illustrated as follows:

Suppose, a producer is willing to supply 100 quintals of wheat at the price of Rs. 110 per

quintal if the price increases to Rs. 120 per quintal, he is willing to supply 25 quintals of wheat. Calculate the elasticity of supply of wheat. Elasticity of supply of wheat will be calculated as fol1ows:

$Es = (\Delta q/\Delta p) \times (p/q) = (25/10) \times (110/100) = 2.75$

Es=2.75 will mean that if the price of wheat goes up by one per cent supply of wheat will increase by 2.75 per cent. The value of elasticity coefficient varies between zero and infinity. The various results are tabulated below:

Elasticity of Supply

	Elasticity	Terminology	Description
1.	Es=Zero	Perfectly inelastic	Quantity supplied does not change.
2.	Es<l	Less than unit elastic or inelastic	Quantity supplied changes by a smaller percentage change than price.
3.	Es=l	Unit elastic	Quantity supplied changes in the same proportion as price.
4.	Es>l	More than unit elastic	
5.	Es	Perfectly elastic	

Factors Influencing Elasticity of Supply: Elasticity of supply depends upon a number of factors, some of which are as follows:

Nature of the Commodity: The first and foremost determinant of the elasticity of supply is the nature of the commodity. Commodities on the basis of their nature can be classified as (i) Perishable (ii) Durable. Perishable products cannot be stored, and hence their supply does not respond in an effective manner to the change in their price. Hence, their supply is inelastic in nature. Durable products, on the other hand, can be stored; hence, their supply is generally elastic, i.e., 'supply responds to the change in prices.

Time: Supply of a commodity, in the ultimate analysis, depends upon its production. Production always involves a time-lag which may. vary from a few days 10 a few years, Moreover, increased production of a commodity may contemplate a change in the very size (If the plant, which in turn may be a long, time-consuming process. Hence, supply of a commodity may be less elastic in the short run, as time progresses supply may become more elastic.

Techniques of Production: Simple techniques of production are, by and large, less expensive in nature, if demand conditions so require, the production and the supply of

such commodities as involve simple: techniques of production could be easily increased. In other words, supply of such like commodities is generally elastic in nature, on the other hand, if the technique of production of a commodity is cumbers me, complex and time-consuming in nature it may not be possible to change the supply in response to varying price-demand conditions. Supply of such commodities would generally be Jess elastic,

Estimates of Future Prices: Future expectations of price changes may also include supply of a commodity. If the producers expect the prices to, rise in future they may hold on to the stocks or the commodities and

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3.2 AGGREGATE SUPPLY

When an entrepreneur gives employment to certain amount of labor, it requires certain quantities of cooper ant factors like land, capital, raw material, etc. which will be paid remuneration along with labor. Thus each level of employment involves certain money costs of production including normal profits which/ the entrepreneur must cover. "At any given level of employment of labor aggregate supply price' is the total amount of money which all the entrepreneurs in the economy, taken together, must expect to receive from the sale of the output produced by that given number of men, if it is to be just worth employing them." If brief, the aggregate supply price refers to the proceeds necessary from the sale of output at a particular level of employment. Thus each level of employment in the economy is related to a particular aggregate supply price and there are different aggregate supply prices for different levels of employment.

A statement showing the various aggregate supply prices at different levels of employment is called the aggregate supply price schedule or aggregate supply function. In the words of Prof. Dillard, "The aggregate supply function is a schedule of the minimum amounts of proceeds required to induce varying quantities of employment;" The Table below shows the aggregate supply schedule.

Aggregate Supply Schedule

Level of Employment (N) (in lakh)	Aggregate Demand Price (Z) (Rs. crore)
20	215
25	230
30	245
35	260
40	275
40	290
40	305

The above table reveals that the aggregate supply price rises with the increase in the level of employment. If the entrepreneurs are to provide employment to 20 lakh workers, they must receive Rs 215 crore from the sale of the output produced by them. It is only when

they expect to receive the minimum amounts of proceeds (Rs. 230 crore, Rs 245 crore and Rs. 260 crore) that they will provide-employment to more workers (25 lakh, 30 lakh and 35 lakh respectively). But when the economy reaches the level of full employment (at 40 lakh workers) the aggregate supply price (Rs. 275,290 and 305 crore) continues to increase but there is no further increase in employment. According to Keynes, the aggregate 'supply' function is an increasing function of the level of employment and is expressed. As $Z = \phi N$, where Z is aggregate supply price of the output from employing new men.

The aggregate supply curve can be drawn on the basis of the schedule. It slopes upward from left to right because as the necessary expected proceeds increase, the level of employment also rises. But when the economy reaches the level of full employment, the aggregate supply curve becomes vertical. Even with the increase in the aggregate; supply price, it is not possible to provide more employment as the, economy has attained the level of full employment.

Determination of Effective Demand: We have studied the two determinants of effective demand separately and now are in a position to analyze the process of determining the level of employment in the economy. The level of employment is determined at the point where the aggregate demand price equals the aggregate supply price; In other words, it is the point where what die entrepreneurs expect to receive equals what they must receive and their profits are maximized. This point is called the effective demand and here the entrepreneurs earn normal profits so long as the aggregate demand price is higher than the aggregate supply price, the prospects of getting additional profits are greater when more workers are provided employment. The proceeds expected (revenue) rise more than the proceeds necessary (costs). This process will continue till the aggregate demand price equals the aggregate supply price and the point of effective demand are reached. This point determines the level of employment and output in the economy. The point of effective demand is, however, not necessarily one of full employment but of underemployment equilibrium. If the entrepreneurs try to provide more employment after this point, the aggregate supply, price exceed the aggregate demand price indicating that the total costs are higher than the total, revenue and there are losses. So the entrepreneurs will not employ workers beyond the point of effective demand till the aggregate demand price rises to meet the aggregate supply price at the, new equilibrium point which may be one of full employment. If the aggregate demand price is raised still further, it will lead to inflation for no increase in employment and output is possible beyond the level of full employment.

The following table below explains the determination of the point of effective demand. It shows that so long as the aggregate demand price is higher than the aggregate supply price, it is profitable for the entrepreneurs to employ more workers, when the entrepreneurs expect to receive , Rs 230 crore, Rs 240 crore and Rs. 250 crore than the proceeds necessary amounting to Rs 215 crore, Rs 23P crore and Rs 245 crore, they will provide increasing employment to 20 lakh, 25 lakh and 30 lakh workers respectively: But when the proceeds necessary and proceeds expected equal Rs. 260 crore the level of employment, rises to 35 lakhs. This is the point of effective demand. If we assume the

level of full employment to be 40 lakh workers in the economy, it will necessitate the drawing up of a new aggregate demand price schedule as shown in Table III last column. As a result, the new point of effective demand is 40 lakh workers because both the aggregate demand price and the aggregate supply price equal Rs. 275 crore. Beyond this point there is no change in the level of employment which is steady at 40 lakh workers.

Schedule of Aggregate Demand and Aggregate Supply Prices

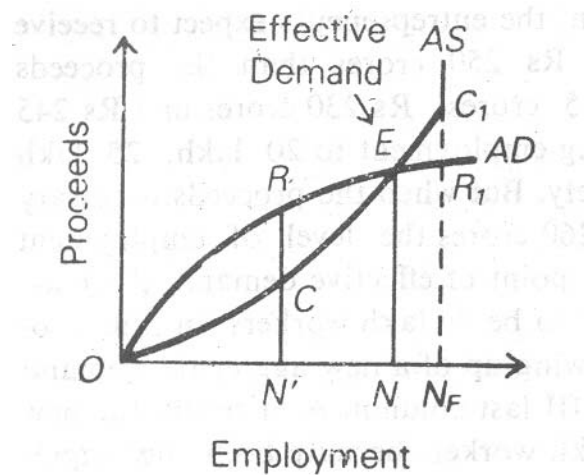| Level of Employment (N) (in lakhs)	Aggregate Supply Price (Z) (Rs. crore)	Aggregate Demand Price (D) (Rs. crore)	
		Old	New
20	215	230	235
25	230	240	245
30	245	250	255
35	260	260	265
40	275	270	275
40	290	280	285
40	305	290	295

Fig 3.1 Determination of Effective Demand

The above Figure illustrates the where AD is the aggregate demand function and AS the aggregate supply function. The horizontal axis measures the level of employment in the economy and the vertical axis the proceeds expected (revenue) and the proceeds necessary (costs). The two curves AD and AS intersect each other at point E. This is effective demand where ON workers are employed. At this point the entrepreneurs expectations of profits are maximized. At any point other than this, the entrepreneurs will either incur losses or earn subnormal profits. At ON level of employment the proceeds expected (revenue) are more than the proceeds necessary (costs), i.e., RN'> CN'. This indicates that is profitable for the entrepreneurs to provide increasing employment to

workers till ON level is reached where the proceeds expected and necessary equal at point E. It would not be; however, profitable for the entrepreneurs to increase employment beyond this to N_f level because the proceeds necessary (costs) exceed the proceeds expected (revenue), i.e., $C_fN_f > R_1N_f$ and they incur losses. Thus E, the point of effective demand determines the actual level or employment in the economy which is of underemployment equilibrium.

Of the two, determinants of effective demand, Keynes regard the aggregate supply function to be given because, it depends on the technical conditions of production, the availability of raw materials, machines etc. which do not change in the short run. It is therefore the aggregate demand function which plays a vital role in determining the level. of employment in the economy. According to Keynes, the aggregate demand function depends on the consumption function and investment function. The cause of unemployment may be a fall in either consumption expenditure or investment expenditure, or both. The level of employment can be raised by increasing either consumption expenditure or investment expenditure, or both. Thus, it is the aggregate demand function which is the "effective" element   in the principle of effective demand. Prof. Dillard regards this Employment as the core of the principle of effective demand.

Importance of Effective Demand: The principle of effective demand is the most important contribution of Keynes. It is the soul of the Keynesian theory of employment. Dr Klein attributes the Keynesian revolution solely to the development of a theory of effective demand.

Determinant of Employment: Effective demand determines the level of employment in the economy. When effective demand increases, employment also increases, and a decline in effective demand decreases the level of employment Thus unemployment is caused by a deficiency of effective demand. Effective demand represents the total expenditure on the total output produced at an equilibrium level of employment. It indicates the value, of total output which equals national income. National income equals national expenditure. National expenditure consists of expenditure on consumption goods and investment goods. Thus the main determinants of effective demand and the level of employment arc consumption and investment. In brief,

Effective Demand=Value of National Output=Volume of Employment=National income=National Expenditure=Expenditure on consumption goods +Expenditure on investment goods.

In the Keynesian analysis of effective demand consumption and investment expenditures relate +0to the private sector because Keynes considers government expenditure as autonomous. But the post-Keynesian economists include government expenditure as a component of effective demand. Thus, effective demand (D) = Private consumption expenditure (C) + Private investment (l) + Government expenditure (C) on both. We may conclude that the importance of the principle of effective demand lies in pointing out the cause and remedy of unemployment. Unemployment is caused by a deficiency of effective demand and it can be removed by an increase in consumption expenditure

or/and investment expenditure and in case the private expenditures and insufficient and ineffective in bringing about the required level of employment, the same can be achieved by government expenditure. Thus the principle of effective demand is the basis of the theory of employment.

Repudiation of Say's Law and Full employment Thesis: The principle of effective demand repudiates Say's Law of Market that supply creates its own demand and that full employment equilibrium is a normal situation in the economy. This principle points out that underemployment equilibrium is a normal situation and full employment equilibrium is accidental. In a capitalist economy supply fails to create its own demand because the whole of the earned income is not spent on the consumption of goods and services. Moreover the decisions to save and invest are made by different people. As a result the existence of full employment is not a possibility and the point of effective demand at any time represents underemployment equilibrium. The Pigovian view that full employment can be achieved by a reduction in money wage-cut is also repudiated by this principle. A money wage-cut will bring about a reduction in expenditure on goods and services leading to a fall ineffective demand and hence in the level of employment. Thus the importance of this principle lies in repudiating Say's Law and the classical thesis of full employment equilibrium.

Role or Investment: The principle of effective demand highlights the significant role of investment in determining the level of employment in the economy. The two determinants of effective demand are the consumption and investment expenditures. When income increases consumption expenditure also increases but by less than the increase in income. Thus there arises a gap-between incofl1e and consumption which leads to decline in the volume of employ men. This gap can be bridged by an increase fin either consumption expenditure or investment expenditure in order, to achieve full employment level of effective demand in the, economy. Since the propensity to consume is stable during the, short run, it is not possible to raise the consumption expenditure. Therefore, the level of effective demand and, hence of employment can be, raise by, increase in investment. In this lies the importance of investment.

The Paradox of Poverty in the Midst of Potential Plenty: The importance of effective demand lies in explaining the paradox of poverty in the midst of potential plenty in the modern capitalism effective demand is mainly determined by the aggregate demand function which is composed of consumption expenditure and investment expenditure. A fundamental principle is that when income increases consumption also increases but less than proportionately (i.e., the marginal propensity to consume is less than one). This creates a gap between income and consumption which must be filled up by the required investment expenditure. If the appropriate investment is not forthcoming to fill this gap, it leads to a deficiency of effective demand resulting in unemployment. It follows that in a poor community, the gap between income and consumption is small because the marginal propensity to consume is high. It will, therefore, have little difficulty in employing all its resources by filling the gap through small investment, expenditure.

On the contrary, in a wealthy community the gap between income and consumption is very large because the marginal propensity to consume is low. It will, therefore, require large investment expenditure to fill the gap between income and consumption in order to maintain a high level of income and employment. But in a rich community investment demand is not adequate to fill this gap and there emerges a deficiency of aggregate demand resulting in widespread unemployment. When the aggregate demand falls the potential wealthy community will be forced to reduce its actual Output until it becomes so poor that the excess of output over consumption-will be reduced to the actual amount of investment. Further, in such a community there is an accumulated stock of capital assets which weakens the inducement to invest because every new investment competes with an already existing large supply of old capital assets. This inadequacy of investment demand reacts in a cumulative manner on the demand for consumption and will, in turn, lead to a further fall in employment, output and income. Thus as Keynes said, "The richer the community, the more obvious and outrageous the defects of the economic system that lead to unemployment on a mass scale in the midst of potential plenty because of the deficiency of effective demand."

3.3 COST AND OUTPUT RELATIONSHIP

Now you will also come to know about cost and output relationship. Cost and revenue are the two major factors that a profit maximizing firm needs to monitor continuously. It is the level of cost relative to revenue that determines the firm's overall profitability. In order to maximize profits, a firm tries to increase its revenue and lower its cost. While the market factors determine the level of revenue to a great extent, the cost can be brought down either by producing the optimum level of output using the least cost combination of inputs, or increasing factor productivities, or by improving the organizational efficiency. The firm's output level is determined by its cost. The producer has to pay for factors of production for their services. The expenses incurred on these factors of production are known as the cost of production, or in short cost. Product prices are determined by the interaction of the forces of demand and supply.

The basic factor underlying the ability and willingness of firms to supply a product in the market is the cost of production. Thus, cost of production provides the floor to pricing. It is the cost that forms the basis for many managerial decisions like which price to quote, whether to accept a particular order or not, whether to abandon or add a product to the existing product line, whether or not to increase the volume of output, whether to use idle capacity or rent out the facilities, whether to make or buy a product, etc. However, it is essential to underline here that all costs are not relevant for every decision under consideration.

The purpose of this topic is to explore cost and its relevance to decision-making. We begin by developing the important cost concepts, an understanding of which can aid managers in making correct decisions. We shall examine the difference between economic and accounting concepts of costs and profits. We shall then consider the concepts of short-run and long-run costs and show that they, in conjunction with the

concepts of production studies in the preceding unit, can give us a more complete understanding of the applications of cost theory to decision-making.

3.3.1 Various Types of Costs

There are different types of costs that a firm may consider relevant for decision-making under varying situations. The manner in which costs are classified or defined is largely dependent on the purpose for which the cost data are being outlined.

Explicit and Implicit Costs: The opportunity cost (or cost of the foregone alternative) of a resource is a definition cost in the most basic form. While this particular definition of cost is the preferred baseline for economists in describing cost, not all costs in decision-making situations are completely obvious; one of the skills of a good manager is the ability to uncover hidden costs for dissimilar purposes. Traditionally, the accountants have been primarily connected with collection of historical cost data for use in reporting a firm's financial behavior and position and in calculating its taxes. They report or record what was happened, present information that will protect the interests of various shareholders in the firm, and provide standards against which performance can be judged. All these have only indirect relationship to decision-making. Business economists, on the other hand, have been primarily concerned with using cost data in decisions making. These purposes call for different types of cost data and classification.

For example, the opportunity cost of a student's doing a full time MBA could be the income that he would have earned if he had employed his labor resources on a job, rather than spending them in studying managerial economics, accounting, and so on. The time cost in money terms can be referred to as implicit cost of doing an MBA. The out-of-pocket costs on tuition and teaching materials are the explicit costs that a student incurs while attending MBA. Thus, the total cost of doing an MBA to a student is implicit costs (opportunity cost) plus the explicit (out-of-pocket) costs.

Direct and Indirect Costs: There are some costs which can be directly attributed to production of a given product. The use of raw material, labor input, and machine time involved in the production of each unit can usually be determined. On the other hand, there are certain costs like stationery and other office and administrative expenses, electricity charges, depreciation of plant and buildings, and other such expenses that cannot easily and accurately be separated and attributed to individual units of production, except on arbitrary basis. When referring to the separable costs of first category accountants call them the direct, or prime costs per unit. The joint costs of the second category are referred to as indirect or overhead costs by the accountants. Direct and indirect costs are not exactly synonymous to what economists refer to as variable costs and fixed costs.

Private Costs versus Social Costs: Private costs are those that accrue directly to the individuals or firms engaged in relevant activity. External costs, on the other hand, are passed on to persons not involved in the activity in any direct way (i.e., they are passed on to society at large). While the private cost to the firm of dumping is zero, it is

definitely positive to the society. It affects adversely the people located down current who are adversely affected and incur higher costs in terms of treating the water for their use, or having to travel a great deal to fetch potable water. If these external costs were included in the production costs of the producing firm a true picture of real or social costs of the output would be obtained. Ignoring external costs may lead to an inefficient and undesirable allocation of resources in society.

Relevant Costs and Irrelevant Costs: The relevant costs for decision-making purposes are those costs which are incurred as a result of the decision under consideration and which are relevant for the business purpose. The relevant costs are also referred to as the incremental costs. There are three main categories of relevant or incremental costs. These are the present-period explicit costs, the opportunity costs implicitly involved in the decision, and the future cost implications that flow from the decision. For example, direct labor and material costs, and changes in the variable overhead costs are the natural consequences of a decision to increase the output level. Many decisions will have implications for future costs, both explicit and implicit. If a firm expects to incur some costs in future as a consequence of the present analysis, such future costs should be included in the present value terms if known for certain.

Economic Costs and Profits: Accounting profits are the firm's total revenue less its explicit costs. But according to economists profit is different. Economic profits are total revenue less all costs (explicit and implicit, the latter including a normal profit required to retain resources in a given line of production). Therefore, when an economist says that a firm is just covering its costs. It is meant that all explicit and implicit costs are being met, and that, the entrepreneur is receiving a return just large enough to retain his or her talents in the present line of production. If a firm's total receipts exceed all its economic costs, the residual accruing to the entrepreneur is called an economic or pure profit. In short:

Economic Profit = Total Revenue - Opportunity Cost of all Inputs

This is depicted in the following Table:

	Economic Profits	**Accounting Profit**
Total Revenue	Economic or Opportunity Cost (Explicit plus implicit costs, including a normal profit)	Accounting Costs

An economic profit is not a cost, because by definition it is a return in excess of the normal profit required to retain the entrepreneur in a particular line of production.

Separable and Common Costs: Costs can also be classified on the basis of their tractability. The costs that can be easily attributed to a product, a division, or a process are called separable costs, and the rest are called non-separable or common costs. The

separable and common costs are also referred to as direct and indirect costs. The distinction between direct and indirect costs is of particular significance in a multi-product firm for setting up economic prices for different products.

Fixed and Variable Costs: Fixed costs are those costs which in total do not vary with changes in output. Fixed costs are associated with the very existence of a firm's rate of output is zero. Such costs as interest on borrowed capital, rental payments, a portion of depreciation charges on equipment and buildings, and the salaries of top management and key personnel are generally fixed costs. On the other hand, variable costs are those costs which increase with the level of output. They include payment for raw materials, charges on fuel and electricity, wages and salaries of temporary staff, depreciation charges associated with wear and tear of this distinctions true only for the short-run. It is similar to the distinction that we made in the previous unit between fixed and variable factors of production under the short-run production analysis. The costs associated with fixed factors are called the fixed costs and the ones associated with variable factors, the variable costs. Thus, if capital is the fixed factor, capital rental is taken as the fixed cost and if labor is the variable factor, wage bill is treated as the variable cost.

3.3.2 Relationship between Production and Costs
The cost is closely related to production theory. A cost function is the relationship between a firm's costs and the firm's output. While the production function specifies the technological maximum quantity of output that can be produced from various combinations of inputs, the cost function combines this information with input price data and gives information on various outputs and their prices. The cost function can thus be thought of as a combination of the two pieces of information i.e., production function and input prices.

Now consider a short-run production function with only one variable input. The output grows at an increasing rate in the initial stages implying increasing retunes to the variable input, and then diminishing returns to the variable input start. Assuming that the input prices remain constant, the above production function will yield the variable cost function which has a shape that is characteristic of much variable cost function increasing at a decreasing rate and then increasing at an increasing rate.

Relationship between average product and average costs, and marginal product and marginal costs for example:

TVC = Prices of Accuring Variable Factors of Production $= (Pr.V)$

$$\therefore AVC = \frac{TVC}{Q} = Pr.\frac{V}{Q} = \frac{Pr}{Q/V}$$

and $MC = \frac{\Delta TC}{\Delta Q}$

where Pr stands for the price of the variable factor and V stands for amount of variable factor.

You may note that Pr being given, AVC is inversely related to the average product of the variable factors. In the same way, given the wage rage, MC is inversely related to the marginal product of labor. We shall explore this relationship in greater detail subsequently.

3.3.3 Short-Run Cost Functions

During short run some factors are fixed and others are variable. The short-run is normally defined as a time period over which some factors of production are fixed and others are variable. Needless to emphasize here that these periods are not defined by some specified length of time but, rather, are determined by the variability of factors of production. Thus, what one firm may consider the long-run may correspond to the short-run for another firm. Long run and short run costs of every firms varies.

In the short-run, a firm incurs some costs that are associated with variable factors and others that result from fixed factors. The former are called variable costs and the latter represent fixed costs. Variable costs (VC) change as the level of output changes and therefore can be expressed as a function of output (Q), that is VC = f (Q). Variable costs typically include such things as raw material, labor, and utilities. In Column 3 of Table 1, we find that the total of variable costs changes directly with output. But note that the increases in variable costs associated with each one-unit increase in output are not constant. As production begins, variable costs will, for a time, increase by a decreasing amount, this is true through the fourth unit of the output. Beyond the fourth unit, however, variable costs rise by increasing amount for each successive unit of output. The explanation of this behavior of variable costs lies in the law of diminishing returns.

The following table will give you an idea about all

Table : Total and Average-Cost Schedules for an Individual Firm in the Short-Rum (Hypothetical Data in Rupees)

Total cost data, per week				Average-cost data, per week			
(1) Total Product	(2) Total Fixed Cost (TFC)	(3) Total variable cost (TVC)	(4) Total cost (TC) TC = TFC + TVC	(5) Average fixed cost (AFC) AFC = TFC/Q	(6) Average variable cost (AVC) AVC = TVC/Q	(7) Average total cost (ATC) ATC = TC/Q	(8) Marginal cost (MC) MC = change in TC / change in Q
0	100	0	100				
1	100	90	190	100.00	90.00	190.00	90
2	100	170	270	50.00	85.00	135.00	80
3	100	240	340	33.33	80.00	113.33	70
4	100	300	400	25.00	75.00	100.00	60
5	100	370	470	20.00	74.00	94.00	70
6	100	450	550	16.67	75.00	91.67	80
7	100	540	640	14.29	77.14	91.43	90

8	100	650	750	12.50	81.25	93.75	110
9	100	780	880	11.11	86.25	97.78	130
10	100	930	1030	10.00	86.67	103.00	150
					93.00		

Total Cost: Total cost is the sum of fixed and variable cost at each level of output. It is shown in column 4 of Table-1. At zero unit of output, total cost is equal to the firm's fixed cost. Then for each unit of production (through 1 to 10), total cost varies at the same rate as does variable cost.

Per Unit, or Average Costs: Besides their total costs, producers are equally concerned with their per unit, or average costs. In particular, average cost data is more relevant for making comparisons with product price,

Average Cost:
AC   =TC/Q
Where   TC =total cost;
        AC = average cost
        Q = quantity

Average Fixed Costs: Average fixed cost (AFC) is derived by dividing total fixed cost (TFC) by the corresponding output (Q). That is

$$AFC = \frac{TFC}{Q}$$

While total fixed cost is, by definition, independent of output, AFC will decline so long as output increases. As output increases, a given total fixed cost of Rs. 100 is obviously being spread over a larger and larger output. This is what business executives commonly refer to as 'spreading the overhead'. We find in Figure-III that the AFC curve is continuously declining as the output is increasing. The shape of this curve is of an asymptotic hyperbola.

Average Variable Costs: Average variable cost (AVC) is found by dividing total variable cost (TVC) by the corresponding output (Q):

$$AVC = \frac{TVC}{Q}$$

AVC declines initially, reaches a minimum, and then increases again,

AFC + AVC = ATC

$$\frac{\Delta ATC}{} = MC$$

ΔQ

Average Total Costs
Average total cost (ATC) can be found by dividing total cost (TC) by total output (Q) or, by adding AFC and AVC for each level of output. That is:

$$ATC = \frac{TC}{Q} = AFC + AVC$$

Marginal Cost
Marginal cost (MC) is defined as the extra, or additional, cost of producing one more unit of output. MC can be determined for each additional unit of output simply by noting the change in total cost which that unit's production entails:

$$MC = \frac{\text{Change in TC}}{\text{Change in Q}} = \frac{\Delta TC}{\Delta Q}$$

The marginal cost concept is very crucial from the manager's point of view. Marginal cost is a strategic concept because it designates those costs over which the firm has the most direct control. More specifically, MC indicates those costs which are incurred in the production of the last unit of output and therefore, also the cost which can be "saved" by reducing total output by the last unit. Average cost figures do not provide this information. A firm's decisions as to what output level to produce is largely influenced by its marginal cost. When coupled with marginal revenue, which indicates the change in revenue from one more or one less unit of output, marginal cost allows a firm to determine whether it is profitable to expand or contract its level of production.

Relationship of MC to AVC and ATC: It is also notable that marginal cost cuts both AVC and ATC at their minimum when both the marginal and average variable costs are falling, average will fall at a slower rate. And when MC and AVC are both rising, MC will rise at a faster rate. As a result, MC will attain its minimum before the AVC. In other words, when MC is less than AVC, the AVC will fall, and when MC exceeds AVC, AVC will rise. This means that so long as MC lies below AVC, the latter will fall and where MC is above AVC, AVC will rise. Therefore, at the point of intersection where MC=AVC, AVC has just ceased to fall and attained its minimum, but has not yet begun to rise. Similarly, the marginal cost curve cuts the average total cost curve at the latter's minimum point. This is because MC can be defined as the addition either to total cost or to total cost or to total variable cost resulting from one more unit of output. However, no such relationship exists between MC and the average fixed cost, because the two are not related; marginal cost by definition includes only those costs which change with output and fixed costs by definition are independent of output.

Managerial Uses of the Short-Run Cost Concepts: As already emphasized the relevant costs to be considered for decision-making will differ from one situation to the other

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depending on the problem faced by the manager. In general, the total cost concept is quite useful in finding out the break-even quantity of output. The total cost concept is also used to find out whether firm is making profits or not. The average cost concept is important for calculating the per unit profit of a business firm. The marginal and incremental cost concepts are essential to decide whether a firm should expand its production or not.

3.3.4 Long-Run Cost Functions

Long-run total costs curves are derived from the long-run production functions in which all inputs are variable. Such a production function is represented by the five asquint curves showing five different levels of output. The five cost curves tangent to these is equates at the points A, B, C, D and E represent total cost on resources. Since the cost per unit of capital (v) and, labor (w) are assumed to be constant, these five cost curves are parallel to one another, and the distance between them is constant along the expansion path traced out by A, B, C, D and E.

Unit Costs in the Long-Run: In the long-run, costs are not divided into fixed and variable components; all costs are variable. Thus, the only long-run unit cost functions of interest are long-run average cost (LAC) and long-run marginal cost (LMC). These are defined as follows:

$$LAC = \frac{LTC}{Q} \quad ; \quad LMC = \frac{\Delta LTC}{\Delta Q} \quad ; \quad LMC = \frac{d(LTC)}{dQ}$$

For the long-run total cost, these unit costs can be presented in tabular form as follows:

Output Q	Long Run Total Cost (LTC)	Long Run Average Cost (LAC)	Long Run Marginal Cost (LMC)
0	0	--	--
50	150	3.00	3.00
125	200	1.60	0.67
250	250	1.00	0.67
300	300	1.00	1.00
325	350	1.08	2.00

3.4 PRODUCTION CONCEPT AND ANALYSIS

The basis function of a firm is that of readying and presenting a product for sale-presumably at a profit. Production analysis related physical output to physical units of factors of production. In the production process, various inputs are transformed into some form of output. Inputs are broadly classified as land, labor, capital and entrepreneurship (which embodies the managerial functions of risk taking, organizing, planning, controlling and directing resources). In production analysis, we study the least-cost

combination of factor inputs, factor productivities and returns to scale. Here we shall introduce several new concepts to understand the relationship involved in the production process. We are concerned with economic efficiency of production which refers to minimization of cost for a given output level. The efficiency of production process is determined by the proportions in which various inputs are used, the absolute level of each input and productivity of each input at various levels. Since inputs have a cost attached, the degree of efficiency in production gets translated into a level of costs per units of output.

Why to Study Production?
When making the decision of what to produce and what not to produce, the study of production is needed. The discussion in this lesson covers decision rules for determining the quantity of various inputs to produce a firm's output under different circumstances. It also develops a basis upon which firm's costs can be constructed. After all, a firm incurs costs because it must pay for productive factors. Thus an understanding of production helps provide a foundation for the study of cost. Business firms produce goods or service as a means to an end. Besides meeting of final consumer needs, the end objective of a firm may be to maximize profits, to gain or maintain market share, to achieve a target return on investment, or any combination there of. In case of public goods, the objective may be to provide a particular service, such as education and health, within the bounds of a budget constraint. In other words, a firm attempts to combine various inputs in such a way that minimum resources are committed to produce a given product or that maximum production results from a given input. To achieve this, persons in the decision-making position should have a basis understanding of the process of production, and also the time perspective of production.

3.4.1 Production Function
A production function expresses the technological or engineering relationship between the output of product and its inputs. In other words, the relationship between the amount of various inputs used in the production process and the level of output is called a production function. Traditional economic theory talks about land, labor, capital and organization or management as the four major factors of production. Technology also contributes to output growth as the productivity of the factors of production depends on the state of technology. The point which needs to be emphasized here is that the production function describes only efficient levels of output; that is the output associated with each combination of inputs is the maximum output possible, given the existing level of technology. Production function changes as the technology changes.

Production function is represented as follows: $Q = f (f1, f2 \ldots \ldots f\ n)$; Where f1, f2,…..fn are amounts of various inputs such as land, labor, capital etc., and Q is the level of output for a firm. This is a positive functional relationship implying that the output varies in the same direction as the input quantity. In other words, if all the other inputs are held constant, output will go up if the quantity of one input is increased. This means that the partial derivative of Q with respect to each of the inputs is greater than zero. However, for a reasonably good understanding of production decision problems, it is convenient to work with two factors of production. If labor (L) and capital (K) are the

only two factors, the production function reduces to: Q=f (K, L). From the above relationship, it is easy to infer that for a given value of Q, alternative combinations of K and L can be used. It is possible because labor and capital are substitutes to each other to some extent. However, a minimum amount of labor and capital is absolutely essential for the production of a commodity. Thus for any given level of Q, an entrepreneur will need to hire both labor and capital but he will have the option to use the two factors in any one of the many possible combinations. For example, in an automobile assembly plant, it is possible to substitute, to some extent, the machine hours by man hours to achieve a particular level of output (no. of vehicles). The alternative combinations of factors for a given output level will be such that if the use of one factor input is increased, the use of another factor will decrease, and vice versa.

3.4.2 Isoquants

Isoquants are a geometric representation of the production function. It is also known as the Iso Product curve. As discussed earlier, the same level of output can be produced by various combinations of factor inputs. Assuming continuous variation in the possible combination of labor and capital, we can draw a curve by plotting all these alternative combinations for a given level of output. This curve which is the locus of all possible combinations is called Isoquants or Iso-product curve. Each Isoquants corresponds to a specific level of output and shows different ways all technologically efficient, of producing that quantity of outputs. The Isoquants are downward slopping and convex to the origin. The curvature (slope) of an Isoquants is significant because it indicates the rate at which factors K&L can be substituted for each other while a constant level of output of maintained. As we proceed north-eastward from the origin, the output level corresponding to each successive isoquant increases, as a higher level of output usually requires greater amounts of the two inputs. Two Isoquants don't intersect each other as it is not possible to have two output levels for a particular input combination.

Marginal Rate if Technical Substitution: It can be called as MRTS. MRTS is defined as the rate at which two factors are substituted for each other. Assuming that 10 pairs of shoes can be produced in the following three ways.

Q	K	L
10	8	2
10	4	4
10	2	8

We can derive the MRTS between the two factors by plotting these combinations along a curve (Isoquant).

Measures of Production: The measure of output represented by Q in the production function is the total product that results from each level of input use. For example, assuming that there is only one factor (L) being used in the production of cigars, total output at each level of labor employed could be:

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Labor (L)	Output(Q)	Labor(L)	Output(Q)
1	3	8	220
2	22	9	239
3	50	10	246
4	84	11	238
5	121	12	212
6	158	13	165
7	192	14	94

The total output will be 220 cigars if we employed 8 units of labor. We assume in this example, that the labor input combines with other input factors of fixed supply and that the technology is a constant. In additional to the measure of total output, two other measures of production i.e. marginal product and average product, are important to understand.

3.4.3 Total, Average and Marginal Products

This has reference to the fundamental concept of marginalize. From the decision making point view, it is particularly important to know how production changes as a variable input are changed. For example, we want to know if it would be profitable to hire an additional unit of labor for some additional unit of labor for some additional productive activity. For this, we need to have a measure of the rate of change in output as labor is increased by one unit, holding all other factors constant. We call this rate of change the marginal product of labor. In general, the marginal product (MP) of a variable factor of production is defined as the rate of change in total product (TP or Q). Here the output doesn't increase at constant rate as more of any one input is added to the production process. For example, on a small plot of land, you can improve the yield by increasing the fertilizer use to some extent. However, excessive use of fertilizer beyond the optimum quantity may lead to reduction in the output instead of any increase as per the Law of Diminishing Returns. (For instance, single application of fertilizers may increase the output by 50 per cent, a second application by another 30 per cent and the third by 20 per cent. However, if you were to apply fertilizer five to six times in a year, the output may drop to zero).

Average Product: Often, we also want to know the productivity per worker, per kilogram of fertilizer, per machine, and so on. For this, we have to use another measure of production: average product. The average Product (AP) of a variable factor of production is defined as the total output divided by the number of units of the variable factor used in producing that output. Suppose there are factors (X1, X2…….Xn), and the average product for the ith factor is defined as: $APi = TP/Xi$. This represent the mean (average) output per unit of land, labor, or any other factor input. The concept of average product has several uses. For example, whenever inter-industry comparisons of labor productivity are made, they are based on average product of labor. Average productivity of workers is important as it determines, to a great extent, the competitiveness of one's products in the markets.

Marginal Average and Total Product: A hypothetical production function for shoes is presented in the Table below with the total average, the marginal products of the variable factor labor. Needless to say that the amount of other inputs and the state of technology are fixed in this example.

Labor Input (L)	Total Output (TP) (AP = TP/L)	Average Products $MP = \dfrac{\Delta TP}{\Delta L}$	Marginal Product
0	0	0	0
1	14	14	14
2	52	26	38
3	108	36	56
4	176	44	68
5	250	50	74
6	324	54	74
7	392	56	68
8	448	56	56
9	486	54	38
10	500	50	14
11	484	44	-16
12	432	36	-52
13	338	26	-94
14	196	14	-142

The value for marginal product is written between each increment of labor input because those e values represent the marginal productivity over the respective intervals. In both the table and the graphic representation, we see that both average and marginal products first increase, reach the maximum, and eventually decline. Note that MP=AP at the maximum of the average product function. This is always the case. If MP>AP, the average will be pushed up by the incremental unit, and if MP<AP, the average will be pulled down. It follows that the average product will reach its peak where MP=AP.

3.4.4 Elasticity of Production

This is a concept which is based on the relationship between Average Product (AP) and Marginal Product (MP). The elasticity of production (e_q) is defined as the rate of fractional change in total product, $\dfrac{\Delta Q}{\Delta L}$

Thus Q/L,

$$e^1_q = \frac{\Delta Q/Q}{\Delta L/L} = \frac{\Delta Q}{\Delta L} \cdot \frac{L}{Q} = \frac{\Delta Q/\Delta L}{Q/L} = \frac{MP_L}{AP_L}$$

Thus labor elasticity of Production, e^1_q is the ratio of marginal productivity of labor to average productivity of labor. In the same way, you may find that capital elasticity of production is simply the ratio of marginal productivity to average productivities of capital. Sometimes, such concepts are renamed as input elasticity of output. In an estimated production function, the aggregate of input elasticities is termed as the function coefficient.

Elasticity of Factor Substitution: This is another concept of elasticity which has a tremendous practical use in the context of production analysis. The elasticity of factor substitution, e^f_s, is a measure of ease with which the varying factors can be substituted for others; it is the percentage change in factor production. Thus K/L with respect to a given change in marginal rate of technical substitution between factors (MRTS $_{KL}$). Thus,

$$e^f_s = \frac{\Delta(K/L)}{(K/L)} \cdot \frac{(MRTS_{KL})}{\Delta(MRTS_{KL})}$$

$$= \frac{\Delta(K/L)}{\Delta(MRTS_{KL})} \cdot \frac{\Delta(MRTS_{KL})}{(K/L)}$$

$$= \frac{\Delta(K/L)}{\Delta(MP_K/MP_L)} \cdot \frac{(MP_K/MP_L)}{(K/L)}$$

The elasticity coefficient of factor substitution, e^1_s, differs depending upon the form of production function. You should be able to see now that factor intensity (factor ratio), factor productivity, factor elasticity and elasticity of factor substitution are all related concepts in the context of production analysis.

3.5 PRODUCTION PROCESS

As already discussed, the production function indicates the alternative combinations of various factors of production which can produce a given level of output. While all these combinations are technically efficient, the final decision to employ a particular input combination is purely an economic decision and rests on cost. An entrepreneur should choose that combination which costs him the least. To aid our thinking in this regard economists have developed the concept of isocost (equal cost) line, which shows all combinations of inputs (a & b) that can be employed for a given cost (in rupees).

In order to determine the least cost combination for a given output, we need to have the

prices of factors of production. Let us consider a production function for plastic buckets where the entrepreneur wants to produce 20 buckets. Let the price of L (P1) be Rs. 10 per unit and the price of capital (PK) is Rs. *5* per unit. It is assumed that unlimited amounts of labor and capital can be bought at given prices. We can now find the total cost of each of the five possible combinations of labor and capital for Q = 20.

Alternative Combination	Inputs in Physical Units		Cost (Rs.)
	Labor	**Capital**	
1	4	17	4x10 +17 / 5 = 125
2	5	12	5x10 + 12 / 5 = 110
3	6	8	6 x 10 + 8/ 5 =100
4	7	5	7 x 10 + 5 / 5 = 95
5	8	4	8 x 10 + 5 /4 = 100

Combination 4 represents the least cost for producing 20 plastic buckets.

Economic Region of Production: In the long-run, a firm should use only those combinations of inputs which are economically efficient. A factor should not be used beyond a point, even if it is available free of cost, as it will result in negative marginal product for that factor. These input combinations are represented by the position of an isoquant curve which has a positive slope.

Returns To Scale: The law of diminishing returns states that as more and more of the variable input is added to the fixed factor base, the increment to total output after some point will decline progressively with each additional unit of the variable factor. The law of diminishing returns is also broadly referred to as the 'law of variable proportions' which implies that as additional units of a variable factor are added to a given quantity of all other factors, the increment to output attributable to each of the additional units of the variable factor will increase at first, decrease later, and eventually become negative. The law of diminishing returns is strictly a short-run phenomenon. Let us now look at what happens if we change all inputs simultaneously which is possible only in the long-run. What happens to the output level as all factor inputs are increased proportionately? This can be understood with the help of the concept known as returns to scale. Under this concept, the behavior of output is studied when all factors of production are changed in the same direction and in the same proportion. Returns to scale are categorized as follows:
- Increasing returns to scale: If output increases more than proportionate to the increase in all inputs.
- Constant return to scale: If a!! inputs are increased by some proportion, output will also increase by the same proportion.
- Decreasing returns to scale: If increase in output is less than proportionate to the increase ill all inputs.

For example, if all factors of production are doubled and output increases by more than two times, we have a situation of increasing returns to scale. On the other hand, if output

does not double even after a 100 per cent increase in input factors. we have - diminishing returns to scale.

Forms of Production Function: In economics, a production function is a function that specifies the output of a firm, an industry, or an entire economy for all combinations of inputs. A meta-production function (sometimes meta production function) compares the practice of the existing entities converting inputs X into output y to determine the most efficient practice production function of the existing entities, whether the most efficient feasible practice production or the most efficient actual practice production. In either case, the maximum output of a technologically-determined production process is a mathematical function of input factors of production. Put another way, given the set of all technically feasible combinations of output and inputs, only the combinations encompassing a maximum output for a specified set of inputs would constitute the production function. Alternatively, a production function can be defined as the specification of the minimum input requirements needed to produce designated quantities of output, given available technology. It is usually presumed that unique production functions can be constructed for every production technology.

By assuming that the maximum output technologically possible from a given set of inputs is achieved, economists using a production function in analysis are abstracting away from the engineering and managerial problems inherently associated with a particular production process. The engineering and managerial problems of technical efficiency are assumed to be solved, so that analysis can focus on the problems of allocative efficiency. The firm is assumed to be making allocative choices concerning how much of each input factor to use, given the price of the factor and the technological determinants represented by the production function. A decision frame, in which one or more inputs are held constant, may be used; for example, capital may be assumed to be fixed or constant in the short run, and only labor variable, while in the long run, both capital and labor factors are variable, but the production function itself remains fixed, while in the very long run, the firm may face even a choice of technologies, represented by various, possible production functions.

The relationship of output to inputs is non-monetary, that is, a production function relates physical inputs to physical outputs, and prices and costs are not considered. But, the production function is not a full model of the production process: it deliberately abstracts away from essential and inherent aspects of physical production processes, including error, entropy or waste. Moreover, production functions do not ordinarily model the business processes, either, ignoring the role of management, of sunk cost investments and the relation of fixed overhead to variable costs. (For a primer on the fundamental elements of microeconomic production theory, see production theory basics). The primary purpose of the production function is to address allocative efficiency in the use of factor inputs in production and the resulting distribution of income to those factors. Under certain assumptions, the production function can be used to derive a marginal product for each factor, which implies an ideal division of the income generated from output into an income due to each input factor of production.

There are several ways of specifying the production function. In a general mathematical form, a production function can be expressed as:

$Q = f(X_1, X2, X3,...,X_n)$ where: Q = quantity of output ; $X_1,X_2,X_3,...,X_n$ = factor inputs (such as capital, labor, land or raw materials). This general form does not encompass joint production that is a production process, which has multiple co-products or outputs. One way of specifying a production function is simply as a table of discrete outputs and input combinations, and not as a formula or equation at all. Using an equation usually implies continual variation of output with minute variation in inputs, which is simply not realistic. Fixed ratios of factors, as in the case of laborers and their tools, might imply that only discrete input combinations, and therefore, discrete maximum outputs, are of practical interest.

One formulation is as a linear function:

$Q = a + bX_1 + cX_2 + dX_3$, where a, b,c, and d are parameters that are determined empirically. Another is as a Cobb-Douglas production function (multiplicative):

$$Q = a X_i^b X_2^c$$

Other forms include the constant elasticity of substitution production function (CES) which is a generalized form of the Cobb-Douglas function, and the quadratic production function which is a specific type of additive function. The best form of the equation to use and the values of the parameters (a, b, c, and d) vary from company to company and industry to industry. In a short run production function at least one of the X's (inputs) is fixed. In the long run all factor inputs are variable at the discretion of management.

3.6 REVIEW QUESTIONS
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1. What do you understand by "cost efficiency"? Draw a long run cost diagram and explain.
2. Distinguish between historical costs and replacement costs. Why is this distinction useful?
3. Can all direct costs be treated as variable costs?
4. Comment on the nature of costs involved in depreciation from both economic and accounting standpoints?
5. Give examples to distinguish between fixed overheads and variable overheads.

MARKET STRUCTURE AND ITS ANALYSIS

Structure

4.1 MARKET STRUCTURES

Now we are starting the fourth unit. This unit will give you all the details of the different market structure. After reading this unit you will be able to know about the different types of markets. The number of firms and the level of product differentiation are useful parameters for classifying various market structures. The level of competition also gets influenced by product and production related factors, potential competitors, number of buyers and their behavior and the governmental policies. We are now ready to analyze the various market forms in greater detail. That will be attempted in the subsequent units in this block.

Meaning of Market: A market is a group of people and firms which are in contact with one another for the purpose of buying and selling some product. It is not necessary that every member of the market be in contact with each other.

Markets and Competition: While all of us often use the word-'Market', we-do' or do not realize that very few, markets possess a well defined place in a geographical area or have a postal address. The Bombay, Stock Exchange is one such market with a building and an area earmarked for transacting shares. The central phenomenon in the functioning of any market is competition. Competitive behavior is molded by the market structure of the product under consideration. It is therefore necessary to have a thorough understanding of this concept.

Meaning of Market structure: A simple definition of this concept can be found in Pappas and Hirschey (1985). According to them "Market structure refers to the number

and size distribution of buyers and sellers in the market for a good or service. The market structure for a product not includes firms and individuals currently engaged in Buying and selling but also the potential entrants.

4.1.1 Classification of Market Structures
Markets are traditionally classified into four basic types. These are:

Perfect competition is characterized by a large number of buyers and sellers of an essentially identical product. Each member of the market, whether buyer or seller, is so small in relation to the total industry volume that he is unable to influence the price of the product. Individual buyers and sellers are essentially price takers. At the ruling price a firm can sell any quantity. Since there is free entry and free exit, no firm can earn excessive profits in the long run.

Monopoly: In this situation there is just one producer of a product. The firm has substantial control over the price: Further, if product is differentiated and if there are no threats of new firms entering the same business, a monopoly firm can manage to earn excessive profits over along period.

Monopolistic Competition: It is coined by E.M. Chamberlin "implies a market structure with a large number of firms selling differentiated products". The differentiation may be real or is perceived so by the customers. Two brands of soaps may just be identical but perceived by customers as different on some fancy dimension like freshness. Firms in such--a market structure have some control over price! By and large they are unable to earn excessive profits in the long run. Since the whole structure operates on perceived product differentiation entry of new firms cannot be prevented. Hence, above normal profits can be earned only in the short run.

Oligopoly is a market structure in which a small number of firms account for the whole industry's output. The product mayor may not be differentiated. For example only 5 or 6 firms in India constitute 100% of the integrated steel industry's output. All of them market almost identical products. On the other hand, passenger car industry with only three firms is characterized by marked differentiation in products. The nature of products is such that very often one finds entry of new firms difficult. Oligopoly is characterized by vigorous competition where firms manipulate both prices and volumes in an attempt to outsmart their rivals. No generalization can be made about profitability scenarios.

4.1.2 Parameters of Market Structures
Now it's clear that all the market structures use only two parameters as distinguishing factors-number of firms and degree of product differentiation. Other factors like product characteristics and entry of new firms are also important but these determine the level of competition in a given market structure. In the real situation we will only find the imperfect market situation, and other market situations like perfect competition, monopoly, and oligopoly are all myth. From the above it is also clear that all these market structures can be classified in only two fundamental forms-Perfect Competition and Imperfect Competition. Under this classification Monopoly, Oligopoly and Monopolistic

Competition are treated as special cases of markets which are less than perfect. Thus these forms illustrate the degree of imperfection in a market by using the number of firms and product differentiation as basic criteria. Most industries that we come across can be classified in the realm of imperfect competition.

Kind of Competition	Number of Producers and Degree of Product Dif-ferentiation	Part of Economy Where Prevalent.	Degree of Control over Price	Methods of Marketing
Perfect competition	Many producers; Identical products	A few agricultural industries	None	Market exchange or auction
Imperfect competition: Many differ-entiated sellers	Many producers; Many real or Fancied differences in product	Toothpastes, Retail trade; Conglomerates	Some	Advertising and quality rivalry; Administered prices
Oligopoly	Few producers; Little or no difference in product Few producers; Some differentiation of products	Steel, Aluminum Autos, Machinery	Some	Advertising and quality rivalry; Administered prices
Complete monopoly	Single producer; Unique product without close Substitutes	A few utilities	Considerable	Promotional and "institutional" public-relations advertising

4.1.3 Factors Determining the Nature of Competition
As we have seen that the number of firms and product differentiation are extremely crucial in determining the nature of competition in a market. It has been tactically assumed that there are a large number of buyers. What would happen if there are several firms producing a standardized product but only one buyer? Obviously, the buyer would control the price, he will dictate how much to buy from whom. The entire price volume decision takes on a different qualitative dimension. Similarly, product features and characteristics the nature of production system the possibility of new entrants in a market

have profound impact on the competitive behavior of firms in a market. Since the 'entry' of new entrants has special relevance in business behavior we reserve it to the next section and deal with other issues in the present one.

Effect on Buyer: We have already referred to the case where there is only one buyer. Such situation is defined as monopoly. For example, there are just six firms in India manufacturing railway wagons all of which supply to just one buyer. Such a situation can also exist in a local labor market where' a single large firm is the only provider of jobs for the people in the vicinity. A recent example is the new petro-chemicals complex that is coming up in the rural parts of coastal Maharashtra. More frequently encountered in the Indian markets is a case of a few large buyers, defined as Oligopoly. The explosives industry which makes detonators and commercial explosives has three major customers Coal India Ltd. (CIL), Department of Irrigation and various governmental agencies working on road building activities of these, just one customer, CIL takes nearly 60% of the. Industry's output. There are about 10 firms. In the industry which negotiate prices and quantities 'with CIL to finalize their short term-plans. Most industries manufacturing heavy engineering equipment are typified in India by a few manufacturers and few buyers with the Government being the major one. Price and volume determination in such products often takes the form of negotiation across table rather than the operation of any market forces. Since the members in the whole, market inclusive of buyers and sellers are not many   very often they know each other. In other situations like the consumer goods firms have no direct contact with their customers?

Production Characteristics; Minimum efficient scale of production in relation to the overall industry output and market requirement sometimes playa major role in shaping the market structure. Why there are no more than say, 5 or 10 integrated steel plants even in an advanced country like the U.S.A. can be partly explained by this factor. Since the minimum economic size of such a steel plant is a few million tones, the entire world steel industry can have no more than JOO efficient and profitable firms. Thus every country has only a handful of steel plants. On the other hand, when one comes to re-rolling mills which take the steel billets or bars as input, the minimum efficient size comes down considerably, and given the existing demand, several firms can be seen to operate. Further, the minimum size does not remain constant but changes drastically with technological advancements, when technical changes push up the economic size of a plant one notice that the number of firms decline over time. This can be noticed in some process industries like synthetic fiber. Conversely, technological innovations may make it possible for smaller sized plants to become economically viable. In such a case a lot of new entrants come and soon the market becomes highly competitive. Notice the personal computers entry in India. Apart from minimum plant size factors like availability of the required raw material, skilled labor etc. can also mould the market structure. Presently only one Indian source (IPCL) provides all the raw material for plastic products. Like wise, enough skilled people are not available work on the sophisticated machines. These factors sometimes restrict output and push up prices even though adequate market potential for expansion exists.

Product Characteristics: The above example referred to market situations with CTV and detergent powder as product examples. Both these markets have many firms and the products are differentiated. But in case of CTV, there are no close substitutes (BWTV) being a poor one, whereas, there are many substitutes to a detergent powder (bar soaps; chips, cakes). Therefore one notices more violent competition in the detergent Market than in the CTV market. In the CTV industry firms are competing with each other's products but in the detergent market the firms are competing with other substitute products as well. Of course *you may* remind us of the customer income constraint but even with that there should be no difficulty in appreciating the differences in the degree of c6mpet1tiveriess in these two markets. Similarly when two locations are connected by road and rail, firms engaged in passenger bus service are not only computing with themselves but also with an alternate mode of transport. The physical characteristics or a product can also influence the competitive structure of its market. If the distribution cost is a major element in the cost *of* a product, competition would tend to get localized. Within a given region firms would compete and make attempts to set up several plants around all the major markets in a bid to show there presence in all the territories. Similarly, for perishable products, the competition is invariably local

Conflict between Physical Characteristics and Minimum Economic Size: An interesting question arises in the case of a product like cement for reason of minimizing the transport costs on raw materials; most cement plants in the country are located near mine sites. A large efficient plant near a mine site can manufacture cement at the optimum cost, but the local demand is never large enough. *If* such a plant has to sell in far away markets (from Gujarat to Kerala, for example) the transport costs can be quite high. Customers located in such areas will always buy cement at a much higher price. The government partly offsets this by using the mechanism of levy price which is the same throughout the country.

4.1.4 Barriers to Entry
In a classic book J .S. Bain (1956) analyzed the character and significance of the condition of entry in manufacturing industries. Till that time, most analyses of how competition works gave little emphasis to the force of the potential or threatened competition of possible new competitors. The attention was simply focused on the competition among firms already established in an industry. Lately, however the meaning of competition is inclusive of potential entrants. The existence or otherwise of 'entry barriers' in a given industry has profound impact on its performance and the behavior of firms in it.

If has been found that the firms in an industry are always worried about the possibility of a new entrant. If the existing number is few then the degree of insecurity will be correspondingly higher. To be sure, the existing firms, especially in an oligopoly, have some advantages over the potential, entrant. But, because of the threat of new entrants, the existing members cannot, exploit these advantages (by raising prices continuously) beyond a point. What that point is and when the new entrants would find it profitable to break the entry barriers are also not known. One thing is clear, that this potential competition always puts a check on the pricing strategies of oligopolists.

What can Act as an Entry Barrier?
Anything that retains the competitive advantages of the existing firms in an industry can act as a barrier to those' desirous of entering it. Some of the commonly encountered aspects are indicated below.

- **High Initial Investment;** A new passenger car plant with a capacity to assemble say 50,000 automobiles per annum can cost around Rs.100, crore. You know that not many firms have the capacity to mobilize resources of that order. Naturally, there are high entry barriers to the automobile market due to high level of initial investment. For similar reasons, one does not find too many integrated steel plants coming up too often. On the other hand, it takes only a few lakhs of rupees to set up a biscuit making unit. The barrier on account of investment is quite low in such industries.

- **Economies of Scale in Non-production Activities:** Scale economies are not restricted to manufacturing. These extend to distribution, marketing and advertising. Consumer products like soaps, toothpastes display considerable economies of scale in marketing and distribution. A nation-wide presence in these industries presupposes an efficient and penetrating distribution network, high order of brand related marketing skills and ability to service a fairly differentiated product line. Thus, one may find numerous local soap makers but there are substantial entry barriers to a new national brand penetrating the market.

- **Technology, Patents and Research:** The ability to possess and commercially exploit certain specialized technology is one more source of entry barrier. Specially chemical drugs; plastics are some of the industries where the difficulty of developing a new product or a process is well understood. These are knowledge related factors. It is very difficult to penetrate an industry where a few existing firms have a strong research base and a large pool of product related patents. New entrants in such industries are often the employees of the existing firms breaking away to form a new entity.

- **Switching Costs:** Take an industry like earthmoving machinery. For such an industry each firm has a few large customers like contractors, project authorities or coal mines. Consider that a customer has a fleet of say 10 machines of a given brand. When he replaces one machine or augments his fleet, more likely the choice would fall on the same brand. For him it means a familiar machine, known operational details, already trained operators and a host of other things like spare parts stocks. Thus, the cost of switching to a new brand can be fairly high, These costs can act as entry barriers. Along with earthmoving machines the customer also has related equipment like loaders and dump trucks which he had purchased on the ground of compatibility with a given brand of the main machine.

Take the case IBM. Why does every other personal computer (PC) that one come as across claims *to* be an IBM compatible. It has *to* be *so,* because all the software is developed by using IBM standards. The PC cannot work without software. By developing industry level standards, IBM has created 'high switching costs' in an attempt to create entry barriers. You will have notice a that' in oligopoly situations, firms should

strive towards creating high entry barriers, if the industry does not possess those necessary characteristics. This is precisely what happens. If there are low entry barriers, new firms enter soon and the profitability of the existing firms drops. Notice the state of the pocket calculator industry. There, are virtually no entry barriers and with the existence of cheap smuggled products, it is impossible to create them. As a result, most large firms are almost out of this market leaving it opens for the small scale units.

4.1.5 The Role of Government Policy

All governments, whether in India *or* abroad, impose taxes and duties. What is special about the Indian governmental policies is their ability to control price, quantity *of* production, distribution choice of product, location and almost every business decision *of* a firm. Some reference to these has been made in the previous sections. Presently we shall see the role *of* government policy in a synoptic way. Later, a full unit in Block No. 5 will talk about the regulatory environment in detail. Through its industrial licensing policies the Central Government has control over the following business decisions:

- Choice of the product
- Scale of production (capacity)
- Location *of* production
- Choice of technology

The policy on foreign collaborations also regulates the aspects pertaining to choice of technology. Import policies can have significant impact on the types and quantities of raw materials that would become available for production. Choice of machinery is also guide by the import regulations in force. Through levy of customs and excise duties, the price of the end products as well as the raw materials gets affected. Some industries like sugar aluminum, steel, edible oils, cement are subject to price controls. These are administered through various Acts and, the job of determining prices is often entrusted to the Bureau of Industrial Costs and Prices under the Ministry of Industry. Firms in these industries are thus partly guided by market forces and partly by the Ministry in regard to their pricing decisions.

Apart from these, several state governments have their regulations for promoting (or restricting) 'the growth bf certain industries. All things considered, the job of the business manager is made quite difficult in the Indian environment. Ironically, government steps ill to correct certain imperfections in the market but in the process adds a few of its own. The existence of many industries with only few firms is mainly attributable to the government policies which have acted as entry barriers for a long period of time. The picture is changing rapidly. There are fair chances that in the future market related forces would operate more on the price volume decisions of the firms, than the government, policy related factors.

4.2 MARKET ANALYSIS

Previously you have been exposed to the concepts of market, competition, perfection, monopolistic elements etc. You must have noted that the number and size of firms is an important determinant of the structure of industry and/or market. For example, a large

group (of firms) case will differ from a small group case. This will give you an idea of behavior of a firm and the industry when there are many (large number) sellers. The crucial parameter is the size of the constituent firms in relation to the total industry's output. If, besides the existence of many firms, there is also product differentiation, then monopolistic competition will prevail. If Products are almost identical perfect competition will be obtained. While considering product differentiation, the acid test is customer perception. Real differences in specifications and performance are relevant but analytically, two products are differentiated, provided the customers perceive them as different.

Here we have made an attempt to make you understand the market forces operating in perfect competition and monopolistic competition. The perfect competition is no doubt an idealized market environment. Though rarely found in reality, a systematic analysis of this market form does offer insight which can be used in formulating policies. Besides, a careful study of perfect competition also helps in assessing market imperfections. It is more like a reference point for the economic analysis of the real world markets which are often less than perfect. The focus of managerial action is not on price-volume alone when one talks about monopolistic competition. Many sellers, differentiated products, existence of close substitutes are some of the distinguishing features of monopolistic competition. Each firm is more worried about differentiating its products to improve it distinctiveness and thereby gaining some competitive advantage. Unlike perfect competition, no clear-cut solutions or prescriptions can be recommended.
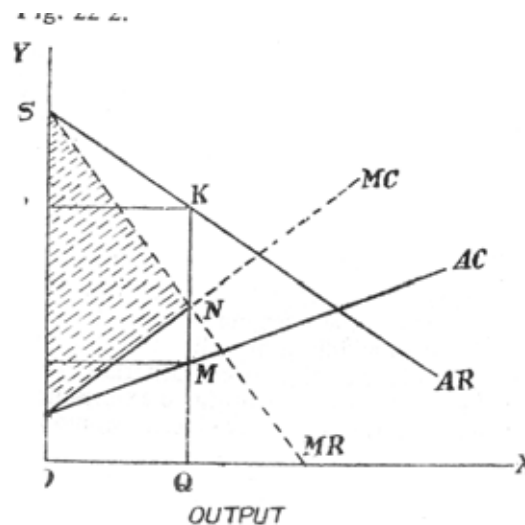

Fig 4.1 Price Determination under Different Market Situation.

Perfect Competition
 A perfect competition is a market situation which is having the following characteristics:
  - Many buyers and sellers exist that no one can influence the price.
  - All firms sell identical products or are perceived so by the buyers.
  - All resources and inputs like materials, labor and capital are perfectly mobile so that firms can enter the market and fold up shop as and when 'they wish.
  - Members in the market have, perfect knowledge; decisions are made as if

everything was certain.

Why such market structures have been theoretically studied? This is so because the analysis of such situations gives insights into the efficiency of resource use. It is used as a yardstick for measuring efficient allocation of resources. To the extent real world markets deviate from this ideal case we get an idea about the inefficiency of resource use prevailing in them. Apart from the efficiency aspect, the analysis of perfect competition illuminates several basic principles underlying business behavior. It is therefore useful to study this market structure in some detail.

Short-run Equilibrium
In the short-run firms cannot increase their production capacities because it takes time to arrange for resources to do so. The industry demand and supply operate in a ' market where processes similar10 an auction are in force. At the intersection of the falling demand curve and the rising supply curve the market price of a commodity for, that particular period is settled. Being too small in re1ation to the total industry's, output every individual firm and the buyer have to accept this price can be seen that at price P and quantity Q the industry's equilibrium is established. If the price were higher than P, excess supply would come in forcing it downwards. Conversely if it were lower than P excess demand would prevail pushing it up. For an individual firm, the quantity Q that it would offer to the market will depend on its objectives and the cost conditions: Market price being given; the firm is confronted with a horizontal demand curve at the height P. 'Since all the output can be sold at P, ' an extra unit of output can be sold at the same price. Thus, for the firm, the demand curve and the average revenue curve are identical.
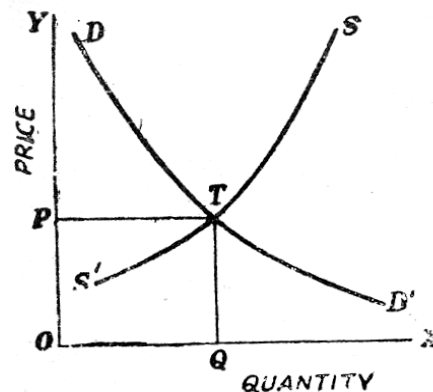

Fig 4.2 Short-run Equilibrium

We therefore have Maximum profits will be obtained at the output rate where marginal cost MC equals marginal revenue MR. This has to be so. because if the cost *of* producing an additional unit is less than what it can fetch in the market, then profits can be improved by producing and selling it. If; however, it costs more to produce that .additional unit than what it earns, the firm would be better off by not producing it Thus, when MC=MR, the firm is in equilibrium producing an output Q_1.. It has been assumed that the firm is confronted with a U shaped cost curve. The firm takes the market price P

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and produces that quantity Q1 which equates MC and MR so as to fulfill the objective *of* profit maximization.

Illustration: Imagine a firm operating in a perfectly competitive market. The following data are available. Price P= AR = MR= Rs.20/-Unit. Total cost function is $C(Q) = 8 + 17Q - 4Q^2 + Q^3$

Let us now find out the profit maximizing output and the maximizing profit by using the concepts developed above by definition, marginal cost will be available if the first derivative of the total cost function is obtained. Thus,

$$MC = \frac{dC(Q)}{dQ} = 17 - 8Q + 3Q^2$$

Maximum profit will be earned when MC and MR are equal

$$20 = 17 - 8Q + 3Q^2$$

Solving the equation gives two values for Q: - 1/3 and 3. It is obvious that negative output cannot be produced, hence at Q=3 the firm will maximize profits. Total revenue will be Rs.60 and total cost Rs. 50 (8+ 17x3-4x9+27). The maximum profit at the output of 3 units is Rs. 10.

Long-run Equilibrium: This is defined as 'economic profit' and represents an above-normal profit situation for the firm. A normal profit is defined as a rate of return on capital which is just sufficient to attract the investment necessary to set up and operate a firm. It is customary to include normal profit as a part of 'economic costs'. Thus any profit which is more than whatever is already included as an element of cost becomes above-normal profit. Over the long-run, any such positive economic profits will attract new firms in the industry or an expansion by the existing firms or both. As this happens, the industry supply gets expanded depressing the price of the product. Long-run equilibrium will be reached when each and every firm operates at a level of output that minimizes average economic costs of producing it (which includes normal profit). Under this condition price will equal not only marginal cost but also average cost.
P=MC=AC=MR

It must be appreciated that as long as the price is above AC there is room for above-normal profit and hence new firms will enter. Conversely, if for some firms the AC is above the price, they will not even earn the minimum incentive to stay in business (normal profit) and will fold up shop in the long-run. When every firm is making just the normal profit, no new firms enter, none of the existing firms quit and equilibrium prevails. The industry as such is, in equilibrium when no firm is earning above-normal profits.
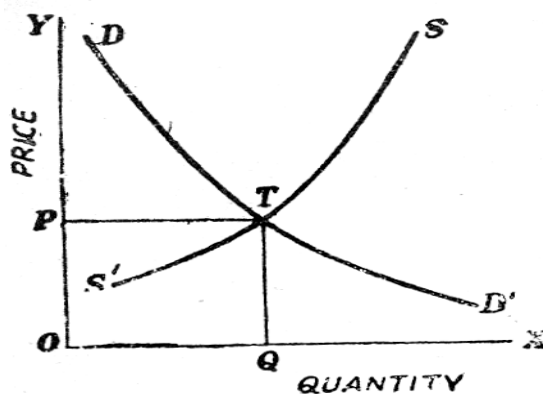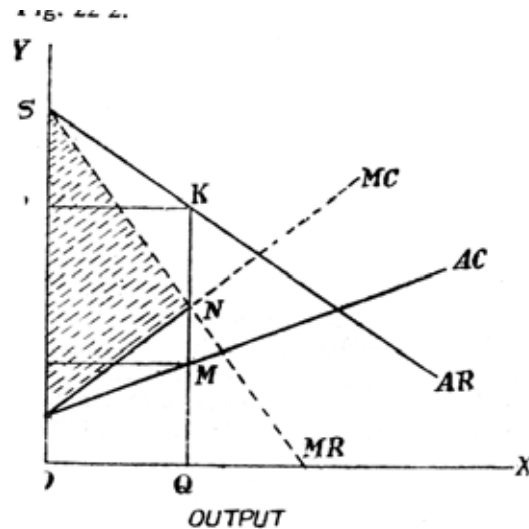
Fig 4.3 Long Run equilibrium Perfect Competition

Supply Curves: We have just seen that a profit maximizing firm will produce that quantity at which the marginal cost equals the price. Suppose in a particular short period the market price is lower than the profit maximizing level. What will the firm do in such a situation? Since the firm is a price-taker, will it just accept the consequences? Its response will depend on how low the price is. If it is so low that the firm is unable to recover it's variable costs, it will simply stop production and incur a loss equal to its fixed costs since these cannot be escaped. The crucial point for the firm to run the show in the short run is to recover its variable costs. This gives us the following result.

In the short-run, the supply curve of a firm in a perfectly competitive market will correspond to that portion of the marginal cost curve that lies above the average variable cost curve. As long as the price exceeds average variable cost, every unit of output provides some profit contribution which can be applied to cover fixed costs and earn some profit. The point at which the price just covers the average variable cost is known as the "shut down point" implying if price drifts below that point; the firm will stop

production in the short-run. In the long-run where all costs are variable, price does cover AC= A VC=MC at the point of perfectly competitive equilibrium.

Equilibrium in the Short-run: For the sake of simplicity, the demand (which is nothing but the average revenue AR) curve is assumed to be linear. The MR curve is below AR so that the distance of MR line is half that of the AR line from the price axis. The cost curves depict the usual U shaped structure of costs. The equality between MR and MC provides the equilibrium price-quantity combination. The maximum profit is indicated by the shaded area.

Suppose the firm's demand function is P = 11,100 - 30Q; and the total cost function is

$C = 4, 00,000 + 300 Q - 30 Q^2 + Q^3$

For this firm, let us equate MR and MC; TR = Total Revenue = Price x Quantity = P x Q = (11,100 - 30Q) x Q; = 11,100 Q - 30 Q^2

MR = d (TR) / d Q = 11,100 - 60Q MC = 300 - 60Q + 3Q^2

MR = MC implies 11,100 - 60Q = 300 - 60Q + 3Q^2 or 3Q^2 = 10,800 or Q = + 60, - 60

Since output cannot be negative, the profit maximizing volume is naturally 60 units. At this output, the price will be (11,100 - 30 x 60) or 9,300. Please notice that at a volume of 60 units with a price per unit of Rs. 9,300 the profit for the firm is Rs. 32,000 during that period.

Conditions of Supply: Intense competition, freedom of entry (or the existence of low entry-barriers), often make life difficult for firms in such an industry. What happens if a given period offers weak demand? Whether the firm supplies any volumes at all or decides to close operations will depend on whether it can get price enough to cover its variable cost. The MR = MC rule yields maximum profit but the maximum that a firm can obtain may as well be negative. Generally, firms would not close down so long as variable cost.

The MR = MC rule yields maximum profit but the maximum that a firm can obtain may as well be negative. Generally, firms would not close down so long as variable costs can be covered by the equilibrium price obtained through the equality of MR and MC. Whenever that becomes difficult product line may be dropped temporarily. But, there is a danger of the customer forgetting about that brand once it is out of the market for a while.

The advertisement expenditure required to restore the brand may have to be reckoned along with the decision to reopen the product line. Alternatively some more differentiation could be added to a product; in which case it would face a new demand function. Notice 'Tomco' launching a detergent powder for exclusive use in washing machines to supplement the sales of the regular product. A new market segment was created, thereby putting the "company, at a slight advantage. You will have also noticed

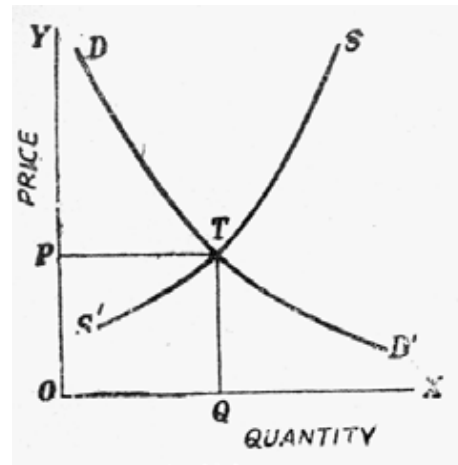that just after a few months one more company (Levers) came out with similar product dampening the advantage.

Fig 4.4

These are normal happenings in a typical monopolistically competitive market. Since each firm faces a unique price-volume-promotion mix, the concept of an industry supply' function becomes ambiguous. Indeed, non-price competition is very prominent in such markets. In the short-run, the total industry demand for all types of, say shampoos will not change. Yet, market shares can undergo some changes. Rather than fighting the market battle on price and end up with low profits, firms choose to compete on non-price related factors-mainly promotion and product variation. We will have something to say on this later.

Long-run Adjustments: Long-run adjustments in a monopolistically competitive market can be compared to those observed under perfect competition. Many producers are in the market, often selling closely substitutable products. Any above-normal profit would invite new entrants and the firms will have to innovate almost continuously to maintain that position. Theoretically normal profits should prevail in the long-run: Since the very concept of an industry is rather loose in such markets, defining normal profitability criteria for atypical firm becomes a difficult task, one thing can be surely observed. The nature of competition does not allow too many firms to earn above normal profits over a long time span. The margin_ are always under pressure and therefore the positive deviation from normal profits is always small. Firms constantly try and reduce costs, introduce minor product differentiation, change advertising strategies and try to maintain that small margin. Although entry-barriers are not too high some firms can manage to keep a lead over the others to patenting some unique product features, thereby acquiring a competitive advantage even over a long-term time horizon. In summary, no clear-cut rules of behavior can be formulated for a market which is characterized by monopolistic competition.

Advertising: We have already seen that non-price competition is more likely to be a dominant feature in monopolistic competition. Advertising is an important element in the competitive strategy of such a firm. But it does not come free. Any expenditure on promotion pushes up the cost curves. Whether or not that has any impact on the demand curve is uncertain at the time of launching a promotional campaign. One only hope that the expenditure so incurred would result in higher sales at given prices or hopefully even at higher prices. Again, rival firms do not keep quiet; they also have their own promotion strategies In some cases, a great portion of sales promotion efforts by firms are self-canceling one firm's actions are matched by rivals resulting in only minor gains in sales and output. In such instances, unit costs go up all the same. Ideally, firms would like to have increased sales so also more than cover the promotion expense leading to a net gain in profitability. In worst cases, promotion gets you nowhere-indeed there is a drop in profitability. The additional costs of promotion are more than the incremental sales revenue. Which outcome finally materializes cannot be forecast with perfect certainty.

$C = 0.1 Q^2 + Q + 10 + t Q$
$= 0.1Q^2 + (1 + t) Q + 10$

The industry supply function will then be
$S = 500(p - t) - 500$

The equilibrium price is given as
$400P + 4,000 = 500 (p - t) - 500$
or $P = 5 + 5 / 9t$

If the tax is 90 paisa per unit then; $P = 5.5$, $D = S = 1800$

Let us analyze this result. Even though the tax is 90 paisa, the price has increased only by 50 paisa. What has happened to the balance 40 paisa? The firm has to absorb this in its production costs. Secondly, since the price has gone up, the equilibrium quantity for the industry as such dropped by 200 units. Some customers cannot afford Rs. 5.50 and would rather not buy the product. At the old price without tax, the typical firm supplied 20 units (5P-5, at P = 5) and earned a profit of Rs. 30.

After the imposition of tax, the typical firm-would supply 18 units [5 (5.5 - 0.90) - 5] and earn a profit of Rs. 40. The sales tax collection for the local government is Rs: -16.20 per firm.

Suppose the objective of the local government was to collect Rs.16.20 from each firm by some means. As an alternative, it could impose a tax on profits at the rate of 54 % and collect exactly Rs. 16.20. In this case the firm's after-tax profits -will be Rs. 13.80. But then, more customers can be served, since at Rs. 5 market price the total quantity would be 2000. Can we, therefore, conclude that it is better to impose 54% tax on profits since only 100 firms get reduced profits compared t0200 customers going without the product in case of a sales tax of 90 paisa? Can you compare the agony of 100 firms with the misery of 200 customers?

Monopolistic Competition: We now know that many firms selling differentiated Products provide the essence of monopolistic competition. Each firm in the industry strive hard to differentiate its, products from the competitors be it soap or toothpaste or toy, Products of no two firms will be perceived as identical. This perceived differentiation gives each firm an element of control over the price it can charge. At the same time, the firm cannot expect to reap the benefits of a differentiated product too long since others can always duplicate the effort albeit with a time lag. Similarly, the price variation between two competing brands of a given product is also not too large.

Monopolistic competition therefore has several interesting aspects. The nature of competition is not restricted to variations in price and volume but extends to promotion, distribution, research and development also.. Cross elasticity of demand for various products are fairly high. This means that a small upward variation in the price of say 'Colgate' may tempt many of its customers to switch to 'Promise:. If this happens, 'Colgate' may not revise its price downward. but instead would change its advertising or innovate on the product features so as to convince the customers that they are getting more value for their money'. As a result, you will notice that products in such markets are close substitutes to each other. All these elements reflect in a downward sloping demand curve for each firm in a monopolistic competitive situation. This is in sharp contrast to perfect competition where each firm faces horizontal demand curve.

Product Variation: Like advertising and sales promotion, this is also an activity with uncertain outcome. Films introduce variations in order to inject an element of differentiation In to their products. Whether or not market perceives it that way is the real test of a successful product variation move. The use of market research in such decisions is therefore gaining wider acceptance. The attempt is to have an idea of what features the customer wants before introducing any variations Similarly, product related research' gets used in offering something new to the customer which he may not have perceived earlier.

All such efforts are costly whether product related or market oriented, research entails expenditure. That pushes up costs. The effect of incurring these costs is quite analogous to the effect of promotion. The actions by different firms vary, according to their perception of what is valued by the customers. Some firms adopt product variations which appeal to price-conscious consumers, other firms would prefer to cater-to the market segment desire us of high quality goods (Surf). Still other films may pursue an-intermediate strategy and have, a product in between the two ends. Product variation is essentially a: differentiation exercise related to the market segments to be serviced and the perception of the customers in each of them. Before we go to next section, it will pay you to"' recapitulate that in terms of revenue' and cost conditions, though a perfectly competitive market differs from a monopolistically competitive market, yet the adjustment process is more or less similar in both markets. Profit encourage entry as loss induces exit; eventually a situation of no loss no profit" or what is called "normal profits" emerge in the long-"run. Though the process is same, the outcome is different depending upon the nature of market, perfect or monopolistic. In Figure given below will tell long-run situation in monopolistically competitive markets.
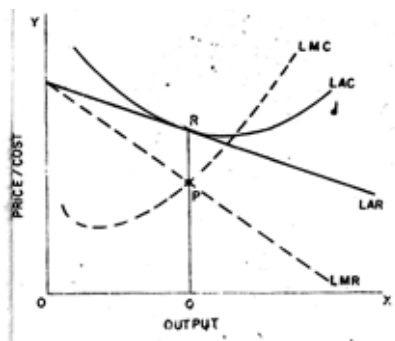
Fig 4.5 Pricing under Imperfect Competition

You may note that in the case of a perfectly competitive situation, both firm equilibrium condition (MR=MC) and the industry's equilibrium condition (AR=AC) are satisfied at single point C, whereas in a monopolistically competitive situation. The double conditions are satisfied at two different points, (MR=MC) and (AR=AC). Comparing the two you may observe that price in higher (by P_{mc} -P_{pc}) and the scale of output, smaller (by $Q_{mc} - Q_{pc}$) under monopolistic competition than under perfect competition. The volume (Q_{mc} - Q_{pc}) is the measure of "excess capacity" associated with monopolistic competition. Such excess capacity is zero under perfect competition. Also note, under perfect competition, (P=AR=MR=MC), but under monopolistic competition, [(P=AR) > (MR = MC)]. Similarly, under perfect competition, [P=AC=MC], but under monopolistic competition [P=(AC > MC)]; the price-marginal cost difference measures the "degree of imperfection"

Monopolistic Competition In India: The previous unit referred to the aspect of government policy acting as an 'entry-barrier in several industries. Besides, the growth of entrepreneurship is also a crucial element in the Indian context. Until a decade or so ago, even products like soaps and toothpastes were characterized by oligopolies. For some reason, new firms just did not enter into several product lines despite favorable government policy. It is only since the 80s that one finds competition hotting up in the country's markets. Product variations, aggressive promotional campaigns, and easy entry of new firms are now commonly encountered in several consumer goods industries.

4.3 ANALYSIS OF MONOPOLY AND OLIGOPOLY MARKET SITUATION

Here, we shall continue our study of imperfect competition but we shall now move from the case of large group to the case of small group of sellers. We shall attempt an in-depth analysis of such market structures where a small number of sellers operate. Such markets may assume a variety of form like monopoly, duopoly, and Oligopoly, bilateral monopoly etc. An extreme case is just one firm. More commonly encountered situations have a number of firms, each large enough to have some control over the market, selling either differentiated or similar products. This part of imperfect competition is very complex and, therefore, offers a variety of situations and solutions. There are, however, a

few clear-cut equilibrium solutions. A study of these situations would also help in appreciating the reality around us, particularly the present status of monopoly regulation in the country. Pricing strategy is at the heart of many business decisions. The discussion proposed in this unit should prepare us to take up this interesting issue in the next unit.

Monopoly: If perfect competition is at one extreme and of the market structure universe, the other end is characterized by monopoly It exists when just one firm is on the sole producer of a product which has no close substitutes. Just as perfect competition is rare, monopoly is also rare in less regulated market economics. The public sector in India has significant monopoly elements. 4nalytically public sector monopolies have a different place in managerial economies and we shall not deal with them here. Although monopoly's an extreme form of market concentration, its study helps this in analyzing less extreme cases. Many of the economic relationships found under monopoly can be used to estimate optimal behavior in the less precise but more prevalent/partly competitive and partly monopolistic market structures that dominate the real world. Under monopoly, the firm is the industry; naturally, a monopolist faces a downward sloping demand curve. The fact that just one firm constitutes the industry imposes a crucial constraint on a monopolist. He can set either the price or the quantity but not both. Given a demand curve, if the monopolist decides to change the price, he has to accept the volume that it will accompany. Similarly, with the volume determination, the price gets automatically established through the demand curve. What will he do?

Pricing Under Monopoly: For maximum profits we must have

$$\frac{d\,\Pi_1}{dQ_1} = 0 \quad \text{and} \quad \frac{d^2\,\Pi_1}{dQ^2_1} < 0$$

NOW, remember that firm I makes variations in its quantities assuming that the quantity of firm II remains at a given level. This means that in computing $d\,\Pi_1 / dQ_1$

We must treat Q2 as const, It. When we do that, it can be readily seen that

$$\frac{d\,\Pi_1}{dQ_1} = 0 \quad \text{gives us } 95 - Q_1 - 0.5\,Q_2 = 0$$

OR $Q_1 = 95 - 0.5\,Q_2$

Coumot formulation calls this the 'reaction function'. Reaction functions express the optional output of firm I as a function of firm It's output and vice versa.

Fig 4.6 Pricing under Monopoly

Given the value of $\quad \dfrac{d\,\Pi_1}{dQ_1}$

We also note that $\qquad \dfrac{d^2\,\Pi_1}{dQ^2_1} = -1$

Which is negative as required for the maximization condition. Similar algebraic manipulations for firm II should give us its reaction functions as.

$Q_2 = 50 - 0.25Q_1$

The typical reaction functions are depicted above in the figure. The solution of duopoly equilibrium crucially depends on the nature of the reaction function of each duopolist. The equilibrium is reached when the values of 01 and 02 are such that each firm maximizes its profit, given the output of the other and neither desire to alter the respective output. This is a very critical condition. From the reaction functions that we have, it can be seen that if one firm increases its output, it will cause a reduction in the optimum output that the other firm can have. However, for a common, solution, both the firms must achieve maximum profits and at the same time have no incentive for changing respective output levels.

Let us therefore solve the two reaction function equations in order to get the equilibrium, solution.

Given $\qquad$ $Q_2 = 50 - 0.25\ Q_1$; and $Q_1 = 95 - 0.5Q_2$
Then, $\qquad$ $Q_2 = 50 - 0.25\ (95 - 0.5\ Q_2)$
Or, $\qquad$ $Q_2 = 50 - 23.75 + .0.125\ Q_2$
Therefore, $\quad$ $0.875\ Q_2 = 26.25$
Or, $\qquad$ $Q_2 = 30$ and $Q_1 = 80$

You can easily verify that P = 45 and firm- I earns a profit of 3200 while that of the firm II is only 900.

Illustration: A monopolist sees his goal as revenue maximization. Yet since he cannot ignore profitability he puts a minimum limit to his profits. His demand and total cost functions are

$P = 304 - 2Q$
$C = 500 + 4Q + 8Q^2$

He must earn at least, 1500 as profits and only after that; he will try and maximize his revenue. His profits are determined by the usual equation ($\Pi = TR - TC$) you may do this in either of the two ways:

1) Set it as a problem of constrained maximization i.e., maximizes TR subject to 7T = 1500, Thus the lagrangian function is:

$L = [304-2Q] Q + \lambda [\Pi - 1500]$,

Where $\Pi = TR - TC$
$L = [304 - 2Q] Q - 500 - 4Q - 8Q_2$
$= 300Q - 10Q^2 - 500$

And then check for $\dfrac{dL}{dQ}$ and $\dfrac{d^2L}{dQ^2}$

2) The easiest way is to set 71= 1500 whereby you win set two solution values fqt Q. Verify that he will achieve his primary profit goal of at least 1500 at two levels of outputs 0 = 10 and Q = 20. Which of the two will he choose given his revenue objective?

Duopoly -Cournot Formulation: As early as in 1838, a French economist Cournot analyzed a special case of competitive business behavior with only two firms in an industry.

The assumptions are quite strict but considering the time at which this foni1ulation was developed, they cannot be faulted with too much. .It is assumed that each member in this two-firm industry produces a homogeneous product, treats the rivals' output as given and maximizes profit. We shall illustrate the equilibrium price-volume combination for each firm by taking a simple example. The rival firm's output behavior with respect to one firm's output is called conjectural variation. Coumot assumed a zero conjectural variation. Sup-pose, the total industry demand function was P = 100 - 0.5 (Q). Since the entire output is shared by just two firms, this can as well be written as

P = 100 - 0.5

$(Q_1 + Q_2)$ Firm number I for example have a constant cost function represented by

C1 = 501, Firm number II is having, an increasing cost, function

=0.5022,

Each firm strives to maximize profits and therefore we can write the profit functions for them as:

Firm I's profit = 71'1

= Total Revenue - Total costs

= $PQ_1 - 5Q_1$

= $[100 - (0.5)(Q1 + Q2)] Q1 - 5Q_1$

= $100 Q_1 - 0.5Q^2_1 - 0.5Q_1Q_2 - 5Q_1$

= $95Q_1 - 0.5Q^2_1 - 0.5 Q_1 Q_2$

Notice that the duopoly equilibrium values fall in between those obtained under perfect competition and monopoly. Each duopolist exercises some control over the price-but the degree of control is less than, that of a monopolist.

Duopoly-Other Models: Cournot assumed zero conjectural variation on output levels. One can imagine a situation with zero conjectural variation on price. This means, each firm takes the rival's price _s given and sets its own price. Naturally every firm would like to set it 11s high as the market can bear. Soon each firm will realize that by cutting the price a little bit it can snatch the whole market. Once price cutting starts, it can go on till the firms reach competitive cost levels. A variation of this theme assumes capacity constraint. There is an upper limit above which each firm cannot increase its output in the short-run. It can be shown that under these conditions, no equilibrium solution is possible. The price oscillates between the monopoly price and some lower price for an indefinite period. The lower limit for the price is at least that obtained under the perfect competition but need not be so. This model is due to Edge worth.

Stackeberg Model: A third type of duopoly analysis is suggested by the German economist Stackleberg. This is popularly known as leader-follower analysis. In this version, each firm has the option of either becoming a leader or remaining as a follower. A follower in this set up will behave like the firm in Cournot model, treating the leaders output as given. A leader knows that the follower is going to treat his (leader's) output as given and then proceeds to maximize profits given this assumption. Each firm would calculate its profits in both the alternatives-as a leader and as a follower-and then choose that role which gives greatest profit. You will realize that when both the firms do this they will naturally figure out that it does not pay to be a follower. If each firm decides to take on the role of leader, no equilibrium can be reached. This is the symptom of "Stackleberg Disequilibrium".

Most models of duopoly contain an element of speculation of what the other firm will do. Indeed, all these can be extended to cover 0lig9polistic markets but the essential features will not change. The failure of the market to reach equilibrium, price-volume

combination appears as the most striking, feature in these models. It is quite natural to imagine that the firms would try to cooperate in some way in order to reduce the uncertainty of rivals' actions. The cooperation may not be formal or clearly expressed as such.

Oligopoly -The Kinked Demand Curve Hypothesis: We now come to probably the most intriguing part of the market structure analysis. When there are a few firms who sell either differentiated products or a homogeneous product we say that the market is Oligopolistic. Of these, differentiated products can offer interesting behavior patterns amongst firms. The particular theory that we shall deal with in this section was simultaneously but independently developed by Paul Sweezy in the U.S.A. and Hall & Hitch in the U.K. around 1939. These researchers observed that Oligopolistic situations lead to rigid prices. The price changes are infrequent. Besides, they are guided more by competitors' behavior than by the objective demand and cost conditions. This is quite _ difference between monopoly pricing where a change in demand and cost curves can be instantaneously matched by a price adjustment.

In oligopoly with differentiated products each firm has to make some intelligent guess about the competitors' response to a given action by the firm. The Kinked demand curve hypothesis states that rivals behave one way when a firm cuts its price, viz. match the cuts, but behave another way when a firm raises its current price viz. hole price constant at the current level. The behavioral assumption behind this theorization is quite easy to appreciate. When one firm cuts its price, rivals do not want that firm to unduly gain in market shares and therefore they will follow suit. 0 the other hand, when the price is increased, rivals think that it has given them an opportunity to grab more sales since they now are more competitive on the price front. Hence, a price increase is not followed by the rivals. The prices therefore tend to change infrequently, flexible downwards but inflexible upwards.

Real Life Cases: You may ask So far so good but do firms really he have this way? Empirical research done abroad offers mixed evidence. Whereas Hall & Hitch found some support for the '-stickiness' in the prices of actual oligopolies studied I the UK a study by Stigler showed that in two monopoly industries (aluminum and nickel) in the U.S.A. the prices were more stable than some oligopoly industries. In fact, Stigler's observations are that his study does not support kinked demand hypothesis all. Rather than review all the.1iterature in this regard, we shall conclude this section by saying that while serious empirical work continues, this hypothesis provides a good starting point for the study of 6ligopolistic pricing situations.

Characteristics of Oligopolistic Markets: While discussing the duopoly case, it has been pointed out that in many such situations; the market fails to reach equilibrium. This may be so technically. Yet, we do come across market structures which are quite stable. How is that market function at all, if no equilibrium is possible? Or', is it that they are constantly in the .state of disequilibrium? The nature of competition in an Oligopolistic market is such that the rivals' actions are constantly weighing on the minds of the decision makers in any firm. The uncertainty of future demand and customers' responses

add to the' complexity of the decision making process. As a result, in an Oligopolistic market structure, there is no neat, simple and clear-cut equilibrium position towards which all firms tend to move such as those in a perfectly competitive market. Many variables are at the command of a firm-product features, price, service, promotion, to name a few, Secondly, given a competitive situation, several different and feasible courses of actions are, open for the firms. Firms rely upon differences in price, quality, reliability, service, design, product development, advertising and product image to promote sales and increase profits. In view of this complexity, a number of plausible competitive situations can prevail in the market. Quite naturally oligopoly theory consists of dozens of models, each depicting certain features of Oligopolistic conduct and performance but at the same time none telling the complete story of what constitutes competition among a small number of firms.

Dominant Firm Model: If there is one dominant firm in an Oligopolistic market and the rest of the firm act as followers we will have a mixture of monopoly and perfect competition. The followers take market price as given and set their MC's to that price in order to maximize profits. The dominant firm acts as price leader and maximizes profit by taking the supply curve of the followers as given The dominant firm acts as a monopolist constrained only by the supply of the, rest of the lot (called the fringe firms). It can be shown that the presence of some firms which offer products at competitive prices dampens the degree of the dominant firm's control over the market price. If the market share of the followers goes up, the monopoly power of the leader suffers accordingly. Thus, in this formulation the equilibrium price is lower than what would be obtained by a pure monopolist. What are the methods by which a dominant firm can maintain its dominance in the market? Some well known responses are:

1) Try and keep the industry price low enough to deter entry and also make expansion of fringe firms unattractive.
2) Innovate on 'non-price competitive areas'-promotion, distribution, after sales service etc.
3) A defensive strategy involving confrontation with the aggressive fringe firms. In order to illustrate a real life competitive situation we reproduce below a case.

Market Share Models: Other models of Oligopolistic behavior centre around the concept of market share variations. In all these models some reasonable assumptions are made about the cost conditions. As it happens, pricing conflicts emerge no sooner than firms start manipulating their prices to gain market shares. Depending on the degree of product differentiation and the price elasticity of market demand, the pricing strategies will be worked out. In general, you will observe that firms are not excited about cutting prices for gaining market shares. In the Indian market, the initial introduction price of the new variety of two wheelers like Kinetic Honda was higher than the popular Bajaj Scooter. After a while, Kinetic Honda reduced its price but also introduced a variation in the product features. It thus started selling two brands. Similarly, Bajaj Scooters are now more aggressively sold on non-price features like ruggcdnes3, easy service, and time-tested vehicle and so on. Around 1986-87 it appeared that a price war may emerge in the two-wheeler market but eventually the fear did not materialize. Firms have relied more

on product and promotion related competition than price related factors. You can identify several instances in the Indian industries where oligopolists have shied away from price competition and shifted the focus to some other variables.

Oligopolistic Co-ordination: Considering the realities of the market and the need to earn minimum acceptable profits, oligopolists are better in a 'cooperative mod_' rather than in a competitive one. This does not mean that they do not compete. They do but with the understanding that there is a greater incentive in coordinating their actions. The cooperation may be subtle, non-formal and manifestly unnoticeable. There are many clues to this phenomenon. Often, the prices of competing brands in an Oligopolistic market tend to move in a restricted range. This is so because no firm can set its price without any regard to those of the competitors. Secondly, the price revisions are not arbitrary and their timing has some well behaved patterns. Thirdly, most oligopoly markets have powerful industry associations' through which firms discuss issues of common interest,-influence public policy and interact with the customers. If you carefully analyze the functioning of these associations, the presence of such factors can be observed. For example, we have in India, fairly vocal associations of tyre firms, synthetic fiber manufacturers and cement units. In the extreme case, Oligopolistic coordination can be so perfect that all the firms may be able to act as a monopolist and maximize joint industry profits. This is called a cartel where all the firms 'administer' price-output decisions jointly.

The extent of Oligopolistic coordination in a market is likely to depend on a variety of factors. Legal framework of the business (MRTP Act, Companies Act, etc.) nature of demand and cost conditions, level of entry barriers, attitudes of the managements are some of the important variables that influence coordination. For example, in the Indian commercial vehicle industry, the entry barriers are quite high and a single firm controls about 50% of the market. Hence, not much coordination is observed. Similarly, if the market demand is booming and there is enough room for at least some firms to expand, coordination will be difficult. The ideal conditions for coordination are provided by a combination of weak demand, excess capacity, low entry barriers and rather weakly differentiated products. The reason for a well coordinated, oligopoly in the Indian tyre, cement and synthetic fiber industries can be found in these conditions.

Monopoly Regulation: The need for monopoly regulation is felt in every country. Oligopolies with dominant firms or cartels can have damaging effects on the markets. Prices can go up without any check or, volumes can be restricted. It is therefore found necessary to put a regulatory control over the power .of large firms so .that customers do not suffer. In most' countries, actions like takeovers, mergers and selling practices are open to scrutiny by some regulatory authorities. The MRTP Act in India regulates much more. It has under its umbrella all decisions pertaining to expansion, diversification, new locations, marketing practices and pricing apart from mergers and takeovers. A complete review of the regulatory aspects will be made in a subsequent unit. Suffice it to say for the present that firms in oligopoly and, near monopoly situations have to reckon with government regulation in any country. Considering the possible, price-volume outcomes,

regulation seems Inevitable. The degree and mechanism of control however changes from country to country.

4.4 REVIEW QUESTIONS

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1. Define monopolistic competition and give a few examples.
2. Identify the competitive and the monopoly elements.
3. Compare and contrast monopolistic competition with perfect competition with reference to adjustments and outcome in terms of equilibrium.
4. List and explain the factors that determine the element of competition in a market for either a product or a factor.
5. What do you mean by the term "Barriers of entry"? State and explain the factors that cause such barriers?

NATIONAL INCOME ANALYSIS AND ECONOMIC WELFARE

Structure

5.1 Introduction to National Income

    5.1.1 Circular Flow of National Income
    5.1.2 Effect of Foreign Trade on Circular Income
    5.1.3 Importance of National Income Estimates

5.2 Methods of Measurement of National Income

    5.2.1 Income Method or Factor Income in the Production Process
    5.2.2 Product Method or Value added Production Process
    5.2.3 Final Expenditure Method
    5.2.4 Reconciling the Three methods
    5.2.5 Choice of Methods
    5.2.6 Difficulties in the Measurement of National Income

5.3 Economic Welfare of National Income

5.4 Review Questions

5.1 INTRODUCTION TO NATIONAL INCOME

Gross National Income comprises the total value of goods and services produced within a country (i.e. its Gross Domestic Product), together with its income received from other countries (notably interest and dividends), and less similar payments made to other countries. For example, if an Indian -owned company operating in another country sends some of their incomes (profits) back to India, the India's GNI is enhanced. Similarly, the repatriation of profit from a US-owned company operating in the India will count towards US GNI, but not affect India's GNI

5.1.1 Circular Flow of National Income

National income is a flow. This flow can be expressed either in terms of goods and services or in the form of money income. The flow is also known as the real flow. The flow of money income is known as the money flow.

Flow of Income in a Two-sector Economy: We will explain the flow of income in an economy by taking a model of simple economy in which only two sectors operate viz., household sector and producer's sector or firms, Real flow and money flow of income are shown in Figure. The upper loop in Figure below shows the real flow in the economy.

Households supply factor services to the firms'. Business firms by utilizing the factor services produce goods and services. Firms provide goods and service_ to households as a reward of their factor services, i.e., goods and services flow from firms to households; this constitutes the real flow in the economy. In the modern economies factor payments are not made in kind hilt in terms of money. Factor-owners, i.e., households, receive their rewards in the form of money, as shown in the lower loop. Household utilizes this money to purchase goods and services produced by the firms. Thus money flows from firms to households and again back to the firms. Since the income flow in a circular way between the firms and households, this flow is also known as "Circular flow of income".
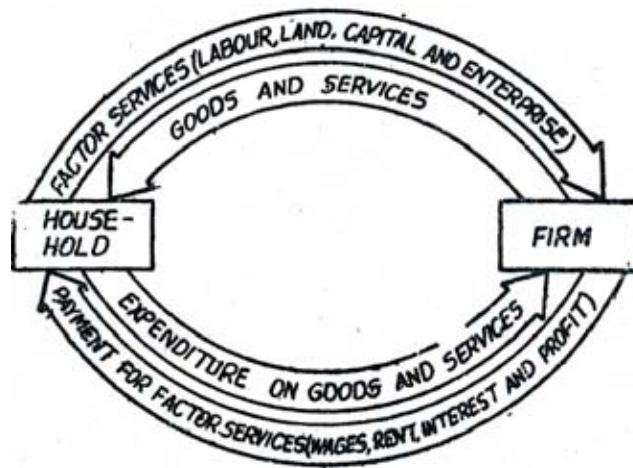
Fig 5.1 Flow of income

Inclusion of Saving and Investment in the Flow of Income: The above simplified illustration of the circular flow of income has been based on a few assumptions, viz.

- Whatever income the households receive, the whole of it is spent on consumption expenditure, and
- Whatever income the firms get by selling goods and services, the whole of it is spent in making factor payments.

In real life, however, households and firms save a part of their earnings. These savings are pooled together in: the capital market. Capital market refers to those institutions which transact in loan able funds; such as banks insurance companies, etc. Savings accumulated in the capital market are utilized by firms for investment purposes, as shown in Figure. Thus, the circular flow of income goes on, moving continuously with no disruption. Saving comes back to the economy in the form of investment. In the ultimate analysis, savings and amount of investment in an economy will always be equal.
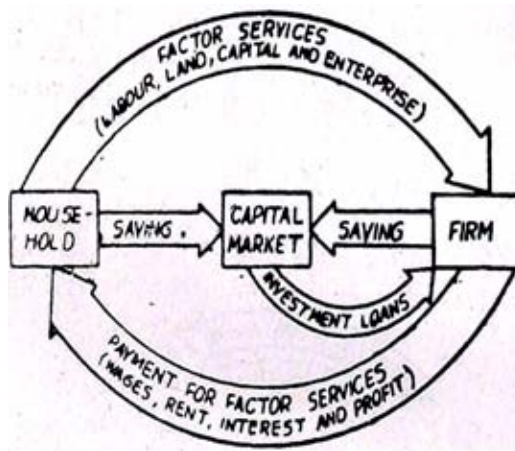
Fig 5.2 Inclusion of Saving and Investment in the Flow of Income

Government Sector and the Flow of Income: Government plays a significant role in the economic life of any country. Government acts both as a consumer and a producer in the modern economies. It has its own sources of income, and also it has to incur expenditure in a number of ways. A government collects taxes both from the firms and the households. A tax is a compulsory payment levied by any authority without any regard to the service rendered by it. Tax is the major source of income of modern governments. A government spends the income so accumulated on a number of activities, which are so designed as to benefit both the households and the firms.

For example, government may undertake to operate a number of collective services for the use of the community. This type of activity will satisfy the communal needs of the society. Likewise, it is also possible that the government may incur expenditure to render some services to the firm-sector; e.g. The Government may decide to subsidies the production of a' few important commodities.' Similarly, government may purchase goods and services from the firm-sector for the collective use of the society. With the introduction of the government sector, the circular I flow' of income will look like as in the given
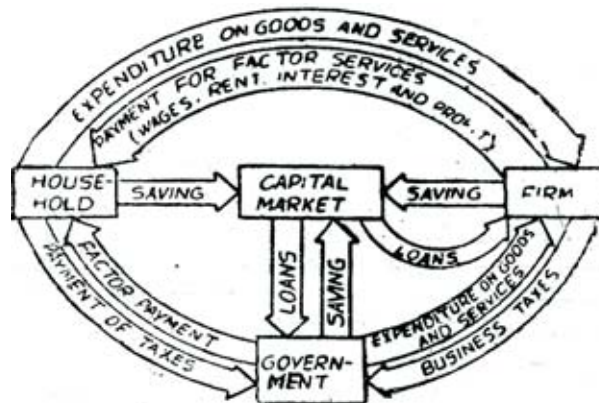

Fig 5.3 Government Sector Flow of Income

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It is clear from the above Figure that whatever the government takes out from the flow of income, it pumps back the same in the form of public or State expenditure, and thus, the circular flow of income goes on moving continuously.

Real and Money Flows: The figure below divides the economy into two sections or *sectors* made up of households and firms.

There are two types of flow (an amount per time period) between these groups:

- **A Real Flow:** Households own factor services which they hire out to firms. Factor services are then used to manufacture goods and services.

- **A Money Flow:** Households receive payments for their services (income) and use this money to buy the output of firms (consumption).
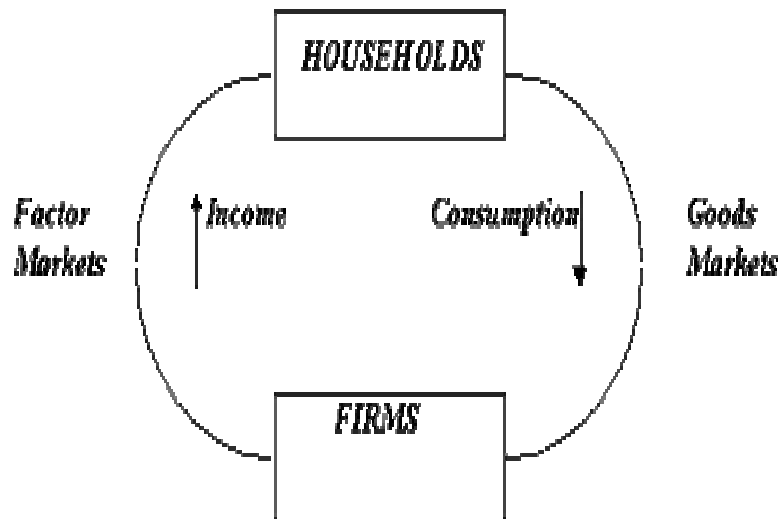

Fig 5.4 Real and Money Flows

Leakages or Withdrawals from the Circular Flow: Not all income will flow from households to firms directly. The circular flow below shows that some part of household income will be:

- Put aside for future spending, i.e. saved.
- Paid to the government in taxes.
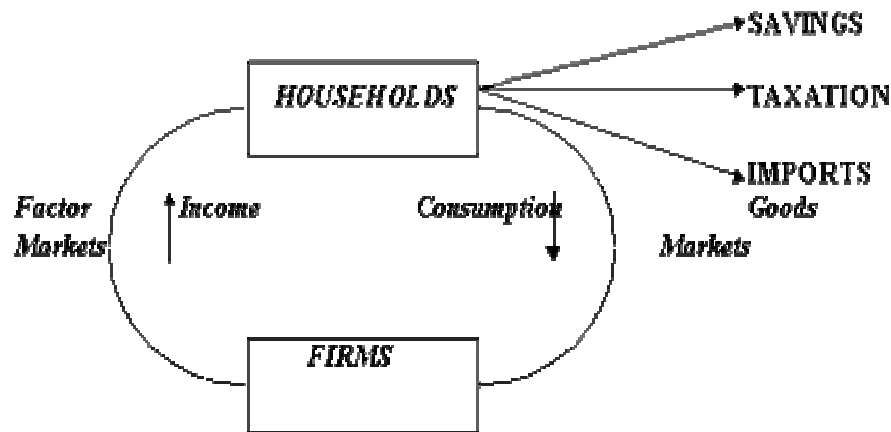- Spent on foreign made goods imported into the country.

Fig 5.5 Withdrawals from the Circular Flow

Injections into the Circular Flow: These flows out of the circular flow of income will be counterbalanced by flows back in. These flows are known as injections. These may take the form of:
- Other firms, i.e. investment expenditure.
- The government, i.e. government expenditure.
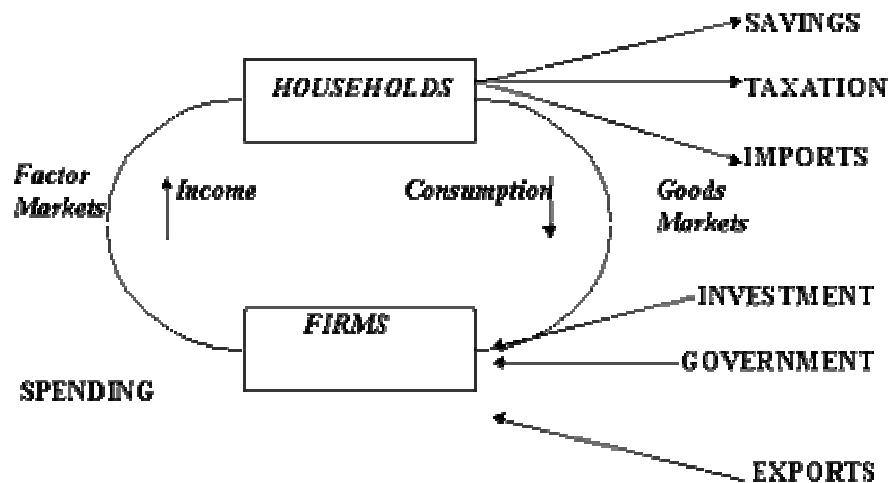- Foreigners, i.e. export expenditure.

Fig 5.6 The Impact of these Injections on the Circular Flow

The Multiplier Effect: When there is an increase in the level of injections a part of it will be received by a household as extra income. The households will probably act so that part of this extra income is then spent and part is saved.
This extra consumer spending then gives rise to a series of further incomes and expenditures. The overall increase in spending is much higher than the initial injection. This effect is known as the multiplier effect. The greater the proportion of the extra income that is spent (the *Marginal Propensity to Consume*), the bigger the multiplier effect will be.

National Income Accounts: The relationships explained in the sections above form the basis of national income accounting. The aim of national income accounting is to place a money value on this year's output. There are three methods of calculation.

Income Method: The income method adds together the total value of all incomes that have been earned in the relevant time period. These may include income from employment, income from self employment, profits, surpluses of public (government) corporations and rent. Note that only incomes earned from supplying a factor service are counted. Transfer payments are ignored.

Expenditure Method: The government adds up all the money spent in buying this year's output. This will be the total of Consumption, investment, government expenditure and net exports (exports - imports). This ignores:
- Indirect taxes and subsidies included in the selling price.
- Spending on second-hand goods.

Output Method: The economy is broken up into twelve different sectors (e.g. manufacturing). The money spent on making the goods (inputs) is taken away from the money received from the sale of the goods (outputs) to give each sector's value added. Taking final output or adding up each sector's value added gives national income.
Unpaid output such as the work of housewives is not recorded.

Measurement of the Standard of Living: The value of this year's national income is a useful measure of how well-off a country is in material terms. However, inflation increases the *money* value of national income but does not provide us with any more goods to consume. *Real national income* is found by applying the equation:

Real national income = Money national income/Retail price index x 100.

The standard of living refers to the amount of goods and services consumed by households in one year and is found by applying the equation:

Standard of living = Real national income/Population

A high standard of living means households consume a large number of goods and services. A second method of calculating living standards is to count the percentage of people owning consumer durables such as cars, televisions, etc. An increase in ownership indicates an improved standard of living. A third method of calculating living standards is by noting how long an average person has to work to earn enough money to buy certain goods. If people have to work less time to buy goods, then there has been an increase in the standard of living.

Interpretation of the Standard of Living: An increase in the standard of living may not mean a better life-style for the majority if:
- Only a small minority of wealthy people consume the extra goods.
- Increased output of certain goods results in more noise, congestion and pollution.

- Leisure time is reduced to achieve the production increase.
- There is an increase in the amount of stress and anxiety in society.

5.1.2 Effect of Foreign Trade on Circular Income

We can further' complicate our model of/the circular flow of income in an economy by including yet another sector; this time we will consider the effect of foreign trade on the circular flow. Foreign trade is the characteristic feature of the modern open economies. Foreign 'trade implies two transactions, viz., exports and imports. Goods and services are exported from one country to another, and similarly imports also come to a country from different sources. Firms and government receive money value in the form of payments for exports, and make payments abroad for imports.

Thus, a part of income which is sent abroad towards payments for imports comes back to the flow in the form of receipts for exports. To sum up, income is generated in the producing sector of the economy; it flows between the different sectors making, the productive process a continuous activity. This size of the flow will-vary depending upon the fact whether the economy is a growing or a static one. In a growing economy, level of economic activity will go on increasing, made possible by investment, which -represents a surplus of production over current consumption. As investment increases, productive potential of the economy will increase, resulting in more production and higher, con-sumption, and also more saving. Government transactions will- also increase, as its revenue from sources like direct and indirect taxes will go up; similarly, it will be called upon to perform more functions necessitating higher expenditure. In a static economy, on the contrary, the size of flow will remain unchanged; the same amount of income will keep on flowing between the different sectors of the economy.

5.1.3 Importance of National Income Estimates

National income is a flow expressed in terms of total output. The -estimates relating to the flow of total output in an economy are being used by economists, policy-makers and decision-makers for varied purposes, e.g., for inter-country comparisons, for temporal comparisons, for measuring the relative sigil1ficance of the different sectors of the economy. Some of the important uses of the national income estimates are as, follows:

First the national account was prepared with a view to helping the public authorities in formulating their economic policies. The use of the national account to exert active pressure on economic development is still of great importance, especially in those developing economies which have adopted economic planning. In such an economy, national income statistics facilitate the formulation of plans and fixing of target & of development. Besides individual programs and projects, a plan will corporate an aggregate picture consisting of saving, income, consumption, investment and employment. For this overall aspect we' do need national income and allied estimates. Further, these estimates also facilitate the evaluation and assessment of development programs. To what extent have the overall targets been achieved, and to what extent do they need a. revision, 'are the problems the answer to which is indicated by national income estimates.

Secondly, the use of the national accounts for the study of the economy and appropriate decision-making has also spread to the business world; business firms take great interest in the study of their share in the aggregate production of industry and in the total national production. They also find in the accounts information about the distribution of national expenditure, i.e., which markets are expanding and which are contracting. This helps the business" firms formulate their business strategy.

Thirdly, the income part of the accounts is of particular interest to trade unions and labor organizations. From these accounts, these organizations find the distributions of the shares of income and the correlation of these shares with production.

Fourthly, the income part of the accounts is of particular interest to trade unions and labor organizations. From these accounts, these organizations find the distributions of the shares of income and the correlation of these shares with production.

Fifthly, national income estimates are used to compare the international level of welfare and the stage of growth of various economies.

Sixthly, the national accounts also throw light on the structural changes in an economy. They provide information on the relative importance of the different producing sectors, as also regarding the distribution of income among the various classes and regions and the consumption pattern of the people.

Finally, the national accounts have been found to be useful in the teaching of economics. Basic economic concepts and identities are grasped more easily and made clearer by following, the inter-relationship between the various aggregates and accounts. Prominent economists have written text-books using the national accounts approach as a method for explaining and analyzing economic activity.

5.2 METHODS OF MEASUREMENT OF NATIONAL INCOME

National income of a country can be measured in three alternative ways (i) as a flow of income (ii) as a flow of goods and services, and (iii) as a flow of expenditure. The three methods of measurement give us three measures of national income, viz., gross national income, gross national product; and gross national expenditure. The three measures will be identical in value, i.e., in an economy.

$$\text{GNI} \equiv \text{GNP} \equiv \text{GNE}$$

5.2.1 Income Method or Factor Income in the Production Process

As we have already discussed that the production process is a Continuous one in which goods and services are produced with the help of various factors of production like our, land, capital, enterprise and so on. 'These factors co-operate in the production process because they receive earnings in cash or in kind which will satisfy wants. The producers engage these factors because they have the capacity to produce tangible goods and services. The producers are, therefore, under an obligation to make payment for factor services. The earnings which the different factors of production get in the production

process are called factor incomes. From the producer's point of view it is termed as 'income paid', and from the factor's point of view as 'income received'

National income of a country could be c6mputed either by taking the sum of income paid by the producing units to the factors of production, or by taking the sum of income received by the factors. The former is known as 'income-paid-out variant' and the latter as 'income received variant'. National income, whether measured by income-paid out variant or by income-received variant must give us identical results. Different countries use either of the two variants to measure national income as sum of factor income, depending upon the availability of essential data. At times, income paid and income received measures are used simultaneously, as in France, to compute the national income. In most of the countries, however, the income-paid-out approach is extensively used because of the easy availability of data relating to it.

Classification of Factor Income: The income which the factors receive from enterprises, government, or other institutions could be classified into different categories accounting to economic division in which economic activities are placed. The most comprehensive classification consists of the following five types of income:
- Compensation of employees,
- Interest,
- Rent,
- Profits and Dividends
- Mixed income of self-employed.

We may adopt a less comprehensive but still effective classification of factor income into three broad categories, viz.
- Wage Income,
- Non-wage Income, and
- Other incomes.

Wage Income: Wage income refers to the income received by the employees in cash and in kind. These employees must be the normal residents of the country. Wage income must be computed before payment of taxes and deductions of social security contributions. Factors of production work for private enterprises, government and sometimes they work for themselves (self. employed). The sum of the wages and salaries received by factors in a year's time gives us national income of the country. Normally, wage income estimates are available through industrial reports, annual surveys, budgetary reports of the government, payroll tax data, and so on. Wages and salaries paid to the factors are compiled from the information received from the different sectors-public and private-employing them.

However, at times, aggregate wage income statistics are inadequate or available for certain years only. In such cases, it is necessary to conduct special surveys to collect wage income data. All the units of factors are not taken into consideration for the collection of data. Suppose that we have to estimate the earnings of the workers employed in the cotton textile industry in India. We will pick up a few workers at random

basis representing all categories in an industrial unit. Then we will find out the average income of these representative workers by dividing their gross income by their number. This average income, then, will be multiplied by the total number of -workers engaged in this industrial unit to arrive at the total income of all the workers in this unit. Similarly, the wage income of workers employed in other cotton textile units is computed. The sum of the wage income of workers in all the units will provide us data relating to income paid to workers in cotton textile industry. Similar method may be employed to find out the wage income of workers working in other sectors.

We have to follow a different method to estimate the compensation paid in kind to domestic and farm workers, restaurant, and industrial employees. The value of board or lodging is computed at their cost to the employers or at the prices at which these facilities would be available to the employees elsewhere. There is yet another form of wage income, known as 'supplementary labor income. This income is paid in the form of provident fund, pension, gratuity, and other social security benefits. Income arising out of supplementary earnings is ascertained from the sample accounts of the enterprises administrating welfare programs. Annual surveys and other reports also furnish information relating to supplementary earnings

Non-Wage Income: Non-wage income refers to the income paid to the factors in the form of interest, rent, distributed profits and dividends. We would like to discuss in brief the different sources of non-wages income which are as follows:

- **Interest:** Interest is the income received 'by individuals and non-profit' institutions as a reward for the capital supplied to the enterprises, It also includes interest on life insurance policies, bank deposits and interest on government bonds. Normally, the interest accruing to households is not -shown in the national' income because no relevant information is available on this count. In such casts, the interest payments to households appear in business profit as a factor share. Income from interest may be estimated from income tax data, as in the United States, or may be obtained by conducting surveys of the production activities of business enterprises.
- **Rent:** Income from rent may be defined as' a capital share derived solely from the ownership of land and building. Rental income includes net rent accruing to households and private non-profit making institutions. It does not include rent on the ownership of farm and owner-occupied business buildings. It is so, because it is reflected in the profits of the firms and business enterprises. Data relating to the share of rent in the national income is collected through special surveys or tax returns.
- **Profits and Dividends:** Corporate profits include dividends and undistributed profits. Dividends are the income paid by the enterprises to households and non-profit making organizations as a share of profits. Data relating to the share of dividends in the national income may be computed from the reports of corporate income taxes or reports of special taxes on income from stock and other securities. Undistributed profits are the sums set aside by .firms for future tax payments. It is obtained after payment of dividends, interest, transfers and direct taxes. Figures relating to undistributed profits may be obtained from the corporate

income tax returns or through special sample surveys. Mixed incomes of the; self-employed are considered as income from work. It is true that the entire income a self-employed person receives cannot be attributed to his effort alone. Any production activity requires the services of other factors in addition to human effort to produce goods and services. In. most cases, the producer supplies his own land and capital instead of borrowing their services from the market. His income, therefore, includes interest for the capital and rent for the land he has supplied. If he were to provide these factors to others he would receive interest and rent. But in practice, it is difficult to draw a dividing line between his labor, land and capital. They are lumped together. The entire: income of the self-employed is regarded as the income from work.

Other incomes: In the category of 'other incomes' we include operating surplus of the public enterprises, taxes, and net flow of income from abroad. Public enterprises are productive units owned by the government. The surplus earned by these enterprises is, not to be distributed among the shareholders, since the government: .itself is the sole owner. Such surplus is included in the national income of the economy. Similarly, the government does not earn taxes, but collects them. These taxes are the incomes of factor inputs which the government has collected. If the same tax money is used to produce various goods and services by paying wages and salaries, the government sector does not appear to generate any income. This is because the incomes of non-government employees were already counted and taxes are a part of their income. If the same money is paid to government employees, it would appear that it should not be called as income. This is not correct. The non-government employees' gross income, before payment of taxes, measures the value of their contribution to the flow of goods and services. Similarly, the government employees' income measures their contribution. Therefore, both should be included in national income. Lastly, net flow of income from abroad is to be included in national income. Net flow of income from abroad is computed as the difference between the total value of exports that a country earns and the total value of imports that a country has to pay out. To sum up, national income as a sum of factor incomes or factor costs can be calculated by estimating the values of wage-income, non-wage income and other incomes by the various methods and sources, discussed above in the text.

Difficulties: Factors of production which assist in the production process to produce goods and services receive income for their factor services. But difficulties arise in the allocation of factor income both art the payable and on the receivable side. We would like to discuss some of the more important difficulties, which are as follows:

- **Classification of Income:** The first difficulty arises in classifying the type of payment or receipts. There is not much of confusion or disagreement regarding the classification of factor income into two broad categories, viz., wage and non-wage income. But, what constitutes wage and non-wage income is a matter of dispute.

- **Income of the Members of Armed Forces**: While the pay and allowance of members of the armed forces are generally not included in the labor income,

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compensation in kind to the member of the armed forces is included in the national income estimate. Another difficulty in assessing the value of compensation is whether the value of boarding and lodging should be computed at their cost to the employer or at the prices the members of the armed forces would pay elsewhere.

- **Allocation of Mixed Income:** Difficulties arise in the allocation of mixed income. While the income from farms and other agricultural enterprises is included in factor income, income from the ownership of farms, buildings and financial assets is not included in the factor income. Income from the ownership of farms buildings, and financial assets is generally recorded separately in the rent and interest shares of income

- **Allocation of Dividend:** Allocation of dividends also creates difficulties. Dividends paid to households, government, and non-profit making organizations by corporations, limited companies, etc are included in the factor shares. But, inter-corporate dividends are not considered as a part of national income.

- **Computation of Undistributed Profits:** Computation of undistributed profits is again a difficult task. The shareholders collectively own the corporations in which they hold shares. Therefore, allocation of the factor income accrual in respect of undistributed corporate profits to corporations as such virtually amounts to allocating this factor income accrual to shareholders collectively. It means that the share holders can claim the whole of the residual income of corporations and not only the part disbursed as dividends.

- **Income of Self-Employed:** There is some amount of uncertainty as to when exactly the income of self-employed becomes payable. The choice rests with the person. He may consider it payable as and when income is earned, or he may defer it till the time of actual withdrawal.

- **Income-Expenditure Surplus:** At times consumers as suppliers of factor services have to over-spend their incomes. In fact to the extent that their borrowing exceeds their lending, consumers, unlike producers have nothing to show for the surplus of borrowed funds. This less of saving reduces their 'net worth' and thereby their claim to a share in total factor income.

- **Change in Inventories:** Changes in inventories also create problem in national income computation. When the inventories are valued on 'first in first out' basis, their book prices may be higher or lower than the actual cost entering into the value of production.

To sum, up, it sounds very simple to calculate national income with the help of income method, in which we have to estimate the factor income generated in the production process. But, in practice, the method has to face a number of difficulties, some of which

may simply prove insurmountable. Therefore, economists have expressed serious doubts about the usefulness of this method in application.

5.2.2 Product Method or Value-Added in Production Process

In the process of production, enterprises, public and private, produce certain goods and services with the help of the various factors of production. These goods maybe consumer goods like cloth, footwear; sugar, milk, grains, etc., or capital goods like cloth, footwear, sugar, milk, grains, etc., capital good like factory buildings, machinery, tools, equipments, rail-roads, etc. Similarly, services include the services of doctors, teachers, musicians, advocates, government servants, banking and insurance, etc. The sum of all the goods and services produced in a country in a year's time gives us gross domestic product. It is, however, not possible to take up the total of all the goods and services, as different units of measurement like grams, liters, quintals, meters, etc., are available to measure their quantities. The utility or satisfaction derived from services is still more difficult to ascertain because it is a subjective thing. It is for this reason that economists have introduced money as the measuring rod to measure the quantity of goods and services. The money value of all the goods and services produced in year's time gives us gross domestic product at market prices. It is worthwhile here to mention three stages through which the national income accounting process has to move. These three stages include: (i) estimating the gross value of domestic output in the various sectors of the economy, ii) determining the cost of materials used and services rendered by other sectors and the depreciation of plant and machinery, and(iii)deducting these cost and depreciation from gross value to derive net value of the domestic product. It is also known as 'census of output method' or 'value added method' of estimating national income.

Classification of Producing Sectors: In the estimation of national income according to - census of output method or value-added method, the economy is classified into various sectors where the income originates. Economists have different opinions about the number of sectors or divisions among which the industries should be classified. However, the most common classification divides the producing units into the following fourteen categories: (i) Agriculture, ii) Mining, (iii) Fishing, (iv) Construction, (v) Manufacturing, (vi) Trade, (vii) Transportation, communications, and other public utilities, (viii) Finance, (ix) Ownership of dwellings and other real estate, (x) Service industries, trade and arts, (xi) Professions, (xii) Domestics, (xiii) Public Administration and (xiv) Private non-profit making organizations. The output of goods and services flowing from each branch of production is the sum of the outputs of all the separate producing units in that branch. The total output is evaluated at the market, prices. The value so computed is called 'gross value of domestic product'.

Valuation of Gross Product: The gross value of the output in a particular sector is estimated either by computing data relating to output in that sector and then multiplying it by an appropriate price, or by collecting information about the gross receipts of enterprises from the sale of their produce and changes in the values of their inventories in a year's time. Product data may be collected by conducting sample surveys. Difficulties of valuation appear especially in case of transport, communications, services of

dwellings, public administration, etc. It is because they do not produce any tangible things. It is for this reason that census of income method is employed to evaluate the contribution of services to the national income.

Intermediate Consumption and Value Added: Computation of national income on the basis of the valuation of gross output in the different sectors does not give us a correct picture, In the, compilation of output data certain items appear more than once and thus over-value the national product. For example, if Industry A is producing pulp sells it to the Industry B producing paper for Rs. 1,000, Industry B sells paper to the Publishing Industry C for Rs. 1,200 and Industry C sells books made of this paper for Rs. 1,500 to book-sellers. In such a case the gross value of output will be Rs.1,000 + Rs. 1,200 + Rs. l,500 = Rs.3,700. But careful analysis of the production process will reveal that this much income has not been generated in the economy. Pulp, which is the original raw material, in this case; has been added three times to the national produce. We should not include a material or product at all the stages of manufacturing; if we want to have correct estimates of national income.

In order to avoid duplicity in counting, we must make allowance for intermediate consumption. The cost of materials, services and taxes must be excluded from the gross value of the product. For example, if estimating the value of food grains, we must deduct from the gross value the cost incurred on seeds, fertilizers, irrigation, etc. Similarly, if we are calculating the value of industrial output, we must deduct from the gross value of output the cost for raw material, fuel, electricity, power, etc. Likewise, in estimating the value of buildings, we must deduct from the gross value the cost of building materials. In all other cases where it is not feasible to ascertain the real cost of the intermediate materials, a certain proportion or percentage of cost should be deducted from the gross value of the produce.

Difficulties of various kinds appear in making allowance for the intermediate consumption. Sufficient data is not available regarding the value of intermediate materials. Difficulties arise specially, incase of small manufacturers who do not keep proper account of the inputs, used by them. The most difficult problem in the estimation of gross value of produce arises when the producers themselves retain a part of the total produce for their self-consumption. For example, suppose a cultivator produces 10, quintals of wheat. He retains 2 quintals of wheat for meeting the food requirements of his family and sells the rest for Rs. 800 (price being Rs. 100 quintal). It means that the national income has been underestimated by Rs. 200 because of intermediate consumption. We may find a number of such cases relating to small producers, who retain a sizable proportion of the total produce for self-consumption and thus create conditions for the underestimation of national income.

Net Value Added: for the correct estimation of the national income according to output method, the concept of 'net value added' has proved very useful. In this method of valuation of product, duplication of counting can be avoided. The term 'value added' implies that only the value added by each industry to the -raw materials or other goods and services that it bought from other industries ,before passing 0n the products to the

next stage be included for the purpose of national income--estimation. In this method, the intermediate inputs are not ignored, but since only the value added embodied at each stage is included in the final total, double counting is automatically overruled.

Industry A sells wood to industry for Rs. 60. In the second stage of production Industry B which is a manufacturer of chairs sells chairs to Industry C for Rs. 90. In the third stage, Industry C. which is a dealer in furniture sells chairs to consumers for Rs. 100. Now if we go by gross value, then the total value pf chairs would be Rs. 250. But, in reality, the economy is getting chairs worth Rs. 100 (the final value of product). The mystery could be resolved with the help of the value-added method Industry A did not use any intermediate input and sold wood for. Rs. 60. Hence, the value added by Industry A is Rs. 60. Industry B purchased raw material in the form of wood for Rs. 60 and sold it for Rs.90 after transforming it into chairs. So the value added by industry B is Rs. 30. Finally Industry C purchased chairs for Rs. 90 and sold them to consumers for Rs. 100. It means that the value added by Industry C is only Rs. 10. Therefore the value added at the three stages of production is Rs. 1100.

Estimation 'of National Income by Value Added

Stage	Industry	Selling price	Cost price	Value Added (Rs.)
First	A	60	0	60
Second	B	90	60	30
Third	C	100	90	10
Total		250	150	100

Illustration: Suppose only the following transactions take place in an economy:

Industry A imports goods worth Rs. 100. It sells goods worth Rs. 400 to industry B, 'goods worth Rs. 200 to industry C, and goods worth Rs. 1,000 for private consumption. Industry B sells goods worth Rs. 500 to industry C and goods worth Rs. 800 for private consumption. Industry C sells goods worth Rs. 600 to private consumption and exports goods valued at Rs. 500. Depreciation cost during the year amounts to Rs. 100. Government realizes taxes of the value of Rs. 100. Calculate the following with the help of net value added method from the data given above: (a) GNP_{MP}, (b) GNP_{FC}, (c) NNP_{MP}, and (d) NNP_{FC}.

(A) GNP_{MP} = Sum of net value added by all the industries

Value-added by industry A
= Sale of goods to industry B
+ Sale of goods to industry C
− Value of imports
Sale of goods to consumers = Rs. 400 + Rs. 200
                      + Rs. 1, 000 − Rs. 100
                      = Rs. 1,590.
Value-added by industry B

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= Sale of goods to industry C
+ Sale of goods to consumers.
– Purchase of goods from industry A
= Rs. 500+Rs. 800 – Rs. 400
= Rs. 900.

Value-added by industry C
= Sale of goods to consumers
+ Exports – (purchase of goods from industry A+ purchase of goods from industry B)
= Rs. 600+Rs. 500-Rs. 200-Rs. 500
= Rs. 400.   .
Gross National Product at market prices or GNPMP equals
Rs. 1,500+Rs. 900+Rs. 400
=Rs. 2,800

Gross National Product at factor cost or G NPFC equals
GNP_{MP} – Indirect taxes + Subsidies
= Rs. 2,800 – Rs. 100 + Rs. 50
= Rs. 2,750.

Net National Product at market prices or NNPMP equals '.
GNP_{MP} – Depreciation
= Rs. 2,800 – Rs. 100
= Rs. 2,700.

Net National Product at factor cost or NNPFC equals
NNP_{MP} - Indirect taxes + Subsidies
= Rs. 2,700-Rs. 1O0 + Rs. 50
= 2,650.

Provision for Depreciation: The value added at different stages of production does not give us the true value of domestic product. While producing goods and services, machines, plants, equipments, etc., get worn out and need replacement after some time. A part of capital is, therefore, set aside in the form of depreciation allowance. After deducting depreciation* cost from the value added finally to a product we get the true value of the product to be included in the national income.

5.2.3 Final Expenditure Method
Final expenditure method is also known as 'consumption and investment method' of measuring national income. In order to use this method we have to collect data relating to the consumption and investment or expenditure on final consumption by the community. Disposition of national income can take two forms. It can either be consumed by house-holds, firms and government or may be used to create assets, i.e., investment; in brief, Y=C+I, where Y is national income, C is consumption expenditure, and I is investment expenditure. (I) Consumption expenditure of a country consist of
   • Private consumption expenditure,

- Government consumption expenditure

Private Consumption Expenditure: It consists of: (a) durable consumer goods like furniture, clothes, shoes, washing machines, TV sets. etc., (b) non-durables like food, drinks, tobacco, tooth paste, etc., and (c) services like hotels, restaurants, educational instituti9ns, hospitals, postal services, transport services, etc. While computing private consumption expenditure for the purposes of measuring national) income, we have to exclude the expenditure of foreign visitors and include in it the expenditures of nationals abroad. Consumption expenditure is calculated by taking the sum of money income, spent by different consumers on goods and services. Figures relating to consumption expenditure may be collected from retail trade activities taking place in a year's time. However, many commodities and services do not enter into the monetary sector and, therefore, remain excluded, from the national income. Government consumption expenditure consists of compensation of employees and net purchase from business enterprises and rest of the world. It should be noted that 'transfer payments' to residents and, foreigner; should never be included in the government expenditure. It is so, because transfer payments do not fall in the purview of production process, they are simply transfers of purchasing power from one hand to another. Government consumption expenditure also includes expenditure on services. These services include public hospitals, parks, transportation and communication, educational institutions, etc. Figures relating to government consumption expenditure may be collected from the State budgets In case of smaller government units; it may be collected by conducting sample surveys.

Investment Expenditure: Disposition of income may also take the form of investment expenditure. The use of the, term 'investment' in the national income accounts has a different meaning to that of its generalized meaning. For example, you may consider your purchase of a share of D.C. M. Company as an investment. However, from the nation's point of view it is not an investment but simply a transfer of purchasing power or ownership of money title. Investment refers to that part of current output which takes the form of additions to or replacement of real productive assets. Suppose in 1987 the total value of assets in the Indian economy was Rs. 3,000 crore, and in 1988 the net assets are valued at Rs. 3,200 crore. It means that the net value of investment during 1987-88 is Rs. 200 crore. In brief:

> Investment = Present Value of Assets – Value of Assets in the previous year.

In order to attain the net value of investment we have to deduct the cost of depreciation zfrom the, gross investment. There are three major categories of investment in the GNP accounts:

- Business fixed investment. It consists of business purchase of durable capital assets like machinery, factory buildings, stores, etc.

- Residential construction. It consists of both single family dwellings for occupancy or for rental purposes.

- Change in business inventories. It is that part of output that is absorbed. by business firms as an increase in their stocks of finished goods, goods in process, and raw materials.

Expenditure on investment may be calculated by 'commodity flow method' and 'capital expenditure method'. In the commodity flow method the net value added in private construction of residential and other building, new transportation and communication structures, net increase in livestock and other non-manufacturing stocks are added to the value of manufactured goods. On the other hand, in the capital expenditure method data are collected from questionnaires on the purchases of capital goods; tax data, etc.

5.2.4 Reconciling the Three Methods

We have discussed the three methods of estimating national income of a country. The national income of a country can be expressed in the form of the total product or the total income or, the total expenditure of the country. The three methods, once again, can be summarized as follows:

Methods of Estimating the National Income

	Output Method	Income Method	Expenditure Method
Approach	Goods and services produced	Types of income	Forms of Expenditure
Examples	Manufacturing, agriculture, etc.	Wages, Profits, etc.	Durable Goods. Services, etc.
Total	Rs. Xm	Rs. Xm	Rs. Xm.

All the three methods of measurement of national income provide identical results as illustrated below

Determination of GNP by Expenditure, Income and Value-added Methods

Commodity	Seller	Buyer	Value of transaction (Rs.)	Value added (Rs.)	Expenditure on final output (Rs.)	Factor income (Rs.)
Steel	Steel Co.	Machine manufacturer	20	20	-	20
Bread-making machine	Machine manufacturer	Bread producer	50	30	50	30
Wheat	Producers of wheat	Flour Mill	5	5	-	5
Flour	Flour Mill	Bread	10	5	-	5

		producer				
Bread	Bread producer	Retailer	20	10	-	10
Bread	Retailer	Consumer	25	5	25	5
Total value of transactions GNP			130	75	75	75

It will be seen from above Table that any of the three methods leads us to the same results, i.e., the value of the gross national product is the same.

5.2.5 Choice of Methods

Depending upon which phase of national income is to be analyzed, we employ different methods of estimating the national income. If we are analyzed, its production phase, the net output method or the net value-added method is generally used. For analyzing its distributive phase or how various factors receive their share from the national produce, the income distributed method is used. And lastly, if we are analyzing national income in its expenditure or income disposing phase, the final products methods of the total expenditure methods will be used. The national, income whether computed in terms of total product, or total factor income, or the total expenditure must give identical results. In other words, total product, total income, and total expenditure provide the same level of national income. Should it, therefore, be inferred that we may use any of these methods for the estimation of national income? Should we use any of these methods irrespective of the difference in the level of economic activities, economic and social structure, occupational distribution of population, availability of data in the different countries? If that would have been so, the economists and experts of national accounting would not have suggested three alternative methods of estimating the national income. Relative suitability of the three methods can be explained as follows:

Difference in Economic Activity and Choice of Methods: The division of economic activities into different sectors depends upon the level of economic development in a country. In underdeveloped countries, agriculture and its allied occupations constitute major economic activity, where 80-85 per cent population is engaged in this sector for their means of livelihood. On the other hand, in the developed countries, manufacturing, trade, transport, commerce, public administration, etc., constitute important activities. Different methods of national income estimation shall have to be employed for different sectors, only then the income originating in these sectors could be estimated properly.

- For estimating the income originating in the agricultural sector, the net output method will prove to be most desirable. It is so. because the agricultural produce is sold at standard market prices, the various in outs like seeds, manures, feed. etc., used in agriculture originate from this sector itself. It is, therefore. very easy

to ascertain the gross agricultural output and deductible cost from the same set of data On the other hand, it is rather difficult to determine the factor share in the agricultural sector, except where agriculture is carried on by co-operatives, or by corporate enterprises. Income distributed method cannot be used in the agricultural sector for want of adequate and dependable data.

- For, estimating the income originating in mining, fishery forestry animal husbandry,. etc. (primary sector), again the net output method appears to be most suitable. In most countries data are easily available relating to the above-mentioned activities and the cost of inputs can also be easily ascertained. The income distributed method has restricted use in these fie1ds because the labor is unorganized and data relating to the factor share are not readily available.

- In the manufacturing sector, including gas, power plants, etc., census of income method or the income-distributed method is more desirable. In the organized manufacturing sector, factor share is allocated predominantly in money incomes. The business enterprises maintain detailed business accounts regarding the factor share and report it to tax authorities and social security agencies. Difficulties, however, arise in case of small manufacturers who do not keep proper accounts of their business activities.

- In measuring the contribution of trade, transport and communications to the national income, both income-distributed and net output methods are alternatively used. Where inadequate data is available relating to income paid out in trade, the net output method remains the only alternative to be used for estimating the national income. For transport and communications, most of the countries possess and publish data relating to their total receipts and expenditure, as well as on wages interest, net profits, etc. We can, therefore, rely upon the income-distri-buted method for estimating the contribution of transport and communications.

- In the field of finance, i.e., banking and insurance, mostly large units exist. Figures relating to the factor shares become easily available in case of large financing agencies. Therefore, the income distributed method proves to be very useful in this field.

- For professional, domestic and other services, the income distributed method is used exclusively. The net output method would appear to be unsatisfactory because there is very little difference in the gross and net output in service

- The contribution 'of the services of dwellings and other buildings is measured by the net output method or the commodity flow method, i.e., expenditure method.

It is clear from the above discussion that different methods of estimation are suitable for different sectors, suitability depending upon the nature of economic activity and the availability of data. But, one thing is very certain that the 'expenditure method is used on a very limited basis because the data relating to expenditure are non-existent in most of the countries.

Difference in the Structure of Economies and Choice of Methods: World economy is classified into developed and under-developed economies on the basis of difference in their structure. Consequently, different methods of estimating national income are used in these countries. In underdeveloped countries agricultural sector occupies the most

significant place. Since agriculture and its related fields constitute the major proportion of economic activities data relining to output is easily available. On the other hand, the rigid and backward socio-economic structure in the underdeveloped countries retards industrial growth and development the services sector. Data relating to personal income taxes, social security benefits and corporate incomes is either conspicuous by its absence or unreliable, under these circumstances net output method is extensively used in underdeveloped countries for the estimation of national income.

In developed countries the situation is quite different. They have well-Knit and fully developed system of national accounting. With elaborate fiscal systems and records, data relating to individual incomes is often rich, making possible the application of the income-distributed method. Figures relating to production, sales, consumption and investment are also available, but these are not as complete or up-to-date as fiscal data. Even such industrial countries as Britain and Germany have sporadic manufacturing censuses, and current statistics on retail sales and consumption expenditure are also inadequate. Therefore, the industrially advanced countries rely more upon the income distillated method for the estimation of national income.

Availability of Data and Choice of Methods: The reliability of national income estimate depends to a large extent upon the completeness, comparability, accuracy and adequacy of the nation's statistics. In case, statistical data have a wide coverage of the economic activities carried out in the various sectors, and if they are easily comparable, the estimated national income on the basis of such data will also be highly dependable. In underdeveloped countries. The range of data is narrow and their quality relatively poor. Division of economic activities in under developed countries is unscientific and ambiguous. Existence of a large non-monetized sector and unorganized business activities pose difficult problems in the collection of income statistics.

In the highly industrialized countries, economic statistics are in good shape. They nave a wide coverage, statistical machinery is very efficient and well-coordinated, and facilities are also available for counterchecking and comparison. Statistics are available not only-on personal income taxes, social security, and corporate incomes, but also on retail trade, consumption expenditure, and investment. By virtue of their well developed system of statistical data, the industrialized countries have the privilege of using one or more methods for the estimation of national income. We can, therefore, conclude that none of the methods possesses completeness and accuracy. Application of a particular method is largely determined by the division of economic activities, economic structure, and above all the state of statistical data. Income-distributed method may be most suitable for the developed countries, while it may appear inappropriate and unworkable in the underdeveloped countries which do not possess the relevant data. Likewise, in the developed countries income distributed method works very successfully in the manufacturing, trade and transport sectors but appears unworkable in the agricultural sector.

5.2.6 Difficulties in the Measurement of National Income

The correct estimation of national income is by no means an easy task. Difficulties of various kinds are generally faced in the measurement of national income. These difficulties may be classified into two categories:

- Conceptual difficulties or Theoretical difficulties
- Practical difficulties

Conceptual Difficulties: These difficulties relate to the various concepts of national income. Some of the important conceptual difficulties are as follows:

- **Determination of intermediate and final goods:** The national income of a country consists of only final goods and services. Final goods refer to those goods which are readily available for consumption. Final goods are required for their own sake. While estimating the national income, it is always not possible to make a clear distinction between intermediate goods and final goods. For example, cotton used at a surgical Clinic is the final product for a doctor, but if the same cotton is used by the cotton milt to manufacture cloth, it will be treated as intermediate product. To stretch this example further, if this cloth manufactured by Delhi Cloth Mills is used by Wings or Liberty Company to manufacture ready-made garments, this cloth will be regarded as an intermediate product.

- **Services without Remuneration:** In our daily life we observe a father teaching his son, a mother taking care of her child, a housewife looking after the household affairs, and so on. No factor payment is made for these services, and therefore, they do not form part of the national income. But if the same services are provided by a tutor, a baby-keeper and a house-maid, respectively, factor payments shall have to be made. So, in the changed circumstance the same services will be included in the national income.

- **Transfer payments:** Transfer payments refer to those payments for which e receive has not to perform any economic' activity. Pocket allowance given to a son, by his father, or the pension paid by the government to the retired employees, are a few examples of transfer payments Transfer payments are the sources of income for the households and the business firms, but these do not form part of the national income.

- **Pricing of Products:** Valuation of the final products for the purposes of national income estimation is a difficult task. We know that the prices change every month, every week, and in certain cases from day to day; therefore, which price should be chosen to ascertain the money value of the products, is really a tough choice. Besides, we find different typed of prices existing in the market, e.g., wholesale price, retail price, etc. Which of these prices should be used to valuate the money value of products is a, difficult task.

- **Income of the foreign companies:** It is again a matter of controversy, whether the income of the foreign firms should be included in the national income or not.

It is suggested that the income which the foreign firms retain in the country must form part the national income while the income which they send abroad should not be included in the national income.

Practical Difficulties: Different types of practical difficulties arise in the estimation of national, income. More important difficulties are as follows:

- **Non-monetized sector**. A large part of the underdeveloped countries consists of non-monetized sector, Nan-monetized sector refers to that part of the economy where the exchange transactions are not performed in money or in order words, barter system of exchange prevails in the non-monetized sector. Goods which do not enter into the monetary sector are thus excluded from the national income.

- **Lack of Occupational Specialization:** It means that a person performs a number of economic activities at one and the same time. Consequently, an individual has different sources of earnings at one and the same time. Far example, a teacher teaches in the school and also takes private tuitions in extra time or a farm-laborer works on the farm and also works in a factory in the off season, and so on. It becomes impossible to trace out, the main source of earning of an individual in such cases. In the absence of adequate, information about the source of income, a large part of income remains excluded from the national income.

- **Non-Availability of Reliable Data**: This difficulty arises mainly in the underdeveloped countries where majority of people are living in the world of dark letters. Illiterate people neither understand the importance of the income-data, nor can they maintain proper records in this respect. Sometimes, the producers, in order to evade income tax, deliberately distort information relating to their incomes. Sometimes, the enumerators do not possess requisite knowledge of collecting, classifying and analyzing the data. Enumerators and investigators vitiate investigations by suing their personal bias and prejudices. National income estimation based upon inadequate and inaccurate statistics need not be dependable.

- **Goods for Self-Consumption:** Producers of final goods retain a part of their produce for self-consumption. Far example, a farmer retains a part of the total crap far personal consumption, or a weaver retains a part of the produced cloth far self-consumption, and the like. Goods which, are retained by the producer for personal consumption do not fetch, money price, and are therefore excluded from the national income.

- **Double Counting:** Many goods and services appear mare than once in the national income estimation. It is not always possible to make a clear distinction between intermediate goods and final goads. Likewise, whether the durable goods like building, furniture, machines, etc., should form part of a year's national income or should be continuously included in the national income till these are finally consumed. We 'can further take the example of goods and services which

satisfy communal wants The government constructs roads, parks, hospitals, bridges, etc., far the welfare of the masses, but different people derive different utilities from these services. How to make allowance for such services in the national income is again a difficult problem.

Thus we find that almost all the countries of the world, irrespective of then economic and social structure, face innumerable difficulties in the estimation of national income. Though it is impossible to remove all these difficulties completely, countries, however, mal work hard to develop a well-knit system of income-expenditure data to make the national income estimates more dependable.

5.3 ECONOMIC WELFARE OF NATIONAL INCOME

Now we are doing a very interesting topic which is related to the welfare of the economy. This topic will give an idea about the economic welfare and its relationship with national income. Apart from this you will also be able to distinguish between economic welfare and non economic welfare. We all know that National income is treated as an index of the economic performance of a country. A country with higher level of national income and per capita income will be more advanced and developed than the country which has a low level of national income and per capita income. An increase in the national income of the country implies that there is increasing availability of goods and services in the country. More goods and services mean higher level of consumption and standard of living. Therefore it is believed that economic welfare depends on national income.

What is Economic Welfare? Before knowing the relation between economic welfare and national income, it is essential to define economic welfare. Welfare is a state of the mind which reflects human happiness and satisfaction. In actuality, welfare is a happy state of human mind. Pigou regards individual welfare as the sum total of all satisfactions experienced by an individual; and social welfare as the sum total of individual welfares. He divides welfare into economic welfare and non-economic welfare. Economic welfare is that part of social welfare which can directly or indirectly be measured in money. Pigou attaches great importance to, economic welfare because welfare is a very wide term. In his, words: "The range of our enquiry becomes restricted to that part of social (general) welfare that can be brought directly or indirectly into relation with the measuring rod of money."[1] On the contrary, non-economic welfare is that part of social, welfare which cannot be measured in money, for instance moral welfare.

But it is not proper to differentiate between economic and non-economic welfare on the basis of money. Pigou also accepts it. According to him, non-economic welfare can be improved upon in two ways. First, by the income-earning method: Longer hours of working and unfavorable conditions will affect economic welfare, adversely. Second, by the income-spending method. In economic welfare it is assumed that expenditures incurred on different consumption goods provide the same amount of satisfaction, but in actuality it is not so, because when the utility of purchased goods starts diminishing the non-economic welfare declines which results in reducing the total welfare. But Pigou is of the view that it is not possible to calculate such effects, because non-economic welfare

cannot be measured in terms of money. The economist should, therefore, proceed with the assumption that the effect of economic causes on economic welfare applies also to total welfare. Hence, Pigou arrives at the conclusion that the increase in economic welfare results in the increase of total welfare 'and vice versa.

But it is not possible always, because the causes lead to an increase in economic welfare may also reduce the non-economic welfare. The increase in total welfare may, therefore, be Jess than anticipated. For instance, with the increase in income, both the economic, welfare and total welfare increase and vice versa. But economic welfare depends not only on the amount of income but also on the methods of earning and spending it. When the workers earn more by working in factories but reside in slums and vitiated atmosphere, the total welfare cannot be said to have increased, even though the economic welfare might have increased. Similarly, as a result of increase in their expenditure proportionately to, income, the total welfare cannot be presumed to have increased, if they spend their increased income, on harmful commodities like wine, cigarettes etc. Hence, economic welfare is not an indicator of total welfare.

Relation between Economic Welfare and National Income: Pigou establishes a close relationship between economic welfare and national income, because both of them are measured. in terms of money. When national income increases, total welfare also increases and vice-versa. The effect of national income on economic welfare can be studied in the following ways:
- Changes in size of national income and economic welfare
- Change in the composition of national income and economic welfare
- Changes in the distribution of national income and economic welfare.

The Change in the Size of National Income and Economic Welfare: There is direct relationship between size of national income and economic welfare. The changes in the size of national income and economic welfare may be positive or negative. The positive change in the national income increases its volume; as a result people consume more of goods and services, which lead in increase in the economic welfare. Whereas the negative change in national income results in reduction of its volume; People get lesser goods and services for consumption which leads to decrease in economic welfare. But this relationship depends on a number of factors. Is the change in national income real or monetary? If the change in national income were due to change in prices, it would be difficult to measure the real change in economic welfare. For example, when the National income increase as a result of increase in prices, the increase in economic welfare is not possible because it is probable that the output of goods and services may not have increased. It is more likely that the economic welfare would decline as a result of increase in prices; it is only the real increase in national income that increases economic welfare.

Second, it depends on the manner in which the increase in national income comes about. The economic welfare cannot be said to have increased, if the increase in. national income is due to exploitation of labor, e.g. to increase in production by workers working for longer hours, by paying them lesser wages than the minimum. Thus, forcing them to

put their women and children to work, by not providing then with facilities of transport to and from the factories and of residence, and their residing in slums.

Third, national income cannot be a reliable index of economic welfare, if per capita income is not borne in mind. It is possible that with the increase in national income, the population may increase at the same pace and thus the per capita income may not increase at all. In such a situation, the increase in national income will not result in increase in economic welfare. But from this, it should not be concluded that the increase in per capita income results in increase in economic welfare and vice versa.

It is possible that as a result of increase in national income, the per capita income might have risen. But if the national income has increased due to the production of capital goods and there is shortage of consumption goods on account of decrease in their output the economic welfare will not increase even if the national income and per capita income rise. This is because the economic welfare of people depends not on capital goods but on consumption goods used by them. Similarly, when during war time the national income and the per capita income rise sharply; the economic welfare does not increase because during war days the entire production capacity of the country is engaged in producing War material and there is shortage of consumption goods. As a result, the standard of living of the people falls and the economic welfare decreases.

Often, even with the increase in national income and per capita income the economic welfare decreases. This is the case when as a result of the increase in national income, income of the richer sections of the society increases and the poor do not gain at all from it. In other words, the rich become richer and the poor become poorer. Thus when the economic welfare of the rich increases, that of the poor decreases. Because the poor are more than the rich!, the total economic welfare decreases.

Last, the influence of increase in national income on economic welfare depends also on the method of spending adopted by the people. If with the, increase in income, people spend on such necessities and facilities, as milk, ghee, eggs, fans, etc., which increase efficiency, the economic welfare will increase. But on the contrary, the expenditure on drinking, gambling etc. will result {n decreasing the economic welfare. As a matter of fact, the increase or decrease in economic welfare as a result of increase in national income depends on changes in the tastes of people. If the change in fashions and tastes takes place in the direction of the consumption of better goods, the economic welfare increases, otherwise the consumption of better goods, decreases. It is clear from the above analysis that though the national income and economic welfare are closely inter-related, yet it cannot be said with certainty that the, economic welfare would increase with the increase in national income and per capita income. The increase or decrease in economic welfare as a result of increase in national in come depends on a number of factors such as the rate of growth of population, the methods of earning income the conditions working; the method of spending, the fashions and tastes, etc.

Changes in the Composition of National Income and Economic Welfare:
Composition of national income refers to the kind of the goods and services produced in

the country. Change in the composition of national income may sometimes increase economic welfare and may at another time decrease it.

Changes in the distribution of national income and economic welfare: Changes in the distribution of national income and economic welfare take place in two ways:

First, by transfer of wealth from the poor to the rich, and Second, from the rich to the poor. When as a result of increase in national income, the transfer of wealth takes place in the former manner, the economic welfare decreases. This happens when the government gives more privileges to the richer sections and imposes regressive taxes on the poor.

The actual relation between the distribution of national income and economic welfare concerns the latter form of transfer when wealth flows from the rich to the poor. The redistribution of wealth in favor of the poor is brought about by reducing the wealth of the rich and increasing the income of the poor. The income of the richer sections can be reduced by adopting a number of measures, e.g., by progressive taxation on income, property etc., by imposing checks on monopoly by nationalizing social services, by levying duties on costly and foreign goods which are used by the rich and so on. On the other hand, the income of the poor can ,also be raised in a number of ways, e.g., by fixing a minimum wage rate, by increasing the production of goods used by the poor, and by fixing the prices of such goods. By granting financial assistance to the producers of these goods, by the distribution of goods through cooperative stores, and by providing free education, social security and low rent accommodation to the poor. When through these methods the distribution of income takes, place ill favor of the poor, the economic welfare increases. Pigou has expressed this in these words: "Any cause which increases the absolute, share of real income in the hands o(the poor, provided that it does not lead to a contraction in the size of national dividend from any point of view will, in general increase economic welfare."

But it is not essential that the equal distribution of national income, would lead to increase, in economic welfare. On the contrary, there is a greater possibility of the economic welfare decreasing if the policy towards the rich is not rational. Heavy taxation and progressive taxes at high rates affect adversely the productive capacity, investment and capital formation, thereby decreasing the national income. Similarly, when through the efforts of the Government the income of the poor increases but if they spend that income on bad goods like drinking, gambling etc. or if their population increases, the economic welfare will decrease. But both these situations are not real and only express the fears, because the government while imposing different kinds of progressive taxes on the rich, keeps particularly in view that taxation should not affect the production and investment adversely. On the other hand, when the income of a poor man increases he tries to pro vide better education to his children and to improve his standard of living. Thus we arrive at the conclusion that as a result of the increase in national income, the economic welfare will increase provided that the income of the poor increases instead of decreasing and they improve their standard of living and that the income of the rich decreases in such, a way that their productive capacity, investment and capital accumulation do not decline.

National Income 'as a Measure of Economic Welfare: GNP is not a: satisfactory measure of economic welfare because the estimates, of national income do not include certain services and production activities which affect welfare. We discuss below some of the factors which affect human welfare but are not included in the GNP estimates Leisure. One of the important things that affect the welfare of society is leisure. But it is not included in GNP. For example, longer working, hours may make people unhappy because their leisure is reduced. On the contrary, shorter working hours per week may increase leisure and make people happy. More or less leisure enjoyed by the community as such may affect the total output of the economy. But the value of leisure is excluded from the national income estimates.

Quality of Life: GNP estimates do not include the quality of life which reflects the community's welfare. Life in overcrowded cities is full of tensions. Roads are overcrowded. There is loss in time. Accidents occur daily which cripple or kill people. Environment becomes polluted. There are the problems of water, power, and housing transportation, etc. Crimes spread. Life becomes complex and the quality of life deteriorates. Consequently, social welfare is reduced; but all these stresses and strains of city life are not included in the national income estimates. Strangely, the efforts made by governments to remedy the ills of the city Life are included in the GNP because they involve public expenditure.

On the other hand, in places where there is no congestion, people enjoy fresh air and the beauty of nature, the quality of life tends to increase. But this is not reflecte9 in GNP.

Non-market Transactions: Some of the non-market transactions increase, welfare but they are not included in national income estimates. The services of housewives within the home and community activities such as religious functions, affect the welfare of the people but they are excluded from the estimates of GNP because no market transaction is involved in providing these services.

Externalities: Similarly, there are externalities which tend to in crease or decrease welfare but they are not included in GNP estimates. "An externality is a cost or benefit conferred upon second or third parties as a result of acts of individual production and consumption." But the cost or benefit of an externality cannot be measured in money terms because it is not included in market activities. "An example of an external benefit is the pleasure one man derives from his neighbor's fine garden: An example of an external cost is environmental pollution caused by industrial plants." The former tends to increase welfare and the latter tends to reduce it. Since externalities are "untraced interdependencies", they are excluded from national. Income estimates.

Nature of Production: GNP estimates do not reflect the capacity of different goods to provide different levels of satisfaction to the community. The same amount of money spent on a nuclear bomb or on building a dam across a river adds equally to the national income. But they provide different levels, of satisfaction to the community. A bomb does' not increase welfare while a dam increases welfare.

Standard of Living: National income estimates also do not reflect standard of living of the community which determines its welfare. If more national expenditure is incurred on the production of arms and ammunitions and on capital goods and less on producing consumption goods, this difference is not reflected in GNP estimates. But the reduction in the production of consumption goods tends to decrease the welfare of the people, while the increase in the expenditure on armaments and capital good does not increase welfare. Keeping the above limitations in view, GNP cannot be used as a measure of welfare. However, a few economists have tried to broaden the definition of GNP so as to make it a measure of economic welfare.

A pioneering attempt toward this direction has been made by Professors Nordhaus and Tobin[2] in 1972. They have constructed a 'Measure of 'Economic Welfare' which they call MEW. Professor Samuelson calls it 'Net Economic Welfare', or NEW. According to Nordhaus arid Tobin, in MEW they have tried 'w measures all consumption that leads to human welfare. To estimate the value of MEW, they deduct from consumption certain items which do not contribute to welfare and add other items that contribute to welfare but are excluded from GNP estimates.

The deductions which they make are of three types: (1) Those public and private expenditures that do not yield utility directly. They call them "regrettable necessities", such as government expenditures on national defense, police force, road maintenance, and sanitation services, and expenses by consumers on commuting (i.e., traveling regularly by train, scooter, car or bus between one's residence and place of work). (2) AIl consumer expenditures on durable household goods such as washing machines, cars, TV sets, etc. which yield utility over their lifetime. (3) Estimated costs arising from "negative externalities", which are disamenities arising from urbanization" congestion and pollution. All these reduce human welfare.

Having made these deductions, Nordhaus and Tobin add three items to consumption: They are: (1) the value of non-market activities; (2) the estimates of the value of the services of durable consumer goods actually consumed by the owners- both households and government; and (3) the estimates of the value of leisure.

In estimating MEW, Nordhaus and Tobin devote more attention to the valuation leisure. For this they adopt two approaches: the opportunity cost approach and the intrinsic-value approach. The first approach is based on the principle that when a person chooses to enjoy more leisure, it is always at the cost of foregoing more income. An hour's leisure means an hour's wages fore gone, They estimated that the value of leisure measured by the opportunity cost approach has been steadily rising over the years because of the steady rise in the real wage rate per hour over the years. The intrinsic-value approach measures the value of leisure in terms of the actual enjoyment (utility) provided by, say, an hour's leisure.

By using such valuation devices, Nordhaus and Tobin estimated that the figure of MEW in the United States for 1965 was dollars 1200 billion which was twice the' GNP, for the

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same year. Their estimate of the growth of per capita MEW for the period 1929.65 averaged 1.1 per cent a year, as against 1.7 per cent a year for pet I pita GNP for the same period. The estimates reveal that there was mark able increase in economic welfare. At the same time, the regrettable necessities had also been growing rapidly.

From the above discussion, it should not be .inferred that MEW is to replace GNP It is at best an attempt to supplement GNP order to include non-market activities in the latter for relating it to economic welfare.

5.4 REVIEW QUESTIONS
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1. Define National Income?
2. Write short notes on National Income Accounting and Circular Flow of Income
3. Give an account on production process.
4. How would you measure national income of a country?
5. What do you understand by the circular flow of income ? Explain the flow of income in a free private economy.

CONSUMPTION FUNCTION, SAVING FUNCTION, DEMAND AND SUPPLY FOR MONEY

Structure

6.1 The Consumption Function

6.2 The Saving Function

6.3 Significance of Consumption Function and Saving Function

6.4 Money

6.5 Demand for Money

6.6 Multiplier

6.7 The Supply of Money

6.8 Review Questions

6.1 THE CONSUMPTION FUNCTION

One of the important tools of the Keynesian economics is the consumption function. This unit deals with the consumption function, its technical attributes, its importance and its subjective and objective determinants along with Keynes's Psychological Law of consumption.

Meaning of Consumption Function: The consumption function or propensity to consume refers to income consumption relationship. It is a "functional relationship between two aggregates, i.e., total consumption and gross national income." Symbolically, the relationship is represented as $C = f\text{-} (Y)$, 'where C is consumption, Y is income, and f is the functional relationship. Thus the consumption function indicates a functional relationship between C and Y, where C is dependent and Y is the independent variable, i.e., C is determined by Y.' This relationship is based on the ceteris paribus (other things being equal) assumption, as such only income consumption relationship is considered and all possible influences on consumption are held constant. In fact, propensity to consume or consumption function is a schedule of the various amounts of consumption expenditure corresponding to different levels of income. A hypothetical consumption schedule is given in Table below.

Table below shows that consumption is an increasing function income because consumption, expenditure increases with increase in income. Here it is shown that when

income is zero during the depression, people spend out of their past savings on consumption because they must eat in order to live. When income is generated in the economy to the extent of Rs. 60 crore, it is not sufficient to meet the consumption expenditure of the community so that the consumption expenditure of Rs. 70 crore is still above the income amounting to Rs 60 crore. (Rs. 10 crore is dis-saved). When both consumption expenditure and income equal Rs 120 crore, it is the basic consumption level.

Table I: Consumption Schedule (Rs. Crore)

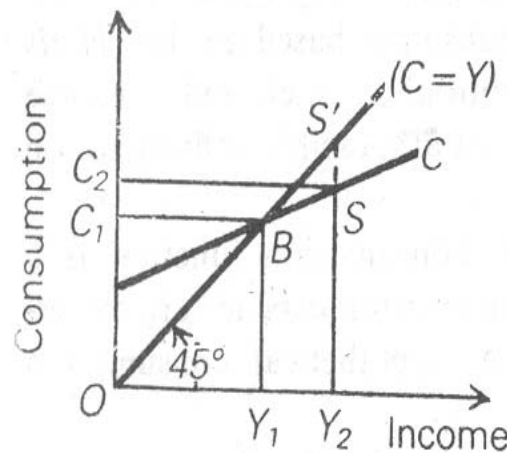| Income (Y)	Consumption C = f(Y)
0	20
60	70
120	120
180	170
240	220
300	270
360	320

Fig 6.1 Consumption Function

After this, income is shown to increase by 60 crore and consumption by 50 crore. This implies a stable consumption function during the short-run as assumed by Keynes. The above Figure above illustrates the consumption function diagrammatically. In the diagram, income is measured horizontally and consumption is measured vertically. 45° is the unity-line where at all levels income and consumption are equal. The C curve is a linear consumption function based on the assumption that consumption changes by the same amount (Rs 50 crore). Its upward slope to the right indicates that consumption is an increasing function of income. B is the break-even point where C= Y or OY1 = OC$_1$. When income rises to 0 YI consumption also increases to OC$_2$, but the increase in consumption' is less than the increase in income, C$_1$ C$_2$ < Y$_1$ Y$_2$. The portion of income not consumed is saved as shown by the vertical, distance between 45° line and C

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curve, i.e., SS'. "Thus the consumption function measures not only the amount spent on consumption but also the amount saved. This is because the propensity to save is merely the propensity not to consume. The 45° line may therefore be regarded as a zero-saving line, and the shape and position of the C curve indicate the division of income between consumption and saving".

Properties or Technical Attributes of the Consumption Function: The consumption function has two technical attributes or properties:
- The average propensity to consume;
- The marginal propensity to consume.

The Average Propensity to Consume: The average propensity to consume may be defined as the ratio of consumption expenditure to any particular level of income. It is found by dividing consumption expenditure by income, or APC=C/Y. It is expressed as-the percentage or proportion of income consumed. The APC at various Income levels is shown in column 3 of Table II. The APC declines as the income increases because the proportion of income spent on consumption decreases. But reverse is the case with APS (average propensity to save) which increases with increase in income (see column 4). Thus the APC also tells us about the APS, APS=1− APC. Diagrammatically, the average propensity to consume is anyone, point on the C curve. In Figure 8.2 panel (A), point R measures the APC of the C curve which is OC'/OY'.

The Marginal Propensity to Consume: "The marginal propensity to consume may be defined as the ratio of the change in consumption to the change in income or as the rate of change in the average propensity to consume as income changes."[5] It can be found by dividing change in consumption by a change in income, or MPC= $\Delta C/\Delta Y$. The MPC is constant at all levels of income as shown in column 5 of the Table below. It is 0.83 or 83 per cent because the ratio of exchange in consumption to change in income is $\Delta C /\Delta Y$=50/60. The marginal propensity to save can be derived from the MPC by the formula 1 − MPC. It is 0.17 in our example (see column 6).

Table II: The Marginal Propensity to Consume

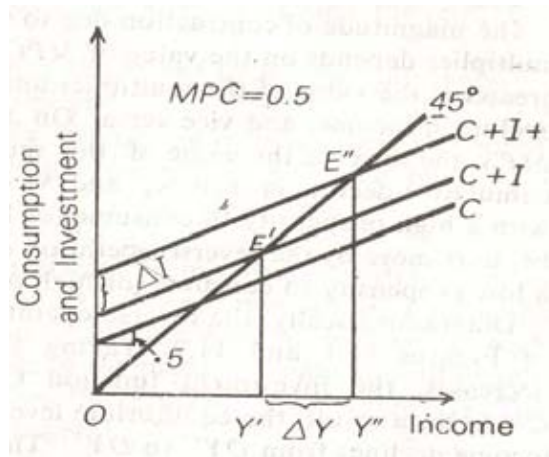| (1)	(2)	(3)	(4)	(5)	(6)
Income Y	Consumption (C)	APC=C/Y	APS=S/Y (1 − APC)	MPC = $\Delta C/\Delta Y$	MPS=$\Delta S/\Delta Y$ (1 − MPC)
120	120	120/120=1 or 100%	0	-	-
180	170	170/180-0.92 or 92%	0.08	50/60=0.83	0.17
240	220	220/240=0.91 or 91%	0.09	50/60=0.83	0.17
300	270	270/300=0.90 or 90%	0.10	50/60=0.83	0.17
360	320	320/360=0.88 or 88%	0.12	50/60=0.83 or 83%	0.17

Fig 6.2 Gradient or Slope of the C curve – Marginal Prosperity to Consume

Diagrammatically, the marginal propensity to consume is measured by the gradient or slope of the C curve. This is shown in the above figure in panel (B) by NQ/RQ where NQ is change in consumption (ΔC) and RQ is change in income (ΔY), or C' C”/ Y' Y".

Significance of MPC: The MPC is the rate of change in, the APC. When income increases, the MPC falls but more than the APC. Contrariwise, when income falls, the MPC rises and the APC also rises but at a slower rate than the former. Such changes are only possible during cyclical fluctuations whereas in the short-run there is change in the MPC and MPC<APC.   Keynes is concerned primarily with the, M PC, for his analysis pertains, to the short-run while the APC is useful in the long-run analysis. The post Keynesian economists have come to the conclusion that, over the long-run APC and MPC are equal and approximate 0.9. In the Keynesian analysis the M PC is given more prominence. Its value is assumed to be positive and less than unity which means that when income increases the whole of it is not spent on consumption. On the contrary, when income: falls, consumption expenditure does not decline in the same proportion and never becomes zero. The Keynesian hypothesis that the marginal propensity to consume is positive but less than unity $0<\Delta C / \Delta Y <1$) is of great analytical and practical significance. Besides telling us that the consumption is an increasing function of income and it increases by less than the increment of income, this hypothesis helps in explaining

- The theoretical possibility of general over production or under employment equilibrium and also
- The relative stability of a highly developed industrial economy.

For it is implied that the gap between income and consumption at all high levels of income is too wide to be easily filled by investment with the possible. consequence that the economy may fluctuate around an underemployment equilibrium.[6] Thus the economic significance of "the M PC lies in filling the gap between, income and consumption through planned investment to maintain the desire level of income. Further, its importance lies in the multiplier theory. The higher the MPC, the higher will be the multiplier and vice versa. The MPC is low in the case of the rich people and high in the

case of the poor. This accounts for nigh MPC in 'underdeveloped countries arid low in advanced countries.

Keynes's Psychological Law of Consumption: Keynes propounded the fundamental psychologically of consumption which forms the basis of the consumption function. He wrote, "The fundamental psychological law upon which we are entitled to depend with great confidence both a prior from our knowledge of human nature and from the detailed facts of experience, is that men are disposed as a rule and on "the average to increase their consumption as their income increases but not by as much as the increase in their income." The law implies that there is a tendency on the part of the people to spend on consumption less than the full increment of income.

Propositions of the Law; this law has three related propositions:
- When income increases, consumption expenditure also increases but by a smaller amount. The reason is that as income increases, our wants are satisfied side by side, so that the need to spend more on consumer goods diminishes. It does not mean that the consumption expenditure falls with the increase in income. In fact, the consumption expenditure increases with increase in income but less than proportionately.
- The 'increased income will be divided in some proportion between consumption expenditure and saving. This follows from the above proportion because when the whole of increased income is not spent on consumption, the remaining is saved. In this way, consumption and saving move together.
- Increase in income always leads to an increase in both consumption and saving. This means that increased income is unlikely 10 lead either to fall in consumption or saving than before. This is based on the above propositions because as income increases consumption also increases but by a smaller amount than before which leads to an increase in saving. Thus with increased income both consumption and saving increase.

The three propositions of the law can be explained with the help of the following Table.

Propositions of the Law (Rs. Crore)

Income (Y)	Consumption (C)	Savings (S=Y−C)
0	20	−20
60	70	−10
120	120	0
180	170	10
240	220	20
300	270	30
360	320	40

Proposition (1): Income increases by Rs. 60 crore and the increase in consumption is by Rs 50 crore. The consumption expenditure is, however, increasing with increase in

income, i.e., Rs 170, 220, 270 and 320 crore against Rs 180, 240, 300 and 360 crore respectively.

Proposition (2): The increased income of Rs 60 crore in each case is divided in some proportion between consumption and saving (i.e. Rs 50 crore and Rs 10 crore).

Proposition (3): As income increases from Rs. 120 to 180, 240, 300 and 360 crore, consumption also increases from Rs 120 to 170, 220, 270, 320 crore, along with increase in saving from Rs to 10, 20, 30 and 40 crore respectively. With increase in income neither consumption nor saving has fallen.

Keynes's Law is based on the following assumptions:

- It assumes a Constant Psychological and Institutional Complex. This law is based on the assumption that the psychological and institutional complexes influencing consumption expenditure remain constant. Such complexes are income distribution, tastes, habits, social customs, price movements, Population growth, etc. In the short run, they do not change and consumption depends on income alone. The constancy of these complexes is the fundamental cause of the stable consumption functions.
- It assumes the Existence of Normal Conditions. The law holds well under normal conditions: If, however, the economy is faced with abnormal and extraordinary circumstances like war, revolution or hyperinflation, the law will not operate. People may spend the whole of increased income on consumption.
- It assumes the Existence of a Laissez-faire Capitalist Economy. The law operates in a rich capitalist economy where there is no government intervention. People should be free to spend increased income. In the case of regulation of private enterprise and consumption expenditures by the state, the law breaks down. Thus the law is inoperative in socialist or state controlled and regulated economies.

Professor Kurihara opinion is that "Keyne's law based on these assumptions may be regarded as a rough approximation to the actual macro-behavior of free consumers in the normal short period.

Implications of Keynes's Law or Importance of the Consumption function: Keynes's psychological law has important implications which in fact point towards the importance of the consumption functions because the latter is, based on the former. The following are its implications.

- **Invalidates Say's Law:** Say's Law states that supply creates its own demand, therefore, there cannot be general overproduction or general unemployment. Keynes's psychological law, invalidates Say's Law because as income increases consumption also increases but by a smaller amount. In other words, all that is produced (income) is not taken off the market (spent), as income increases. Thus supply fails to create its own demand. Rather it exceeds demand and leads to

general over production and glut of commodities in the market. As a result, producers stop production and there is mass unemployment.

- **Need for State Intervention:** As a corollary to the above, the psychological law highlights the need for state intervention. Say's Law is based on the existence of laissez-fair policy and its refutation, implies that the economic system is not self adjusting. So when consumption does not increase by the full increment of income and subsequently there is general overproduction and mass unemployment, the necessity of state intervention arises in the economy, to avert general overproduction and unemployment through public policy.

- **Crucial Importance of the Investment:** Keynes's psychological law stresses the vital, point that people fait to spend on consumption the full increment of income. This tendency creates a gap between income and consumption which can only be filled by either increased investment or consumption. If either of them fails to rise, output and employment will inevitably fall. Since the consumption function is stable in the short-run, the gap between income and consumption can only be filled by an increase in investment. Thus the psychological law emphasizes the crucial role of investment in Keynes's theory. It is the inadequacy of investment which results in unemployment and logically. The remedy to overcome unemployment is increase in investment.

- **Existence of Underemployment Equilibrium:** Keynes's notion of underemployment equilibrium is also, based on the psychological law of consumption. The point of effective demand which determines the equilibrium level of employment is not of full employment but of full underemployment because consumers do not spend the full increment of their income on consumption and there remains a deficiency in aggregate demand, Full employment equilibrium level can, however, be reached if the state increases investment to match the gap between income and consumption.

- **Declining Tendency of the Marginal Efficiency of Capital:** The psychological law also points towards the tendency of declining marginal efficiency of capital in Ii laissez-faire economy. When income increases and consumption does not increase to the same extent, there is a fall in demand for consumer goods. This results in glut of commodities in the market. The producers will reduce production which will, in turn, bring a decline in the demand for capital goods and hence in the expected rate of profit and business expectations. It implies a decline in the marginal efficiency of capital. It is not possible to arrest this process of declining tendency of marginal efficiency of capital unless the propensity to consume rises, but such a possibility can exist only in the long run when the psychological law of consumption does not hold good.

- **Danger of Permanent Over-saving or Under-investment:** Gap; Keynes's psychological law points out that there is always a danger of an over-saving or under-investment gap appearing in the capitalist economy because as people

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become rich the gap between income and consumption widens. This long-run tendency of increase in saving and fall in investment is characterized as secular stagnation. When people are rich, their propensity to consume is low and they save more. This implies low demand which leads to decline in investment. Thus the tendency is for secular stagnation in the economy.

- **Unique Nature of Income Propagation:** The fact that the entire increased income is not spent on consumption explains the multiplier theory. The multiplier theory or the process of income propagation tells that when an initial injection of investment is made in the economy, it leads to smaller successive increments of income. This is due to the fact that people do not spend their full increment of income on consumption. In fact, the value of multiplier is derived from the marginal propensity to, consume, i.e. Multiplier= 1−1 / MPC. The higher the MPC, the higher the value of the multiplier, and vice versa.

- **Explanation of the Turning Points of the business Cycles:** This law explains the turning points of a business cycle. Before the economy reaches the full employment level, the downturn starts because people fail to spend the full increment of their income on consumption. This leads to fall in demand, overproduction, unemployment and decline in the marginal efficiency of capital.

Conversely, the upturn in the economy starts before it reaches the stage of complete depression because when income falls, consumption also falls but by less than the fall in income. People continue to buy consumer goods even when it comes falls. So when the, excess stock of commodities is exhausted in the community during a depression, the existence of consumer expenditure on goods leads to revival.

Determinants of the Consumption Function: Keynes mentions two principal factors which influence the consumption' function and determine its slope and position. They are:
- The subjective factors
- The objective factors

The Subjective Factors are endogenous or .internal to the economic system. They include psychological characteristics of human nature, social practices and institutions and social arrangements. They are unlikely to undergo .a material change over a short period of time except in abnormal or revolutionary circumstances. They, therefore, determine the slope and position of the C curve which is fairly stable in the short-run.

The Objective Factors are exogenous or external to the economic system. They may, therefore, undergo rapid changes and may cause marked shifts in the consumption function (i.e., the C curve).

Subjective Factors in the Consumption Function: Keynes's subjective factors basically underlie and determine the form (i.e., slope and position) of the consumption function. As already noted above, the subjective factors are the psychological characteristics of human

nature, social practices and institutions, especially the behavior patterns of business concerns with respect to wage and dividend payments and retained earnings, and social arrangements affecting the distribution of income.

Individual Motives: First, there are, eight motives "which lead individuals to refrain from spending out of their incomes." They are:
- The desire to build reserves for unforeseen contingencies
- The desire to provide for anticipated future needs, i.e., old age, sickness, etc
- The desire to enjoy an enlarged future income by way of interest and appreciation
- The desire to enjoy a gradually increasing expenditure in order to improve the standard of living
- The desire to enjoy a sense of independence and power to do things
- The desire to secure a "masse de maneuver" to carry out speculative or business projects
- The desire to bequeath a fortune
- The desire to satisfy a pure merely instinct

Business Motives: The subjective factors are also influenced by the behavior of business corporations and governments. Keynes lists four motives for accumulation on their part:
- Enterprise, the desire to do big things and to expand
- Liquidity, the desire to meet emergencies and difficulties successfully
- Income raise, the desire to secure large income and to show successful management
- Financial prudence, the desire to provide adequate financial resources against depreciation and obsolescence, and to discharge debt

These factors remain constant during the short-run and keep the consumption function stable. First we take up the objective factors given by Keynes.

- **Change in the Wage Level:** If the wage rate rises, the consumption function shifts upward. The workers having a high propensity to consume spend more out of their increased income and this tends to shift the C curve upward. If, however, the rise in the wage rate is accompanied by a more than proportionate rise in the price level, the real wage rate will fall and it will tend to shift the C curve downward, A cut in the wage rate will also reduce the consumption function of the community due to a fall in income, employment and output. This will shift the curve downward.

- **Windfall Gains or Losses:** Unexpected changes in the stock market leading to gains or losses tend to shift the consumption function upward or downward. For instance, the phenomenal/windfall gains due to the stock market boom in the American economy after, 1925 led to a rise in the consumption spending of the stock-holders by roughly in proportion to the increased income and as a result the consumption function shifted upward. Similarly, unexpected losses in the stock market lead to the downward shifting of the C curve.

- **Changes in the Fiscal Policy:** Changes in fiscal policy in the form of taxation and public expenditure affect the consumption function. Heavy commodity taxation adversely affect the consumption function' by reducing the disposable income of the people. This, is what actually happened during the Second World War when the consumption function shifted downward due to heavy indirect taxation, rationing and price controls, On the other hand, the policy of progressive taxation along with that of public expenditure on welfare programs tends to shift the consumption function upward by altering the distribution of income.

- **Change in Expectations:** Change in future expectations also affect the, propensity to consume. If a war is expected in the near future, people start hoarding durable and semi-durable, commodities in anticipation of future scarcity and rising prices. As a result, people buy much in, excess of their current needs and the consumption function shifts upward. On the contrary, if it is expected: that prices are likely to -fall in the future, people would buy only those things which are very essential. It will lead to a fall in consumption demand and' to a downward shift of the consumption function.

- **Change in the Rate of Interest:** Substantial changes in the market rate of interest may influence the consumption function indirectly. There are several ways in which the rate of interest may affect the consumption function. A rise in rate of interest will lead to a fall in the price of bonds, thereby tending to discourage the propensity to consume of the bond-holders. It may also have the effect of substituting one type of assets for another. People may be encouraged to save rather than invest in bonds. In case they are buying durable consumer goods like refrigerators, scooters, etc. on hire-purchase system they will tend to postpone their purchases when the rate interest rises. They will have to pay more in installments and thus their consumption function will shift downward. Keynes' wrote, Over a, long period substantial changes in the rate of interest probably tend to modify social habits considerably.

Besides, these five factors Keynes also listed changes in accounting practice with respect to depreciation. This factor has been rejected by Hansen who opines that "it is not a factor which can be thought to change violently in the short-run and it was a mistake for Keynes to include it here." However, we add some of the other objective factors listed by Keynes's followers."

- **Financial Policies of Corporations:** Financial policies of corporations with regard to income retention, dividend payments and reinvestments tend to affect the consumption function in several ways. If corporations keep mote money in the form of reserves, dividend payments to shareholders will be less, this will have the effect of reducing the income of the shareholders and the consumption function will shift downward. Moreover "a lag between corporate profits and dividend payments tend to slow up the 'multiplier' process of consumption responding and income propagation. For excessive corporate savings, however prudent from the standpoint of individual corporations, not only reduce

consumption expenditures but may also make it 'almost hopeless to find still more new investment,' as Keynes put it."[12]

- **Holding of Liquid Assets:** The amount of liquid assets in the form of cash balances, savings and government bonds in the hands, of consumers also influence the consumption function. If, people, hold larger liquid assets they will have a tendency to spend more out of their current income and the propensity, to, consume will move upward, and vice versa. Pigou was of the view that with a cut in money wage, prices fall and the real value.' of such assets increases. This tends to shift the consumption function upward. This is called the "Pigou Effect." But it is not necessary for the Pigou effect to take place, via money wage-cut. An increase in the real value of such accumulated savings takes place directly through a fall in prices and a decrease in their value through price inflation. In the former case, asset holders te!1d to spend more on consumption and in the latter case less on consumption, If, however, the low income groups hold such liquid assets, the tendency would be for the consumption function to shift upward because their propensity to consume is high.

- **The Distribution of Income:** The distribution of income in the community, also determines the shape of the consumption function. , lf there are large disparities in incline 'distribution between the rich, and 'the poor, the consumption function is low because the rich have a low propensity to consume and the poor with a very low income are unable to spend more on consumption. If through progressive taxation and other fiscal measures, the in qualities of income and wealth are reduced, the consumption function will shift upward because with the increase in the inc9me of the poor their consumption expenditure will increase more than the reduction in the expenditure of the rich. "Moreover, if the distribution of income is significantly altered for political or humanitarian reasons, consumer habits themselves may undergo such changes as to cause the position or shape of the entire consumption function to vary perceptibly."

- **Attitude toward Saving:** The consumption function is also influenced by people's attitude toward saving. If they value future consumption more than present consumption, they will tend to save more and the consumption function will shift downward. This tendency may be reinforced by the state through compulsory life insurance, provident fund and other social insurance schemes to keep die consumption function low. In a high-saving economy, the consumption function is low.

- **Duesenberry Hypothesis:** James Duesenberry has propounded a relative income hypothesis affecting the consumption function. The first part of this hypothesis relates to the demonstration effect.' There is a tendency in human beings not only to keep up with the Joneses but also to surpass the Joneses, that is, the tendency is to strive constantly toward a higher consumption level and to emulate the consumption patterns of one's rich neighbors and even to surpass them. Thus consumption preferences are interdependent. The second, part is the 'past peak of

income' hypothesis which explains the short-run fluctuations in consumption. Once the community reaches a particular income level and standard of living, it is reluctant to come down to a lower level of consumption during a recession. Consumption is sustained by the reduction in current saving and vice versa. So there is no shift in the consumption function during the short-in. There is simply an upward downward movement on the same consumption function when income rises or falls during the' short-run.'

We may conclude with Professor Hansen "that except for quite abnormal or revolutionary changes in certain "objective factors--expectations caused by unusual events such as wars, earthquakes, strikes, revolutions etc., major changes in the tax structure, quite exceptional windfall losses or gains-apart from such' drastic changes, shifts in the 'propensity to consume out of a given income' are not likely to be" of more than secondary importance."

Measures to Raise the Propensity to Consume: The propensity to consume remains stable, during the short-run due to the existence of certain psychological and institutional factors in the society. But "employment can only increase with an increase in investment; unless, indeed, there is a change in the propensity to consume," as pointed out by Keynes. Therefore, it is significant to study the measures which tend to raise the propensity to consume

- **Income Redistribution:** Redistribution of income' in favor of the poor tends to raise the propensity to consume because the marginal propensity to consume of the low income groups is high in comparison to the rich. Therefore, the propensity to consume can be raised by' transferring income, and wealth from the rich to the poor. This can be done by the state through its taxation and', pubic, spending Policies. By imposing progressive taxes ort incomes, expenditures, estates, capital gains: etc., the state is able to mobilize larger revenues for providing mote facilities to the poor. But care should be taken that such taxation should not, adversely affect investment Secondly the state can increase the income, of the poor trough judicious public expenditure program. By starting public works, it is in apposition to increase income by providing larger employment opportunities to the unemployed. The provision for free education, free mid-day- meals, free health services, low-rent housing indirectly ,helps in increasing the income of the workers and tends to raise their Consumption expenditure. Such social expenditures by the state also increase the efficiency of the workers which, in turn leads to a rise in their wages.

- **Increased Wages:** If wages are raised, they will have direct effect in shirring the consumption function upward. But a policy high wages adversely affects the level of employment in the economy for it is not possible to raise the marginal revenue productivity of labor in the short-run. lf wages are raised in such a situation, costs will rise-in the absence of increase in the marginal revenue productivity of labor and the economy is likely to experience unemployment .Therefore, the long-run

wage' policy should be such that wages increase with increase in labor productivity. This will tend to raise the level of consumption in the economy.

- **Social Security Measures:** 'Social security measures tend to raise tile consumption function in 'the long-run. Provision for unemployment relief, medical, facilities, old age pension, etc. remove future uncertainties and the tendency to save is reduced on ,the part of the people, The state should; therefore, provide Larger social security measl1res to raise the propensity to consume of the people. Unemployment relief and old age pensions tend to maintain a high con-sumption expenditure even during 'a depression and thus help bring revival in the economy. So social security measures tend to raise the consumption function both in periods of prosperity and depression.

- **Credit Facilities:** Cheap and easy credit facilities help in shifting the consumption function upward. When 'loans are easily and cheaply available to the people, they' buy more durable consumer goods like scooters, televisions, refrigerators etc. This tends to raise the propensity to consume. To purchase, these things on installment basis or on hire-purchase system produces the same effect thus credit facilities in various ways, help raise the propensity 'to consume "of durable consumer goods,

- **Advertisement:** Advertisement is one of the most significant ways to raise the propensity to consume in modern times ;'Advertisement and propaganda through the various media of radio, television_ cinema, newspaper, etc. make the aons1,1mers familiar with the uses of products. The consumers are attracted toward them and they tend to buy them; this raises-their propensity to consume.

- **Development of the Means of Transport:** Well developed means of transport also tend to shift the consumption function upward. The movement of goods from .the manufacturing centers to the different parts of the country becomes easy. The size of the market expands. The prices may also fall due to the reduction of transport cost Things are available to the people in their 'respective towns. All this as the tendency to raise the consumption function.

- **Urbanization.** As a corollary to the above, 'urbanization \i\helps raise the propensity's consume. When urbanization takes place, people move from the rural to the urban areas. They are enamored by new articles and influenced by the demonstration effect. This tends to shift the consumption function upward. Thus the state should follow the, policy of deliberate urbanization for the purpose of raising the consumption function.

6.2 THE SAVING FUNCTION

Saving function tells us the relationship between income and savings. The relationship between income and consumption also tells us what kind of relationship exists between income and saving. So, the saving function may be derived with the aid of the

consumption function. In our simple model with no government and no foreign trade sectors, income equals, by definition, consumption plus saving:

Y = C + S
But C is equal to a +b Y; after substitution
Y = a = a Y = S
Or –S = a – Y = bY
Or –S = a – (1-b) Y
Or S = -a + (1-b) Y

Thus the saving function is
S = -a + (1-b)Y   [O<(1-b),1]

Where a is the intercept and (1-b) is the slope.

The saving function shows that saving changes. If the change in saving is denoted as ΔS and the change in income as ΔY, the ratio of the change in saving to the change in income $\Delta s/\Delta y$ is 1-b, the slope of the saving function. This relationship is called the marginal propensity to save (MPS). Since 'b' represents the MPC, the MPS is 1-MPC. It implies that the MPS is between 0 and 1, provided that the MPC is between 0 and 1.

Given 'a' equal to Rs. 100 crore and 'b' equal to 0.8, the saving function becomes
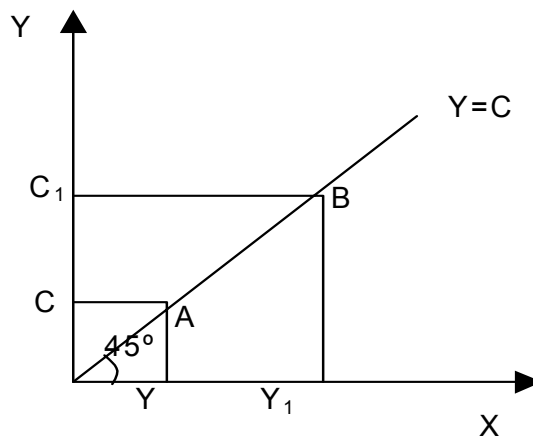S = -100 + (1-8) Y
or S = -100 + 2Y

Fig 6.3 45^0 Curve Showing Relationships between Income and Consumption

The intercept is -100 and the slope, the marginal propensity to save, is 2. To plot the function, assume that income is zero, this means that saving is equal to –100. Negative saving or dissaving occurs if individual households consume more that their income. They may do so by spending part of their savings or by borrowing. Consequently, one point on the saving function is the point Y = 0, S = -100. To obtain another point, select another level of income, say Rs. 900 crore. At that level of income, saving equals –100 + 2 times, Rs. 900 crore or a total of Rs. 80 crore. Consequently, another point on the

saving function is the point Y = Rs. 900 crore and S = Rs. 80 crore. Other points on the saving function could be obtained in the same manner.

The saving function may be depicted graphically as well. To aid in this process, a 45 degree line is drawn from the origin. The 45 degree line is a guideline which denotes that any point on the line in equidistant from the two axes. This means that the distance from the origin to some point on that horizontal axis will be the same as the vertical distance from that point on the horizontal axis to the 45 degree line. In other words, when we graph the points that correspond to equal values on each axis, we obtain a line that exactly bisects 90 degree angle—hence the name 45 degree line.

W measure income on the horizontal axis and consumption expenditure is measured on the vertical axis. Notice that anywhere on the 45 degree line, income always equals consumption expenditure. For example, OY=OC at point A and $OY_1 = OC_1$ at point B. the level of income can, therefore, be measured either vertically to the 45 degree line or along the horizontal axis. This requires, of course, that same number scale be used on both axis of the diagram.

Given the 45 degree line and the consumption function we can now derive the saving function graphically. Since income equals consumption plus saving, saving is the difference between income and consumption. Therefore, to find saving at each level of income, consumption is subtracted from income.
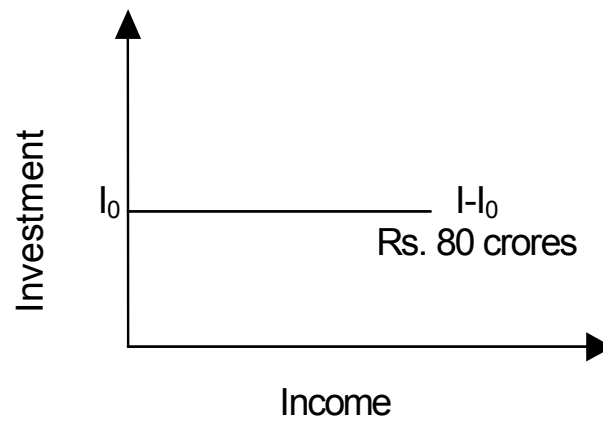

Fig 6.4 Graphical Derivation of the Saving Function.

Graphically, saving is the vertical distance between the 45 degree line and the consumption function, saving being positive (negative) when income is greater (less) than consumption. Consider income Y_0 in Fig. 5.6. At income Y_0, consumption equals C_0 S_0 is obtained by subtracting C_0 from Y_0 therefore, one point on the saving function is the point $Y = Y_0$, $S = S_0$.

Select another level of income, say Y_1 where consumption function intersects the 45^0 line. At that level of income, consumption equals C_1 which also equal Y_1. Therefore, at Y $= Y_1$, S_1 equals 0. Since S_1 equals $Y_1 - C_1$ and C_1 equal Y_1, consequently, another point on the saving function is the point $Y = Y_1$, $S = 0$. Finally, suppose income is zero. At that

level of income consumption equals 'a' hence saving equals 'a', obtained by subtracting C = a from Y = 0. Thus, a third point on the saving function is the point Y = 0, S = 'a'. Other points on the saving function may be obtained by considering other levels of income. In the above saving is positive at income levels greater than Y_1 since income exceeds consumption at those levels of income. Saving is negative at income less than Y_1 since income exceeds consumption at those levels of income. Saving is negative at income les than Y_1 since consumption exceeds income.

Determinants Propensity to Save: Since saving is defined as that part of income which is not consumed, we have the following identity:

Income ≡ Consumption + Saving
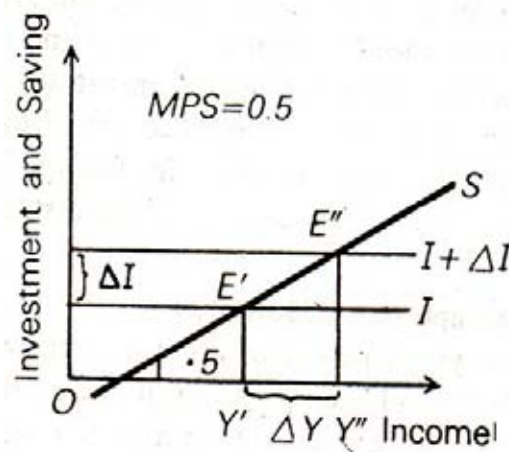
$(Y) \equiv (C) + (S)$

Fig 6.5 Saving Function.

An income earner makes only one decision either regarding consumption or saving, the other component is only a residual. It follows then that determinants of aggregate consumption and aggregate saving are the same. Theories which explain total consumption also explain total saving. However, some of the important factors which affect propensity to save are discussed briefly below:

- **Saving and Income**: In general, it is assumed that people have a strong preference for present consumption over future consumption. Therefore, a person will forgo present consumption only if he is paid premium equal to or greater than his marginal rate of time preference, i.e. an amount that will make the utility of a rupee received today equal to or smaller than the utility of the sum he will collect in a year if he lends the rupee. Presumably, a higher rate of interest will induce an individual to forgo some more present consumption in favor of future consumption. In other words, at higher rate of interest more will be the amount of saving and vice versa. The direct relation between interest and saving critically depends on the nature of individual's preferences. It is possible to have inverse relationship between saving and interest rate. To some extent this may be due to the fact that some individuals save towards a lump sum of wealth in future. An

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increase in the rate of interest will enable the individuals to put aside a smaller sum every year and still reach the desired goal of saving a fixed sum. Similarly, while an increase in the rate of interest will induce the individual to substitute's future consumption; the high rate of interest also improves his future income prospects so that he may tend to save less today.

- **Saving and Taxation Policy:** Taxes reduce the disposable income of the people and they have also to cut down their consumption expenditure. As a result, the level of compulsory saving increase in an economy.

- **Saving and Social Insurance and Life Insurance:** Deductions towards provident fund, insurance premium, etc., from the money income also raise the level of saving.

- **Saving and the Price Level:** The nature of relationship between saving and the price level is rather uncertain in economic theory. On the one hand, real balance effect suggests a positive relation between saving and the price level. At high price the value of real balances falls which reduce consumption and increases saving. On the other hand, it is a argued that high prices are associated with lower interest rates in the course of cheap money policy. When the authorities attempt to peg interest rates at low levels, saving is discouraged. However, a positive change in the price level is found to have favorable effect on saving. It is possible that people expect prices to rise if there is a price rise in the preceding period. This may increase consumption of durables like housing etc. which is recorded as saving.

- **Saving and Distribution of Income:** Aggregate saving in an economy may depend, among other things, on the distribution of income. Since the marginal propensity to save of the rich persons is high, therefore, disparities of income will raise the level of saving in an economy. Equitable distribution of income on the other hand, lowers the propensity to save.

6.3 SIGNIFICANCE OF CONSUMPTION FUNCTION AND SAVING FUNCTION

The relationship between consumption and income (or alternatively saving and income) is the foundation stone of Keynesian revolution. The functions in relation to investment function help to explain underemployment equilibrium and provide a challenge to the classical thinking, particularly the Say's Law. The saving function and consumption function are fundamental bases of the Keynesian theory of income determination and multiplier analysis.

The Investment Function: Like consumption, investment depends on many variables. For simplifying our analysis we assume that investment is given independently of the level of income. Thus, investment is a consultant I_0 the determinants of investment are examined in detail in Chapter 8.

Since investment is assumed to be constant at the I_0 level the investment function is $I = I_0$ ($I_0 > 0$) where I_0 represent a given positive level of investment. Suppose I_0 equal s Rs. 8 crore. With investment on the vertical axis and income on the horizontal axis, the investment function is plotted as a straight line parallel to the horizontal axis.

6.4 MONEY

Money is something which sounds interesting to each and everyone. Money is not only needed to buy something but it is also needed to various other purposes.

Meaning of Money Market: A money market is a market for short-term loans. The dealers in the money market comprise various institutions. The borrowers (or buyers) include government and private institutions. The lenders include various financial and other institutions and individuals. The commodities traded in this market are various types of monetary assets, like the bills, government bonds, etc. The Reserve Bank defines money market as "The center for dealings, mainly of short-term character, in monetary assets; it meets the short-term requirements of borrowers and provides liquidity or cash to the lenders. It is the place where short-term surplus invisible funds at the disposal of financial and other institutions are bid by borrowers, again comprising institutions and individuals and also by the government." Thus, the major function of the market is to provide finance for short term to various public and private institutions. The money market deals in various kinds of loans. Each may be said to constitute a market by itself, like call money market, bill market, collateral loan market, etc. The money market is a broad term for all these markets put together.

Money Market and Capital Market: While operations of money market are limited to short-term loans, a capital market is the market for long-term loans. Such loans are demanded by business houses, governments, and consumers wanting to purchase durable consumer goods. Some of these borrowings are done directly by the borrowers from the general public by the issue of various instruments. But a substantial part of the loans in a capital market is supplied by the financial intermediaries that form part of the capital market. These intermediaries get their funds primarily from the savings of households to be available for long-term financing of investment and consume goods expenditure.

Constituents of the Indian Money Market: The Major constituents of the Indian money market can be classified into three groups, viz.
- Organized sector
- Unorganized sector
- Co-operative sector

Organized Sector: The main constituents of the organized sector are the Reserve Bank, the State Bank and the various commercial banks. Quasi-government bodies and large-sized commercial firms also operate in this market as lenders and financial intermediaries, such as loan brokers and general finance and stock brokers take part in the transactions.

The Unorganized Sector: The Unorganized Market on the indigenous market comprises the indigenous bankers and moneylenders, working both in rural and urban areas. In this market, there is no clear demarcation between short-term and long-term finance, nor even between the purposes of finances, inasmuch a there is usually nothing on a hundi (which is indigenous bill of exchange) to indicate whether it is for financing trade, or for providing financial accommodation; in other words, whether it is a genuine trade bill or a financial paper. By and large, these bills are accommodation bills.

Co-operative Sector: A somewhat intermediate position between the organized and unorganized sectors of the money market is occupied by the co-operative credit institutions. These institutions were set up mainly with a view to supplanting the indigenous sources of rural credit, particularly the moneylenders, since the credit provided by the moneylenders was subject to many drawbacks, especially high interest rates. While considerable progress has been made in fulfilling this objective in the last few years, the total credit requirements of the rural sector have also increased considerably. The Reserve Bank has stepped up substantially the credit assistance to this sector and to supplement the efforts of the co-operative sector, regional rural banks and commercial banks are also entering the rural economy in a big way. With the notable increase in the number of commercial bank branches in the rural areas in the last decade, closer link have been forged between the co-operative credit system and the organized money market, particularly with the State Bank of India.

Composition of the Organized Market: The organized money market consume of
- Call money market
- Bill market
- Collateral loan market

Call Money Market: It comprises dealings primarily among banks. It is the most sensitive section of the money market. The rates of interest in this market vary from time to time according to the volume of transactions, being higher in the busy season than in the slack season.

Bill Market: It comprises dealings in short-term bills of exchange, including hundis of the indigenous bankers. Bill market in India has developed quite late—it had its real beginning only after the introduction by the Reserve Bank of its New Bill Market Scheme in 1970. Since then, although this market is developing, it is as yet not a very prominent feature of the Indian money market.

Collateral Loan Market: It forms, by and large, the largest and the best developed section of the money market. It this market, loans are given against the security of government bonds, shares of first class companies, agriculture and manufactured commodities, and bullion and jewellery.

Salient Features of New Money Market Instruments: The present position of major money market instruments that are dealt with in the Indian money market is as under:

Call and Notice Money: In this market, funds are borrowed and lent for one day (call) and for a period up to 14 days (notice) without any collateral security. However, deposit receipt is issued to the lender who on recalling the funds, discharges the receipt and gives back to the borrower; upon which the borrower will repay the amount together with interest. The participants in this market are commercial and co-operative banks, mutual funds and all-India financial institutions approved by the Reserve Bank of India. From May 1, 1989, the interest rates in the call and notice money market are market-determined. Interest rates in this market are highly sensitive to the demand and supply factors. Within one fortnight, rates are known to move to as high as over 70 per cent to as low as 2-3 per cent; intra-day variations are also quite high. Variation of as high as 10 percentage points is not uncommon.

Inter-Bank Term Money: This is a market exclusively for banks—commercial and co-operative banks. In this market, banks borrow and lend funds for a period over 14 days and generally up to 90 days without any collateral security at market-determined rates. Deposit receipts are exchanged. As per IBA ground rules lenders cannot prematurely recall these funds. Hence, this instrument is not liquid.

Treasury Bills: Treasury Bills are short-term promissory notes issued by Government of India at a discount for period of 91 days and 182 days. Presently, 91 days treasury bills are issued by the Reserve Bank of India on tap basis at a fixed discount rate of 4.60 per cent per annum. 91 days treasury bills are rediscounted by the Reserve bank of India but "additional early rediscounting fees" are levied for rediscounting of these bills within 14 days from the date of purchase. Hence, 91 days treasury bill has ceased to be of any significance to the money market. More relevant to the money market is the introduction of 182 Days Treasury Bills on auction basis in November 1986. The rate of discount is determined on the basis of the outcome at the auctions. 182 Days Treasury Bills can be purchased by any person resident in India (except State Government and Provident Funds) for a minimum subscription of Rs. 1 lakh. Every fortnight, the Reserve Bank of India invites bids for sale of 182 Days Treasury Bills. The bids are scrutinized by a committee headed by a Deputy Governor of the Reserve Bank of India. The committee decides on a cut-off price and all bids quoting price equal to or higher than the cut-off price are accepted for allotment. Other bids are rejected.
Since 182 Days Treasury Bills can be acquired by any investor (other than State Government and Provident Funds), having short-term surpluses, this instrument has potentiality of providing a link between various segments of the financial markets through shift of funds from cash to Treasury Bills and *vice versa.*

Commercial Bills: Bills of exchange are drawn by the seller (drawer) on the buyer of the value of goods delivered to him. Such bills are called trade bills. When trade bills are accepted by commercial banks they are called commercial bills. If the seller wishes to give some period for payment, the bill would be payable at a future date. During the currency of the bill, if the seller is in need of funds, he may approach his bank for discounting the commercial bills at a prescribed discount rate. The bank will receive the maturity proceeds (face value) of discounted bill from the drawer. In the meanwhile, if the bank is in a need funds, it can rediscount the bills already discounted by it in the

commercial bill rediscount market at the market-related rediscount rate. Scheduled commercial banks, all-India financial institutions, mutual funds and select scheduled State co-operative banks are approved participants in this market. The eligibility criteria prescribed by the Reserve Bank of India for rediscounting commercial bills interalia are that the bills should arise out of genuine commercial or trade transactions evidencing sale of goods, and maturity date of the bill should not be more than 90 days from the date of rediscounting.

Certificates of Deposit: Certificates of Deposit (CDs) are negotiable term deposit certificates issued by commercial banks of bulk depositors at market related rates. In June 1989, the Reserve Bank of India issued guidelines for issue of CDs. CDs can be issued by commercial banks at discount to face value for a period from 3 months up to one year. On maturity, face value of the CDs is paid to the last holder by the issuing bank. CDs can be issued for minimum amount of Rs. 25 lakhs to a single investor in the minimum denomination of Rs. 5 lakhs. A bank can issue CDs to the extent of 5 per cent of its average fortnightly aggregate deposits in 1989-90. Being a negotiable instrument loan can be transferred by endorsement and delivery but only after the expiry of 45 days from the date of issue to the primary investor. The issue amount of CDs is included in the issuing bank's demand and time liabilities for reserve requirements. CDs are subject to stamp duty.

Commercial Papers: Commercial Papers (CPs) are unsecured promissory notes issued by well rated corporate entities to raise short-term working capital requirements directly from the market instead of borrowing from banks. According to the guidelines issued by the Reserve Bank of India in January 1990 and relaxations thereto from time to time, companies issuing CPs must meet following major requirements:
- The working capital (fund based) limit of the company should not be less than Rs.10 crore and net worth of the company should not be less than Rs. 5 crore.
- The CP can be issued for a period of 3 months to 6 months. The issue should be of a minimum amount of Rs. 25 lakhs to a single investor and in the denomination of Rs. 5 lakhs and multiples thereof.
- A company can issue CPs up to 30 per cent of its working capital limit and after issue of the CPs Company's working capital limit with bank is correspondingly reduced.
- Credit rating awarded by the CRISIL to the issuing company should be P1 or higher and the borrow account of the company's classified under Health Code No. 1

Shortcomings of the Indian Money Market: The major defects of the Indian money market are as follows:
- **Dichotomy of the Market**. The money market is divided into two sections, viz., organized sector and the unorganized sector. The two sectors work independently with little coordination between their activities. The organized sector is quite well-nit presently with the Reserve Bank exercising an effective control over the activities of the commercial banks. This control has been further facilitated by the nationalization of major commercial banks in 1962. The unorganized sector remains outside the purview of the Reserve Bank control and acts independently.

The relation between the organized and unorganized sector is loose, and the transactions and the rates in the two do not always move together. There is, however, a certain degree of relationship between the two sectors that has developed in recent years. The indigenous market often depends on funds provided by the organized market particularly during the busy season when the indigenous bankers rediscount their *hundis* with the commercial banks. With the growth and rapid spread of co-operative institutions, regional rural banks and commercial banks, the grip of the indigenous bankers is getting loosened gradually. A number of suggestions have also been made in the recent past to bring these banks within the purview of the Reserve Bank control.

- **Multiplicity of Money Rates:** In the Indian money market, till recently a number of different money rates used to exist. The call money rate, the hundi rate of the indigenous bankers, the loan rate of commercial banks, and the bazaar rates of small traders, all used to exist at the same time with fairly wide differences between them. All these rates used to move independently and at times in different directions. With the Reserve Bank operating more forcefully in the money market, these disparities are getting narrowed down, although these have not been completely eliminated.

- **Variance in interest rates at different centers:** Another feature of the Indian money market is the simultaneous existence of divergent rates of interest at different centers in the country, like Bombay, Calcutta and Madras. Divergent rates lead to fluctuations in the prices of securities and reactions on movement of trade, since funds do not move from one center to another. Although the Reserve Bank has rationalized and cheapened the system of remittance of funds between different parts of the country and has thereby helped in equalizing the rates at different centers, a certain amount of variance still does exist.

- **Seasonal Stringency of Money:** Depending on the volume of transactions and ensuring demand for funds, calendar year can be divided into two parts, viz., (a) busy season, and (b) slack season. Busy season stretches between the end of October to the end of April.[1] This season requires finance for the post-harvest movement of agricultural commodities from the producers to final consumers, form meeting the needs of seasonal industries like sugar, and to some extent coal, and for meeting the generally higher tempo of economic activity in the post-monsoon period. The incidence of the closing of accounts of the Government at the end of the financial year in March also adds to the element of season for the demand for money and credit.

- **An Underdeveloped Bill Market:** Seasonality of the transactions leads to pressures on the liquidity of the banking system. These pressures can be eased by the bill market in which the commercial banks can get short-term financial accommodation by rediscounting bills of exchange in their possession. The bill market in India is still in its infancy. The infant character of the Bill Market at times reduces the effectiveness of the various monetary instruments adopted by the Reserve Bank to affect the level of economic activity in the country. It would be seen from the above discussion that he Reserve Bank has been pursuing a course of action that consistently aims at reforming the structure of the Indian

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money market, so that its control could be more effective and meaningful. Given the structure of the market, in which the Reserve Bank has

Control of Credit by the Reserve Bank of India: The statutory basis for the regulation of the credit system by the Reserve Bank is embodied in the Reserve Bank of India Act, 1934, and the Banking Regulation Act, 1949. The former Act confers on the Bank the usual powers available to the central banks generally, while the latter provides special powers of direct regulation of the operations of commercial and co-operative banks. The technique of credit control in India adopted by the Reserve Bank is based on regulating the amount of financial accommodation provided to the banks mainly during the busy season, and its cost and on controlling the use of bank credit for holding inventories of essential commodities. In other words, the Reserve Bank makes use of both quantitative or traditional (or monetary) methods of control and qualitative or selective (or non-monetary) methods. We will review the working of these different methods of control under two headings:
- Quantitative Controls
- Selective Controls.

Quantitative Controls: In considering the quantitative credit controls, viz., the bank rate, open market operations and variable reserve requirements, it is important to stress that these are closely inter-related and have to be operated in coordination. All of them affect the level of bank reserves. The use of one instrument rather than another at any point of time is determined by the nature of the situation and the range of influence it is desired by wield as well as the rapidity with which the change is required to be brought about.

Bank Rate Policy: The Bank Rate has been defined in the Reserve Bank of India Act as 'The standard rate at which it (the bank) is prepared to buy or rediscount bills of exchange or other commercial paper eligible for purchase under this Act.' But for all practical purposes, the Bank rate is taken as the rate at which the Reserve Bank extends advances to the commercial banks. The Reserve Bank has been following an active but flexible policy of using the Bank rate as a tool to influence expansion or contraction of credit. Contraction of credit can be secured by raising the Bank rate, and similarly expansion of credit may result if the Bank rate is lowered. The Reserve Bank has used the Bank rate as a tool to influence credit creation by commercial banks by: (a) affecting the availability of credit, (b) affecting the cost of credit, and (c) deposit mobilization.
- **Bank Rate and Availability of Credit**. Changes in the Bank rate influence the availability of credit. A rise in the Bank rate results in a fall in the net worth of securities and promissory notes held by the commercial banks against which these banks borrow funds from the Reserve Bank. Limited availability of credit forces commercial banks to be selective in extending loans to their borrowers. Moreover, as stated earlier, a rise in the Bank rate serves as a warning to the commercial banks of coming credit squeeze, which may be characterized by more hard measures. Similarly, a fall in the Bank rate liberalizes credit.
- **Bank Rate and Cost of Credit**. As regards the cost of credit made available by the Reserve Bank an increase in the Bank rate implies that commercial banks can

borrow only at higher rates: correspondingly, they will charge higher rates of interest from their borrowers. Similarly, a fall in the Bank rate would be accompanied by a fall in the market rates of interest also.

- **Deposit Mobilization**. Lending rates of commercial banks have been getting adjusted more or less automatically to the variation in the Bank rate. The Reserve Bank has also been fixing the deposit rates of commercial banks so as to mobilize savings in to the banking sector or to regulate the volume of investments.

Bank Rate Change in India

Year		Bank rate %	Change	Reasons
November	1951	3.5	Rise	
May	1957	4.0	Rise	
January	1963	4.5	Rise	To curb
September	1964	5.0	Rise	Inflationary rise
February	1965	6.0	Rise	
March	1968	5.0	Fall	To stimulate
May	1973	7	Rise	economic recovery
July	1974	9	Rise	
July	1981	10	Rise	
July	1991	11	Rise	To curb
October	1991	12		Inflationary rise

Bank Rate Policy during Planning Era. The Reserve Bank has been participating more actively in the development process initiated under the five-year plans. Consequently, changes in the Bank rate have been more frequent and more meaningful, as would be seen from the Table below. It would be seen that the raising of the Bank rate by Reserve Bank has now become an important tool in squeezing bank credit and containing inflationary pressures. The Bank rate policy of the Reserve Bank has been supplemented by a number of other measures like the system of differential interest rates, reserve ratio system, etc. We will talk about these systems in detail separately.

Evaluation of Bank Rate Policy. Although the Reserve Bank has been relying heavily on the Bank rate as an instrument of credit control, its effectiveness has been limited by a number of institutional and other constraints.

- First, a large portion of the credit in the market is made available by non-banking institutions. Rate of interest being charged by non-banking institutions does not bear any direct relation with the Bank rate. The effectiveness of the Bank rate changes thus gets reduced.
- Secondly, in the developing economy of India, speculative dealings carry large premium in the form of large margin of profits. A small change in the rate of interest only insignificantly affects the profit margin of the dealer. Therefore, as long as finance is made available to them, they are willing to bear higher costs.

- Thirdly, in an inflationary situation, as has been witnessed in India for the last three and a half decades, higher costs of credit are more than offset by higher prices of final products. Higher interest rates, therefore, hardly deter the entrepreneurs from borrowing.
- Fourthly, a large part of the bank credit is being advanced to the priority sectors of the economy at concessional rates of interest. It is almost immune to the effect of the changes in Bank rate.

Open Market Operations.

Open market operations, as defined by the Reserve Bank, refer 'broadly to the purchase and sale by the central bank of a variety of assets such as foreign exchange, gold, Government securities and even company shares." In practice, however, they are confined to the purchase and sale of Government securities. The Reserve Bank of India is authorized under the Reserve Bank of India Act, 1934, to purchase or sell Government securities. The Bank is also authorized to purchase and sell the shares of any other banking or financial institution. Originally, as provided in the Reserve Bank of India Act, there was a ceiling on the Reserve Bank's holdings of Government securities related to its capital reserves and deposit liabilities. Since 1951, there have been two major changes:

- First, there is, presently no restriction as to either the quality or maturity of the securities which the Reserve bank can purchase or sell, or hold.
- Secondly, before 1951 the Reserve Bank used to purchase Government securities from commercial banks, to enable them to acquire additional cash in times of financial stringency. In 1951, when the Bank rate was raised a change was made in this provision also. Henceforward, the Reserve Bank does not purchase these securities; instead the Bank provides temporary accommodation against collateral of Government securities.

Objectives of Open Market Operations in India. Open Market operations in India have not been applied essentially to serve as an instrument of credit control; instead, a number of other objectives have been attached to them. Among the important objectives of open market operations in India have been:

- Open market operations have been employed by the Reserve Bank primarily to assist the Government in their borrowing operations and to maintain orderly conditions in the gilt-edged market. In this process, the instrument has been used to mop up the market by purchasing securities nearing maturity to facilitate redemption and to make available on top a variety of loans to broaden the gilt-edged market. As banker to the Government it is the duty of the Reserve Bank to cerate in the gilt-edged market conditions favorable for the successful implementation of Government's borrowing and refunding operations.
- Open market operations have also been used to provide seasonal finance to banks. In the slack season (May to September) banks generally invest their surplus funds in Government securities which they sell during the busy season (October to April) in order to expand credit to industry and commerce, the Reserve Bank being generally ready to deal in these securities.

Open Market Operations in India. During the period of the Second World War, banks were continuously adding to their investments in Government securities, in the absence of alternative outlets for funds, and the Reserve Bank's operations were mainly intended to assist the successful floatation of Government loans. In the immediate post-war years, the Reserve Bank's operations were mainly in the direction of purchases of securities, in order to meet the cash requirements of the commercial banks for expansion of credit which during the war time had fallen to low proportions.   The Policy of comparatively free purchases of securities by the Reserve Bank was modified in November 1951. In most of the subsequent years since then the Reserve Bank's sales to the public have exceeded its purchases of securities. Apart from outright purchases or sales the Reserves Bank's sales to the public have exceeded its purchases of securities. Apart from outright purchases or sales the Reserve Bank engages extensively in 'switch operations', that is, purchase of the loan against sale of another and vice versa to maintain an orderly pattern of yields and to cater to the varying requirements of investors with respect to maturity distribution policy.

Evaluation of the Policy of Open Market Operations: It is true that the policy of open market operations as adopted by the Reserve Bank of India has been more successful than its bank rate policy. But, at the same time, it must be admitted that the primary objective of open market operations in India has not been to influence the flow of credit, as in other developed countries, by influencing its availability and cost.   Rather the principal objective of open market operations has been to assist Government in their borrowing operations and to maintain orderly conditions of the gilt-edged market. It is only o few occasions that the Reserve Bank has undertaken open market operations in order to absorb the surplus liquid resources of the banking system. This is in spite of the fact that quite a few favorable conditions exist in India that can make the policy of open market operations very successful. Among these we mention the following conditions.

- First, one of the factors facilitating the central bank in undertaking open market operations is the increase in the volume of Government securities, consequent on the growth of public debt. In India, also, there has been a large expansion in the volume of Government debt, consequent on the floatation of a large number of loans by the Government. This factor should be of help in the open market policy of the Reserve Bank.
- Secondly, there are fairly well-organized markets dealing with securities in cities like Bombay, Calcutta and Madras. This is an important factor favorable for carrying on open market operations.
- Thirdly, commercial banks are now subject to a greater degree of control at the hands of the Reserve Bank. They are obliged to keep a stable cash ratio to their total deposit liabilities. This is another factor that should help open market operations. In this situation, it should be expected that the Reserve Bank will depend more on open market operations to influence the flow of credit in the economy.

Variable Reserve Requirements: The Reserve Bank also uses the method of variable reserve requirements to control credit in India. By changing the ratio of reserves that the commercial banks are required to keep in the form of cash against their deposits, the

Reserve Bank seeks to influence the credit creation power of the commercial banks. The requirements are of two kinds, viz.:
- Cash reserve ratio (CRR), and
- Statutory liquidity requirements (SLR).

Cash reserve ratio refers to that portion of total deposits of a commercial bank which it has to keep with the Reserve Bank in the form of cash reserves. Originally, under the Reserve Bank of India Act, scheduled banks were required to maintain with the Reserve Bank at the close of business on any day a minimum cash reserve of 5 per cent of their demand liabilities and 2 per cent of their time liabilities in India. The Amendment Act of 1956 empowered the Bank to vary the minimum reserve required to be maintained with it by scheduled banks between 5 and 20 per cent in respect of the demand liabilities and 2 and 8 per cent in respect of their time liabilities in India. Incidentally, since 1956, the minimum reserve requirement is related to the average daily balance of banks with the Reserve Bank, i.e., the average of the balances held at the close of business or each day of the week, Saturday to Friday. In 1962, the Act was further amended under which the reserve requirements were fixed at 3 per cent of the aggregate demand and time liabilities of each bank, thus removing the distinction between demand and time liabilities for the purpose of reserve requirements. The Reserve Bank was also empowered to vary the cash ratio between 3 per cent and 15 per cent of the total demand and time liabilities. To facilitate the flexible operation of this system, the Reserve Bank has also been vested, since 1956, with the power to require scheduled banks to maintain the additional cash reserves, computed with reference to the excess of their total demand and time liabilities over the level of such liabilities on a base date to be notified by the Reserve Bank. This provision is designed to ensure equity in the operation of additional reserve requirements when the acquisition of fresh deposits by banks is highly uneven.

The Reserve Bank, of late, has been frequently changing this reserve requirement. During 1973, the requirement was changed twice, as form of credit squeeze. It was raised from 3 per cent to 5 per cent in June 1973 and to 7 per cent in September 1973. Later, the Reserve Bank reduced it to 4 per cent of the total deposit liabilities. It was again raised to 6 per cent in November 1976, and presently stands at 14 per cent. A rise in this ratio should be taken as a positive indicator of the tight credit policy being pursued by the Reserve Bank.

Statutory Liquidity Requirements refer to that portion of total deposits of a commercial bank which it has to keep with itself in the form of cash reserves. Statutory liquidity requirements supplement the statutory cash reserves and are so designed as to prevent commercial banks from offsetting the impact of statutory cash reserves by liquidating their Government security holdings. Originally, under he Banking Regulation Act, banks had to maintain liquid assets in cash, gold or unencumbered approved securities amounting to not less than 20 per cent of the total demand and time deposits. This enabled banks to liquidate their Government security holdings when the cash reserve requirements were raised and thus minimize the impact of this instrument. This Act was, therefore, amended in 1962 requiring all banks to maintain a minimum amount of liquid assets equal to not less than 25 per cent of their demand and time liabilities in India

exclusive of the balances maintained with the Reserve Bank under statutory cash reserve requirements. This amendment ensured that with every increase in the cash reserve requirements, the overall liquidity obligations were correspondingly raised. The Reserve Bank has also been authorized to change the statutory liquidity requirements.

These were raised from 25 per cent of demand and time liabilities to 30 per cent in November 1972, to 32 per cent in 1973, 33 per cent in 1974, 34 per cent in December 1978 and subsequently to 38.5 per cent. Since then the SLR on incremental net demand and time liabilities over April 3, 1992, level has been reduced to 30 per cent from 38.5 per cent. This exercise has been done to improve bank's profitability and also to make larger resources available with banks for lending purposes. In the next three to five years, it will be brought down to 25 per cent.

Selective Credit Controls: Selective credit controls are considered by the Reserve Bank as a useful supplement to general credit regulation. From available experience it appear that their effectiveness is greatly enhanced when they are used together with general credit controls. They are designed specially to curb excesses in selected areas without affecting other types of credit. They attempt to achieve a reasonable stabilization of prices of the concerned commodities through the demand side, by regulating the availability of bank credit for purchasing and holding them. It should, however, be noted that prices are determined by the interaction of supply and demand and when supply is substantially short, what selective credit controls are likely to accomplish is to moderate the price rise rather than arrest the basic trend.

Selective Credit Controls during Planning Era: The technique of selective credit controls was used by the Reserve Bank for the first time in 1949 for controlling speculative activity in the stock market. However, this technique has assumed importance only during the years of planning. The Reserve Bank has been given the power of instituting selective credit controls under the Banking Regulation Act. The following powers of selective credit controls have been exercised by the Reserve Bank.

- The Reserve Bank can give directions as to purposes for which advances may or may not be made by the commercial banks.
- The Reserve bank can determine the margin requirement to be maintained in respect of secured advances.
- The Reserve Bank can lay down the maximum amount of advances that can be made by a commercial bank to any one borrower.
- The Reserve Bank can determine the maximum amount up to which guarantees may be given by a commercial bank.
- The Reserve Bank can determine the rate of interest and other terms and conditions on which advances may be made by a commercial bank.
- The Reserve Bank may caution or prohibit banks against entering into any particular transaction.

During the planning era, and especially since 1956, the Reserve Bank has made extensive se of selective credit controls. The major techniques of selective credit controls used by the Reserve Bank are:

- Minimum margins for lending against specific securities;
- Ceiling on the amount of credit for certain purposes; and
- Discriminatory rates of interest charged on certain types of advances.

At present, selective credit controls are used against the following commodities:
- Food grains
- Cotton and kappa's
- oilseeds and oil
- Vanaspati
- Sugar, khandsari, gur
- Cotton textiles including yarn

As already stated above, selective credit controls have assumed three forms.
- First, higher margins have been prescribed against the loans based on the security of the stocks of these six groups of commodities subject to selective controls. Higher margins, we already know, restrict the borrowing capacity of the stock-holders of these commodities.
- Secondly, the Reserve Bank fixes party wise ceiling   on the basis of crop prospects, supply position and price trends. Commercial banks are required to get the permission of the Reserve Bank to grant loans to new borrowers and to increase the credit limits in case of existing borrowers.
- Thirdly, discriminatory rates of interest are charged on certain types of advances. The Reserve Bank fixes minimum lending rate for advances against commodities subject to selective controls.

Furthermore, granting of clean credit facilities is not allowed to a borrower affected by selective credit controls. The Reserve Bank also makes certain exemptions from the use of selective credit controls—for example, State agencies such as the Food Corporation of India and the State Trading Corporation are not subject to selective controls.

Evaluation of the Monetary Policy in India: The monetary policy of the Reserve Bank has been described as one of 'controlled expansion' of credit. The object is to restrain prices while ensuring at the same time that legitimate credit requirements for production are not adversely affected. To achieve these objectives, the Reserve Bank has been making use of both traditional and non-traditional instruments. Among the traditional instruments, Bank rate and open market operations are the two important ones. But the inherent limitations of these two weapons have caused a more frequent use of another traditional instrument of credit control, variation of reserve requirements. The traditional instruments have been supplemented by non-traditional or qualitative controls. As a matter of fact, during the last two and a half decades, more frequent use has been made of qualitative controls like stipulation of margin requirements and directives to maintain aggregate credit against particular commodities within specified limits. Formal credit controls, whether qualitative or quantitative, have often been supplemented by recourse to moral suasion through informal consultation with and exhortation of the banking community by the Reserve Bank. In short, an articulate and flexible monetary policy has been pursued by the Reserve Bank which has aimed at reconciling the requirements of an

expanding volume of money to finance the expansion of output while restraining the use of credit for unproductive and non-essential purposes. Monetary policy has been operated with a view to ensuring a reasonable degree of stability consistent with the needs of economic development.

Failures and Limitations. The major failure of the monetary policy lies on the price front. The monetary authorities in India have not been in a position to curb inflationary rise in prices, which ahs often taken violent jumps at intervals. Effectiveness of monetary policy in India is marred by a number of limitations, among which the more important are as follows:

- **Higher Proportion of Non-banking Credit.** Monetary policy, to be effective, should be able to regulate the supply and cost of credit extended to industry, agriculture, trade and other service activities. Generally speaking, monetary authorities in India try to do so by controlling the activities of commercial banks and to some extent of co-operative banks. In all societies, there are other financial institutions which also provide credit. But, in India, the proportion of total credit provided by non-banking institutions or agencies is not well-developed. The impulses generated by the Reserve Bank have, thus, a limited impact in relation to the totality of transactions that need to be affected.

- **Limitations of Monetary Instruments**. In relation to commercial banks, the task of the Reserve Bank is rendered difficult by the limitations inherent in the various monetary instruments. As far as the traditional weapon of bank rate changes is concerned, there are inhibitions regarding frequent and sharp changes, as these are supposed to conflict with developmental or equity objectives. Most Bank rates, therefore, are virtually fixed and mutually unrelated so that the scope for adjustment here is very limited. The same is true of reserve requirements and selective controls although for different reasons. Thus, with prolonged experience of inflation and shortages of one or more commodities from time to time margin requirements have tended to be so high for most of the time that the scope for further increase is extremely limited whereas opportunities for sharp reductions seldom appear. Similarly, since reserve requirements have been used as a way of underpinning plan finance to a substantial extent, it is not possible to lower them sharply and this limits the scope for further increases also.

- **Preferential Rediscount Facilities**. In pat, the freedom to curtail Reserve Bank accommodation to banks is also constrained by the fact that the device of offering preferential or easy or somewhat cheaper rediscount facilities has been used in the past as a device for encouraging banks to lend to certain sectors such as food, finance or exports or credit to agriculture and small industry. With so many windows opened for reference as an adjunct to efforts to change the long-term pattern of bank finance, it becomes difficult for the Reserve Bank to close these special windows just when the banks may find it necessary or tempting to use these special facilities.

- **Selective Application of Credit Constraints**. In a developing economy credit constraints have to be applied selectively. Apart from the general consideration of not affecting productive activity and accepting the need for some adjustment to at least some kinds of price changes, there is the special consideration in India

that hitherto neglected sectors, such as small farmers and artisans in rural areas, should be shielded as far as possible from the credit curbs. This makes the task of the monetary policy more difficult.

- **Defects in Statistical and Monitoring Systems**. The Type of the policy characterized by selective application of credit constraints—we have pursued hitherto—requires the presence of a sound statistical and monitoring system. Any defects in this system make it difficult to bring about a speedy or prompt and appropriately calibrated turn-around in credit trends.

Conclusions and Suggestions: In face of the given limitations it would be appreciated that monetary authorities in India have to steer clear of the twin dangers of attempting too little and too late, on the one hand, and attempting too much on the other. Given the limitations on monetary policy in controlling inflation, there may be temptation to give up the effort. But it would have still serious repercussions. For one thing, monetary authorities have a responsibility to sound early warning even if the major responsibility for inflationary pressures and monetary expansion lies elsewhere. Second, in the absence of appropriate monetary policy measures, the impact of budget deficits or external surplus or even cost-push inflation would tend to be accentuated. Bank credit can expand by a multiple of the primary increase in reserves and the Reserve Bank must at least prevent or minimize these secondary repercussions. Even in regard to cost-push or supply induced factors, monetary policy can be too accommodating or permissive in the sense that it might facilitate or provide an easy vehicle for price rises to be passed on and thus become cumulative. Needless to say, this aspect of the quantity of the means of payments acting as a brake on price rises so to speak directly rather than indirectly through higher interest rates and the like has limitations of its own as both velocity of circulation of money and the use of there financial instruments as money can be stretched. In practice, the limits of the monetary policy should not be assumed in advance but explored by its active pursuit with such sharpening of instruments as may be found feasible and necessary from time to time.

6.5 THE DEMAND FOR MONEY

The demand for money arises from two important functions of money. The first is that money acts as a medium of exchange and the second is that it is a store (If value. Thus individuals and businesses wish to hold money partly in cash and paltry in the form of assets. What explains changes in the demand for money? There are two views on this issue. The first is the "scale" view which is related to the impact of the Income or wealth level upon the demand for money. The demand for money is directly related to the income level. The higher the income level, the greater will he the demand for money. The second is the "substitution" view which is related to relative attractiveness of asset that can be substituted for money. According to this view, when alternative assets like bonds become unattractive due to fall in interest rates, people prefer to keep their assets in cash, and the demand for money increases, and vice versa. The scale and substitution view combined together have been used to explain the nature of the demand for money which has been split into the transactions demand, the precautionary demand and the speculative

demand. There are three approaches to the demand for money: the classical, the Keynesian, and the post-Keynesian. We discuss these approaches below.

The Classical Approach: The classical economists did not explicitly formulate demand for money theory but their views are inherent in the quantity theory of money. They emphasized the transactions demand for money in terms of the velocity of circulation of money. This is because money acts as a medium of exchange and facilitates the exchange of goods and services. In Fisher's "Equation of Exchange",

$$MV=PT.$$

Where M is the total quantity of money, V is its velocity of circulation, P is the price level, and is the total amount of goods and services exchanged for money. The right hand side of this equation PT represents the demand for money which, in fact, "depends upon the value of the transactions to be undertaken in the economy, and is equal to' a constant fraction of those transactions." MV represents the supply of money which is given and in equilibrium equals the demand for money. Thus the equation becomes

$$Md=PT$$

This transactions demand for money, in turn, is determined by the level of full employment income. This is because the classicists believed in Say's Law whereby supply created its own demand, assuming the full employment level of income. Thus the demand for money in Fisher's approach is a constant proportion of the level of transactions, which in turn, bears a constant relationship to the level of national income. Further, the demand for money.' is linked to the volume of trade going on in an economy at any time. Thus its underlying assumption is that people hold money to buy goods. But people also hold money for other reasons, such as to earn interest and to provide against unforeseen events. It is, therefore, not possible to say that V will remain constant when M is changed. The most important thing about money in Fisher's theory is that it is transferable. But it does not explain fully why people hold money. It does 'not clarify whether to include as money such items as time ,deposits or savings deposits that are not-immediately available to pay debts without ,first being converted into currency. It was the Cambridge cash balance approach which raised a further question: Why do people actually want to hold their assets in the form of money? With target incomes, people want to make larger volumes of transactions and that larger cash balances will, therefore, be demanded. The Cambridge demand equation for money is

$$Md=kPY$$

Where Md is the demand for money which must equal the supply to money (Md Ms) in equilibrium in tile economy k is the fraction of the real money income (PY) which people wish to hold in cash and demand deposits or the ratio, of money stock to income, P is the price level, and Y is the aggregate real income. This equation tells us that "other things being equal, the demand for money in normal terms would be proportional to the nominal level of income for each individual, and hence for the aggregate economy as well."

Its Critical Evaluation: This approach includes time and saving deposits and other convertible funds in the demand for, money. It also stresses the importance of factors that make money more or less useful, such as the costs of holding it, uncertainty about the future and, so on. But it says little about the nature of the relationships that one expects to prevail between its variables, and it does not say too much about which ones might be important.   One of its major criticisms arises from the neglect of store of value function of money. The classicists emphasized only the medium of exchange function of money which simply acted as a go-between to facilitate buying and selling. For them, money performed a neutral role in the economy. It was barren, and would not multiply, if stored in the form of wraith. This was an erroneous view because money performed the "asset'-' function when it is transformed into other forms of assets like bills, bonds, equities, debentures, real assets (houses, cars, TV S, and so 'on), etc. Thus the neglect of the asset function of money was the major weakness of classical approach to the demand 'for money which Keynes remedied.

The Keynesian Approach: Liquidity Preference: Keynes in his General 'Theory used a new term "liquidity preference" for the demand for money. Keynes suggested three motives which led to the demand for money in 'an economy:
- The transactions demand,
- The precautionary, demand,
- The speculative demand.

The Transactions Demand for Money: The transactions demand for money arises from the medium of exchange function of money in making regular payments for goods and services. According to Keynes, it relates to "the need of cash for the current transactions of personal and business exchange." It is further divided into income and business motives. The income motive is meant "to bridge the interval between the 'receipt of income and' its disbursement." Similarly, the business motive is meant "to bridge the interval between, the time of incurring business costs and, that of the receipt of the sale proceeds." If the time between the incurring, of expenditure and receipt of income is, small, less cash will be held by the people for current, transactions, and vice versa. There will, however, be changes in the transitions demand for money depending upon the expectations of income recipients and businessmen. They depend upon the level of income, the interest rate, the business turnover, the normal period between the receipt and disbursement of income, etc. Given these factors, the transactions demand for money is a direct proportional and positive function of the level of income, and is expressed as

$$LT = k\,Y$$

Where LT is the transactions demand for money, k is the proportion of income which is kept for transactions purposes, and Y is the income.

The Precautionary Demand for Money;   The precautionary motive relates to "the desire to provide for contingencies requiring sudden expenditures and for unforeseen opportunities of advantageous purchases." Both individuals 'and' businessmen keep cash

in reserve to meet unexpected needs. Individuals hold some cash to provide for illness, accidents; unemployment and other unforeseen contingencies. Similarly, businessmen keep cash in reserve to tide over unfavorable conditions or to gain from unexpected deals. Therefore, "money held under the precautionary motive is rather like water kept in reserve in a water tank." The precautionary demand for money depends upon the level of income, and business activity; opportunities for unexpected profitable deals, availability of cash, the cost of holding liquid assets in bank reserves, etc.

Keynes held that the precautionary demand for money, like transactions demand, was a function of the level of income. But the post-Keynesian economists believe that like transactions demand, it is inversely related to high interest rates. The transactions and precautionary demand for money will be unstable, particularly if the economy is not at full employment level and transactions are, therefore, less than the maximum, and are liable to fluctuate up or down

The Speculative Demand for Money: The speculative (or asset or liquidity preference) demand for money is for securing profit from knowing better than the market what the future will bring forth". Individuals and' businessmen having funds, after keeping enough for transactions and precautionary purposes, like to make a speculative gain by investing in bonds. Money held for speculative purposes is a liquid store of value which can be invested at an opportune moment in interest-bearing bonds or securities. Bond prices and the rate of interest are inversely related to each other. Low bond prices are indicative of high interest rates, and high bond prices reflect low interest rates. 'A bond carries a fixed rate of interest. For instance, if a bond of the value at Rs. 100 carries 4 per cent interest and the market rate of interest rises to 8 per cent, the value of this bond falls to Rs 50 in the market. If the market rate of interest falls to 2 percent, the value of the bond will rise to Rs 200 in the market. This can be worked out with the help of the equation

$$V=R/r$$

Where V is the current market value of a bond, R is the annual return on the bond, and r is the rate of return currently earned or the market rate of interest. So a bond worth Rs 100 (V) and carrying a 4 per cent rate; of interest (r), gets an ' annual return (R) of Rs 4, that is, V=Rs 4/0.04=RsI00. When the market rate of interest rises to 8 per cent, then V=Rs 4/0.08=Rs 50; when it fall to 2 per cent, then V= =Rs 200. Thus individuals and businessmen can gain by buying bonds worth Rs 100 each at the market price of Rs 50 each when the rate of interest is high (8 per cent), and sell them again when they are dearer (Rs 200 each when the rate of interest falls (to 2 per cent).

According to Keynes, it is expectations about changes in bond prices or in the current market rate of interest that determine the speculative demand for money. In explaining the speculative demand for money, Keynes had a normal or critical rate of interest (r) in mind. If the current rate of interest (r) is above the "critical" rate of interest, businessmen expect it to fall and bond price to rise. They will, therefore, buy bonds to sell them in future when their prices rise in order to gain thereby. At such times, the speculative

demand for money would fall. Conversely, if the current rate of interest happens to be below the critical rate, businessmen expect it to rise and bond prices to fall they will, therefore, sell bonds in the present if they have any, and the speculative demand for money would increase. Thus when r = r_c an investor holds all his liquid assets in bonds, and when r = r_c his entire holdings go into money. But when r=r_c, he becomes indifferent to hold bonds or money.
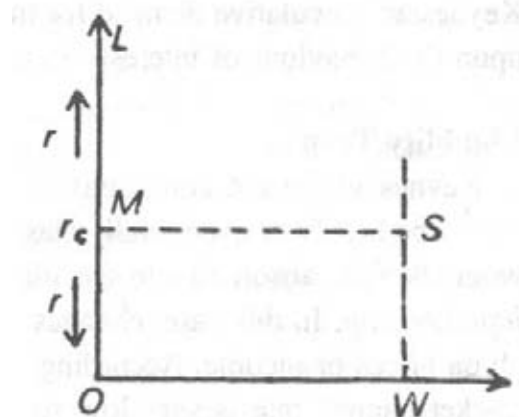

Fig. 6.6 Speculative Demand for Money

Thus relationship between an individual's demand for money and the rate of interest is shown in the above figure where the horizontal axis shows the individual's demand for money for speculative purposes and the current and critical interest rates on the vertical axis. The figure shows that when r is greater than r_c, the asset holder all his cash balances in bonds and his holder's demand for money and the current rate of interest gives the discontinuous step demand for money curve LMSW. Thus the speculative demand for money is a decreasing function of the rate of interest. The higher the rate of interest, the lower the speculative demand for money, and the lower the rate of interest, the higher the speculative demand for money, It can be expressed algebraically as Ls=f(r), where Ls is the speculative demand for money and r is the rate of interest. With a further fall in the interest rate to r6' it rises to OS'. Thus the shape of the Ls curve shows that as the interest rate rises, the speculative demand for money declines; and with the fall in the interest rate, it increases. Thus the Keynesian speculative demand for money function is highly volatile, depending upon the behavior of interest rates.

Liquidity Trap: Keynes visualized conditions in which the speculative demand for money would be highly or even totally elastic so that changes in the quantity of money would be fully absorbed into speculative balances. This is the famous Keynesian liquidity trap. In this case, changes in the quantity of money have no effects at all on prices or income. According to Keynes, this is likely to happen when the market interest rate is very low so that the yields on bond, equities and other. Securities will also be low.

At a very low rate of interest, such as r2 the LS curve becomes perfectly elastic and the speculative demand for money is infinitely elastic. This portion of the Ls curve is known

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as the liquidity trap. At such a low rate, people prefer to keep money in cash rather than invest in bonds because purchasing bonds will mean a definite loss. People will not buy bonds so long as the interest rate remains at the low level and they will be waiting for the rate of interest to return to the "normal" level and bond prices to fall. According to Keynes as the rate of interest approaches zero, the risk of loss in holding bonds becomes greater. "When the price of bonds has been bid up so high that the rate of interest is, say, only 2 per cent or less, a very small decline in the price of bonds will wipe out the yield entirely and a slight further decline would result in loss of the part of the principal." Thus the lower the interest rate, the smaller the earnings from bonds. Therefore, the greater the demand for cash holdings. Consequently, the Ls curve will become perfectly elastic.

Further, according to Keynes, "a long-term rate of interest of 2 percent leaves more to fear than to hope, and offers, at the same time, a running yield which is only sufficient to offset a very small measure of fear." This makes the Ls curve "virtually absolute in the sense that almost everybody prefers cash to holding a debt which yields so Iowa rate of interest." Prof. Modigliani believes that an infinitely elastic Ls curve is possible in a period of great uncertainty when price reductions are anticipated and the tendency to invest in bonds decreases, or if there prevails a real scarcity of investment outlets that are profitable at rates of interest higher than the institutional minimum."

The phenomenon of liquidity trap possesses certain important implications. First, the monetary authority cannot influence the rate of interest even by following a cheap money policy. An increase in the quantity of money cannot lead to a further decline in the rate of interest in a liquidity-trap situation. Second the rate of interest cannot 'fall to zero. Third, the policy of a general wage cut cannot be efficacious in the face of a perfectly elastic liquidity preference curve. No doubt, a policy of general wage but would lower wages and prices, and thus release money from transactions to speculative purpose, the rate of interest would remain unaffected because people would hold money due to the prevalent uncertainty in the money market. Last, if new money is created, it instantly goes into speculative balances and is put into bank vaults or cash boxes instead of being invested. Thus there is no effect on income. Income can change without any change in the quantity of money. Thus monetary changes have a weak effect on economic activity under conditions of absolute liquidity preference.

The Total Demand for Money

According to Keynes, money held for transactions and precautionary purposes is primarily a function of the level of income, LT= (f Y), and the speculative demand for money is a function of the rate of interest, Ls=fir). Thus the total demand for money is a function of both income and the interest rate:
$L_T+L_s=f(Y) +f(r)$;
or L= f(y)+f(r);
or L=f(Y, r);
where L represents the total demand for money.

The Post-Keynesian Approaches: Keynes believed that the transactions demand for money was primarily' interest inelastic. Prof. Baumol has analyzed the interest elasticity of the transactions demand for money on the basis of his inventory theoretical approach. Further, in the Keynesian analysis the speculative demand for money is analyzed in relation to uncertainty in the market Prof. Tobin has given an alternative theory which explains liquidity preference as behavior towards risk. The third important post-Keynesian development has been Friedman's formulation that the demand' for money is not merely a function of income and-the rate of interest, but also of the total wealth, This analysis has already been discussed under Friedman's Reformulation of Quantity Theory of Money. The other two approaches to the liquidity preference theory are discussed below.

Baumol's Inventory Theoretic Approach : William Baumol has made an important addition to the Keynesian transactions demand for money. Keynes regarded transactions demand for money as a function of the level of income, and the relationship between transactions demand and income as linear and proportional. Baumol shows that the relation between transactions demand and income is neither linear nor proportional rather, changes in income lead to less than proportionate changes in the transactions demand for money. Further, Keynes considered transactions demand as primarily interest inelastic. But Baumol analyses the interest elasticity of the transactions demand for money. Baumol's analysis is based on the holding of an optimum inventory of money for transactions purposes by a firm or an individual. He writes: "A firm's cash balance can usually be interpreted as an inventory of money which its holder stands ready to exchange against purchases of labor, raw materials, etc." Cash balances the held because income and expenditure do not take place simultaneously. "But it is expensive to tie up large amounts of capital in, the form .of cash balances. For that money could .otherwise be, profitably elsewhere in the firm. It could be invested profitably in securities." Thus the alternative to holding cash balances is bonds which earn in rest. A firm would always try to keep minimum transactions balances in order to earn maximum interest from its assets. The higher the interest rate on bonds, the lesser the transactions balances which a firm holds.

Its Superiority over the Classical and Keynesian Approaches: Baumol's inventory theoretic approach to the transactions demand for money is an improvement over the classical and Keynesian approaches. The cash balance quantity theory of money assumed the relationship between the transactions demand and the level of income as linear and proportional. Baumol has shown that this relationship is not accurate. No doubt it is .true the transactions demand increases with increase in income but it increases less than proportionately because of the economies of scale in cash management. Baumol's theory also has the merit of demonstrating the interest elasticity of the transactions demand for money as against the Keynesian view that it is interest inelastic. Further, Baumol analyses the transactions demand for real balances thereby emphasizing the absence of money illusion. Again, Baumol's inventory theoretic approach is superior to both the classical and Keynesian approaches because it integrates the transactions demand for money with the capita/l-theory approach by taking assets and their interest and non-interest cost into account.

Tobin's Portfolio Selection Model: The Risk Aversion Theory of Liquidity Preference: James Tobin in his famous article "Liquidity Preference as Behavior towards Risk," formulated the risk aversion theory of liquidity preference based on portfolio selection. This theory removes two major defects of the Keynesian theory of liquidity preference. One, Keynes's liquidity preference function depends on the inelasticity of expectations of future interest rates; and two, individuals hold either money or bonds. Tobin has removed both the defects. His theory does not depend on the elasticity of expectations of future interest rates but proceeds on the assumption that the expected value of capital gain or loss from holding interest-bearing assets is always zero. Moreover, it explains that an individual's portfolio holds money and bonds rather than only one at a time.

Tobin starts his portfolio selection model of liquidity preference with this presumption that an individual asset holder has a portfolio of money and bonds. Money neither brings any return nor imposes any risk on him. But bonds yield interest and also bring income. However, income from bonds is uncertain because it involves a risk of capital losses or gains. The greater the investment in bonds, the greater is the risk of capital loss from them. An investor can bear this risk if he is compensated by an adequate return from bonds. If g is the expected capital gain or loss, it is assumed that the investor bases his actions on his estimate of its probability distribution. It is further assumed that this probability distribution has an expected value of zero and is independent of the level of the current rate of interest, r, on bonds." His portfolio consists of a proportion M of money and B of bonds where both M and B add up to 1. They do not have any negative values. The return on a portfolio R is

R =B (r+ g) where 0<B<1

Since g is a random variable with expected value zero, the expected return on portfolio is.

RE =u R=Br.

The risk attached to a portfolio is measured by the standard deviation of R, that is a R Tobin describes three types of investors. The first category is of risk that enjoy putting all their wealth into bonds to maximize risk. They accept risk of loss in exchange for the income they expect from bonds. They are like gamblers. The second category is of plungers. They will either put all their width into bonds or will keep it in cash. Thus plungers either go all the way, or not at all. But the majority of investors belong to the third category. They are risk, averters or diversifiers. Risk averters prefer to avoid the risk of loss which is associated with holding bonds rather than money. They are prepared to bear some additional risk only if they expect to receive ,some additional return on bonds, provided every increase in risk borne brings with it greater increases in returns. They will, therefore, diversify their portfolios, and hold both money and bonds. Although money neither brings any return any risk, yet it is the most liquid form of assets which can be used for buying bonds any time. In order to find out risk averter's preference

between risk and expected return, Tobin uses indifference curves having positive slopes indicating that the risk averter demands more expected returns in order to take more risk.

It's Superiority over Keynesian Theory: Tobin's risk aversion theory of portfolio selection is superior to the Keynesian liquidity preference theory of speculative demand for money.

- First, Tobin's theory does not depend on inelasticity of expectations of future interest rates, hut proceeds from the assumption that the expected value of capital gain or loss from holding interest-bearing assets is always zero. In this respect, Tobin regards his theory as a logically more satisfactory foundation- for liquidity preference than the Keynesian theory.
- Second, this theory is superior to Keynes's theory in that it explains that individuals hold diversified portfolios of bonds and money rather than either bonds or money.
- Third, like Keynes, Tobin regards the demand for money as closely dependent on interest rates and inversely related to interest rates. But he is more realistic than Keynes in not discussing the perfect elasticity of demand for money (the liquidity trap) at very low rates of interest.
- Fourth, the real importance of the portfolio theory lies in "not what it tells directly about the aggregate economy, but rather it represents an interesting approach to the problem of relating demand for money to the existence of uncertainty, an approach that probably has scope for considerable development in the future."

6.6 MULTIPLIER

The Concept of Multiplier: The concept of multiplier was first developed by R.F. Kahn in his article "The Relation of home Investment, to Unemployment" in the Economic Journal of June 1931. Kahn's multiplier was the Employment Multiplier. Keynes took the idea' from Kahn and formulated the Investment Multiplier.

The Investment Multiplier: Keynes considers his theory of multiplier as an integral part of his theory of employment. The multiplier according to Keynes establishes a precise relationship, given the propensity to consume, between aggregate employment and income and the rate of investment. It tells us that, when there is an increment of investment, income will increase by an amount which is K times the increment of investment" i.e.

$$\Delta Y = K \, \Delta I.$$

In the words of Hansen, Keynes' investment multiplier is the coefficient relating to an increment of investment to an increment of income, i.e., $K = \Delta Y / \Delta I$. where Y is income, I is investment, Δ is change (increment or decrement) and K is the multiplier.

In the multiplier theory, the important element is the multiplier coefficient, K which refers to the power by which any initial investment expenditure is multiplied to obtain a final increase in income. The value of the multiplier is determined by the marginal propensity to consume. The higher the marginal propensity to consume, the higher is the

value of the multiplier, and vice versa. The Multiplier coefficient can also be derived from the Marginal Propensity to Save (MPS) and it is the reciprocal of MPS, i.e. K = 1/MPS.

Working of the Multiplier: The multiplier works both forward and backward. First, we study its forward working. The multiplier theory explains the cumulative effect of a change in investment on income via its effect on consumption expenditure. We first take the "sequence analysts" which shows a "motion picture" of the process of income propagation. An increase in investment leads to increased production which creates income and generates consumption expenditure. This Process continues in dwindling series till no further increase in income and expenditure is possible: This is a lag less instantiates process in a static framework, as explained by Keynes. Suppose that in an economy MPC is 1/2 and investment is raised by Rs100crore. This will immediately lead to a rise in production and income by Rs100 crore. One-half of this new income will be immediately spent on consumption goods which will lead to increase in production and income by the same amount, and so on. It reveals that an increment of Rs 100 crore of investment in the primary round leads to the same increase in income. Of this, Rs 50 crore is saved and Rs 50 crore is spent on consumption which goes to increase income by the same amount in the second round. This dwindling process of income generation continues in the secondary rounds till the total income generated from Rs 100 crore of investment rises to Rs 200 crore. This is also clear from the multiplier formula,

$\Delta Y = K \times \Delta I$ or $200 = 2 \times 100$, where K=2 (MPC=I/2) and ΔI=Rs 100 crore.

Backward Operation: The above analysis pertains to the forward operation of the multiplier. If, however, investment decreases, instead of increasing, the multiplier operates backward. A reduction in investment will lead to contraction of income and consumption which, in turn, will lead to cumulative decline in income and consumption till the c0ntraction in aggregate income is the multiple of the initial decrease in investment. Suppose investment decreases by Rs 100 crore. With an MPC=0.5 and K=2, consumption expenditure would keep on declining till aggregate income is decreased by Rs 200 crore. In terms of multiplier formula, $-\Delta Y = K(-\Delta I)$, we get -200 = 2 (-100).

The magnitude of contraction due to the backward operation of the multiplier depends on the value of Multiplier Propensity to Consume (MPC). The higher the MPC, the greater is the value of the multiplier and the greater the cumulative decline in income, and vice versa. On the contrary the higher the M PS, the lower is the value of the multiplier and the smaller the cumulative decline in income, and. vice versa. Thus, a community with a high propensity to consume (or low propensity to save) will be hurt more by the reverse operation of the multiplier than one with a low propensity to consume (or high propensity to save).

Assumptions of Multiplier: Keynes's theory of the multiplier works under certain assumptions which limit the operation of the multiplier. They are as follows:
- There is change in autonomous investment and that induced investment is absent.
- The marginal propensity to consume is constant.

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- Consumption is a function of current income.
- There are no tine lags in the multiplier process. An increase (decrease) in investment instantaneously leads to a multiple increase (decrease) in income.
- The new level of investment is maintained steadily for the completion of the multiplier process.
- There is net increase in investment.
- Consumer goods are available in response to effective demand for them.
- There is surplus capacity in consumer goods industries to meet the increased demand for consumer goods in response to a rise in income following increased investment.
- Other resources of production are also easily available within the economy.
- There is an industrialized economy in which the multiplier process operates.
- There is a closed economy unaffected by foreign influences.
- There are no changes in prices. .
- The accelerator effect of consumption on investment is ignored.
- There is less than full employment level in the economy.

Leakages of Multiplier: Leakages are the potential diversions from the income stream which tend to weaken the multiplier effect of new investment. Given the marginal propensity to consume, the increase in income in each round declines due to leakages in the income stream and ultimately the process of income propagation "peters out." The .following are the important leakages:

- **Saving:** Saving is the most important leakage of the multiplier process. Since the marginal propensity to consume is less than one the whole increment in income is not spent on consumption: A part of it is saved which peters out of the income stream and the increase. In income in the next round declines. Thus the higher the marginal propensity to save, the smaller the size of the multiplier arid the greater the amount of leakage out of the income stream, and vice versa. For instance if MPS=1/6, the multiplier is 6, according to the formula K= l/MPS; and the MPS of 1/3 gives a multiplier of 3.
- **Strong Liquidity Preference:** If people prefer to hoard the increased income in. the form of idle cash balances to satisfy a strong liquidity preference for the transaction, precautionary and speculative motives, that will act as a leakage out of the income stream. As income increases people will hoard money in inactive bank deposits and the multiplier process is checked.
- **Purchase of Old Stocks and Securities:** If a part of the increased income is used in buying old stocks and securities instead of consumer goods, the consumption expenditure will fall and its cumulative effect on income will be less than before. In other words, the size of the multiplier will fall with a fall in consumption expenditure when people buy old stocks and shares.
- **Debt Cancellation**: If a part of increased income is used to repay debts to banks, instead of spending it for further consumption, the part of the income peters out of the income stream. In case, this part of the increased income is repaid to other creditors who save or hoard it, the multiplier process will be arrested.

- **Price Inflation:** When increased investment leads to price inflation, the multiplier effect of increased income may be dissipated on higher prices. A rise in the prices of consumption goods implies increased expenditure on them. As a result, increased income is absorbed by higher prices and the real consumption and income fall. Thus price inflation is an important leakage which tends to dissipate increase in income and consumption on higher prices rather than in increasing output and employment.
- **Net Imports:** If increased income is spent on the purchase of imported goods it acts as a leakage out of the domestic income stream. Such expenditure fails to effect the consumption of domestic goods. This argument can be extended to net imports when there is an excess of imports over exports thereby causing a net outflow of funds to other countries.
- **Undistributed Profits:** If profits accruing to joint stock companies are not distributed to the shareholders in the form of dividend but are kept in the reserve fund, it is a leakage from the income stream. '. Undistributed profits with the companies tend to reduce the income and hence further expenditure on consumption goods thereby weakening the multiplier process.
- **Taxation:** Taxation policy is also an important factor in weakening the multiplier process. Progressive taxes have the effect of lowering the disposable income of the taxpayers and reducing their consumption expenditure. Similarly commodity taxation tends to raise the prices of goods, and a part of increased income may be dissipated on higher prices. Thus increased taxation reduces the income stream and lowers the size of the multiplier.
- **Excess Stocks of Consumption Goods:** If the increased demand for consumption goods is met from the existing excess stocks of consumption goods there will be no further increase in output, employment and income and the multiplier process will come to a halt till the old stocks are exhausted.
- **Public Investment Programs:** If the increase in income as a result of increased investment is affected by public expenditures.

It may fail to induce private enterprise to spend that income for further investment due to the following reasons.

- Public investment programs may raise the demand for labor and materials leading to a rise in the costs of construction so as to make the undertaking of some private projects unprofitable.
- Government borrowing may, if not accompanied by a sufficiently liberal credit policy on the part of the monetary authority, increase the rate of interest and thus discourage private investment.

- Government operations may also injure private investors confidence by arousing animosity or fears of nationalization

Criticism of Multiplier: The multiplier theory has been severely criticized by the post-Keynesian eC0nomists on the following grounds.

- Prof. Haberler has criticized Keynes' multiplier as- tautological. It is a truism which defines the multiplier as necessarily true as $K = 1/1-(\Delta C/\Delta Y)$. As pointed by Professor Hansen, "Such a coefficient is a mere arithmetic multiplier (i.e., a truism} and not a true behavior multiplier based on a behavior pattern which establishes a verifiable relation between consumption and income. A mere arithmetic multiplier, $1/1-(\Delta C/\Delta Y)$ is tautological."

- Keynes's logical theory of the, multiplier is an instantaneous process without time lag. It is a timeless static equilibrium analysis in which the total effect of a change in. investment on income is instantaneous so that consumption goods are produced simultaneously and consumption expenditure is also incurred instantaneously. But this is not borne out by facts because a time lag is always involved between the receipt of income and its expenditure on consumption goods and also in producing consumption goods. Thus "the timeless, multiplier analysis disregards the transition and deals only with the new equilibrium income level" and is therefore unrealistic.

- According to Hazlitt, the Keynesian multiplier "is a strange concept about which some Keynesians make more fuss than about anything else in the Keynesian system." It is a myth for there can never by any precise, pre determinable or mechanical relationship between investment and income. Thus he regards it is a worthless theoretical toy.

- One of the weaknesses of the multiplier theory is that it studies the effects of investment on income through changes in consumption expenditure. But it ignores the effect of consumption on investment which is known as the acceleration principle. Hicks, Samuelson and others have shown that, it is the interaction of the multiplier and the accelerator which helps in controlling business fluctuations.

- Gordon points out that the greatest weakness of the multiplier concept is its exclusive emphasis on consumption. He favors the use of the term 'marginal propensity to spend' in place of marginal propensity to consume to make this concept more realistic. He also objects to the constancy because in a dynamic economy, it is not likely to remain constant. If it is assumed to be constant, it is not possible "to predict with much accuracy the multiplying effects over the cycle of a given increase in private investment or public spending."

- Keynes's multiplier theory establishes a linear relation between consumption and income with the, hypothesis that the, MPC is less than one and greater than zero. Empirical studies of the behavior of consumption in relation to income show that the relationship between the two is complicated and nonlinear. As pointed out by Gardner Ackley, "The relationship does not run simply from current income to current consumption, but rather involves some complex average of past and expected income and consumption. There are other factors than income to consider."

But despite its scathing criticism, the multiplier principle has considerable practical, applicability to economic problems as given, below.

Importance of Multiplier: The concept of multiplier is one of the important contributions Keynes's to the income and employment theory. As aptly observed by Richard Goodwin, Lord Keynes did discover the multiplier; that honor goes to Mr. RF. Kahn. But he gave it the role it today by transforming it from an instrument for the analysis of road building into one for the analysis of income building. It set a fresh wind blowing through the structure of economic thought. Its importance lies in the following:

- **Investment:** The multiplier theory highlights the importance of investment in income and employment theory. Since the consumption function is stable during the short run fluctuations in income and employment are due to fluctuations in the rate of investment. A fall in investment leads to a cumulative decline in income and employment the multiplier process and vice versa. Thus it underlines the investment and explains the process of income propagation.

- **Trade Cycle:** As a corollary to the above, when there are fluctuations. In the level of income and employment due to variations the rate pf investment, the multiplier process throws a spotlight on the different phases of the trade cycle. When there is a fall in investment, income and employment decline in a cumulative manner leading recession and ultimately to depression, on the contrary, an increase in invest my deeds to reveal and, if this process continues, to a boom. Thus the multiplier is regarded as an indispensable .tool in trade cycles

- **Saving-Investment Equality:** It also helps in bringing the equality between saving and investment. If there is a divergence between saving and investment, an increase in investment leads to a rise in income via the multiplier process by more than the increase in initial, investment. As a result of the increase in income, saving also increases and equals investment.

- **Formulation of Economic Policies:** The multiplier is all important tool in the hands of modern states in formulating economic policies. Thus this principle presupposes state intervention in economic affairs.

- **To achieve full employment:** The state decides upon the amount of investment to be injected into the economy to remove unemployment and achieve full employment. An initial increase in investment leads to the rise in income and employment by the multiplier time the increase in investment. If a single dose of investment is insufficient to bring full employment, the state, can inject regular doses of investment for this purpose till the full employment level is reached.

- **To control trade cycles:** The state can control booms and depressions in a trade cycle on the basis of the multiplier effect on, income and employment. When the economy is experiencing inflationary pressures, the state can control them by a

reduction in investment which leads to a cumulative decline in income and employment via the multiplier process. On the other hand, in a deflationary situation, an increase in investment can help increase the level of income and employment through the multiplier process.

- **Deficit financing:** The multiplier principle highlights the importance of deficit budgeting. In a state of depression, cheap money policy of lowering the rate of interest is not helpful because the marginal efficiency of capital is so low that a low rate of interest fails to encourage private investment. In such a situation, increased public expenditure through public investment programs by creating a budget deficit helps in increasing income and employment by multiplier time the increase in investment.

- **Public Investment:** The above discussion reveals the importance of the multiplier in public investment policy. Public investment refers to the state expenditure on public works and other works meant to increase public welfare. It is autonomous and is free from profit motive. It therefore, applies with greater force in overcoming inflationary and deflationary pressures in the economy, and in achieving and maintaining full employment. Private investment being induced by profit motive can help only when the public investment has created a favorable situation for the former. Moreover, economic activity cannot be left to the vagaries and uncertainties of private enterprise.

Hence, the importance of multiplier in public investment lies in creating or controlling income and employment. The state can have the greatest multiplier effect on income and employment by increasing public investment during a depression where the MPC is high (or the MPS is low). On the contrary, in periods of overfull employment, a decline in investment will have a serious effect on the levels of income and employment where the MPS is high (or MPC is low). The best policy is to reduce investment where the MPC is low (or MPS is high), to have gradual decline in income and employment. The important thing, however: if the timing of public investment is such a manner that the multiplier is able to work with full force and, there is little scope for the income, 'stream to peter out. Moreover, public investment should not supplant but supplement private investment so that it could be increased during depression and reduced during inflation. As a result, the forward and 'backward operation of the multiplier will help in the two situations.

The Dynamic or Period Multiplier: Keynes's logical theory of the multiplier is an instantaneous process without time lag. It is a timeless static equilibrium analysis in which the total effect of a change in investment on income is instantaneous so that consumption goods are produced simultaneously and consumption expenditure is also incurred instantaneously. But this is not borne out by facts because a time lag is always involved between the receipt of income and its expenditure on consumption goods and also in producing consumption goods. Thus the timeless multiplier analysis disregards the transition and deals only with-the new equilibrium income level and is, therefore, unrealistic. The dynamic multiplier relates to the time lags in the process of income generation. The series of adjustments in income and consumption may take months or

even years for the multiplier process to complete, depending upon the assumption made about the period involved.

The Employment Multiplier: The concept of Employment Multiplier was introduced by R.F. Kahn in 1931 as a ratio between the total increase in employment and primary employment, i.e., $K_1 = \Delta N / \Delta N_1$ where K_1 stands for the employment multiplier, ΔN for the increase in total employment and ΔN_1 for the increase in primary employment. Thus the "employment multiplier is a coefficient relating an increment of primary employment on public works to the resulting increment of total employment, primary and secondary combined." To illustrate it, suppose 200000 additional men are employed in public works so that the (secondary) employment is increased by 400000. The total employment is increased by 600000 (= 200000 primary + 400000 secondary). The employment multiplier would be 600000/200000= 3. Algebraically, the Keynesian multiplier. $\Delta Y = K\Delta I$ is analogous to Kahn's multiplier $\Delta N = K_1\Delta N_1$. But Keynes points out that there is no reason in general to suppose that $K = K_1$ because income in terms of wage units may rise more than employment, if in the process, non wage earners income should rise proportionately more than wage earners income. Moreover, with decreasing returns, total product would rise proportionately less than employment. In short, income in terms of wage units would rise most, employment next and output the least. Still, according to Hansen, in the short-run, all three would tend to rise and fall together as envisaged by the Keynesian income and employment theory. He concludes that thus for practical' purposes we do no great violence to the facts if we assume that the employment multiplier equals the investment multiplier.

6.7 THE SUPPLY OF MONEY

The supply of money is a stock at their particular point of time, though it conveys the idea of a flow over time. The term the supply of money: is synonymous with such terms as money stock', 'stock of money', 'money supply' and 'quantity of money'. The supply of money at any moment is the total amount of money in the economy. There are three alternative views .regarding the definition or measures of money supply. "The most common view is associated with the traditional and Keynesian thinking which stresses the medium of exchange function of money. According to this view money supply is' defined as currency with the public and demand deposits with commercial banks. Demand deposits are savings and current accounts of depositors in a commercial bank. They are the liquid form of money because depositors can draw cheques for any amount lying in their accounts and the hank has to make immediate payment on demand. Demand deposits with commercial banks plus currency with the public are together denoted as M_1 the money supply. This is regarded as a: narrower, definition of the money supply.

The second definition is broader and is associated with the modern quantify theorists headed by Friedman. Professor Friedman defines the money supply at any moment of time as "literally the number of dollars people are carrying' around in their pockets, the number of dollars they have to their credit at banks or dollars they have their credit at banks in the form of demand deposits, and also commercial bank time deposits." Time

deposits are fixed deposits" of customers in a commercial bank. Such deposits earn a fixed rate of interest varying with the time period for which the amount is deposited. Money can be withdrawn before the expiry of that period by paying a penal rate of interest to the bank. So time deposits possess liquidity and are included in the money supply by Friedman. Thus this definition includes M_1 plus time deposits of commercial banks in the supply of money. This wider definition is characterized as M_2 in America and M_3 in Britain and India. It stresses the store of value function of monetary policy or what Friedman says, 'a temporary abode of purchasing power.

The third definition is the broadest and is associated with Gurley and Shaw. They include in the supply of money, M_2 plus deposits of savings banks, building societies, loan associations, and deposits of other credit and financial institutions. The choice between, these alternative definitions of the money supply depends on two considerations:

- A particular choice of definition may facilitate or blur the analysis of the various motives for holding cash;
- From the point of view of monetary policy an appropriate definition should include the area over which the monetary authorities can have direct influence.

If these two criteria are applied, none of the three definitions is wholly satisfactory.

The first definition of money supply may be analytically better because M_1 is a sure medium of exchange. But M_1 is an inferior store of value because it earns no rate of interest, as is earned by time deposits. Further, the central bank can have control over a narrower area if only demand deposits are included in the money supply.

The second definition that includes time deposits (M_2) in the supply of money is less satisfactory analytically because "in a highly developed financial structure, 'it is important to consider separately the motives for holding means of payment and time deposits." Unlike demand deposits, time deposits are not a perfect liquid form of money. This is because the amount lying in them can be withdrawn immediately by cheques. Normally, it cannot be withdrawn before the due date of expiry of the deposit. In case a depositor wants his money earlier, he has to give a notice to the bank which allows the withdrawal after charging a penal interest rate from the depositor. Thus time deposits lack perfect liquidity and cannot be included in the money supply. But this definition is more appropriate from the point of view of monetary policy because the central bank can exercise control over a wider area that includes both demand and time deposits held by commercial banks.

The third definition of money supply that includes M_2 plus deposits of non bank financial institutions is unsatisfactory on both the criteria. Firstly, they do not serve the medium of exchange function of money. Secondly, they almost remain outside the area of control of the central bank. The only advantage they possess is that they are highly liquid store of value. Despite this merit, deposits of non-bank financial institutions are not included in the definition of money supply.

Determinants of Money Supply: There are two theories of the determination of the money supply. According to the first view, the money supply is determined exogenously by the central bank. The second view holds that the money supply is determined endogenously by changes in the economic activity which affects people's desire to hold currency relative to deposits, the rate of interest, etc. Thus the determinants of money supply are both exogenous and endogenous which can be described broadly as: the minimum cash reserve ratio, the level of bank reserves, and the desire of the people to hold currency relative to deposits. The last two determinants together are called the monetary base or the high powered money.

The Required Reserve Ratio: The required reserve ratio (or the minimum cash reserve ratio or the reserve deposit ratio) is an important determinant of the money supply. An increase in the required reserve ratio reduces the supply of money with commercial banks and a decrease in required reserve ratio increases the money supply. The RRR is the ratio of cash to current and time deposit liabilities which is determined by law. Every commercial bank is required to keep a certain percentage of these liabilities in the form of deposits with the central bank of the country. But notes or cash held by commercial banks in their tills are not included in the minimum required reserve ratio. But the short-term assets along with the cash are regarded as the liquid assets of a commercial bank. In India the statutory liquidity ratio (SLR) has been fixed by law as an additional measure to determine the money supply. The SLR is called 'Secondary Reserve Ratio in other countries while the required reserve ratio is referred to as the primary ratio. The raising of the SLR has the effect of reducing the money supply with commercial banks for lending purposes, and the lowering of the SLR tends to increase the money supply with banks for advances.

The Level of Bank Reserves: The level of bank reserves is another determinant of the money supply. Commercial bank reserves consist of reserves on deposits with the central bank and currency in their tills or vaults. It is the central bank of the country that influences the reserves of commercial banks in order to determine the supply of money. The central bank requires all commercial banks to hold reserves equal to a fixed percentage of both time and demand deposits. These are legal minimum or required reserves. Required reserves (RR) are determined by the required reserve ratio (RRR) and the level of deposits (D) of a commercial bank: RR= RRR x D. If deposits amount of Rs 80 lakh and required reserve ratio is 20 per, cent, then the required reserves will be 20% x 80=Rs 16 lakh. If the reserve ratio is reduced to 10 per cent, the required reserves will also be reduced to Rs 8 lakh. Thus the higher the reserve ratio, the higher the required reserves to be kept by a bank, and vice versa. But it is the excess reserves (ER) which are important for the determination of the money supply. Excess reserves are the difference between total reserves (TR) and required reserves (RR): ER=TR-RR.

If total reserves are Rs 80 lakh and required reserves' are Rs 16 lakh, then the excess reserves are Rs 64 lakh (Rs 80 - 16 lakh). When required reserves are reduced to Rs 8 lakh, the excess reserves increase to Rs 72 lakh. It is the excess reserves of a commercial bank which influence the size of its deposit liabilities. A commercial bank advances loans equal to its excess reserves, which are an important component of the money supply. To

determine the supply of money with a commercial bank, the central bank influences its reserves by adopting open market operations and discount rate policy.

Open market operations refer to the purchase and sale of government securities and other types of assets like bills, securities, bonds, etc., of both government and private in the open market. When the central bank buys or sells securities in the open market, the level of bank reserves expands or contracts. The purchase of securities by the central bank is paid for with cheques to the holders of securities who, in turn, deposit them in commercial banks thereby increasing the level of bank reserves. The opposite is the case when the central bank sells securities to the public and banks that make payments to the central bank through cash and cheques thereby reducing the level of bank reserves.

The discount rate policy affects the money supply by influencing the cost and supply of bank credit to commercial banks. The discount rate, known as the bank rate in India, is the interest rate at which commercial banks borrow from, the central, bank. A high discount rate means that commercial banks get fewer amounts by selling securities to the central bank. The commercial banks, in turn raise their lending rates to the public thereby making advances dearer for them. Thus there will be contraction .of credit and the level of commercial bank reserves. Opposite is the case when the bank rate is lowered. It tends to expand credit and the consequent bank reserves. It should be noted that commercial bank reserves are affected significantly only when open market operations and discount rate policy supplement each other. Otherwise, their, effectiveness as determinants of bank reserves and consequently of money supply is limited.

Public's Desire to Hold Currency and Deposits: People's desire to hold currency (or cash) relative to deposits in commercial banks also determines the money supply. If people are in the habit of keeping less in cash and more in deposits with the commercial banks, the money supply will be large. This is because banks can create more money with larger deposits. On the contrary, if people do not have banking habits and prefers to keep their money holdings in cash, credit creation by banks will be less and, the money supply will be at a low level.

High Powered Money and the Money Multiplier: The current practice is to explain the determinants of the money supply in terms of the monetary base or high powered money .High-powered money is the sum of commercial bank reserves and currency (notes and coins) held by the public. High-powered money is the base for the expansion of bank deposits and creation of the money supply. The supply of money varies directly with changes in the monetary base, and inversely with the currency and reserve ratios.

Other Factors: The money supply is a function not only of the high-powered money determined by the monetary authorities, but of interest rates; income and other factors. The latter factors change the proportion of money balances that the public holds as cash. Changes in business activity can change the behavior of banks and the public and thus affect the money supply. Hence the money supply is not only an exogenous controllable item but also an endogenously determined item.

Conclusion: We have discussed above the factors which determine money supply through the creation of bank credit. But money supply and bank credit are indirectly related to each other. When the money supply increases, a part of it is saved in banks depending upon the depositors' propensity to save. These savings become deposits of commercial banks who, in turn, lend after meeting the statutory reserve requirements. Thus with every increase in the money supply, the bank credit goes up. But it may nut happen in exactly the same proportion due to the following factors:

- The marginal propensity to save does not remain constant. It varies from time to time depending on changes in income levels, prices, and subjective factors.
- Banks may also create more or less credit due to the operation of leakages in the credit creation process.
- The velocity of circulation of money also affects the money supply. If the velocity of money circulation increases, the bank credit may not fall even after a decrease in the money supply. The central bank has little control over the velocity of money which may adversely affect bank credit.

High-Powered Money and the Money Multiplier: The current practice is to explain the determinants of the money supply in terms of the monetary base or high-powered money. High-powered money is the sum of commercial bank reserves and currency (notes and coins) held by the public. High-powered money is the base for the expansion of bank deposits and creation of the money supply. The supply of money varies directly with changes in the monetary base, and inversely with the currency and reserve ratios.

The use of high-powered money consists of the demand of commercial banks for the legal limit or required reserves .with the central bank and excess reserves and the demand of the public for currency. Thus high-powered money $H=C+RR+ER$, where C represents currency, RR the required reserves and ER the excess reserves.

A commercial bank's required reserves depend upon its deposits. But a bank usually holds reserves in excess of its required reserves. In fact, banks do not advance loans up to the legal limits but precisely less than that. This is to meet unanticipated cash withdrawals or adverse clearing balances. Hence the deed arises for maintaining excess reserves by them. The money supply is "thus determined by the required reserve ratio and the excess reserve ratio of commercial banks. The required reserve ratio (RRR) is the ratio of required, reserves to deposits (RR/D), and the excess reserve ratio (ERR) is the ratio or excess reserves to deposits (ER/D).

Currency held by the public is another component of high-powered money. The demand for currency by the public is expressed as a proportion of bank deposits. Thus the currency ratio $Cr = C/D$, where C is the currency and D is the deposits. The currency ratio is influenced by such factors as changes in income levels of the people, the use of credit instruments by the public, and uncertainties in economic activity. The formal relation between the money supply and high-powered money can be stated in the form of equations as under: The money supply (M) consists of deposits of commercial banks (D) and currency (C) held by the public. Thus the supply of money

$$M=D+C \dots (1)$$

High-powered money (H) (or monetary base) consists of currency held by the public (C) plus required reserves (RR) and excess reserves of commercial banks. Thus high-powered money

$$H = C + RR + ER \ldots (2)$$

The relation between M and H can be expressed as the ratio of M to H. So divide equation (1) by (2):

$$M/H = 1 + C/D/C/D + RR/D + ER/D \ldots (3)$$

By substituting Cr for C/D RRR for RR/D, and ERR for ER/D. equation (3) becomes

$$M/H = 1 + Cr/Cr + RRR + ERR \ldots (4)$$

Thus high-powered money

$$H = Cr + RRR + ERR/1 + Cr \times M \ldots (5)$$

$$M = 1 + Cr/Cr + RRR + ERR \times H \ldots (6)$$

And money supply Equation (7) defines money supply in terms of high-powered money. It expresses the money supply in terms of four determinants, H, Cr, RRR, and ERR. The equation states that the higher the supply of high powered money, the higher the money supply. Further, the lower the currency ratio (Cr), the reserve ratio (RRR), and the excess reserve ratio (ERR) the higher the money supply, and vice versa.
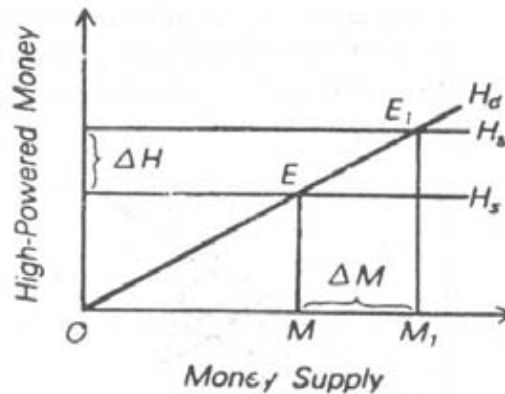
Fig 6.7

The relation between the money supply and high-powered money is illustrated in the above Figure. The horizontal curve Hs shows the given supply of high powered money. The curve H_d shows the demand for high-powered money associated with each level of money supply and represents equation (5). The slope of the H_d curve is equal to the term (Cr + RRR + ERR)/ (1+Cr). Given Cr, RRR, ERR and the high-powered money Hs, the equilibrium money supply is OM. If the money supply is larger than this, say OMI, there will be excess demand for high-powered money. On the contrary, a less than OM money supply will mean less demand for high-powered money.

If there is an increase in anyone of the ratios Cr or RRR or ERR, there would be an increase in the demand for high-powered money. This is shows by the H_d curve in the above Figure where the increase in the demand 'for high-powered money leads to decline in the money supply to OM.

The quotient of equation (7) is the money multiplier m. Thus

$$= I +Cr/ CR +RRR + ERR \quad ... (7)$$

Now the relation between the money supply and high-powered money of equation (7) becomes

$$M=m \, H ... \qquad (8)$$

Equation (8) expresses the money supply as a function of m and H in other words; the money supply is determined by high powered money (H) and the money multiplier (m). The size of the money multiplier is determined by the currency ratio (Cr) of the public, the required reserve ratio (RRR) at the 'Central bank, and the excess reserve ratio (ERR) of commercial banks. The lower these ratios are, the larger the money multiplier is. If m is fairly stable, the central bank manipulates the money supply (M) by manipulating H. The central' bank can do so by open market operations. But the stability of m depends upon the stability of the currency ratio and the reserve ratios RRR and ERR. Or, it depends upon off-setting changes in RRR and ERR ratios. Since these ratios and currency with the public are liable to change, the money multiplier is quite volatile in the short run. Given the division of high-powered money between currency held by the public, the required reserves at the central bank, and the excess reserves of commercial banks, the money supply varies inversely with Cr, RRR and ERR.

Some economists do not take into consideration excess reserves in determining high-powered money and consequently the money supply. But the monetarists give more importance to excess reserves. According to them, due to uncertainties prevailing in banking operations as in business, banks always keep excess reserves. The amount of excess reserves depends upon the interaction of two types of costs: the cost of holding excess reserves, and the cost generated by deficiency in excess reserves. The 'first cost is in terms of the market rate of interest at which excess reserves are maintained. The second' cost is in terms of the bank rate which is a sort of penalty to be paid to the central bank for failure to maintain the legal required reserve ratio by the commercial bank. The excess reserve ratio varies inversely with the market rate of interest and directly with the bank rate. Since the money supply is inversely related to the excess reserve ratio, decline in the excess reserve ratio of banks tends to increase the' money supply and vice versa. Thus the money supply is determined by high-powered money, the currency ratio, the required reserve ratio and the market rate of interest and the bank rate.

The monetary base or high-powered money is directly controllable by the central bank. It is the ultimate base of the nation's money supply. Of course, the money multiplier times the high-powered money always equals the money supply, i.e. M=m H. This formulation

tells us how much new money will be created by the banking system for a given increase in the high-powered money. The monetary policy of the central bank affects excess reserves and the high-powered money identically. Suppose the central bank makes open market purchases. This raises the high-powered money in the form of excess reserves of banks. An increase in money supply that results from it comes from the banking system which creates new money, on the basis of its newly acquired excess reserves. Thus this concept tells us that the monetary authorities can control the money supply through changing the high-powered money or the money multiplier.

6.8 REVIEW QUESTIONS
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1. Define consumption function? What are the various properties or attributes of it?
2. What are MPC and APC and how do they differ?
3. Compare Linear and Non linear consumption functions.
4. Bring out the relationship between money and interest.
5. Explain the determinants of high powered money.
6. Write a note on money multiplier

FOREIGN EXCHANGE MARKET, MNCS, AND INTERNATIONAL TRADE THEORIES

Structure

7.1 Introduction

7.2 Functions of Foreign Exchange Market

7.3 Foreign Exchange Control

7.4 Foreign Exchange Rates

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7.7 International Trade Theories
    7.7.1 Absolute Cost Theory
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    7.7.3 Opportunity Cost Theory.
    7.7.4 Factory Endowment Theory
    7.7.5 Comparative Trade Theory

7.8 Review Questions

7.1 INTRODUCTION

We are discussing a very interesting lesson that is foreign exchange. Every one of us irrespective of his or her job profile wants to know the exchange rates. Whether we are into foreign exchange market or not than also we are concerned about the exchange rates. Can anyone tell me what is this exchange rates or what do you mean by the term exchange rate?

Well in general terms exchange rates can be anything or any rate for or with which we can exchange anything. But when talking to foreign exchange rate it can be defined as that rate by which we can exchange the currency of one nation with the another nations currencies

Meaning of Foreign Exchange Market: H.E. Evitt has defined foreign exchange market as follows:

"Foreign exchange market is the section of economic science which deals with the means and methods by which rights to wealth in one country's currency are converted into rights to wealth in terms of another country's currency".

He further observes that, "it…involves the investigation of the method by which the currency of one country is exchanged for that of another, the causes which render such exchange necessary, the forms which such exchange may take, and the ratios or equivalent values at which such exchanges are effected".

There are different interpretations of the term foreign exchange, of which the following two are most important and common:

1. Foreign exchange is the system or process of converting one national currency into another, and of transferring money from one country to another.
2. Secondly, the term foreign exchange is used to refer to foreign currencies. For example, the Foreign Exchange Regulation Act, 1973 (FERA) defines foreign exchange as "foreign currency and includes all deposits, ('I edits and balance payable in any foreign currency and any drafts, traveler's cheques, letters of credits and bills of exchange, expressed or drnwl1 in Indian currency, but payable in any foreign currency.

7.2 FUNCTIONS OF FOREIGN EXCHANGE MARKET

The foreign exchange market is a market in which foreign exchange transactions take place. In other words, it is a market in which national currencies are bought and sold against one another.
A foreign exchange market performs three important functions:

1. **Transfer of Purchasing Power:** The primary function of a foreign exchange market is the transfer of purchasing power from one country to another and from one currency to another. The international clearing function performed by foreign exchange markets plays a very important role in facilitating international trade and capital movements.

2. **Provision of Credit:** The credit function performed by foreign exchange markets also plays a very important role in the growth of foreign trade, for international trade depends to a great extent on credit facilities. Exporters may get pre-shipment and post-shipment credit. Credit facilities are available also for importers. The Eurodollar market has emerged as a major international credit market.

3. **Provision of Hedging Facilities:** The other important function of the foreign exchange market is to provide hedging facilities. Hedging refers to covering of export risks, and it provides a mechanism to exporters and importers to guard themselves against losses arising from fluctuations in exchange rates.

Methods of Affecting International Payments: There are five important methods to effect international payments.

1. **Telegraphic Transfer:** By this method, a sum can be transferred from a bank in one country to a bank in another part of the world by cable or telex. It is, thus, the quickest method of transmitting funds from one centre to another.
2. **Mail Transfer:** Just as it is possible to transfer funds from a bank account in one centre to an account in another centre within the country by mail, international transfers of funds can be accomplished by Mail Transfer. These are usually made by air mail.
3. **Cheques and Bank Drafts:** International payments may be made by means of cheques and bank drafts. The latter is widely used. A bank draft is a cheque drawn on a bank instead of a customer's personal account. It is an acceptable means of payment when the person tendering is not known, since its value is dependent on the standing of a bank which is widely known, and not on the credit-worthiness of a I1rl11 or individual known only to a limited number of people.
4. **Foreign Bill of Exchange:** A bill of exchange is an unconditional order in writing, addressed by one person to another, requiring the person to whom it is addressed to pay a certain sum on demand or on a specified future date.

There are two important differences between inland and' foreign bills. The date on which an inland bill is due for payment is calculated from the date on which it was drawn, but the period of a foreign bill runs from the date on which the bill was accepted. The reason for this is that the interval between a foreign bill being drawn and its acceptance may be considerable, since it may depend on the time taken for the bill to pass from the drawer's country to that of the acceptor. The second important difference between the two types of bill is that the foreign, bill is generally drawn in sets of three, although only one of them bears a stamp, and of course, one of them is paid.

Nowadays, it is mostly the documentary bill that is employed in international trade. This is nothing more than a bill of exchange with the various shipping documents-the bill of lading, the insurance certificate and the consular invoice-attached to it. By using this, the exporter can make the release of the documents conditional upon either:

a) Payment of the bill, if it has been drawn at sight; or
b) Its acceptance by the importer if it has been drawn for a period.

5. **Documentary (or reimbursement) Credit** Under this method, a bill of exchange is necessarily employed, but the distinctive feature of the documentary credit is the opening by the importer of a credit in favor of the exporter, at a bank in the exporter's country.
    Illustration: To illustrate the use of the documentary credit, let us assume that Mr. Menon of Cochin intends to purchase goods from Mr. Ronald of New York and that the terms of the deal have been agreed upon 'by them. Then the transaction would be carried through the following stages.
    (a) Mr. Menon, the importer, instructs his bank, say the State Bank of India (SBI), to open a credit in favor of Mr. Ronald, the exporter, at the New York branch of the SBI (if the SBI has no branch in New York, it will appoint some other bank to act as its agent there). The SBI will then inform Mr. Ronald by a letter

of credit that it will pay him a specified sum in exchange for the bill of exchange and the shipping documents.

(b) Mr. Ronald may now dispatch the goods to Mr. Menon at Cochin, draw n bill of exchange on the SBI and then present the documentary bill to the New York branch of the SBI. If all the documents are in order, the hunk will pay Mr. Ronald. The bank will charge for its services, and will also charge interest if the bill is not payable at sight.

(c) The New York branch of the SBI then sends the documentary bill to its Cochin office for payment or acceptance, as the case may be, by Mr. Menon. When the bill is paid, Mr. Menon's account will be debited by that amount. Every thing being in order, the banker will release the bill of lading from the bill to enable Mr. Menon to claim the goods on their arrival at the Cochin port.

Transactions in the Foreign Exchange Market

A very brief account of certain important types of transactions conducted in the foreign exchange market is given below.

Spot and Forward Exchanges: The term spot exchange refers to the class of foreign exchange transaction which requires the immediate delivery, or exchange of currencies on the spot. In practice, the settlement takes place within two days in most markets. The rate of exchange effective for the spot transaction is known as the spot rate and the market for such transactions is known as the spot market.

The forward transaction is an agreement between two parties, requiring the delivery at some specified future date of a specified amount of foreign currency by one of the parties, against payment in domestic currency by the other party, at the price agreed upon in the, contract. The rate of exchange applicable to the forward contract is called the forward exchange rate and the market for forward transactions is known as the forward market.

The foreign exchange regulations of various countries, generally, regulate the forward exchange transactions with a view to curbing speculation in the foreign exchanges market. In India, for example, commercial banks are permitted to offer forward cover only with respect to genuine export and import transactions.

Forward exchange facilities, obviously, are of immense help to exporters and importers as they can cover the risks arising out of exchange rate fluctuations by entering into an appropriate forward exchange contract.

Forward Exchange Rate: With reference to its relationship with the spot rate, the forward rate may be at par, discount or premium.

1. **At Par:** If the forward exchange rate quoted is exactly equivalent to the spot rate at the time of making the contract, the forward exchange rate is said to be at par.

2. **At Premium:** The forward rate for a currency, say the dollar, is said to be at a premium with respect to the spot rate when one dollar buys more units of another currency, say rupee, in the forward than in the spot market. The premium is usually expressed as a percentage deviation from the spot rate on a per annum basis.

3. **At Discount:** The forward rate for a currency, say the dollar, is said to be at discount with respect to the spot rate when one dollar buys fewer rupees in the forward than in the spot market. The discount is also usually expressed as a percentage deviation from the spot rate on per annum basis.

The forward exchange rate is determined mostly by the demand for and supply of forward exchange. Naturally, when the demand for forward exchange exceeds its supply, the forward rate will be quoted at a premium and, conversely, when the supply of forward exchange exceeds the demand for it, the rate will be quoted at discount. When the supply is equivalent to the demand for forward exchange, the forward rate will tend to be at par.

Swap Operation: Commercial banks who conduct forward exchange business may resort to a swap operation to adjust their fund position. The term swap means simultaneous sale of spot currency for the forward purchase of the same currency or the purchase of spot for the forward sale of the same currency. The spot is swapped against forward. Operations consisting of a simultaneous sale or purchase of spot currency accompanied by a purchase or sale respectively, of the same currency for forward delivery, are technically known as swaps or double deals as the spot currency is swapped against forward.

Arbitrage: Arbitrage is the simultaneous buying and selling of foreign currencies with the intention of making profits from the differences between the exchange rate prevailing at the same time in different markets. For illustration, assume that the rate of exchange in London is £ I = $ 2 while in New York £ 1 = $ 2.10. This presents a situation wherein one can purchase one pound sterling in London for two dollars and earn profit of $ 0.10 by selling the pound sterling in New York for $ 2.10. This situation would, hence, lead to an increase in demand for sterling in London and consequently, an increase in the supply of sterling in New York. Such operations, i.e., arbitrage, could result in equalizing the exchange rates in different lI1urkets (in our example London and New York).

Arbitrage in .foreign currencies is possible because of the ease and speed of modern means of communication between commercial centers throughout the world. Thus, an operator in New York might buy dollars in Amsterdam and sell them a few minutes later in London. The effect of arbitrage, as has already been mentioned, is to iron out (differences in the rates of exchange of currencies in different centers, thereby creating, theoretically speaking, a single-world market in foreign exchange.

Determination of Exchange Rates: How are exchange rates between different currencies determined under the paper currency standard? There are two important theories which attempt to explain the mechanism of exchange rate determination, namely,

the purchasing power parity theory and the balance of payments or the demand and supply theory
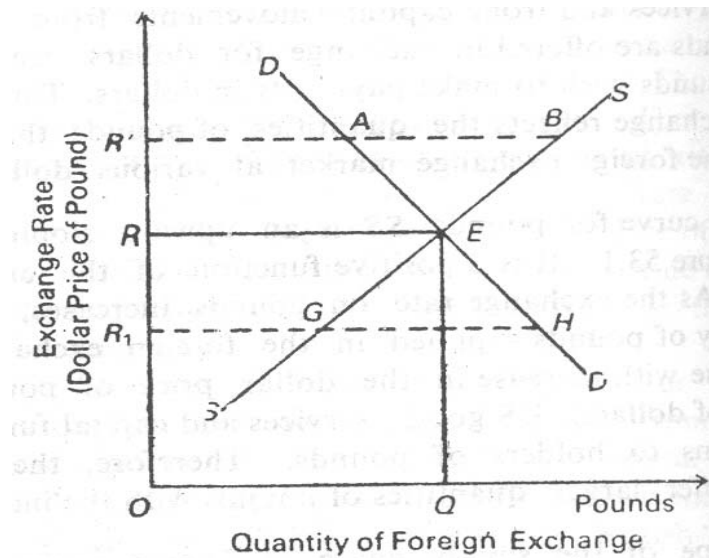

Fig. 7.1 Diagrammatical representation of exchange rate and quantity of foreign exchange

Purchasing Power Parity Theory: According to the purchasing power parity theory, put forward by Gustav Cassel in the years following the First World War, when the exchange rates are free to fluctuate, the rate of exchange between two currencies in the long run will be determined by their respective purchasing powers. In the words of Cassel, "the rate of exchange between two currencies must stand essentially on the quotient of the internal purchasing powers of these currencies.

The essence of the theory is clearly expressed by Professor S.E. Thomas as follows:

"While the value of the unit of one currency in terms of another currency is determined at any particular time by the market conditions of demand and supply, in the long run, that value is determined by the relative values of the two currencies as indicated by their relative purchasing power over goods and services (in their respective countries). In other words, the rate of exchange tends to rest at that point which expresses equality between the respective purchasing powers of the two currencies. This point is called the purchasing power parity."

Thus, according to the purchasing power parity theory, the exchange rate between one currency and another is in equilibrium when their domestic purchasing powers at that rate of exchange are equivalent. For example, assume that a particular bundle of goods in India costs Rs. 45.00 and the same in USA costs $ 1. Then the exchange rate will be in equilibrium if the exchange rate is $ 1 = Rs. 45.00. Once the equilibrium is established, the market forces will operate to restore the equilibrium if there are some deviations. For example, if the exchange rate changes to $ 1 = Rs. 46.50 when the purchasing powers of these currencies remain stable, dollar holder will convert dollars into rupees because, by doing so, they can save Rs. 1.50 when they purchase a commodity worth $ 1. This will

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increase the demand for the Indian currency and the supply of dollars will increase in the foreign exchange market and ultimately, the equilibrium rate of exchange will be re-established.

Criticisms of the Theory: The purchasing power parity theory is subject to the following criticisms:

(i)   The theory makes use of the price index number to measure the changes in the equilibrium rate of exchange and hence the theory suffers from the various limitations of the price index number.

(ii)   The composition of the national income varies in different countries and hence the types of goods and services included in the index number may vary from country to country, rendering comparisons on the basis of such index number unrealistic.

(iii)   The quality of goods and services may vary from country to country.

(iv)   Comparison of prices without regard to the quality is unrealistic.

(v)   The price index number includes the price of all commodities and services, including those which are not internationally traded and hence the rate of exchange calculated on the basis of such price indices cannot be realistic.

(vi)   The theory is rendered further unrealistic by ignoring the cost of transport in international trade.

(vii)   Another very unrealistic assumption made by the theory is that international trade is free from all barriers.

(viii) The purchasing power parity theory ignores the effects of international capital movements on the foreign exchange market. International capital movements may cause changes in the exchange rate. For example, if there is capital inflow to India from USA, the supply of the dollar and the demand for rupees increases in the foreign exchange market, causing an appreciation in the value of the rupee and depreciation in the value of the dollar.

(ix)   Another defect of the theory is that it ignores the impact of changes in the exchange rates on the prices. For example, if, as a result of large capital inflows to India, Indian currency appreciates in terms of foreign currencies, Indian exports may decline and as a result, the supply of goods in India may exceed the demand and may cause a fall in prices.

(x)   The theory does not explain the demand for supply of foreign exchange. When the exchange rate is determined largely by demand and supply conditions, any theory that does not pay adequate attention to these aspects proves to be unsatisfactory.

(xi)   The purchasing power parity theory starts with a given rate of exchange, but rails to explain how that particular rate of exchange is arrived at. Thus, the theory only tells us how, with a given rate of exchange, changes in the purchasing powers or two currencies affect the exchange rate.

(xii)   The theory is based on the wrong assumption that the elasticity of demand for exports and imports is equal to unity i.e., this theory is valid only if the exports and imports change in the same proportion as the change in prices. But this is a very rare occurrence.

(xiii) No satisfactory explanation of short term changes in exchange rates is provided by the theory.

(xiv) Lastly, the purchasing power parity theory goes contrary to general experience. Critics point out that there has hardly been any case when the rate of exchange between two currencies has been equivalent to the ratio of their purchasing powers.

Despite its many defects and deficiencies, the purchasing power parity theory exposes some very important aspects of exchange rate detern1ination.

1. It indicates the relationship between the internal price levels and exchange rates.
2. It explains the state of the trade of a country as well as the nature of its balance of payments at a particular time.
3. Further, the theory is applicable, to some extent, to all sorts of monetary standards.
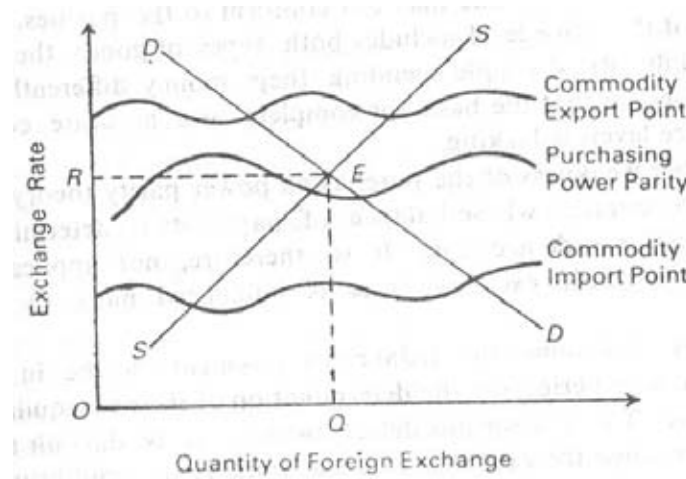
Fig. 7.2 Diagrammatical Representation of Quality of Foreign Exchange

Balance of Payments Theory

The balance of payments theory, also known as the Demand and Supply Theory and the General Equilibrium Theory of exchange rate, holds that the foreign exchange rate, under free market conditions, is determined by the conditions of demand and supply in the foreign exchange market. Thus, according to this theory, the price of a currency i.e., the exchange rate, is detern1ined just like the price of any commodity is determined by the free play of the forces of demand and supply.

The value of a currency appreciates when the demand for it increases and depreciates when the demand falls, in relation to its supply in the foreign exchange market. The extent of the demand for and supply of a country's currency in the foreign exchange market depends on its balance of payments position. When the balance of payments is in

equilibrium, the supply of and demand for the currency are equal. But when there is a deficit in the balance of payments, supply of the currency exceeds its demand and causes a fall in the external value of the currency; when there is a surplus, demand exceeds supply and causes a rise in the external value of "the currency.

Evaluation of the Theory: The balance of payments theory provides a fairly satisfactory explanation of the determination of the rate of exchange. This theory has the following merits.

- Unlike the purchasing power parity theory, the balance of payments theory recognizes the importance of all the items in the balance of payments, in determining the exchange rate.
- This demand and supply theory is In conformity with the general theory of value- like the price of any commodity in a free market, the rate of exchange is determined by the forces of demand and supply.
- This theory brings the determination of the rate of exchange within the purview of the General Equilibrium Theory. That is why this theory is also called the general equilibrium theory of exchange rate determination.
- It also indicates that balance of payments disequilibrium can be corrected by adjustments is the exchange rate (i.e., by devaluation or revaluation), rather than by internal deflation or inflation.

The main defect of the theory is that it does not recognize the fact that the rate of exchange may influence the balance of payments.

7.3 FOREIGN EXCHANGE CONTROL

Exchange control is one of the important means of achieving certain national objectives like an improvement in the balance of payments position, restriction of inessential imports and conspicuous consumption, facilitation of import of priority items, control of outflow of capital and maintenance of the external value of the currency.

Under the exchange control, the whole foreign exchange resources of the nation, including those currently occurring to it, are usually brought directly under the control of the exchange control authority (the Central Bank, treasury or a specially constituted agency). Dealings and transactions in foreign exchange are regulated by the exchange control authority. Exporters have to surrender the foreign exchange earnings in exchange for home currency and the permission of the exchange control authority have to be obtained for making payments in foreign exchange. It is generally necessary to implement the overall regulations with a host of detailed provisions designed to eliminate evasion.

The allocation of foreign exchange is made by the exchange control authority, on the basis of national priorities. Though the exchange control is administered by a central authority like the central bank, the day-to-day business of buying and selling foreign

exchange ill ordinarily handled by private exchange dealers, largely the exchange depart-1I1(,lIt5 of commercial banks. For example, in India there are authorized dealers and money changers, entitled to conduct foreign exchange business.

Objectives of Exchange Control: The important purposes of exchange control are outlined below.

- **To Conserve Foreign Exchange:** The main objective of foreign exchange regulation in India, as laid dawn in the Foreign Exchange Regulation Act (FERA), 1973, is the conservation of the foreign exchange resources .of the country and the proper utilization thereof in the interest .of the national development. This is one of the important objectives .of foreign exchange regulations of many other countries too.
- **To Check Capital Flight Exchange** control may be employed to prevent flight of capital from the country and to regulate the normal day-to-day capital movements. As Krause remarks, if adequately implemented and enforced, exchange control tends to be highly effective in curbing erratic .outflows .of capital. When exchange control authorities refuse to sell foreign exchange far this purpose, they close the .only legal avenue through which capital may leave a country.
- **To Improve Balance of Payments:** Exchange control is .one .of the measures available to improve the balance .of payments position. This can be achieved by restricting imparts by means .of exchange control.
- **To Curb Conspicuous Consumption:** In the developing countries especially, there is a craze far the consumption of imparted articles, which are regarded as inessential 'luxury' goods. Exchange control may be used to prevent their import and, thereby, their consumption.
- **To Make Possible Essential Imports:** Due to the non-availability .of .or scarcity within the country, the developing countries generally have to impart capital goods, know haw and certain essential inputs and consumer goods. By giving priority to such imparts in the allocation .of foreign exchange, exchange control may ensure availability .of foreign exchange far these imparts.
- **To Protect Domestic Industries:** Exchange control may also be employed as a measure to protect domestic industries from foreign competition.
- **To Check Recession-induced Exports into the Country:** If foreign economies are undergoing recession when 'the dames tic economy is free from it, the decline in prices .of foreign goods, due to the recession, may encourage their exports into the country not yet affected by recession. Exchange control may be employed to check such recession-induced exports into the country.
- **To Regulate Foreign Companies:** Exchange Control may also seek to regulate the business of foreign companies in the country. For instance, the FERA provided that non-residents, foreign national resident in India, companies (other than banking companies) incorporated abroad and having more than 40 per cent non-resident interest could not carry on in India, or establish a branch/office or other place of business in the country for carrying on any activity of a trading, commercial or industrial revenue, without the permission of the Reserve Bank of India.

- **To Regulate Export and Transfer of Securities:** Exchange control may be employed also for the purpose of controlling the export and transfer of securities form the country. The FERA for instance, prohibited the sending or transferring of securities from the country to any country outside India, without the permission of the Reserve Bank of India.
- **Facilitate Discrimination and Commercial Bargaining:** Exchange control offers scope for discrimination between different countries. It would be used to accord exchange concessions, on a reciprocal basis, between different countries.
- **Enable the Government to Repay Foreign Loans:** If the system of exchange control empowers the government to acquire foreign exchange from the residents of the country, it becomes easy for the government to repay foreign loans.
- **To Lower the Price of National Securities held Abroad:** It may be possible to reduce the price of national securities held abroad by preventing nationals from buying them. This would enable the government to purchase such securities at a lower price.
- **To Freeze Foreign Investments and Prevent Repatriation of Funds :** Exchange control may be used to freeze investments, including bank deposits, III foreigners in the home country and to prevent the repatriation of funds out of the country.. This is sometimes done by hostile countries.
- **To Obtain Revenue:** Governments may use exchange control to obtain some revenue. The government/government agency can make profit out of the foreign exchange business by keeping certain margin between the average purchase price and the average selling price of the foreign exchange.

Methods of Exchange Control: The various methods of exchange control may be broadly classified into
    (1) Unilateral methods; and
    (2) Bilateral/multilateral methods.

Unilateral Methods
Unilateral measures refer to those methods which may be adopted by a country unilaterally i.e., without any reference to or understanding with other countries. The important unilateral methods are outlined below.

- **Regulation of Bank Rate:** A change in the bank rate is usually followed by changes in all other rates of interest and this may affect the flow of foreign capital. For example, when the internal rates of interest rise, foreign capital is attracted to the country. This causes an increase in the supply of foreign currency and the demand for domestic currency in the foreign exchange market and results in the appreciation of the external value of the currency. A lowering of the bank rate is expected to produce the opposite results.
- **Regulation of Foreign Trade:** The rate of exchange may be controlled by regulating the foreign trade of the country. For example, by encouraging exports and discouraging imports, a country can increase the demand for, in relation to supply, its currency in the foreign exchange market and thus bring about an increase in the rate of exchange of the country's currency.

- **Rationing of Foreign Exchange:** By rationing the limited foreign exchange resources, a country may restrict the influence of the free play of market forces of demand and supply and thus maintain the exchange rate at a higher level.
- **Exchange Pegging:** Exchange pegging refers to the policy of the government of fixing the exchange rate arbitrarily either below or above the normal market rate. When it is fixed above the free market rate, it is known as pegging up and when it is fixed below the free market rate, it is known as pegging down. Exchange pegging is resorted to, generally, during war times to prevent violent fluctuations in the exchange rate.
- **Multiple Exchange Rates:** Multiple exchange rates refer to the system of the fixing, by a country, of the different rates of exchange for the trade or different commodities and/or for transactions with different countries. The main object of the system is to maximize the foreign exchange earning of country by increasing exports und reducing imports. The entire structure of the exchange rate is devised in a manner that makes imports cheaper and exports more expensive. The multiple exchange rate system has been severely condemned by the IMF.
- **Exchange Equalization Fund:** The main object of the Exchange Equalization Fund, also known as the Exchange Stabilization Account, is to stabilize the exchange rate of the national currency through the sale and purchase of foreign currencies. When the demand for domestic currency exceeds its supply, the fund starts purchasing foreign currency with the help of its own resources. This results in an increase in the demand for foreign currency and increases the supply of the national currency. The tendency of the rate of exchange of the national currency to rise can thus be checked. When the supply of the national currency exceeds demand and the exchange rate tends to fall, the Fund sells the foreign currencies and this increases the supply of foreign currencies and arrests the tendency of the exchange rate of the domestic currency to fall. This sort of an operation may be resorted to eliminate short term fluctuations.
- **Blocked Accounts:** In the case of blocked accounts, foreigners are prevented from withdrawing money from their deposits with banks, for the purpose of remitting abroad. This measure makes the foreign exchange position of the country more comfortable. This is generally regarded as a wartime measure. Under this method, domestic debtors may be required to deposit their dues to foreign creditors into specifically designated bank accounts.

Bilateral/Multilateral Methods

The important bilateral/multilateral methods are the following:

- **Private Compensation Agreement:** Under this method, which closely resembles barter, a firm in one country is required to equalize its exports to the other country with its imports from that country so that there will be neither a surplus nor a deficit.
- **Clearing Agreement:** Normally, importers have to make payments in foreign currency and while exporters are paid in foreign currency. Under the clearing agreement, however, importers make payments in domestic currency to the clearing account and exporters obtain payments in domestic currency from the

clearing fund. Thus, under the clearing agreement, the importer does not directly pay the exporter and hence, the need fore foreign exchange does not arise, except for settling the net balance between the two countries.

- **Standstill Agreement:** The standstill agreement seeks to provide debtor country some time to adjust her position by preventing the movement of capital out 01 the county through a moratorium on the outstanding short-term foreign debts.
- **Payments Agreement:** Under the payments agreement, concluded between a debtor country and a creditor country, provision is made for the repayment of the principal and interest by the debtor country to the creditor country. The creditor country refrains from imposing restrictions on the imports from the debtor country in order to enable the debtor to increase its exports to the creditor. On the other hand, the debtor country takes necessary measures to encourage exports to and discourage imports from the creditor country.

Exchange Rate Systems: Broadly, there are two important exchange rate systems, namely the fixed exchange rate system and flexible exchange rate system.

Fixed Exchange Rates: Countries following the fixed exchange rate (also known as stable exchange rate and pegged exchange rate) system agree to keep their currencies. at a fixed, pegged rate and to change their value only at fairly infrequent intervals, when the economic situation forces them to do so.

Under the gold standard, the values of currencies were fixed in terms of gold. Until the breakdown of the Bretton Woods System in the early 1970, each member country of the IMF defined the value of its currency in terms of gold or the US dollar and agreed to maintain (to peg) the market value of its currency within:!: I per cent of the defined (par) value. Following, the breakdown of the Bretton Woods System, some countries took to managed floating of their currencies while a number of countries still embraced the fixed exchange rate system.

Arguments for the Stable Exchange Rate System: The relative merits and demerits of the fixed and flexible exchange rate systems have long been a topic for debate. A number of arguments have been put forward for and against each system. The important arguments supporting the stable exchange rate system:
1. Exchange rate stability is necessary for orderly development and growth of foreign If exchange rate stability is not assured, exporters will be uncertain about the amount they will receive and importers will be uncertain about the amount they will have to pay. Such uncertainties and the associated risks adversely affect foreign trade. A great advantage of the fixed exchange rate system is that it eliminates the possibilities of such uncertainties and risks.
2. Especially the developing countries, which have a persistent balance of payment deficits, should necessarily adopt the stable exchange rate sys.
3. Exchange rate stability is necessary to attract foreign capital investment as foreigners will not be interested to invest in a country with an unstable currency. Thus, exchange rate stability is necessary to augment resources and foster economic growth.

4. Unstable exchange rates may encourage the flight of capital. Exchange rate stability is necessary to prevent its outflow.
5. A stable exchange rate system eliminates speculation in the foreign exchange market.
6. A stable exchange rate system is a necessary condition for the successful functioning of regional groupings and arrangements among nations.
7. Foreign trade plays a very important role in case of a number of countries. As we have seen in the first chapter, for certain countries, the value, of foreign trade exceeds GNP, while for others; the value of foreign trade is more than 50 percent of their GNP. Exchange rate stability is especially important for such countries to ensure the smooth functioning of the economy. Its absence will give rise to uncertainties and this would disturb the foreign trade sector and, thereby, the economy.
8. A stable exchange rate system is also necessary for the growth of international money and capital markets. Due to the uncertainties associated with unstable exchange rates, individuals, firms and institutions may shy away from lending to and borrowing from the international money and capital markets.

Flexible Exchange Rates: Under the flexible exchange rate system, exchange rates are freely determined in an open market primarily by private dealings, and they, like other market prices, vary from day-to-day.

Under the flexible exchange rate system, the first impact of any tendency toward a surplus or deficit in the balance of payments is on the exchange rate surplus in the balance of payments will create an excess demand for the country's currency and the exchange rate will tend to rise. On the other hand, deficit in the balance of payments will give rise to an excess supply of the country's currency and the exchange rate will, hence, tend to fall.

Automatic variations in the exchange rates, in accordance with the variation in the balance of payment position, tend to automatically restore the balance of payments equilibrium. A surplus in the balance of payments increases the exchange rate. This makes foreign goods cheaper in terms of the domestic currency and domestic goods more expensive in terms of the foreign currency, This, in turn, encourages, imports and discourages exports, resulting in the restoration of the balance of payments equilibrium. On the other hand, if there is a payments deficit, the exchange rate falls and this makes domestic good cheaper in terms of the foreign currency and foreign goods more expensive in terms of the domestic currency. This encourages exports discourages imports and thus helps to establish the balance of payments equilibrium: Theoretically, this is how the flexible exchange rate system works.

Cases for and against Flexible Exchange Rates: A number of economists strongly advocate the adoption of the flexible exchange rate system. Nobel laureate, Milton Friedman, for instance, argues,

"There is scarcely a facet of international economic policy for which the implicit acceptance .of a system of rigid exchange rates does not create serious and unnecessary difficulties."

He is of the view that

"...sooner a system of flexible exchange rates is established, the sooner unrestricted multilateral trade will become a real possibility. And it will become one without, in any way, interfering with the pursuit by each nation of domestic economic stability according to its own rights."

A number of economists, however, point out that certain serious problems are associated with the system of flexible exchange rates. We present here some important arguments against and for flexible exchange rates.

1. Flexible exchange rates present a situation of instability, creating uncertainty and confusion. Friedman disputes this view and argues that a flexible exchange rate need not be an unstable exchange rate. If it is, it is primarily because there is underlying instability in the economic conditions governing international trade. And a rigid exchange rate may, while itself remaining nominally stable, perpetuate and accentuate other elements of instability in the economy. The mere fact that a rigid official exchange rate does not change while a flexible rate does is no evidence that the former means greater stability in any more fundamental sense.

2. The system of flexible exchange rates, with its associated uncertainties, makes it impossible for exporters and importers to be certain about the price they will have to pay or receive for foreign exchange. This will have a dampening effect on foreign trade.

Friedman encounters this objection by pointing out that under flexible exchange rates, traders can almost always protect themselves against changes in the rate by hedging in the future market. Such markets in foreign currency readily develop when exchange rates are flexible. J 1 However, as Sodersten points out, it is certainly true that no market exists today that can protect against all the risks connected with a system of flexible exchanges, and it is doubtful if such a market can be established in the future, if a system of flexible exchanges were introduced. A system of flexible exchanges might, (therefore, have a considerably dampening effect on the volume of foreign trade.

3. Under flexible exchange rates, there wilt' be widespread speculation, which will have a destabilizing effect. Against this, it is argued that normally, .peculation has a stabilizing influence on exchange rates. Friedman observes that if speculation is supposed to be destabilizing, it implies that speculators lose money on their activity.13 However, Farrell question this argument and shows that it might be possible, under what seems to be fairly general assumptions that speculation can be, at the same time, profitable and destabilizing.

4. The system of flexible exchange rates gives an inflationary bias to an economy. When the currency depreciates due to payments deficit, imports become costlier and this stirs up an inflationary spiral. The supporters of the flexible exchange rates, however, counter this criticism by stating that when Imports become costlier, the demand for them falls, compelling foreign suppliers to reduce prices. Though it is

theoretically possible, it may not be realized. The general feeling is that flexible exchange rates may have an inflationary impact on the economy.

We have reviewed the arguments for and against the fixed and flexible systems. Which system, then, should a country adopt?

The answer will depend on circumstances. It will depend on the characteristics of the economy, and it will change with time as the economy changes. Value judgments are also involved, and ultimately the answer could depend on values and views of a political nature.

Exchange Rate Classifications

Following are different types of exchange rate regimes and how they work:

- **Single Currency Peg**: The country pegs to a major currency-usually the US dollar or the French franc-with infrequent adjustment of the parity.

- **Composite Currency Peg**: The country pegs to a basket of currencies of major trading partners to make the pegged currency more stable than if a single currency peg were used. The weights assigned to the currencies in the basket may reflect the geographical distribution of trade, services, or capital flows. They may also be standardized, as in the SDR and the European Currency Unit.

- **Limited Flexibility vis-à-vis a Single Currency:** The value of the currency is maintained within certain margins of the peg (this system applies to four Middle East countries).

- **Limited Flexibility through Cooperative Arrangements:** This applied to countries in the exchange rate mechanism of the European Monetary System (EMS) and was a cross between a peg of individual EMS currencies to each other and a float of all these currencies jointly vis-à-vis non-EMS currencies.

- **Greater Flexibility through Adjustment to an Indicator:** The currency is adjusted more or less automatically to changes in selected indicators. A common indicator is the real effective exchange rate, which reflects inflation-adjusted changes in the currency vis-à-vis major trading partners.

- **Greater Flexibility through a Managed Float:** The Central bank sets the rate but varies it frequently. Indicators for adjusting the rate include, for example, the balance of payments position, reserves, and parallel market developments. Adjustments are not automatic.

Full Flexibility through an Independent Float Rates is determined by market forces. Some industrial countries have floats-except for the EU countries-but the number of developing countries in this category has been increasing in recent years.

Convertibility of the Rupee

Free convertibility of a currency means that the currency can be exchanged for any other convertible currency, without any restriction, at the market determined exchange rates. Convertibility of the rupee, thus means that the rupee can be freely converted into dollar, pound sterling', yen, Deutsche mark, etc. and vice versa at the rates of exchange determined by the demand and supply forces.

After the collapse of the Bretton Woods System in 1971, the rupee was pegged to pound sterling for four years after which it was linked to a basket of 14 and later 5 major currencies. In 1981, a rise in dollar due to high interest rates in the US led to rupee appreciation which adversely affected India's exports due to fall in the export profitability. It prompted the Reserve Bank of India to experiment with a managed float, pegging the rupee to dollar and pound sterling alternatively depending on which was going down, to guard against the appreciation of the rupee that would adversely affect the exports.

A considerable exchange rate adjustment (devaluation) was made in July 1991. As a part of the economic policy reforms, partial convertibility of the rupee on the current account was announced by the Finance Minister in his Budget speech for 1992-93 and the rupee became partially convertible since March 1992. The move towards convertibility of the rupee was in line with the worldwide trend towards currency convertibility. According to the IMF, 70 countries accepted current account convertibility by 1990 while another 10 joined them in 1991. Many other countries including the East European countries and Russia have been contemplating the convertibility move.

According the Liberalized Exchange Rate Management System (LERMS) introduced in March 1992, 60 per cent of all receipts under current transactions (merchandise exports and invisible receipts) could be converted at the free market exchange rate quoted by the authorized dealers. The rate applicable for the remaining 40 per cent was the official rate fixed by the Reserve Bank. This 40 per cent of the total foreign exchange receipts under the current account was exclusively meant to cover government needs and to import essential commodities. In addition, foreign exchange at official rate was to be made available to meet 40 per cent of the value of the advance licenses and special import licenses. In short, it was a dual exchange rate system.

Why Partial Convertibility: One major reason for introducing partial convertibility was to make foreign exchange available at a low price for essential imports so that the prices of the essentials would not be pushed up by the high market price of the foreign exchange.

It was risky to introduce full convertibility when the current account showed large deficit. While introducing the partial convertibility, the government announced its intentions to introduce full convertibility on the current account in three to five years. However, full convertibility on trade account was introduced by the Budget for 1993-94.

The fact that the free market rate was ruling fairly stable at a reasonable level might have encouraged the government to introduce full convertibility. Rupee was showing remarkable stability in the months which followed the Introduction of the full convertibility.

Capital Account Convertibility: The introduction of capital account convertibility at least convertibility for certain types of capital flows helps attract resources from abroad. It also enables residents to hold internationally diversified investment portfolios, thereby having more risk bearing capacity. However, capital account convertibility cannot be introduced until certain conditions are satisfied. "In the absence of confidence in the macroeconomic stability and the competitiveness of domestic enterprises, establishment of capital account convertibility entails the risks of capital flight and greater volatility in exchange rate, external reserves or interest rate. It is because of this, many countries have maintained various restrictions on various types of capital flows until their economies are well developed."

It may be noted that under completely free capital account convertibility an Indian can sell his property here and take the money out of the country. Due, to such factors, even when capital account convertibility is introduced, several restrictions may have to be attached.

Merits of Convertibility: The convertibility or the floating of the Rupee has certain merits.

    (i)   It gives an indication of the real value of the rupee.

    (ii)   It encourages exports by increasing the profitability of the exports

    (iii)   The profitability increases as the free market rate is higher than the official exchange rate.

    (iv)   It encourages those exports with no or less import intensity. As the proportion of the imported inputs in the exportable increases, the profitability cause of the higher free market exchange rate gets correspondingly reduced. This could encourage import substitution in export production.

    (v)   The high cost of foreign exchange could encourage import substitution in other areas. Also, it provides incentives for remittances by NRIs.

    (vi)   The convertibility and the liberalization of gold imports have been expected to make illegal remittances and gold smuggling less attractive and thereby increase the remittances through proper channels.

    (vii)   It is described as a self balancing mechanism because the total imports and other current account payments will be confined to the total current account receipts unless there are imports financed by foreign currency loans.

Points (ii) to (v) are on the assumption that Rupee will not appreciate.

Problems: The convertibility would cause some problems unless certain conditions are satisfied.
   a) Convertibility could cause an increase in prices because of the increase in the import prices.
   b) Under full convertibility, if the tree market exchange rate is very high, the cost of essential imports will correspondingly increase.
   c) If the current account balance is not kept under control, the free market rate would rise very high.

Pre-requisites: For the successful functioning of the convertible system, certain essential conditions will have to be satisfied. These include:

   a) Maintenance of domestic economic stability
   b) Adequate foreign exchange reserves
   c) Restrictions on inessential imports as long as the foreign exchange position is not very comfortable
   d) Comfortable current account position
   e) An appropriate industrial policy and a conducive investment climate
   f) An outward oriented development strategy and sufficient incentives for export growth.

Experiences of Other Countries: The experiences of other countries with currency convertibility present a fixed picture. Britain which introduced full convertibility in July 1947 had to beat a hasty retreat the very next month because of large scale flight of capital. In 1958 Britain introduced restricted convertibility. South Korea which faced problems with partial convertibility in the beginning rescinded it in 1985 but ultimately restored it in 1989 and succeeded. Fiji which introduced current account convertibility in 1985 made a retreat in 1987. Although Pakistan's balance of payments crisis was more severe than that of India, after the convertibility their rupee more or less stabilized. The experiences of countries like Mexico, Argentina, Peru and Chile have also been encouraging.

7.4 FOREIGN EXCHANGE RATES.

Exchange rates represent the linkage between one country and its partners in the global economy. They affect the relative price of goods being traded (exports and imports), the valuation of assets, and the yield on those assets. In the period of **fixed** or constant exchange rates these prices, values, and yields were predictable over time. However, since 1973 we have been living in a world of **flexible rates** where foreign exchange markets determine these rates based on trade flows, interest rate differentials, differing rates of inflation, and speculation about future events.

Exchange rates can be expressed as the foreign price of a domestic currency (i.e., the Euro price of a U.S. dollar) or its reciprocal -- the domestic price of foreign currency. We will express these values using the following notation:

The Euro price of a Dollar: €P/$
Or
The Dollar price of a Euro: $P/€

Currently this particular ratio of currencies is near parity (1:1) and thus numerically not very interesting. The following represents the foreign-exchange value of a U.S. dollar as of October 2002 (**from here on out, exchange rates will be expressed as the Foreign Price of a Dollar 'FP/$'):**

<div align="center">

Table 7.1

Country / Region	Currency	Rate
Britain	Pound '**£**'	0.6402
Canada	Dollar '**C$**'	1.59
China	Yuan '**RMB**'	8.278
Europe	Euro '**€**'	1.013
Indonesia	Rupiah '**Rp**'	9007.0
Japan	Yen '**¥**'	124.1
Mexico	Peso	10.12
Russia	Ruble	31.69
Singapore	Dollar '**S$**'	1.79
South Korea	Won	1260.0
Switzerland	Franc '**F**'	1.48

</div>

All of the above rates represent **Nominal Exchange Rates** in that they are the actual posted trading rates on foreign exchange markets. These particular rates can be used to find the domestic price of foreign goods. For example, suppose that we are interested in the price of a portable CD player manufactured in Japan:

$P_{Japan} = ¥ 8060$
If the exchange rate is:
¥124 = $1
Then the domestic (U.S.) price of this same good is:
$P_{U.S.} = 65 (8060/124)

As exchange rates fluctuate, the domestic prices of foreign goods will often be affected:

New exchange rate: **¥140 = $1**   (*a weaker Yen*)
Price of CD player in Japan: **P $_{Japan}$ = ¥ 8060** (*unchanged*)
Price of CD player in the U.S.: **P$_{U.S.}$ = $57.60**   (*less expensive*)

The **weaker yen** (it now takes more yen to buy a U.S. dollar) or *stronger dollar* (a dollar now buys more yen), has led to a reduction in the price of Japanese exports and U.S. imports. We would expect that this change will lead to an increase in the flow of goods from Japan to the U.S. However, trade flows are affected not by **nominal exchange rates**, but instead, **Real Exchange Rates**

Purchasing Power Parity: In order to understand the determination of **real exchange rates**, we need to examine the concept of **Purchasing Power Parity** or **PPP**.

Suppose that we compare the price of a common good in two different countries. The *Economist* magazine often used a McDonald's Big Mac™ for this purpose. McDonald's operates in many countries around the world selling products governed by strict specifications and standards. The presentation and taste of a Big Mac™ (based on this author's experience) is identical in Beijing, Denver, Jakarta, Singapore, and Seoul. Using this homogeneous worldwide product, we expect the following to be true:

> Exchange rate: **¥124 = $1**
> Price of a Big Mac™ in the U.S.: **$P_{U.S.} = $2.25**
> Price of Big Mac™ in Japan: **$P_{Japan} = ¥279**

If Purchasing Power Parity holds then the **nominal exchange rate** should be:

¥P (Big Mac™) / $P(Big Mac™) = ¥279 / $2.25 = ¥124 : $1

But what if we had the following:

> Exchange rate: **¥124 = $1**
> Price of a Big Mac™ in the U.S.: **$P_{U.S.} = $2.25**
> Price of Big Mac™ in Japan: **$P_{Japan} = ¥300**

In this case, **¥P (Big Mac™) / $P (Big Mac™) > nominal exchange rate**.

We could therefore take $1000 and buy 444 Big Macs™; export the Big Macs™ to Japan and sell them for ¥300 each. This would generate ¥ 133,200 in revenue. We then *sell* yen on foreign exchange markets and *buy* dollars. At the current exchange rate, this would allow us to buy $1074 (¥133,200/¥124) and earn a profit of $74.

However, this process of arbitrage (on a larger scale) should affect Big Mac™ prices and the nominal exchange rate. The *buying* of Big Macs™ in the U.S. should push the domestic price upwards. The *selling* of Big Macs™ should drive prices down in Japan. The *selling* of Yen on foreign exchange markets should weaken the Yen and the *buying* of Dollars should strengthen the dollar. This activity will continue until the ratio of Big Mac™ prices is just equal to the **nominal exchange rate**

The Real Exchange Rate

This information between **nominal exchange rates** and foreign/domestic prices of a common good can be expressed as a single value -- the **Real Exchange Rate 'ε'** $_r$:

$$\varepsilon_r = e.r._{Nominal}[P_{Domestic} / F_{oreign}]$$
Or
$$\varepsilon_r = (¥P/\$) [\$P (Big\ Mac™) / ¥P(Big\ Mac™)]$$

This **real exchange rate 'ε$_r$'** is a unit-free measure where, in the case of a single good, its value can be interpreted relative to 1.0 (PPP). In our above example where '¥P/$ = 124:1, the ¥P (Big Mac™) = 300, and the \$P(Big Mac™) = 2.25 we would calculate the real rate to be:

$$\varepsilon_r = (124)[2.25 / 300] = 0.93$$

Or 1 Big Mac™ in the U.S. is equivalent to 0.93 Big Macs™ in Japan allowing for arbitrage opportunities. Either the Yen must *weaken*, the price of Big Macs™ in the U.S. must increase, or the price of Big Macs™ in Japan must fall. However, other economic events or conditions (capital flows, trade barriers, price-making power) may prevent this from happening. These **real exchange rates** do provide a foundation for the direction of trade flows such that:

Net Exports 'NX' = $f_{(-)}(\varepsilon_r)$

The above rate of 0.93 would lead to the export of Big Macs™ from the U.S. and imported into Japan.

The calculation of **real exchange rates** are more-likely based on a basket of goods rather that a single homogeneous commodity. Thus price indices in different countries are used such that:

$$\varepsilon_r = e.r._{nominal} [CPI_{Domestic} / CPI_{Foreign}]$$

In constructing the **real exchange rate** this way we can then think about how differences in rates of inflation among nations affect this real rate and thus trade flows or perhaps leads to changes in nominal exchange rates:

If $\%\Delta P_{U.S.} > \%\Delta P_{Japan}$ then either: ε_r ⬆ or e.r.$_{nominal}$ ⬇

In using these indices, we can no longer interpret the **real exchange rate** relative to a unit value (1.0). Instead we are forced to look at the direction of change in the real rate to understand the effect on exports and imports.

7.5 COST BENEFIT ANALYSIS OF FDI

Multinational Corporations: The multinational corporation, also known as multinational enterprise, transnational corporation, global corporation, international corporation (or firm, enterprise or company) etc., has been regarded as "The most important and most visible innovation of the postwar period in the economic field." The relevance of MNCs to the subject of international trade is expressed in the following statement: "All of the issues we have examined-trade theory, commercial policy, foreign exchange and the balance of payments, and the international economics of development-are profoundly influenced by the MNCs, which actually do on a transnational basis all of the things that concern the international economic and financial position of national states. They do them quickly, efficiently and this is where many of the MNCs' costs and benefits to the international economy lie.

Definitions: There is, however, no universally accepted definition of the term multinational corporation. As an ILO report observes, "The essential nature of the multinational enterprises lies in the fact that its managerial headquarters are located in one country (referred to for convenience as the 'home country') while the enterprise carries out operations in a number of other countries as well ('host countries'),

Obviously, what is meant is "... a corporation that controls production facility in more than one country, such facilities having been acquired through the process of foreign direct investment. Firms that participate in international businesses, however large they may be, solely by exporting or by licensing technology, are not multinational enterprises.

Jacques Maisonrouge, president of IBM World Trade Corporation, defines an MNC as a company that meets five criteria:

1. It operates in many countries at different levels of economic development.
2. Its local subsidiaries are managed by nationals.
3. It maintains complete industrial organizations, including Rand D and manufacturing facilities, in several countries.
4. It has a multinational central management.
5. It has multinational stock ownership.

James C. Baker defines the multinational corporation as a company

1. Which has a direct investment base in several countries;
2. Which generally derives from 20 per cent to 50 per cent or more of its net profits from foreign operations; and
3. Whose management makes policy decisions based on the alternatives available anywhere in the world.

Terms such as International Corporation, Multinational Corporation, Transnational Corporation and Global Corporation are often used as synonyms. However, several multinationals have evolved into certain advanced stage of transnational organization and operations and it now becomes necessary to draw some distinction between these terms.

A company with manufacturing investment (or service operation) in at least one foreign country may be regarded as an international corporation. However, multinational implies international operations of more significance than this, as indicated in the definition of the MNC given above, such as direct investment in several countries and a considerable share of the total business being in foreign countries. A multinational corporation is, obviously, an international corporation. Only those international corporations which satisfy certain criteria, as described above, may be regarded as multinationals.

It would be useful to draw a distinction between the Multinational Corporation and Transnational Corporation. "Multinational companies are usually organized around a national headquarters, from which international control is exercised-they still have a national identity, even though their subsidiaries may not always care to allow that identity to obtrude in the markets they serve. A transnational company is a multinational in which both ownership and control are so dispersed internationally. There is no principal domicile and no one central source of power. Examples include Royal Dutch-shell and Unilever.

The term global corporation is also often used to mean more less the same thing as the transnational corporation.

It may also be pointed out here that some marketing and management experts add some essential dimension to the term global corporation, although it is not agreed upon by many others. According to them, a global corporation is one which views the entire world as a single, homogeneous, market which should be catered to by globally standardized products. Theodore Levitt, the world renowned professor of marketing who has championed this line of thinking, observes that while "The multinational corporation operates in a number of countries and adjusts its products and practices in each-at a high relative cost", "... the global corporation operates with resolute constancy-a low relative cost-as if the entire world (or major region of it) were a single entity; it sells the' same thing the same way everywhere. According to Levitt, "The world is becoming a common market place in which people-no matter where they live-desire the same products and life styles. Global companies must forget the idiosyncratic differences between countries and cultures and instead concentrate on satisfying universal drives. Levitt who says that "...the world's needs and desires have been in-evocably homogenized" argues that this "... makes the multinational corporation obsolete and the global corporation absolute. Levitt's theory has been strongly criticized on several grounds.'

Organizational Transformation: As pointed out above, many of the multinationals have transformed themselves to transnational or global corporations. Whatever may be the differences in the nomenclature or the views regarding the strategies of the multinational, it has reached a new watershed in its evolution.

Dunning observes: **"**From behaving largely as a confederation of loosely knit foreign affiliates, designed primarily to serve the parent company with natural resources or local markets with manufactured products and services, to its maturation over the ... years as a controller of a group of integrated value adding activities in several countries, the MNE is now increasingly assuming the role of an orchestrator of production and transactions within a cluster, or network, of cross border internal external relationships, which mayor may not involve equity investment, but which are intended to serve its global interests."

He further adds, "From being mainly a provider of capital, management and technology to its outlying affiliates, each operating more or" less independently of each other, and then a coordinator of the way in which resources are used within a closely knit family of affiliates; the decision-taking nexus of the MNE in the late 1980s has come to resemble the central nervous system of a much larger group of independent but less formally governed activities, whose function is primarily to advance the global competitive strategy and position of the core organization. This it does, not only by, or even mainly by, organizing internal production and transactions in the most efficient way; or by, its technology, product and marketing strategies; but by the nature and form of alliances' it concludes with other firms."

"These corporations which have become transnational or global stop thinking of themselves as national marketers who have ventured abroad and now think of themselves as global marketers. The top management and staff are involved in the planning of worldwide manufacturing facilities, marketing policies, financial flows and logistical systems. The global operating units report directly to the chief executive or executive committee, not to the head of an international division. Executives are trained in worldwide operations, not just domestic or international. Management is recruited from many countries; components and supplies are purchased where they can be obtained at the least cost; and investments are made where the anticipated returns are the greatest"

Dominance of MNCs: The economic dominance of the multinationals is manifested by the fact that the MNCs control between a quarter and a third of all world production and the total sales of their foreign affiliates is about the same as the gross national product of all developing countries excluding oil-exporting developing countries.

The economic clout of the MNCs is indicated by the fact that the GDP of most of the countries is smaller than the value of the annual sales turnover of the multinational giants. In 1997, the value of the sales of the US multinational, General Motors, the biggest multinational in terms of sales turnover, was $ 178.2 billion. Of the total 101 developing countries with a population of more than one million each, listed by the World Development Report, only nine countries (India China, Mexico, Argentina, Indonesia, Turkey, Brazil, Russia and S. Korea) had a GDP which was more than this figure. There were also several developed countries whose value of GDP was less than this. It may be noted that in 1997 India's GDP was only $359.8 billion.

Due to the differences in the definition adopted, the estimates of the numbers of MNCs also vary. According to the United Nations' World Investment Report J 998, there were more than 53,000 TNCs, which had more than 4, 50,000 affiliates,

The United States and Europe are the homes for most of the MNCs. Their shares have, however, been declining because of the growth of MNCs in other regions, Japanese MNCs have made rapid strides in the 1970s and 1980s. In 1991, majority of the 10 largest multinationals (in terms of sales) were Japanese. Multinationals from developing countries such as S. Korea and Taiwan have also been making their presence increasingly felt.

Investment Pattern: The major part of the business of the MNCs is in the developed economies. The share of the developed countries in the total overseas investment was, in fact, increasing. According to Professors Dunning and Stopford, developing countries' share of foreign direct investment slipped to 27 per cent by 1980 from 31 per cent in 1971.16 It dropped further to 17 per cent during 1986-90.17 However, the 1990s witnessed an increase in the share of the developing countries in the multinational investments. The economic reforms ushered in the developing countries, particularly the liberalization of foreign investment and privatization, might have given a boost to the FDI in these countries.

In the case of the LDCs, the investment and employment created by the 'MNCs have been chiefly concentrated in about a dozen of the nations; China, Brazil, Mexico, Hong Kong, the Philippines, Singapore, India, Taiwan, Indonesia and South Korea accounting for a major share.

As the Brandt Commission observes, foreign investment has moved to a limited number of developing countries, mainly those which could offer political stability and a convenient economic environment, including tax incentives, large markets cheap labor and easy access to oil or other .,natural resources. In poor countries foreign investment is mainly in plantations and minerals, or in countries with large internal markets-like India. The Brandt Commission has also observed that private investment's can supplement aid, but it cannot substitute for it: It tends not to move to the countries or sectors which need aid the most.

Investment Motives: There are a variety of motives for international investments. They include the following:'

1. To circumvent the tariff walls. For example, getting behind the EEC's common external tariff was certainly a major consideration for US companies during the last many years. Recently, there has been a spurt of such investments in the EEC by companies from Japan and some other countries.
2. To reduce the production costs by making use of the cheap labor and other factors in the home countries and by avoiding/reducing transport costs.
3. To gain dominance in the foreign market and to effectively fight competition.

4. To adjust to the government regulation in the host country. For example, some countries prefer foreign investment and domestic production out of it to import of goods.
5. To mitigate the impact of home country regulations, like anti-trust regulations, regulations against industries causing ecological problem, etc.
6. To exploit the natural resources of the host countries.
7. To enjoy the benefits of tax-havens.

MNCs and International Trade: Peter Drucker, the well-known writer on Management, remarks that 111ultinationalism and expanding world trade are two sides of the same coin.19 He points out that the period of most rapid growth of multinationals-the fifties and sixties was the period of most rapid growth of multinational trade. Indeed, during this period the world trading economy grew faster-at an annual rate of 15 per cent, or so, in most years-than even the fastest growing domestic economy, that of Japan of 20%.

There seems to be a misconception that the growth of the MNCs has to do with trade restrictions. Peter Drucker points out that far from being a cause of multi nationalism, protectionism is incompatible with it; indeed an emergence of protectionism would be the greatest threat to the MNCs. The best proof that protectionism is not at the bottom of the multinational trend is the European development. The rise of the multinationals began when continental Europe abolished protection and joined in a common market. Further, it is not in the most heavily protected industries where multinationalism has forged ahead the fastest. It came late, for instance, in the chemical industry which is very heavily pro-tected. But pharmaceuticals, where protection plays a minor role, was a leader fro111 the start. And there has been almost no multinationalism in heavily protected steel industry.

It is estimated that between one-fourth and one-third of manufactured goods now moving in world trade are being shipped from one branch to another of the MNCs; that is, they are intra-company shipments. The sale of foreign subsidiaries in the host countries in which they are located are three to four times as large as total world exports.22 Apart from trade in commodities, other transactions also take place extensively between the different parts of these enterprises, for example the granting of loans, the licensing of technology and the provision of services. In all such transactions, transfer polices may be settled which are different from the price which would have been the case between independent parties operating at arms length.

Such differences may reflect the legitimate business concerns of the companies but are also capable of being used in order to shift profits from high to low tax countries or to get around exchange or price controls or customs duties. As the Brandt Commission observes, the ability of multinationals to manipulate financial flows by the use of artificial transfer prices is bound to be a matter of concern to the government. The monitoring and control of transfer prices involves inter-governmental cooperation and measures to secure due disclosure of relevant information by companies. This is necessary to make effective tax laws covering transfer prices which exist in many countries. Intra-firm trade also opens up the possibility for corporations to impose restrictive business practices within their own organization; they can limit the exports of

their affiliates, allocate their markets between nations or restrict the use of their technology or that developed by their affiliates. Such practices, although best pursued in the best business interests of the companies, may conflict with the developmental objectives and national interests of host countries.23

Merits of MNCs: As the Preface to the ILO report on Multinational Enterprises and Social Policy observes, "For some, the multinational companies are an invaluable dynamic force and instrument for wider distribution of capital, technology and employ-il1ent: for others, they are monsters which our present institutions, national or international, cannot adequately control, a law to themselves with no reasonable concept, the public interest or social policy can accept.

We will mention the important arguments in favor of and against the MNCs.

MNCs, it is claimed, help the host countries in the following ways:

1. MNCs help increase the investment level and thereby the income and employment in the host country.
2. The transnational corporations have become vehicles for the transfer technology, especially to the developing countries.
3. They also kindle a managerial revolution in the host countries through professional management and the employment of highly sophisticated management techniques.
4. The MNCs enable the host countries to increase their exports and decrease their import requirements.
5. They work to equalize the cost of factors of production around the world.
6. MNCs provide an efficient means of integrating national economies.
7. The enormous resources of the multinational enterprises enable them to have very efficient research and development systems. Thus, they make a commendable contribution to i).1ventions and innovations.
8. MNCs also stimulate domestic enterprise because to support their own operations, the MNCs may encourage and assist domestic suppliers.
9. MNCs help increase competition and break domestic monopolies.

Demerits of MNCs: MNCs have, however, been subject to a number of criticisms, like those mentioned below:

1. As Leonard Gomes points out, the MNC's technology is designed for world-wide profit maximization, not the development needs of poor countries, in particular employment needs and relative factor scarcities in these countries. In general, it is asserted, the imported technologies are not adapted to
    (a) the consumption needs,
    (b) the size of domestic markets,
    (c) resource availabilities, and
    (d) stage of development of many of the LDCs.25

2. Through their power and flexibility, MNCs can evade or unde1111ine national economic autonomy and control, and their activities may be inimical to the national interests of pal1icular countries.
3. MNCs can have unfavorable effect on the balance of payments of a country. For instance, the Coca-Cola until 1978 had remitted abroad nearly Rs.6 crore on an initial investment of Rs 6.6 lakh in India.
4. MNCs may destroy competition and acquire monopoly powers.
5. The tremendous power of the global corporation poses the risk that they may threaten the sovereignty of the nations in which they do business.
6. MNCs retard growth of employment in the home country.
7. The transnational corporations cause fast depletion of some of the nonrenewable natural resources in the host country.
8. The transfer pricing enables MNCs to avoid taxes by manipulating prices on intra-company transactions.

Recent Trends: There has been a considerable change in the attitude towards the multinationals. They are not subject to as severe criticisms as in the past. Even communist countries have wide opened their doors for the MNCs.

Streeten points out that the following trends suggest that the role of the MNCs has to be reassessed.

(i)   Many more nations are now competing with US multinationals in setting up foreign activities, which means that the controversy is no longer dominated by nationalistic considerations. Japanese and European firms figure prominently among the new multinationals.

(ii) Developing countries themselves are now establishing multinationals. In addition to companies from the Organization of Petroleum Exporting Countries (OPEC), and firms established in tax-haven countries, the leading countries where multinationals are being established are Argentina, Brazil, Colombia, Hong Kong, India, the Republic of Korea, Peru, the Philippines, Singapore, and Taiwan.

(iii) Not only do host countries deal with a greater variety of foreign companies, comparing their political and economic attractions, weighing them against their costs, and playing them off against one another, but also the large multinationals are being replaced by smaller and more flexible firms. An increasingly alterative form of organizations to the traditional from of multinational enterprise are becoming available: banks, retailers, consulting firms, and trading companies are acting as instruments of technology transfer.

(iv) Some multinationals from developed countries have accommodated them-selves more to the needs of the developing countries.

Perspective: Future holds out an enormous scope for the growth of MNCs. The changes in the economic environment in a large number of countries indicate this. For instance, the number of bilateral treaties that promote and/or protect FDI has increased markedly, with some 64 such treaties signed in the first 18 months of the 1990s compared with 199 such treaties during 1980-89. Further, of the 82 changes made in FDI policy by 35

countries during 1991, 80 were in the direction of increased liberalization. Privatization programs in more than 70 countries offer new opportunities for foreign investors, especially in the service sector.

The World Investment Report 1992 describes several developments that point to a rapidly changing context for economic growth, along with a growing role for transnational corporations in the process. These include:

(i)   Increasing emphasis on market forces and a growing role for the private sector in nearly all developing countries

(ii)   Rapidly changing technologies that are transforming the nature of organization and location of international production

(iii)   The globalization off inns and industries;

(iv)   The rise of services to constitute the largest single sector in the world economy; and

(v)   Regional economic integration, which has involved both the world's largest economies as well as selected developing countries.

Code of Conduct: As the Brandt Commission observes, there is now much interest in trying to formulate international codes of conduct for the transfer of technology, for restrictive business practices and transnational corporations. Definite progress has been made in some of these negotiations. Any code, of course, will only work if it can influence the actual behavior of home and host governments and of investors. The major elements of any effective code should be capable of being eventually translated into agreements between governments. Such an overall regime will have to have elements of both persuasion and effective implementation, with flexible approaches and attitudes on all sides. The participating governments will have to consult with labor and business to find the means to reconcile interests and to monitor and implement the arguments. The ILO has created a committee for consultation and monitoring the Code of Conduct relating to multinational enterprises. This offers one model.

According to the Brandit Commission, the principal elements of an international regime for investment should include:

1. A framework to allow developing countries as well as transnational corporations to benefit from direct investment on terms contractually agreed upon. Home countries should not restrict investment or the transfer of technology abroad, and should desist from other restrictive practices such as export controls or market allocation arrangements. Host countries in turn should not restrict current transfers such as profits, royalties and dividends, or the repatriation of capital, so long as they are on terms, which were agreed when the investment was originally approved or subsequently negotiated.

2. Legislation promoted and coordinated in home and host countries, to regulate the activities of transnational corporations in such matters as ethical behavior, disclosure of information, restrictive business practices, cartels, anticompetitive practices and labor standards. International codes and guidelines are a useful step in that direction.

3. Cooperation by governments in their tax policies to monitor transfer pricing and to eliminate the resort to tax havens.
4. Fiscal and other incentives and policies towards foreign investment to be harmonized among host developing countries, particularly at regional and sub regional levels,' to avoid the undern1ining of the tax base and competitive positions of host countries.
5. An international procedure for discussions and consultations on measures affecting direct investment and the activities of transnational corporations.

Foreign Investment by Indian Companies: Although some developing countries like S. Korea and Taiwan, whose economic position had not been better than that of India when India started planned development, have made substantial FDI in other countries, Indian companies have not ;wade any significant foreign investment so far. Although government of India's policy has been one of encouraging foreign investment by Indian companies subject to certain conditions, several factors like the domestic economic policy and the domestic economic situation have been deterrents to foreign investment by Indian companies.

By restricting the areas of operation and growth, the government policy seriously constrained the potential of Indian companies to make a foray into the foreign countries through investment. Added to this was the attraction of the protected domestic market which was; in many cases, a sellers' market and this made the Indian companies to ignore the foreign markets.

At the beginning of 1998, there were a total of 691 wholly owned subsidiaries established by Indian companies in foreign countries involving a total equity of over 2000 crore. Most of the subsidiaries are in trading, marketing, consultancy, hotel, computer software and shipping service; and in the manufacturing field.

At the beginning of 1998, there were also 807 Indian joint ventures abroad, dispersed over many countries. The new economic policy of India is expected to encourage foreign investments by Indian companies. The curbs on growth, even by mergers and acquisitions, have been removed, financing restrictions have been eased, areas of business opened to the private sector companies have been substantially enlarged and foreign tie up policies have been liberalized. Further, domestic market is becoming increasingly competitive. All these factors should encourage the Indian companies to invest in other countries and take advantage of the economic liberalization in many foreign countries.

Indications are that several Indian companies are drawing up plans for establishing subsidiaries or joint ventures abroad. The 1990s is a decade of real test for Indian companies in this respect.

7.6 ROLE OF MNCS IN INDIA

Comparatively very little foreign investments have taken place in India due to several reasons, (like the dominant role assigned to the public sector in the industrial policy and

the restrictive government policy towards foreign investment). Some multinationals, Coca-Cola and IBM, even left India in the late 1970s as the Government conditions were unacceptable to them.

A common criticism against the MNCs is that they tend to invest in the low priority and high profit sectors in the developing countries, ignoring the national priorities. However, in India the government policy confined the foreign investment to the priority areas like high technology and heavy investment sectors of national importance and export sectors. Firms which were established in non priority areas prior to the implementation of this 'policy have, however, been allowed to continue in those sectors.

The controversial Foreign Exchange Regulation Act (FERA), 1973, required the foreign companies in India to dilute the foreign equity holding to 40 per cent (exceptions were allowed in certain cases like high technology and export oriented sectors).

An often aired criticism is that multinationals drain the foreign exchange resources of the developing countries. However, Aiyar's study indicates that contrary to the popular belief, foreign companies are less of a drain on foreign exchange reserves than Indian ones. He also points out that the public sector has a higher propensity to use foreign exchange on a net basis than multinationals. In fact, the foreign exchange outgo of the public sector alone is greater than the entire trade deficit of the country.

It is not a right approach to estimate the net impact of multinationals on the foreign exchange reserves by taking the net foreign exchange outflow or inflow. If a multinational is operating in an import substitution industry, the net effect on the foreign exchange reserves could be favorable even if there is a net foreign exchange outflow by the company.

Multinationals in several developing countries make substantial contribution to export earnings. The performance in the case of India has, however, been very dismal. This is attributed mostly to the government policy. "We have consistently followed policies in India that discriminate against export production and in favor of production for the local market. In this milieu it has not made sense for the Indian private sector or public sector to focus on exports. Naturally, it has not made sense for foreign companies either. In 1947, foreign companies did not have an anti-export image. Indeed, the most prominent ones were engaged in the export of tea and jute manufactures. Only after Jawaharlal Nehru decided to emphasize import-substitution at the expense of exports did foreign (and Indian) companies spurn exports.

Although export promotion has been pursued since the Third Plan, the highly protected domestic market and the unrealistic exchange rate made the domestic market much more attractive than exports. However, since the mid-1980s with the economic liberalization that increased domestic competition and the steady depreciation of the rupee, exports began to become attractive and several foreign companies and companies with foreign participation, as well as India companies have become serious about exports. This was reflected in the acceleration of the export growth.

The new policy is expected to give a considerable impetus for MNC's investment in India. However, foreign companies find the policy and procedural environment in India still so perplexing and disgusting that a multinational, Motorola, even shifted some of the projects, originally earmarked for India, to China where the government environment is much more conducive.

At the end of March 1998, there were 871 foreign companies in India. (A foreign company is defined as a company incorporated outside India, but which has a place of business in India.) In addition, there are many Indian companies with foreign equity participation.

Several Indian outfits of MNCs like Ponds, Johnson, Lipton, Brook Bond, Colgate-Palmolive, etc., are in the low technology consumer goods sector. Hindustan Lever, while popular in the low-tech consumer goods, has diversified into high technology and export oriented sectors. Pond's had diversified into thermometers, leather uppers and mushrooms meant entirely for experts (Pond, Brook Bond, and Lipton merged with Hindustan Lever) ITC (Indian Tobacco Company-formerly Imperial Tobacco Company) has diversified into areas like hotel, paperboards and edible oil. There are MNCs, like Siemens, which are in high technology areas. There are several MNCs in the pharmaceutical industry, like Glaxo, Bayer, Sandoz, and Hoechst. MNCs like Marubeni and Nissho Iwai are mostly in foreign trade.

It is wrong to assume that the success of MNCs or foreign is guaranteed in developing countries and that the domestic firms, particularly the small ones, will not be able to withstand the competition from them. There are several Indian cases to prove this.

Double Cola was not a success in India:. Parle appeared to be very much worried about the entry of the Pepsi and it did everything to prevent its entry. But, when the competition became a reality, it faced its head on and the reports were that the Parle brands were far outselling the Pepsi's. In the soft-drink concentrate market, while the Kothari-General Foods (MNC) combine failed, the product of the small firm, Pioma industries (Rasna) has become a grand success. Asian Paints which has its beginning as a small unit has become the unrivalled industry leader, successfully fighting multinationals. Similarly, the Nirma story is well known. They are successfully fighting multinationals. There are, on the other hand, several foreign brands like Tang, which have miserably failed.

In short, the feeling that multinationals and foreign brands will have a runaway success and domestic firms will not be able to survive their competition is not right.

7.7 INTERNATIONAL TRADE THEORIES

Bases of International Trade: In this section we shall identify and discuss the various International Trade theories, which include the following:

- Absolute cost Theory
- Comparative cost Theory
- Opportunity Cost Theory
- Factory Endowment Theory
- Complementary Trade Theory

We shall also differentiate between different Trade Theories.

7.7.1 ABSOLUTE COST THEORY

Adam Smith, the father of Economics, thought that the basis of international trade was absolute cost advantage. According to his theory: trade between two countries would be mutually beneficial if one country could produce one commodity at an absolute advantage (over the other country) and the other country could, in turn, produce another commodity at an absolute advantage over the first.

Table 7.2

	USA	UK
No of units of wheat per unit of labor	10	4
No of units of cloth per unit of labor	3	7

In the above hypothetical example, US have an absolute advantage in the production of wheat over UK and UK have an absolute advantage in the production of cloth over US. Hence, according to Adam Smith's theory, US should specialize in the production of wheat and meet its requirement of cloth through import from UK. On the other hand, UK should specialize in the production of cloth and would obtain wheat from US. Such trade would be mutually beneficial.

Adam Smith pointed out that the scope for division of labor (i.e. specialization) depended on the size of the market. Free international trade, therefore, increases division of labor and economic efficiency and consequently economic welfare. In his treatise Wealth of Nations, Adam Smith observes:

"By means of it (foreign trade) the narrowness of home market does not hinder the division of labor on any particular branch of art or manufacture from being carried to the highest perfection. By carrying a more extensive market for whatever part of the produce for their labor may exceed the home consumption, it encourages them to improve its productive powers and to augment its annual produce to the utmost and thereby increase the real revenue and wealth of society."

In short, according to Smith's theory of international trade, three kinds of gains accrue to a country from international trade:

a. Productivity gain,
b. Absolute cost gain, and
c. Vent for surplus gain.

The famous classical economist David Ricardo has demonstrated that the basis of trade is the comparative cost difference-trade can take place even in the absence of absolute cost difference provided there is comparative cost difference.

7.7.2 COMPARATIVE COST THEORY

The Comparative Cost Theory was first systematically formulated by the English economist David Ricardo in his Principles of Political Economy and Taxation, published in 1817. It was later refined by Mill, Marshall, Taussig and others.

In a nutshell, the doctrine of comparative costs maintains that if trade is left free, each 'country, in the long run, tends to specialize in the production and export of those commodities in whose production it enjoys a comparative advantage in terms of real costs, and to obtain by importation those commodities which could be. Produced at home at a comparative disadvantage in terms of real costs, and that such specialization is to the mutual advantage of the countries participating in it

The Ricardian theory is based on the following assumptions:

1. Labor is the only element of cost of production.
2. Goods are exchanged against one another according to the relative amounts of labor embodied in them.
3. Labor is perfectly mobile within the country but perfectly immobile be-tween countries.
4. Labor is homogeneous.
5. Production is subject to the law of constant returns.
6. International trade is free from all barriers.
7. There is no transport cost.
8. There is full employment:
9. There is perfect competition.
10. There are only two countries and two commodities.

Ricardo's illustration of the Comparative Cost Theory, using a two country two-commodity model, shows that trade between nations can be profitable even if one of the two nations can produce both the commodities more efficiently than the other nation provided that it can produce one of these commodities with comparatively greater efficiency than the other commodity. The law of comparative advantage indicated that a country should specialize in the production of those goods in which it is more efficient and leave the production of the other commodity to the other country. The two nations will then have more of goods by engaging in trade.

Ricardo, in his celebrated two-country-two-commodity model, has taken the hypothetical example of production costs of cloth and wine in England and Portugal, to illustrate the comparative cost theory.

From the example given below, it is evident that Portugal has an absolute superiority in both branches of production. However, a comparison of the ratio of the cost production of wine (80/120) with ratio of the cost production of cloth (90./100.) reveals that though Portugal has an absolute superiority in both the branches of production, in production of wine, she has comparative advantage over England (80/120 < 90/100). England will gain by specializing in producing cloth and selling it in Portugal in exchange for wine.

Table 7.3

Country	No of units of labor per unit of cloth	No of units of labor per unit of wine	Exchange ratio between wine and cloth
England	100	120	1 wine = 1.2 cloth
Portugal	90	80	1 wine = 0.88 cloth

In the absence of trade between England and Portugal, one unit of wine commands 1.2 and 0.88 unit of cloth in England and Portugal respectively. In the event of trade taking place, under the assumption that within each country, labor is perfectly mobile between various industries, Portugal will gain if it can get anything more than 0..88 units of cloth in exchange for 1 unit of wine and England will gain if it has to part with less than 1.2 units of cloth against 1 unit of wine. Hence, any exchange ratio between 0.88 units and 1.2 units of cloth against one unit of wine represents a gain for both the countries. The actual rate of exchange will be determined by the Reciprocal Demand.

Thus, according to the comparative cost theory, free and unrestricted trade among nations encourages specialization on a larger scale. It, thereby, tends to bring about:

1. The most efficient allocation of world resources as well as maximization of world production
2. A redistribution of relative product demand , resulting In greater equality of product prices among trading nations, and
3. A redistribution of relative resource demand to correspond with relative product demands, resulting in relatively greater equality of resource prices among trading nations.

Evaluation of the Theory: The Ricardian theory, though based on a number of wrong assumptions has been regarded as an important landmark in the development of the theory of international trade. Paul Samuelson remarks: "If theories, like girls, could win beauty contests, comparative advantage would certainly rate high in that it is an elegantly logical structure".3 He adds: "The theory of comparative advantage has in it a most

important glimpse of truth A nation that neglects comparative advantage may have to pay 'a heavy price in terms of living standards and potential rates of growth.

The comparative cost doctrine, however, is not complete in itself. It has been severely criticized, particularly for its wrong assumptions. The main criticisms of the theory are:

1. As the the6ry is based on the labor (cost) theory of value, it has inherited all the defects of the labor theory of value. Labor is certainly not the only element of cost. Further, in the real world, the exchange ratio between commodities need not necessarily reflect the respective cost ratio. The demand and supply conditions playa very important role in the determination of the price at which commodities are exchanged.
2. In a money economy, it is not proper to express the cost of production in (real terms labor units). Differences in wages may alter the price ratios i. from the ratios of labor units expended, particularly between countries.
3. The assumptions about the mobility and homogeneity of labor are also incorrect. There rarely is perfect mobility of labor from one branch of production to another. In fact, there are non-competing groups of labor. Inter-regional mobility of labor within a country is also not perfect. It is also wrong to assume that labor is completely immobile between countries. Further, it is highly unrealistic to assume that labor is homogenous. There are in fact many different qualitative types of labor.
4. Ricardo tacitly assumed constant cost. But constant cost is a rare case. Costs may rise or fall as production Increases.
5. The assumptions of full employment and perfect competition, characteristic of classical economic theories are also obviously wrong.
6. Similarly, it is highly unrealistic to assume that international trade is free and does not evolve cost of transport.
7. By taking a two country two commodity model, Ricardo has over simplified the situation.
8. As Gruham has pointed out, even if we assume that all the assumptions are true It will not lead to complete specialization if one of the two countries is small and the other big. The small country may be able to specialize fully, but the big country cannot since it cannot sell its entire surplus in the small country and cannot get from the small country the quantity of goods which it can produce though at a comparatively higher cost.
9. The theory of comparative cost fixes only the limit within which the exchange ratio must settle under international trade. it does not show the exact point within these two limits is determined. In other words, the theory does not say how the term of trade is determined.
10. As Ellsworth and Leith point out, an important "...feature of the classical trade theory is that Ricardo, Mill and their followers appear to have regarded it not primarily as an explanation of the actual pattern of trade, but as a convincing demonstration of the gains from trades and they have used it "...as a powerful argument for a more rational trade policy in a tariff ridden world".

11. Though the Ricardian theory maintains that comparative differences in the labor cost from the basis of international trade, it does not explain what underlies such differences in relative cost of production.

Elaboration and Refinements of the Classical Theory: The Ricardian theory of comparative costs was based on a number of simplifying assumptions. This, however, does not mean that the theory is valid only under the assumptions upon which it was originally formulated; the relaxation of the simplifications does not invalidate the law of comparative advantage. The classical doctrine has been elaborated and modified by economists like J.S. Mill, Alfreg Marshall and Taussig.

Introduction of Money: One of the major criticisms of the comparative cost theory is that it expresses production cost in real terms and not in money terms. But Haberler states in a modern economy, "...goods are not exchanged directly against other goods, but goods are bought with money. People do not think of the exchange relations between goods. The flow of international trade is determined directly by absolute differences in money prices and not by comparative differences in labor cost". To make the theory more realistic, labor cost should, therefore, be transformed into money price. The translation of comparative differences in cost into absolute differences in price in no way alters the real exchange relations between commodities which lie behind the money prices.

To illustrate the refinement of the comparative cost theory with introduction of money, let us take the hypothetical example of labor costs of wine and cloth in Portugal and England and assume that the wage per unit of labor is $ I in England and 1.3 in Portugal. Then, the price per unit of cloth will be $ 100 in England and $ 117 in Portugal and the price per unit of wine will be $ 120 in England $ 104 in Portugal (see Table 3.3). Therefore, England will import wine from Portugal instead of producing it at home at a higher cost. Similarly, Portugal will import cloth from England instead of producing it at a higher cost.

Table 7. 4

Country	No of units of labor required for one unit of		Wage per unit of labor	Price per unit of	
	Cloth	Wine		Cloth	Wine
England	100	120	1.00	100.00	120.00
Portugal	90	80	1.30	117.00	104.00

The above illustration clearly shows that the discarding of labor-cost and the introduction of money does not invalidate the comparative cost theory. It should, however, be noted that if money wages rise or fall below certain limits, it will distort the trade pattern. For example, while the money wage remains stable in England, if it rises above $ 1.5 in Portugal, the price of wine will exceed $ 120 (the price in England) and, therefore, England will not import wine from Portugal. Similarly, a rise in wages beyond a certain level in England will make the English cloth more expensive than the Portuguese. A fall

in the wage in a country beyond a certain limit will cause a similar situation. For example, if the wage level remains stable in England and if it falls to less than $ 1.11 in Portugal, English cloth will no longer be cheaper than that produced in Portugal.

Introduction of Transfer Costs: The Ricardian theory assumed that the transfer of goods between countries does not involve any cost. Quite obviously, certain transfer costs like the cost of transport are involved in international trade. It is not difficult to introduce the costs of transfer to the comparative cost theory. The introduction of transfer costs, however, decreases the extent of the international division of labor because if the cost of transfer of a commodity is more than the difference in the costs of production between two countries, it will not be traded , between them. For instance, with reference to our previous example, if the cost of the transfer of wine from Portugal to England is more than $ 16 per unit, England is not likely to import wine from Portugal because the landed cost of Portuguese wine in England will be more than $ 120 (which is the price of the domestic wine.)

In the absence of transfer costs, the condition for the establishment of trade between country A and B is that $X_a / X_b < Y_a / Y_b$, where X_a and Y_a denote the number of units of the commodities X and Y which one unit of labor can produce in country A and X_b and Y_b denote the number of units of the commodities.

X and Y which one unit of labor can produce in country B. Introduction of transfer costs requires the fulfillment of two more conditions for the establishment of trade viz., $X_a / X_v < Y_a / Y_b$ and $X_a / X_b < Y_a J Y_b$ where Xv denotes the number of units of commodity X which can be produced and transferred to A with one unit of labor in B and Y_a, denotes the number of unit of commodity Y which can be produced and transported to B with one unit of labor in A.

Introduction of More than Two Commodities: Though Ricardo considered only two commodities, the theory can be applied to cases in which not merely two commodities but any number of goods is produced in the two countries. If Countries I and II exchange a number of commodities between them, according to the doctrine of comparative cost differences, Country I must be enjoying a comparative advantage over Country II in all its export commodities relatively to all its import commodities. Similarly, Country II must be enjoying a comparative advantage over Country I in all its export commodities relatively to all its import commodities.

To get an idea of which commodities a country exports and imports, we may arrange various goods in order of the comparative advantage of Country lover Country II, so that if we call them a, b, c, d: e,... $a_1 / a_2 < b_1 / b_2 < c_1 / c_2 < d_1 / d_2 < e_1 / e_2$" Country I will export commodities on the left side and import commodities on the right side. Country II, on the other hand, specializes in the production of commodities on the right side and imports those on the left side. It is not possible that Country I exports a, b, and d and imports c. If it imports c, it must necessarily be importing d (assuming, of course, that d has a demand in country I).

Relying only on the cost data, we cannot determine the exact position of this dividing line. We can say only that it must be drawn in such a manner that Country I enjoys a comparative advantage in every commodity it
Exploits relatively to every commodity it imports. The dividing line will be at a position at which the balance of payments will be in equilibrium. The point at which the balance of payments will be in equilibrium will be determined by the reciprocal demand of the two countries for each other's products. An examination of Table will make the meaning of the algebraic expression clear.

Table 7.5

Kings of goods	A	B	C	D	E	F	G	H	I	J	K	L
Real cost per unit in Country I expressed in ($a_1, b_1, c_1,$)	30	30	30	30	30	30	30	30	30	30	30	30
Unit of labor in country II (a_2, b_2, c_2)	55	50	46	40	32	30	27	25	20	15	12	10

If we assume that money wages are the same in both the countries, we can easily say which goods will be exported and which imported. Country I will export goods A to E and Country II will export goods L to G. It depends upon the reciprocal demand whether or not this situation maintains equilibrium in balance of payments.

More than Two Countries: Though the Ricardian model consists of two countries only, the theory is equally applicable to a situation in which more than two countries participate. Each country will specialize in the commodity or commodities in the production of which It has comparative advantage over the others and import from other countries goods which can be produced domestically only at a comparative disadvantage.

A country may import a commodity from more than one country just as it exports a commodity to more than one country. Assume that the intel11ational price of commodity X is $ 100 per unit. Now, all countries that can produce at a cost of less than $ 100 per unit, can export X However, the gains to the different exporting countries may vary. The country with the least production cost will gain the maximum (per unit of export) and vice versa. All countries with costs of production of over $ 100 per unit of X will gain by importing it rather than producing domestically at a higher cost. The extent of gain from import also may vary between the various importing countries. The gain (per unit) will be the maximum for the importing country with the highest domestic cost of production of X and vice versa.

Variable Costs of Production: Ricardo assumed a constant cost of production. The removal of the assumption of constant costs and the introduction of variable costs do not, however, change the substance of the comparative cost theory, It should, however, be noted that, although the consideration of congiti5.ms of increasing costs calls for no

basic. modifications of the them)', production under conditions of increasing costs does - prevent international specialization from developing to the extent that it would under constant costs, and consequently reduces the potential gains from trade", Production under conditions of decreasing costs, on the other hand, tends to widen national costs differentials and also the limits of the term of trade.

Non-Competing Groups: The Ricardian theory assumed that labor in each country is homogeneous and perfectly mobile within the country. But, as a matter of fact, labopr force in any country consists of many different groups, i.e., the technical, skilled, semi-skilled and unskilled, and mobility between these groups is far from perfect. These distinct categories of labor with rather well marked differences in wages arc known as "non-competing" groups. The mere existence of such groups would not affect the theory of international trade provided that in each country the relative scale of wages was the same. But the relative scale of wages differs between countries due to factors like the relative abundance or scarcity of certain categories of labor and' this affects the pattern of trade. For instance, abnormally low wages for a particular category of labor in a country enables it to produce some commodity or commodities at a lower money cost than its competitors, even though it has no comparative advantage. Abnormally low wages of particular kind of labor thus act as substitute for real comparative advantage. The existence of non-competing groups within a country affects international trade only so far as the situation thus engendered is peculiar to that country.

Capital Charges: Taussig has pointed out that interest charges influence international trade in so far as different quantities of capital are used in the production of different commodities. Hence, like non-competing groups of labor, interest changes may also affect the cost of production and pattern of trade. A low rate of interest tends to give a country a comparative advantage to choose goods which are made with much capital; these tend to be exported from it. A high rate of interest correspondingly is a handicap on the export of these same goods and a stimulus to their import. However, high or low interest does not in itself act as an independent factor; it exercises an influence only so far as it enters to a greater degree in one commodity than in another. The conclusion is of essentially the same sort as that reached with regard to non-competing groups and differences of wages.

7.7.3 OPPORTUNITY COST THEORY

One of the main drawbacks of the Ricardian comparative cost theory was that it was based on the labor theory of value which stated that the value or price of a commodity was equal to the amount of labor time going into the production of the commodity. Gottfried Haberler gave a life to the comparative cost theory by restating the theory in term of opportunity costs in 1933.

The opportunity cost of a commodity is the amount of a second commodity that must be given up in order to release just enough factors of production or resources to be able to produce one additional unit of the first commodity) For. example, suppose that the resources required to produce one unit of commodity X are equivalent to the resources

required to produce 2 units of commodity Y Then, the opportunity cost of one unit of X is two units of Y

According to the opportunity cost theory, a nation with a lower opportunity cost for a commodity has a comparative advantage in that commodity and a comparative disadvantage in the other commodity. Suppose that the opportunity cost of one unit of X is 2 units of Y in country A and 1.5 unit of Y in country B. Then Country A must specialize in production of Y and import its requirements of X from B, and B should specialize in the production of X and import Y from A rather than producing it at home.

In the above analysis, we have assumed that Portugal would wish to maintain the pre-trade level of consumption of wine and England the pre-trade level of consumption of cloth. But the real situation may be different Consumption of these commodities by the respective countries under trade may be less or more than under autarchy so that community welfare could be maximized. It should be noted that as production takes place under conditions of-increasing costs, neither country will be entirely specialized, but at the point at which deal settles, there is no gain from additional trade and specialization.

To sum up the opportunity cost theory demonstrates that trade is beneficial as long as opportunity costs differ. The superiority of Haberler's approach is that it recognizes the existence of many different kinds of productive factors whereas Ricardo considered only labor. The opportunity cost theory tells us that even we discard the labor theory of value as being invalidated rely on the opportunity cost theory, the comparative cost theory is still valid/In short, the opportunity cost theory is a refinement of the Ricardian theory. As far as the basis of international specialization and trade are concerned, the logic behind the comparative cost approach and the opportunity cost approach are the same.

7.7.4 FACTOR ENDOWMENT THEORY

The Factor Endowment theory was developed by Swedish Economist Eli Heckscher and his student Bertil Ohlin. Paul Samuelson and Wolfgang Stolper have also made significant contributions to this theory.

The factor endowment theory consists of two important theorems, namely, the Heckscher-Ohlin theorem and the factor price equalization theorem. The Heckscher-Ohlin theorem examines the reasons for comparative cost differences in production and states that a country has comparative advantage in the production of that commodity which uses more intensively the country's more abundant factor. The factor price equalization theorem examines the effect of international trade on factor prices and states that free international trade equalizes factor prices between countries, relatively and absolutely, and thus serves as a substitute for international factor mobility

Heckscher-Ohlin Theorem: Heckscher and Ohlin have explained the basis of international trade in terms of factor endowments. The classical theory demonstrated that the basis of international trade was comparative cost difference. However, it made little attempt to explain the causes of such comparative cost difference. The alternative

formulation of the comparative cost doctrine developed by Heckscher and Ohlin attempts to explain why comparative cost differences exist internationally. They attribute international (and inter-regional) differences in comparative costs to:

a) Different prevailing endowments of the factors of production and
b) The fact that production of various commodities requires that the factors of production be used with different degrees of intensity. In short, it is difference in factor intensities in the production functions of goods along with actual differences in relative factor endowments of the countries which explains international differences in comparative cost of production.

Thus, in a nutshell, the Heckscher-Ohlin theory states that a country will specialize in the production and export of goods whose production requires a relatively large amount of the factor with which the country is relatively well endowed. In the Heckscher-Ohlin model, factors of production are regarded as scarce or abundant in relative terms and not in absolute terms. That is, one factor is regarded as scarce or abundant in relation to the quantum of other factors. Hence, it is quite possible that even if a country has more capital, in absolute units, than other countries, it could be poor in capital. A country can be regarded as richly endowed with capital only if the ratio of capital to other factors is higher when compared to other countries.

(i) In country A

           Supply of labor = 25 units
           Supply of capital = 20 units
           Capital-labor ratio = 0.8

(ii) In country B:

           Supply of labor = 12 units
           Supply of capital = 15 units
           Capital-labor ratio = 1.25

In the above example, even though country A has more capital in absolute terms, country B is more richly endowed with capital because the ratio of capital to labor in country A (0.8) is less than in country B (1.25).

The following diagram (Fig. 3.5) illustrates the pattern of world trade according to the Heckscher-Ohlin approach.
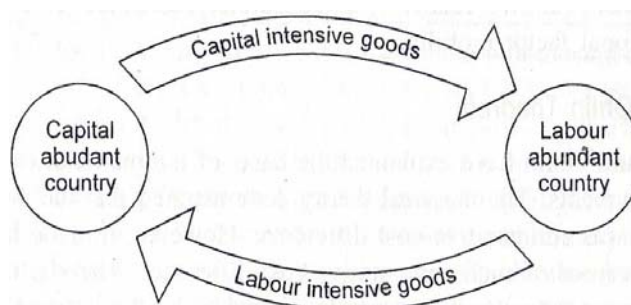

Fig. 7.3 Pattern of trade under Heckscher-Ohlin model

The two-country-two commodity model of Heckscher and Ohlin is based on a number of explicit and implicit assumptions. The important assumptions of the model are:

1. Both product and factor markets in both countries are characterized by perfect competition.
2. Factors of production are perfectly mobile within each country but immobile between tow cities.
3. Factors of production are of identical quality in both countries.
4. Factor supplies in each country are fixed.
5. Factors of production are fully employed in both the countries.
6. Factor endowments of one country vary from that of the other.
7. There is free trade between the countries, i.e. there are no artificial barriers to trade.
8. International trade is costless, i.e. there is no transport cost.
9. Techniques of producing identical goods are the same in both countries. Due to this, the same input will give the same quantity and quality of output in both the countries.
10. Factor intensity varies between goods. For instance, some goods are capital intensive (i.e., they require relatively more capital or their production) and some others are labor intensive (i.e., they require relatively more labor for their production).
11. Production is subject to the law of constant returns, i.e. the input-output ratio will remain constant irrespective of the scale of operation.

Factor Price Equalization Theorem : The factor price equalization theorem states that free international trade equalizes factor prices between countries relatively and absolutely, and this serves as a substitute for international factor mobility International trade increases the demand for abundant factors (leading to an increase in their prices) and decreases the demand for scare factors (leading to a fall in their prices) because when nations trade, specialization takes place on the basis of factor endowments. According to Ohlin, "The effect of inter-regional trade is to equalize commodity prices. Furthermore, there is also a tendency towards equalization of the prices of the factors of production, which means their better use and a reduction of the disadvantages arising from the unsuitable geographical distribution of the productive factors." Since from each region goods containing a large proportion of relatively abundant and cheap factors are exported, while goods containing a large proportion of scarce factors are imported, "...inter-regional trade serves as a substitute for such inter-regional factor movements".

Equalization of Commodity Prices: International trade tends to equalize the prices of internationally traded goods in all the regions of the world because trade causes the movement of commodities from areas where they are abundant to areas where they are scarce. This would tend to increase commodity prices where there was abundance and decrease prices where there was scarcity due to the redistribution of commodity supply between these two regions as a result of trade. International trade tends to expand up to the point where prices in all regions become equal. But perfect equality of prices can

hardly be achieved due to the existence of transport costs and due to the absence of free trade and perfect competition.

Factor Intensity Reversal: According to the Heckscher - Ohlin theory, the pattern of imitational trade is detenl1ined by factor endowments and factor intensities. But, changes in the relative factor endowments and factor intensities are possible over time. Such changes could change or even reverse the pattern of trade. A growth in factor supplies may eventually make the scarce factor abundant and vice verse. This relative change in factor endowments may change the commodity composition of trade.

The commodity composition of trade may be reversed also by changes in production functions. For example, a technological change may make a labor intensive good a capital intensive one. Again, same technological change or government policy in favor of labor intensive production techniques could make the production of certain capital intensive goods more labor intensive.

The factor endowment theory assumes that production function is decidedly biased, i.e., a given commodity uses a particular factor of production intensively. But it can be shown that production intensity need not be biased at all or that reversal in factor intensities is possible.

Factor reversals may occur when production functions are symmetrical and hence factor endowments do not necessarily determine which commodities a nation will export or import. The factor-reversal hypothesis, thus, tends to question the validity of the factor endowment theory in a static sense. As has been mentioned in the beginning, production functions could alter due to factors like technological change or change in government policies.

To find out whether such factor intensity reversals do take place in the real world, it is necessary to collect data on production techniques used in different countries. B.S. Minhas collected such statistics for 24 industries and 1<9 different countries and found factor reversals in five of the industries. Furthermore, he found a low correlation of + 0.328 between the capital-labor ratios of 20 industries existing in both the United States and Japan. Leontief and Moroney have raised some questions about how great the probability is that factor intensity reversals do take place in the real world by analyzing Minhas' statistics somewhat more closely. From these studies we can conclude that factor intensity reversals do take place, but they are not frequent enough to serve as a major empirically relevant explanation of the Leontief paradox.

7.7.5 COMPLEMENTARY TRADE THEORIES

There is a significant portion of the international trade that is not explained by the basic Heckscher-Ohlin model. Some theories have been propounded to explain different patterns of or reasons for trade which are not explained by the basic H-O model. These

theories, which are described as complementary trade theories or extensions of the H-O trade model are outlined below:

Intra-Industry Trade: One important pattern of international trade left unexplained by the H-O theory is the intra-industry trade or the trade in the differentiated products, i.e., products which are similar but not identical (for example, different models of motor cars). A large proportion of such trade takes place between the industrialized countries. There are two explanations for this.

One explanation for the intra-industry trade is that producers cater to 'majority' tastes within each country leaving the 'minority' tastes to be satisfied by imports.

Such minor market segments which are overlooked or ignored by the major market players but have potential for other players are referred to as market niches in marketing management parlance. Such niches often provide an opportunity for entering the market by new or small players.. For example, the large companies in the United States had ignored the market segments for small screen TVs, small cars, small horse-power tractors, etc. This provided a good opportunity for the Japanese companies, for whom these products had a large domestic market, to enter the US market. It may be noted that niche marketing has been a very successful international marketing strategy employed by Japanese companies.

Over a period of time, sometimes consumer tastes and preferences, and demand patterns may change' and a 'minor' market segment may become a large segment. Thus, the oil price hike substantially increased the demand for the fuel efficient compact cars in the US and the Japanese companies enormously benefited from it. Through shrewd marketing strategies a company could succeed, in many cases, in expanding a minor segment of the market into a large segment. Bases of International Trade

Further, it has also been observed, particularly with regard to the Japanese companies, that after consolidating their position in a market segment, with the strength and reputation they have built up, they may gradually move to other segments and expand their total market share.

Another reason for the failure of the basic H-O model to explain the intra-industry trade is, as Kindleberger and Lindert observe, "...to recognize the inadequacy of lumping factors of production into just capital, land and couple of types labor. In fact, there are many types and qualities of each. Further, there are factors specific to each sub-industry or even each firm. Heterogeneity is especially evident in the higher reaches of management and other rate skills." In Short, the H-O theory can be extended to the inter-industry trade if we recognize the existence within each industry of a number segment with distinctive characteristics and enlarge the definition of factor endowments to include such factors as technology, skill and management also. "Disaggregating the factors of production into finer groupings could add to the explanatory power of the H-O emphasis on factor proportions. Sectors of the economy are bound to look more different in their endowments once finer distinctions are made. In the extreme, endowments of factors of production that are specific to each sector can be very unequal across countries and very intensively used in their own sectors, thereby suggesting explanations for trade patterns.

Economies of Scale: The H-O model is based on the assumption of constant returns to scale. However, with increasing returns to scale (decreasing costs), i.e., when economies of scale exist in production, mutually beneficial trade can take place even when the two nations are identical in very respect.

In Fig.7.4, PPC represents the production possibility curves of both the Countries A and B (both the nations are assumed to have identical endowments and technology). The production possibility curve is convex to the origin implying economies of scale.
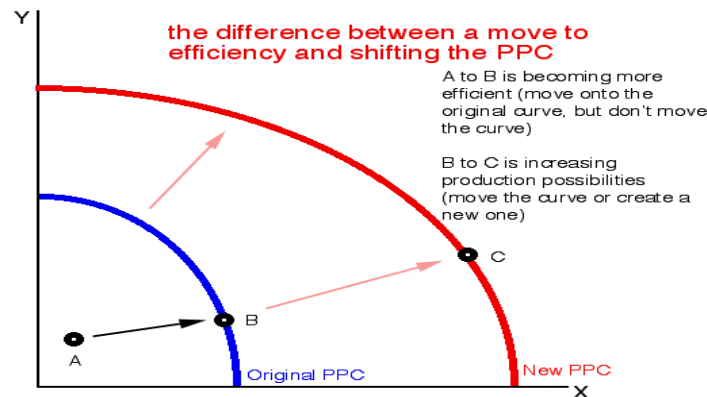

Fig. 7.4 Production Possibility Curves

Since production is subject to increasing returns to scale, it is possible to reduce the cost of production if one country specializes in the production of wheat and the other rice. For example, Country A may specialize completely in the production of wheat (i.e., move from E to P in production) and country B may move production from E to C, specializing completely in rice, By doing so both nations gain 10 units of wheat and 10 units of rice, as shown by the new equilibrium point N on the indifference curve IL although the production possibilities of both the nations remain the same.

Technological Gaps and Product Cycles: There are two models which explain international trade based on technological change, viz.
        (i)   The Technological Gap Model, and
        (ii)   The Product Cycle Model.

In the case of both the models, the key element that causes the trade is the time involved in acquiring the technology by different nations.

According to the **Technological Gap Model** propounded by Posner, a great deal of trade among the industrialized countries is based on the introduction of new products and new production processes. In other words, technological innovation forms the basis of trade. The innovating firm and nation get a monopoly through patents and copyrights or other factors which turns other nations into importers of these products as long as the monopoly remains. However, as foreign producers acquire this technology they may become more competitive than the innovator because of certain favorable factors (like low labor cost, for example). When this happens, the innovating country may turn into an

importer of the very product it had introduced. Firms in the advanced countries, however, strive to stay ahead through frequent innovations which make the earlier products obsolete.

The **Product Cycle Model** developed by Vernon represents a generalization and extension of the technological model. According to this model an innovative product is often first introduced in an advanced country like the USA (because of certain favorable factors like a large market, ease of organizing production, etc.). The product is then exported to other developed countries. As the markets in these developed countries enlarge, production 'facilities are established there. These subsidiaries, in addition to catering to the domestic markets, export to the developing countries and to the United States. Later, production facilities are established in the developing countries. They would then start exports to the United States-TV receiving sets is one such example.

Availability and Non-Availability: The availability approach to the theory of international trade seeks to explain the pattern of trade in terms of domestic availability and non-availability of goods. Availability influences trade through both demand and supply forces. In a nutshell, the availability approach states that a nation would tend to import those commodities which are not readily available domestically and export those whose domestic supply can be easily expanded beyond the quantity needed to satisfy the domestic demand.

Kravis argues that Leontiefs findings that the United States' exports have a higher labor content and a lower capital content than United States' imports can be explained better and more simply by the availability factor. Goods that happen to have high capital content are being bought abroad because they are not available at home. Some are unavailable in absolute sense (for example, diamonds), others in the sense that an increase in output can be achieved only at much higher costs (that is the domestic supply is inelastic). When availability at home is due to lack of natural resources (relative to demand), the comparative advantage argument is perfectly adequate.

According to Kravis, there are other facets of the availability explanation of commodity trade pattern that cannot be so readily subsumed under the 'comparative advantage'. One of these is the effect of technological change. Historical data for the United States suggest that exports have tended to increase most in those industries which have new or improved products that are available only in the United States or in a few other places, at the most. Product differentiation and government restrictions are some of the other factors tending to increase the proportion of international trade that represents purchases by the importing country of goods that are not available at home.

According to Kravis, there are, thus, four bases of the availability factor, namely, (i) natural resources, (ii) technological progress, (ii) product differentiation, and (iv) government policy.

The first three of the four bases-natural resources, technological progress and product differentiation-probably tend, on the whole, to increase the volume of international trade. The absence of free competition, a necessary condition for the unfettered operation of the law of comparative advantage, tends to limit trade to goods that cannot be produced by the importing country, argues Kravis. The most important restrictions on international

competition are those imposed by the governments and by cartels. Those imports that are unavailable or available only at formidable costs are subject to the least government interference. Kravis thinks that the quantitative importance of the availability factor in international trade must be considerable. This appears to apply especially to half of world trade that consists of trade between the industrial areas, on the one hand, and primary producing areas, on the other.

The availability approach has, undoubtedly, considerable merit in its explanation of the pattern of trade.

7.8 REVIEW QUESTIONS
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1. Explain how foreign exchange rates are determined.
2. Discuss the purchasing power parity theory
3. What are the objectives and methods of exchange control?
4. Write notes on the following:
   - Foreign exchange
   - Foreign exchange market
   - Spot and forward exchange rates
   - Arbitrage
   - Balance of Payments theory
   - Stable exchange rate system
   - Flexible exchange rate system
   - Exchange rate classifications.
5. Critically examine the Comparative Cost Theory.
6. "If theories, like girls, could win beauty contests, comparative cost theory would certainly rate high in that it is an elegantly logical structure". Discuss.
7. Give a brief account of the elaborations and refinements of the classical theory .
8. Explain the opportunity cost theory.
9. Discuss the factor endowment theory.
10. Evaluate the Heckscher-Ohlin model.
11. Write notes on the following:
    - Non-competing groups
    - Factor endowment
    - Factor intensity reversals
    - Heckscher-Ohlin theorem
    - Factor price equalization theorem.
    - Leontief paradox
    - Intra-industry trade
    - Technological-gap model
    - Product Cycle Theory
    - Availability and non-availability approach

INFLATION, INFLATIONARY GAP AND MEASURES TO CONTROL INFLATION

Structure

8.1   Introduction to Inflation

8.2   Inflationary Gap

8.3   Demand Pull or Monetary Theory of Inflation

8.4   Cost Push Inflation

8.5   Other Theories of Inflation

8.6   Phillips Curve: The Relation between Unemployment and Inflation

8.7   Measures to Control Inflation

8.8   Measures of Prices and Inflation

8.9   Monetary and Fiscal Policies in Developing Countries.
      8.9.1 Monetary Policy
      8.9.2 Fiscal Policy
      8.9.3 Fiscal and Monetary Interaction

8.10 Review Questions

8.1 INTRODUCTION TO INFLATION

Inflation is a highly controversial term which has undergone modification since' II was first defined by the neo-classical economists. They meant by it a galloping rise in prices as it result of the excessive increase in the quantity of money. They regarded inflation "as a destroying disease born out of lack of monetary control whose results undermined the rules of business, creating havoc in markets and financial ruin of even the prudent."

But Keynes in his General Theory allayed all such fears. He did not believe like the neo-classicists that there was always full employment in the economy which resulted in hyper-inflation with increases in the quantity of money. According to him, there being underemployment in the economy, an increase in the money supply leads to increase in aggregate demand, output and employment. Starting from a depression, as the money supply increases, output at first rises proportionately but as aggregate demands, output and employment rise further, diminishing returns start and certain bottlenecks appear and

prices start rising; This process continues till the full employment level is reached. The rise in the price level during this period is known as bottleneck inflation or "semi inflation". If the money supply increases beyond the full employment level, output ceases to rise and prices rise in proportion with the money supply. This is true inflation, according to Keynes.

Keynes's analysis is subjected to two main drawbacks. First, it lays emphasis on demand as the cause of inflation, and neglects the cost side of inflation. Second, it ignores the possibility that a price rise may lead to further increase in aggregate demand which may, in term, lead to further rise in prices.

However, the types of inflation during the Second World War, in the immediate post-war period, till the middle of the 1950s were on the Keynesian model based on his theory of excess demand. "In the latter 1950s, in the United States, unemployment was higher than it had been in the immediate post-war period, and yet prices still seemed to be rising, at the same time, the war time fears of postwar recession had belatedly been replaced by serious concern about, the problem of inflation. The result was a prolonged debate. . . On the one side of the debate was the 'cost-push' school of thought, which maintained that there, was no excess, demand. . . On the other side was the "demand-pull" school. . Later, in the United States, there developed a third school of thought, associate with the name of Charles Schultz, which advanced the sectoral 'demand-shift theory' of inflation. .

While the debate over cost-push versus demand-pull was raging in the United States, a new and very interesting approach to the problem of inflation and anti-inflationary policy was developed by A.W. Phillips."

In the present chapter, we shall study all theories mentioned here, besides Keynes's theory of the inflationary gap. But before we analyze them, it is instructive to know about the meaning of inflation.

Meaning of Inflation: To the neo-classical and their followers at the University of Chicago, inflation is fundamentally a monetary phenomenon. In the words of Friedman, "Inflation is always and everywhere a monetary phenomenon . . . and can be produced only 'by a more rapid increase in the quantity of money than output." But economists do not agree that money supply alone is the cause of inflation. As pointed out by Hicks, "Our present troubles are not of a monetary character." Economists, therefore, define inflation in terms of a continuous rise in prices. Johnson defines "inflation as a sustained rise" in prices. Brooman defines it as "a continuing increase in the general price level." Shapiro also defines inflation in a similar vein "as a persistent and appreciable rise in the general level of prices." Dernberg and McDougall are more ,explicit when they write that "the term usually refers to a continuing rise in prices as measured by an index such as the consumer price index (CPI) or by the implicit price deflator for gross national product."

However, it is essential to understand that a sustained rise in prices may be of various magnitudes. Accordingly, different types have been given to inflation depending upon the rate of rise in prices.

1. **Creeping Inflation**. When the rise in prices is very slow like that of a snail Ii, or creeper, it is called creeping inflation. In terms of speed, a sustained rise in prices of animal increase of less than 3 per 'cent per annum is characterized as creeping inflation. Such an increase in prices is regarded safe and essential for economic growth.

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2. **Walking or Trotting Inflation**. It can be defined as when prices rise moderately and the annual inflation rate is a single digit. In other words, the rate of rise in prices is in the Intermediate range of 3 to 7 per cent per annum or less than 10 per cent. Inflation lit this rate is a warning signal for the government to control it before it turns into running Inflations.

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3. **Running Inflation**. When prices rise rapidly like the running of a horse, at a rate of speed of 10 to 20 per cent per annum, it is called running inflation. Such inflation affects the poor and middle class.

4. **Hyper inflation**. When prices rise very fast at double or triple digit rates form more than 20 to 100, per cent per annum or more, 'lt is usually called runaway or galloping inflation. It is also characterized as hyperinflation by certain economists. In reality, hyperinflation is a situation when the rate of Inflation becomes immeasurable and absolutely uncontrollable. Prices rise many limes every day. Such a situation brings a total collapse of the monetary system because of the continuous fall in the purchasing power of money.

8.2 THE INFLATIONARY GAP

In his pamphlet "How, to Pay for the War" published in 1940, Keynes explained the concept of the inflationary gap. It differs from his views on inflation given in the General Theory. In the General Theory, he started with underemployment equilibrium. But in How to Pay for the War, he began with a situation of full employment in the economy. He defined an inflationary gap as an excess of planned expenditure over the available output at pre-inflation or base prices. According to Lipsey, "The inflationary gap is the amount by which aggregate expenditure would exceed aggregate output at the full employment level of income." The classical economists explained inflation as mainly due to increase in the quantity of money, given the level of full employment. Keynes, on the other hand, ascribed it to the excess of expenditure over income at the full employment level. The larger the aggregate of expenditure, the larger is the gap and the more rapid is the inflation. Given a constant average propensity to save, rising money incomes at full employment level would lead to an excess of demand over supply and to a consequent inflationary gap. Thus Keynes used the concept of the inflationary gap to show the main determinants that cause an inflationary rise of prices.

The inflationary gap is explained with the help of the following example:

Suppose the gross national product at pre-inflation prices is Rs. 200 crore. Of this Rs 80 crore is spent by the Government. Thus Rs 120 (Rs 200-80) crore worth of output is available to the public for consumption at pre-inflation prices. But the gross national income at current prices at full employment level is Rs 250 crore. Suppose the government taxes away Rs. 60 crore, leaving Rs. 190 crore as disposable income. Thus Rs. 190 crore is the amount to be spent on the available output worth Rs. 120 crore, thereby creating an inflationary gap of Rs 70 crore.
.
This inflationary gap model is illustrated as under:

1. Gross National Income at current prices	Rs 250 Cr.
2. Taxes	Rs 60 Cr.
	-------------
3. Disposable Income	Rs 190 Cr
	---------------
4. GNP at pre-inflation prices	Rs 200 Cr.
5. Government expenditure	Rs. 80 Cr.
	---------------
6. Output available for consumption at pre-inflation prices	Rs 120 Cr.

Inflationary gap (Item 3-6) =	Rs 70 Cr.

In reality, the entire disposable income of Rs 190 crore is not spent and a, part of it is saved. If, say, 20 per cent (Rs 38 cores) of it is saved, then Rs 152 crore (Rs 190-Rs 38 crore) would be left to create demand for goods worth Rs" 120 crore. Thus the actual inflationary gap would be Rs 32 (Rs 152-120) crore instead of Rs 70 crore.

Article I.   How can the inflationary gap be wiped out?

The inflationary gap can be wiped out by, increase in savings so that the aggregate demand is reduced. But this may lead to deflationary tendencies. Another solution is to raise the value of available output to match the disposable income. As aggregate demand increases, businessmen hire more labor to expand output. But there being full employment at the current money wage, they offer higher money wages to induce more workers to work for them. As there is already full employment, the increase in money wages leads to proportionate rise in prices. Moreover, output cannot be increased during the short run because factors are already fully employed. So the inflationary gap can be closed by increasing taxes and reducing expenditure. Monetary' policy can also be used to decrease the money stock. But Keynes was not in favor of monetary measures to control inflationary pressures within the economy.

Article II.   Its Criticisms

The concept of inflationary gap has been criticized by Friedman, Koopmans, Salant, and other economists.

1. The analysis of inflationary gap is based on the assumption that full employment prices are flexible upward. In other words, they respond to excess demand in the market for goods. It also assumes that money wages are sticky when prices are rising, but the share of profits in GNP increases. So this concept is related to excess-demand inflation' in which there is profit inflation. This has led to the mixing up of demand and cost inflations.

2. Bent Hansen criticized Keynes for confining the inflationary gap to the goods market only and neglecting the role of the factor market. According to him, an inflationary gap is the result of excess demand in the goods market as well as in the factor market.

3. The inflationary gap is a static analysis. But the inflationary phenomena are dynamic. To make them dynamic, Keynes himself suggested the introduction of time lags concerning receipts and expenditures of income. Koopmans has developed relationships between eggs and the rate of price increase per unit of time. He has shown with the help of spending lags and wage-adjustment lags that the speed of inflation becomes smaller, that is the inflationary gap is narrowed.

4. Holzman has criticized Keynes for applying the multiplier technique to a full employment situation. According to him, the multiplier technique is not adequate in periods of full employment and inflation. It abstracts from changes in the distribution of income. In a full employment situation, the share of one group in the national output can only be increased at the expense of another.

5. Another weakness of the inflationary-gap analysis is that it is related to flow concepts, such as current income, expenditure, consumption, and saving. In fact, the increase in prices at the full employment level is not confined to prices of current goods alone. But they also affect the prices of goods already produced. Further, the disposable income which is the difference between current income and taxes may include idle balances from the income of previous periods.

Article III.   Its Importance:

Despite these criticisms the concept of inflationary gap has proved to be of much importance in explaining rising prices at full employment level and policy measures. in controlling inflation.

It tells that the rise in prices, once the level of full employment is attained, is due to excess demand generated by increased expenditures. But the output cannot be increased because all resources are fully employed in the economy. This leads to inflation.

As a policy measure, it suggests reduction in aggregate demand to control inflation. For this, the best course is to have a surplus budget by raising taxes. It also favors saving incentives to reduce consumption expenditure. "The analysis of the inflationary gap in terms of such aggregates as national income, investment outlays and consumption expenditures clearly reveals what determines public policy with respect to taxes, public expenditures, savings campaigns, credit control, wage adjustment-in short, an ,the conceivable anti-inflationary measures affecting the propensities to consume, to save and to Invest which together determine the general price level."

8.3 DEMAND-PULL OR MONETARY THEORY OF INFLATION

Demand-pull inflation or excess demand inflation is the traditional and most common type of inflation. It takes place when aggregate demand is rising while the available supply of goods is becoming less. Goods may be in short supply either because resources are fully utilized or production cannot be increased rapidly to meet the increasing demand. As a result, prices begin to rise in response to a situation often described as "too much money chasing too few goods."

There are two principal theories about the demand-pull inflation that of the Monetarists and the Keynesians. We shall also discuss a third one propounded by the Danish economist, Bent Hansen.

1. Monetarist View or Monetary Theory of Inflation: The monetarist's emphasis the role of money as the principal cause of demand-pull inflation: They contend that inflation is always a monetary' phenomenon. Its earliest explanation is to be found in the simple quantity theory of money. The monetarists employ the familiar identity of Fisher's Equation of Exchange:

$$MV=PQ$$

where M is the money supply, V is the velocity of money, P is the price level, and Q is the level of real output.

Assuming V and Q as constant, the price level (P) varies proportionately with the supply of money (M). With flexible wages, the economy was believed to operate at full employment level. The labor force, the capital stock, and technology also changed only slowly over time. Consequently, the amount of money spent did not affect the level of real output so that a doubling of the quantity of money would result simply in doubling the price level. Until prices had risen by this proportion, individuals and firms would have excess cash which they would spend, leading to rise in price. So inflation proceeds at the same rate at which the money supply expands. In this analysis the aggregate supply is assumed to be fixed and there is always full employment in the economy. Naturally, when the money supply increases it creates more demand for goods but the supply of goods cannot be increased due to the full employment of resources. This leads to rise in

prices. But it is a continuous and prolonged rise in the money supply that will lead to true inflation.

Friedman's View- Modern quality theorists led by Friedman hold that "inflation is always and everywhere a monetary Phenomenon that arises from a more rapid expansion in the quantity of money than in total output." He argues that changes in the quantity of money will work through to cause changes in nominal income. Inflation everywhere is based On an increased demand for goods and services as people try to spend their cash balances. Since the demand for money is fairly stable, this excess' spending the outcome of a rise in the nominal quantity of money supplied to the economy. So inflation is always a, monetary phenomenon.

Next Friedman discusses whether an increase in money supply will go first into output or prices. Initially, when there monetary expansion, the nominal income of the people increases. Its immediate-ate effect will be to increase the demand for goods. This will raise the demand for labor. Workers will settle for higher wages. Input costs and Prices will rise. Profit margins will reduce and the prices of products will increase. In the beginning: people do not expect prices to continue rising. They regard the price rise a temporary and expect prices to fall later on. Consequently, they end to increase their money holdings and the price rise is less than the rise In nominal money supply. 'Gradually people tend to readjust their money holdings. Prices then rise than in proportion to the money supply. The precise rate at which Prices rise for a given rate of increase in the money supply depends on such factors as past price behavior, current changes in the structure of labor, product markets and fiscal policy. Thus, according to Friedman, the monetary expansion works through output before inflation starts.

2. Keynes' Theory of Demand-Pull Inflation: Keynes and his followers emphasize the increase in aggregate demand as the source of demand-pull inflation. There may be more than one source of demand. Consumers want more goods arid services for consumption purposes. Businessman wants more inputs for investment. Government demands more goods and services to meet civil and military requirements of the country. Thus the aggregate demand comprises consumption, investment and government expenditures. When the value of aggregate demand exceeds the value of aggregate supply at the full employment level, the inflationary gap arises. The larger the gap between aggregate demand and aggregate supply, the more rapid the inflation. Given a constant average propensity to save, rising money incomes at the fully employment level would lead to an excess of aggregate demand over aggregate supply and to a consequent inflationary gap. Thus Keynes used the notion of the inflationary gap to show an inflationary rise in prices.

The Keynesian theory is based on a short-run analysis in which prices are assumed to be fixed. In fact, price is determined by on-monetary forces. On the other hand, output is assumed to be more variable which is determined largely by changes in investment .spending. The Keynesian chain of causation between changes in investment money income and in prices is an indirect one through the rate of interest rate. When the quantity of money increases, its effect is on the rate of interest, which tends to fall. A fall in the interest would, in turn, increase investment which would raise aggregate demand. A rise

in aggregate demand would first affect only output and not prices so long there are unemployed resources. But a sudden large increase in the aggregate demand would encounter bottlenecks when resources are still unemployed. The supply bf some factors might become inelastic or others might be in short supply and non-substitutable. This would lead to increase in marginal costs and hence in prices. Accordingly prices would rise above average unit cost and profits would increase rapidly which, in turn, would bid up wages owing to trade pressures. Diminishing return might also set in some industries. As full employment is reached the elasticity of supply of output falls to zero and prices rise with out any increase in output. Any further increase in expenditure would lead to excess demand, and to more than proportional increase in prices. Thus, in the Keynesian view so long as there is unemployment, all the change in income is in output, and once there is full employment, all is in prices.

3. Bent Hansen's Excess Demand Model: The Danish economist Bent Hansen has presented an explicit dynamic excess demand model of inflation which incorporates two separate price levels, one for the goods market and other for the factor (labor) market.

Its Assumptions: His dynamic model for demand inflation is based on the following assumptions:

- There is perfect competition-in both the goods market and the factor market.
- Price at the moment will persist in the future.
- Only one commodity is produced with the help of only one variable factor, labor services.
- The quantity of labor services per unit of time is a given magnitude.
- There is a fixed actual level of employment and consequently of output which is full employment.

8.4 COST-PUSH INFLATION

Cost-push inflation is caused by wage increases enforced by unions and profit increases by employers. The type of inflation has not been a new phenomenal and was found even during the medieval period. 16 But it was revived in the 1950S and again in the 1970s as the principal cause of inflation. Cost-push inflation is caused by wage-push, and profit-push to prices.

The basic cause of cost-push inflation is the rise in money wages money rapidly than the productivity of labor. In advanced countries, trade unions arc. very powerful. They press employers to grant wage increases considerably in excess of increases in the productivity of labor, thereby raising the cost of production of commodities. Employers, in turn, raise prices of their products. Higher wages enable workers to buy as much as before 'in spite of higher prices. On the other hand, the increase in prices induces unions to demand still higher wages. In this way, the wage-cost spiral continues, thereby leading to cost-push or wage-push inflation.

Cost-push inflation may be further aggravated by upward adjustment of wages to compensate for rise 'in the cost of living index. This is usually done in either of the two ways. First; unions include an escalator clause" in contracts with employers whereby money wage rates are adjusted upward each time cost of living index increases by some specified number of percentage points. Second, In case where union contracts do not have an escalator clause, the cost of living index is used as the basis for negotiating larger wage increases at the time of fresh contract settlements.

Again, a few sectors of the economy may be affected by money wage increases and prices of their products may be rising. In many cases, their products are used as inputs for the production of commodities in other sectors. As a result, production costs of other sectors will rise and thereby push up the prices of their products. Thus wage-push inflation in a, few sectors of the economy may soon lead to inflationary rise in prices in the entire economy.

Further, an increase in the price of domestically produced or imported raw materials may lead to cost-push inflation. Since raw materials are used as inputs by the manufacturers of finished goods, they enter into the cost of production of the latter. Thus a continuous rise in the prices of raw materials tends to set off a cost-price-wage spiral.

Another cause of cost-push inflation is profit-push inflation. Oligopolies and monopolist firms raise the price of their products to offset the rise in labor and production costs so as to earn higher profits. There being imperfect competition In the case of such firms, they are able to "administer price" of their products. In an economy in which so called administered prices abound there is at least the possibility that these prices may be administered upward faster than cost in an attempt to earn greater profits. To the extent such a process is widespread profit-push inflation will result. Profit-push inflation is, therefore, also called administered-price theory of inflation or price-push inflation or sellers' inflation or market-power inflation.

But there are certain limitations on the power of firms to raise their profits. They cannot raise their selling prices to increase their profit-margins if the demand for their products is stable. Moreover, firms are reluctant to increase their profits every time unions are successful in raising wages. This is because profits of a firm depend not only on price but on sales and unit costs as well, and the latter depend in part on prices charged. .So firms cannot raise their profits because their motives are different from unions. Lastly, profits form only a small fraction of the price of the product and a once-for-all increase in profits is not likely to have much impact on prices. Economists, therefore, do riot give much importance to profit-push inflation as an explanation of cost-push inflation.

The cost-push theory has been criticized on three issues. First, cost-push inflation is associated with unemployment. So the monetary authority is in a' fix because to control inflation it will have to tolerate unemployment. Second, if the government is committed to a policy of full employment, it will have to tolerate wage increases by unions, and hence inflation. Lastly, if the government tries to increase aggregate demand during

periods of unemployment, it may lead increase in wages by trade union action instead of raising output and employment.

Demand-Pull versus Cost-Push Inflation

There has been a lot of controversy among the economists over the issue whether inflation is the consequence of demand-pull or cost-push. According to F. Machlup, "The distinction between cost-push and demand-pull inflation is unworkable, irrelevant or even meaningless.

However, the debate between demand-pull and cost-push arises mainly fro the difference between the policy recommendations on the two views. Recommendations on demand-pull inflation are related to monetary and fiscal measures which lead to a higher level of unemployment. On the other hand, cost-push aims at controlling inflation without unemployment through administrative controls on price increases and incomes policy.

Machlup argues that the controversial issue is partly who is to be blamed for inflation and partly what policies should be pursued to avoid a persistent increase in prices. If demand-pull is the cause of inflation then the government blamed for overspending and taxing little, and the central bank is blamed for granting interest rates too low and for expansion of too much credit. On the other hand if cost-push is the cause of inflation then trade unions are blamed for excessive wage increases, industry is blamed for granting them, big firms for raising administered prices of materials and goods to earn higher and government. It is blamed for not persuading or forcing unions and industry from raising their wages and profits. But, trade unions reject the wage-push theory because they would not like to be blamed for inflation. They also reject the demand-pull view because that would prevent the use of monetary and fiscal measures to Increase employment. Thus they hold only big firms responsible for inflationary rise in prices through administered prices. But there is no conclusive proof that the profit margins and profit rates of firms have been increasing year after year.

Machlup further points out that there is a group of economists who holds that cost-push is no cause of inflation, because, without an increase in purchasing power and demand, cost increases would lead to unemployment." On the other hand, there is another group of economists who believes that demand-pull is no causes of inflation; it takes a cost-push to produce it.

Thus it is difficult to distinguish demand-pull from cost-push inflation in practice and it is easy to say that inflation has been .caused by cost-push when, in fact, demand-pull may be the cause. As pointed out, by Samuelson and Solow, "The trouble is that we have no normal initial standard from which to measure, 110 price level which has always existed to which every one has adjusted." It is also suggested that identification of demand-pull or cost-push inflation can be made with reference to timing. If prices increase first, it is a demand-pull Inflation, and if wages increase follow, it is cost-push inflation.

Like Machlup, Johnson regards the issue of demand-pull versus cost-push as "largely a spurious one." He assigns three reasons for this.

1. First, the proponents of the two theories fail to investigate the monetary assumptions on which the theories are based. Neither the demand-pull nor the cost-push theory can generate a sustained inflation unless monetary policy followed by the monetary theory is taken into consideration under varying circumstances. The two theories are, therefore, not independent and self-contained but rather theories concerning the mechanism of inflation in a monetary environment that permits it.
2. The second reason is based on differences between the two theories about their definitions of full employment. If full employment is defined as a situation when the demand for goods is just sufficient to prevent prices from rising or falling, then it is a case of demand-pull inflation which is associated with excess demand for goods and labor. Full employment here means overfull employment. On the other hand, if full employment is defined as the level of unemployment at which the percentage of the unemployment just equals the number of persons seeking jobs, then inflation is caused by forces other than excess demand. Such forces cause cost-push inflation.
3. In the third place, it is extremely difficult to devise a test capable of determining whether a particular inflation is of the demand-pull or cost-push type.

We may conclude with Lipsey: "Debate continues on the balance between demand and cost as forces causing inflation in the contemporary inflationary climate. The debate is important because the policy implications of different causes of inflation are different, and different target variables need to be controlled, according to the cause. Until the causes of inflation are fully under-stood, there will be debate about policies."

8.5 OTHER THEORIES OF INFLATION

Mixed Demand-Pull Cost-Push Inflation: Some economists do not accept this dichotomy that inflation is either demand pull or cost-push. They hold that the actual inflationary process contains some elements of both. In fact, excess demand and cost-push forces operate simultaneously and interdependently in an inflationary process. Thus inflation is mixed demand-pull and cost-push when price level changes reflect upward shifts in both aggregate demand and supply functions.

But it does not mean that both demand-pull and cost-push inflations may start simultaneously. In fact, an inflationary process may begin with either excess demand or wage-push. The timing in each case may be different. In demand-pull inflation, price increases may precede wage increases, while it may 'be the other way round in the case of cost-push inflation. So price increases may start with either of the two forces, but the inflationary process cannot be sustained in the absence of the other forces.

Suppose an inflationary process begins with excess demand with no cost push forces at work. Excess demand will raise prices which will in due course pull up money wages. But the rise in money wages is not the result of cost-push forces. Such a mixed inflation

will lead to sustained rise in prices. This sustained increase in prices has also been the result of the increase in money wage rates due to increase in aggregate demand at the full employment level. When prices rise, producers are encouraged to increase output as their profits rise with increased aggregate demand. They, therefore, raise the demand for labor thereby increase money wages which further lead to increase in demand for goods and services So long as the demand for output continues to raise money incomes, Inflationary pressure's will continue.

Consider an inflationary process that may begin from the supply side due to increase in money wage rates. This will raise prices every time there is a wage-push. But the rise in prices will not be sub stained if there is no increase in demand.

The cost-push inflationary process will be self-sustaining only if every wage-push is accompanied by a corresponding increase in aggregate demand. Since every cost-push in accompanied by a fall in output and employment along with I' price increase, it is likely that the government will adopt expansionary monetary and fiscal policies in order to check the fall in output and employment. In 'this way, cost-push will lead to a sustained inflationary process because the government will try to achieve full employment by raising aggregate demand which will, in turn, lead to further wage-push and so on.

Sectoral or Demand-Shift Inflation: Sectoral or demand-shift inflation is associated with the name of Charles Schulz who in a paper, entitled "Recent Inflation in the United States", pointed but price increases from 1955-57 were caused by neither demand-pull nor cost-push but by sectoral shifts in demand. Schultz advanced his thesis with reference the American economy but it has now been generalized in the case of modern industrial economies.

Schultz begins his theory by pointing out that prices and wages are flexible upward in response to excess demand but they are rigid downward. Even if aggregate demand is not excessive, excess demand in some sectors of economy and deficient demand in other sectors, will still lead to a rise in general price level. This is because prices do not fall in the deficient-demand sectors, there being downward rigidity of prices. But-prices rise in the excess demand sectors and remain constant in the other, sectors. The net effect is ' overall rise in the price level.

Moreover, increase in prices in excess-demand industries (or sectors) spread to deficient-demand industries through the prices of materials and wages of labor. Excess demand in particular industries will lead to a. gene, rise in the price of intermediate materials, supplies and components. The rising prices of materials will spread to demand-deficient industries which use them as inputs. They will, therefore, raise the-prices of their products in order protect their profit margins.

Not only this, wages will also be bid up in excess demand industries, II wages in demand-deficient industries win follow the rising trend. Because wages in the latter industries are not raised they will lead to dissatisfaction among workers, thereby leading to inefficiency

and fall in productivity. The rising wage rates, originating in the excess demand industries, spread through out the economy.

The spread of wage increases from excess demand industries to other parts the economy increases the rise in the price of semi-manufactured materials all components. Other things remaining the same, the influence of increasing costs will be larger at the final stages of production. Thus producers of finished good will face a general rise in the level of costs, thereby leading to rising prices. They may happen even in case of those industries which do not have excess demand for the products.

Another reason for demand-shift inflation in modern industrial economies is increase in the relative importance of overhead costs. This increase is due to two factors. First, there is an increase in overhead staff at the expense of production workers. According to Schultz, automation of production methods, instrumentation of control functions, mechanization of office and accounting procedures, self-regulating materials, handling equipments, etc. lead to the growth of professional and semi-professional personnel in supervising, operating and maintenance roles. Similarly, the growth of formal research and development (R & D) as a separate function not only alters the production processes but also the composition of the labor force required to service them.

The second reason for the rise in overhead costs is that the ratio of relatively short-lived equipment to long-lived plant rises substantially. As a result, depreciation as a proportion of total cost increases. The ultimate effect of an increasing proportion of overhead costs in the total cost is to make average costs more sensitive to variations in output. The distinguishing characteristic of the demand-shift inflation is a continued investment boom in the face of stable aggregate output. All industries expand their capacity and their employment of overhead personnel; yet only a few enjoy a concomitant rise in sales. So producers facing shrinking profit margins try to recover a part of their rising costs in higher prices.

Thus demand-shift inflationary process "arises initially out of excess demand in particular industries. But it results in a general price rise only because of the downward rigidities and cost-oriented nature of prices and wages. It is not characterized by an autonomous upward push of costs nor by an aggregate excess demand. Indeed its basic nature is 'hat it cannot be understood in terms of aggregates alone. Such inflation is the necessary result of sharp changes in the composition: of demand, given the structure of prices and wages in the economy."

This theory was evolved by Schultz to examine the nature of the gradual inflation to which the American economy had been subject during the period 1955-57. It has since been generalized in the case of modern industrial economies. However, Johnson has criticized it for two reasons.

- First, empirical evidence has failed to confirm Schultz's proposition that sectoral price increases are explained by upward shifts of demand.

- Second, it suffers from the same defects as the two rival theories of demand pull and cost-push, it seeks to challenge. That is, its "failure to investigate the monetary preconditions for inflation, and imprecision respecting the definitions of full employment and general excess demand.

Structural Inflation: The structuralist school of South America stresses structural rigidities as the principal cause of inflation in such developing countries as Argentina, Brazil and Chile. Of course, this type of inflation is also to be found in other developing countries.

The structuralist holds the view that inflation is necessary with growth. According to this view, as the economy develops, rigidities arise which lead structural inflation. In the initial phase, there are increases in non-agricultural incomes 'accompanied, by high growth rate of population that tend to increase the demand for goods. In fact, the pressure of population growth and rising urban incomes would tend to raise through a chain reaction mechanism, first the prices, of agricultural goods, second, the general price level, and third, wages. Let us analyze them.

As the demand for agricultural goods rises, their domestic supply being inelastic, the prices of agricultural goods rise. The output of these goods does not increase when their prices rise because their production is inelastic due to a defective system of land tenure and other rigidities in the form of lack of irrigation, finance, storage and marketing facilities, and bad harvests. To pre can he imported. But it is not possible to import them in large quantities due to foreign exchange constraint. Moreover, the prices of imported products are relatively higher than their domestic prices. This tends to raise the price level further within the economy.

When the prices of food products rise, wage earners press for increase in wage rates to compensate for the fall in their real incomes. But wages and/or D.A. are linked to the cost of living index. They are, therefore, raised whenever the cost of living index rises above an agreed point which further increases the demand for goods and a further rise in their prices.

Another cause of structural inflation is that the rate of export growth .in a developing economy is slow and unstable which is inadequate to support the required growth rate of the economy. The sluggish growth rate of exports and the foreign exchange constraint lead to the adoption of the policy of industrialization based on import substitution. Such a policy necessitates the use protective measures which, in turn, tend to raise the prices of industrial products, and incomes in the non-agricultural sectors, thereby leading to further rise in prices. Moreover, this policy leads to a cost-push rise in prices because of the rise in prices of imported materials and equipment, and protective measures. The policy of import substitution also tends to be inflationary because of the relative inefficiency of the new industries during the "learning" period. The .countries deterioration in the terms of trade of primary products of developing countries further limits the growth of income from exports which often leads to the exchange rate devaluation.

The nature of the tax systems and budgetary processes also help in accentuating the inflationary trends in such economies. The tax system has low inflation elasticity which means that when prices rise, the real value of taxes falls. Often taxes are fixed in money terms or they are raised slowly to adjust for price rises. Moreover; it often takes long time to collect taxes with the result that by the time they are paid by assesses, their real value is less to the exchequer. On the, other hand, planned expenditures on projects are often not incurred on schedule due to various supply bottlenecks with the result that when prices rise, the money value of expenditures rises proportionately. As a result of fall in the real value of-tax collections and rise in money value of expenditures, governments have to adopt larger fiscal deficits which further accentuate inflationary pressures.

So far as the money supply is concerned, it automatically expands when prices rise in a developing country. As prices rise, firms need larger funds from hanks. And the government needs more money to finance larger deficits in order to meet its expanding expenditure and wages of its employees. For this, it borrows from the central bank which leads to monetary expansion and 'to a further rise in the rate of inflation.

Thus structural inflation may result from supply in elasticity leading to rise in agricultural prices, costs of import substitutes, deterioration of the terms of trade and exchange rate devaluation.

Its Criticisms: The basic weaknesses in the structural arguments have been:

- First, no separation is made between autonomous structural rigidities and induced rigidities resulting from price and exchange controls or mismanagement of government intervention.
- Second, the sluggishness in the export growth is not really structural but the result of failure to exploit export opportunities because of overvalued exchange rates.

Markup Inflation: The theory of markup inflation is mainly associated with Prof. Ackley, though formal models have also been presented by Holzman and Duesenberry independently of each other. We analyze below Ackley's simplified version of the markup inflation.
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The analysis is based on the assumption that both wages and prices are "administered" and are settled by workers and business firms. Firms fix administrative prices for their goods by adding to their direct material and labor costs some standard markup which covers profit.' Labor also seeks wages on the basis of a fixed markup over its cost of living.

This model of inflation can lead to a stable, a rising, or a falling price level depending on the markups which firms and workers respectively use. If either or both use a percentage markup, the inflation will progress faster than if I either or both fix the markups in money terms. If each participant fixes prices on the basis of prices he pays, the inflation will be high and of long duration. If one firm raises its prices in order to maintain its desired markup, the costs of other firms are raised which, in turn, raise their prices and this

process of raising costs and prices will spread to other firms in an endless chain. When consumers buy such goods whose prices are rising, their cost of living rises. This causes wage costs to rise, thereby increasing the inflationary spiral. However, the inflationary spiral may come to a halt, if there is a gradual improvement in the efficiency and productivity of labor. A rise in efficiency and productivity means that there is a rise in wage rates or prices of materials leading to a smaller rise in labor and material costs. But stability in prices may not come if firms and workers appropriate the gains of rising productivity by increasing their markups. If each participant increases its markup by 100 per cent of the gains of productivity increase, the inflationary spiral might continue indefinitely.

According to Ackley, the markup can be based on either historical experience or expectations of future costs and prices. Moreover, the size of the markup applied by firms and workers is a function of the pressure of demand felt in the economy. When the demand is moderate, the markups may be applied to historically experienced costs and prices, and the price rise may be slow. But when demand is intense, the markups are based on anticipations of future costs and prices rise rapidly. Thus there can be no inflation without some change in the size of the markup.

This theory can also be applied to cost-push and demand-pull models of inflation. If firms and workers believe that their markups are lower than the required costs and prices, regardless of the state of aggregate demand, they will Increase the size of their markups. Under such a situation, costs and prices rise in an inflationary spiral. This is similar to the cost-push inflation. On the other hand, if firms and workers raise the markups due to increase in demand, markup pricing is related to demand-pull inflation.

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To conclude with Ackley, "Inflation might start from an initial autonomous Increase either in business and labor markups. Or it might start from an increase in aggregate demand and which first and most directly affected some of the flexible market-determined prices. But however it starts, the process involves the interaction of demand and market elements."

Its Criticisms: Ackley's theory suffers from two weaknesses:

- First, the theory gives a very limited explanation of the cause of inflation, especially the motives which compel workers and firms to fix higher markups in the absence of demand conditions.
- Second, it suffers from the implication that once inflation starts, it is likely to continue indefinitely when costs and prices rise in a spiral.

The markup inflation can be controlled by the usual monetary and fiscal tools in order to restrict the demand for goods and increase productivity. Ackley also suggests wage-and-price guidelines or an incomes policy to be administered by a national wage-and price commission.

Open and Suppressed Inflation: Inflation is often open and suppressed.

Open Inflation: Inflation is open when "markets for goods or factors of production are allowed to function freely, setting prices of goods and factors without normal interference by the authorities." Thus open inflation is the result of the uninterrupted operation of the market mechanism. There are no checks or controls on the distribution of commodities by the government. Increase in demand and shortage of supplies persist which tend to lead to open inflation. Unchecked open inflation ultimately leads to hyper-inflation.

Suppressed Inflation: On the contrary, when the government imposes physical and monetary controls to check open inflation, it is known as repressed or suppressed inflation. The market mechanism is not allowed to function normally by the use of licensing, price controls and rationing in order to suppress extensive rise in' prices. According to Friedman, governments themselves are often producers and sellers of wide range of commodities and they want to keep their own prices low by price restrictions and controls. This leads to the breakdown of the free price system.

Further, suppressed inflation also results when efforts are made to increase domestic production and reduce import demand by tariffs, import restrictions, limits on foreign loans, voluntary import agreements, etc. So long as such controls exist, the present demand is postponed and there is the version of demand from controlled to uncontrolled commodities. But as soon as these controls arc removed, there is open inflation.

Its Effects. Suppressed inflation adversely affects the economy:

- When the distribution of commodities is controlled, and the prices of uncontrolled commodious rise very high.
- Suppressed inflation reduces the incentive to work because people do not get the commodities which they want to have.
- Controlled distribution of goods also leads to misallocation of resources. This results in the diversion of productive resources from essential to non-essential industries.
- Frictions increase in the labor market when high inflation is associated with higher unemployment.
- Suppressed inflation leads to black marketing, corruption, hoarding and profiteering. It invites extra-legal powers of control.
- Finally, it reduces the prospect of anti-inflationary policy being tried at all.

8.6 PHILLIPS CURVE: THE RELATION BETWEEN UNEMPLOYMENT AND INFLATION

The Phillips curve examines the relationship between the rate of unemployment and the rate of money wage changes. Known after the British economist A. W. Phillips who first identified it, it expresses an inverse relationship between the rate of unemployment and the rate of increase in money wages. Basing his analysis on data for the United Kingdom, Phillips derived the empirical relationship that when unemployment is high, the rate of

increase in money wage rates is low. This is because "workers are reluctant to offer their services at less than the prevailing rates when the demand for labor is low and unemployment is high so that wage rates fall very slowly." On the other hand when unemployment is low, the rate of increase in money wage rates is high. This is because, "when the demand for labor is high and there are very few unemployed we should expect employer to bid" wage rates up quite rapidly."

The second factor which influences this inverse relationship between money wage rate and unemployment is the nature of business activity. In a period of rising business activity when, unemployment falls with increasing demand for labor, the employers will bid up wages. Conversely in period of falling business activity when demand for labor is decreasing and unemployment is rising, employers will be reluctant to grant wage increases.

Rather, they will reduce wages. But workers and unions will be reluctant to accept wage cuts during such periods. Consequently, employers are forced to dismiss workers, thereby leading to high rates of unemployment. Thus when the labor market is depressed, a small reduction in wages would lead to large increase in unemployment Phillips concluded on the basis of the above arguments that the relation between rates of unemployment and of change of money wages would be highly non-linear when shown on a diagram. The curve is called the Philips curve.
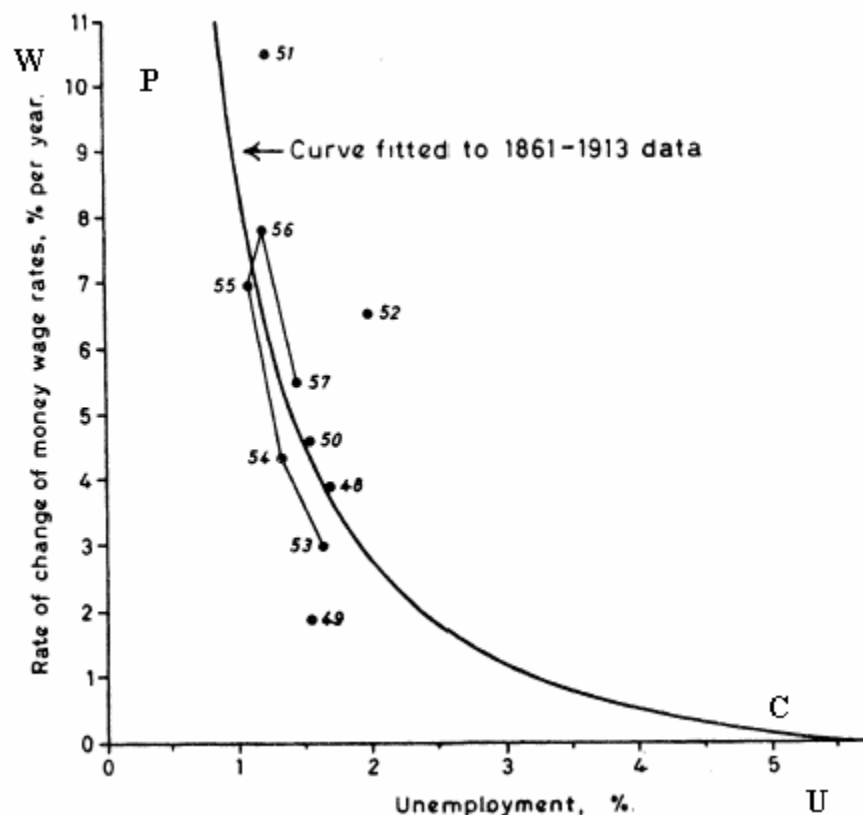

Fig. 8.1: The Phillips Curve

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The **PC** curve in Figure 8.1 is the Phillips curve which relates percentage change in money wage rate **(W)** on the vertical axis with the rate of unemployment **(U)** on the horizontal axis. The curve is convex to the origin which shows that the percentage change in money wages rises with decrease in the employment rate. In the figure, when the money wage rate is 2 per cent, the unemployment rate is 3 per cent. But when the wage rate is high at 4 per cent, the unemployment rate is low at 2 per cent. Thus there is a trade-off between the rate of change in money wage and the rate of unemployment. This means that when the wage rate is high the unemployment rate is low and vice versa.

The original Phillips curve was an observed statistical relation which was explained theoretically by Lipsey as resulting from the behavior of labor market in dis-equilibrium through excess demand. Several economists have extended the Phillips analysis to the trade-off between the rate of unemployment and the rate of change in the level of prices of inflation rate by assuming that prices would change whenever wages rose more rapidly than labor productivity. If the rate of increase in money wage rates if higher than the growth rate of labor productivity, prices will rise and vice versa. But prices do not rise, if labor productivity increases at the same rate as money wage rates rise.

It is to be noted that **PC** is the "conventional" or original downward sloping Phillips curve which shows a stable and inverse (elation between the rate of unemployment and the rate of change in wages.

Friedman's View: The Long-Run Phillips Curve: Economists have criticized and in certain cases modified the Phillips curve. They argue that the Phillips curve relates to the short run and it does not remain stable. It shifts with changes in expectations of inflation. In the long run, there is no trade-off between inflation and employment. These views have been expounded by Friedman and Phillips in what has come to be known as the **"**accelerationist" or the "adaptive expectations" hypothesis.

According to Friedman, there is no need to assume a stable downward sloping of Phillips curve to explain the trade-off between inflation and unemployment. In fact, this relation is a short-run phenomenon. But there are certain variables which cause the Phillips curve to shift over time and the most important of them is the expected rate of inflation. So long as there is discrepancy between the expected rate and the actual rate of inflation, the downward sloping Phillips curve will be found. But when this discrepancy is removed over the long run, the Phillips curve becomes vertical.

In order to explain this, Friedman introduces the concept of the natural rate of unemployment. It represents the rate of unemployment at which the economy normally settles because of its structural imperfections. It is the unemployment rate below which the inflation rate increases, and above which the inflation rate decreases. At this rate, there is neither a tendency for the inflation rate to increase or decrease. Thus the natural rate of unemployment is defined as the rate of unemployment at which the actual rate of inflation equals the expected rate of inflation. It is thus an equilibrium rate of

unemployment towards which the economy moves in the long run. In the long run;-the Phillips curve is a vertical line at the natural rate of unemployment.

This natural or equilibrium unemployment rate is not fixed for all times. Rather, it is determined by a number of structural characteristics of the labor and commodity markets within the economy. These may be minimum wage laws, inadequate employment information, deficiencies in manpower training, costs of labor mobility, and other market imperfections. But what causes the Phillips curve to shift over time is the expected rate of inflation. This refers to the extent the labor correctly forecasts inflation and can adjust wages to the forecast. Suppose the economy is experiencing a mild rate of inflation of 2 per cent and a natural rate of unemployment (N) of 3 per cent.

Any reduction in unemployment rate below its natural rate will be associated with an accelerating and ultimately explosive inflation. But this is only possible temporarily so long as workers overestimate or underestimate the inflation rate. In the long-run, the economy is bound to establish at the natural unemployment rate.

There is, therefore, no trade-off between unemployment and inflation except in the short run. This is because inflationary expectations are revised according to what has happened to inflation in the past. So when the actual rate of inflation, say, rises to 4 per cent, workers continue to expect 2 per cent inflation for a while and only in the long run they revise their expectations upwards towards 4 per cent. Since they adapt themselves to the expectations, it is called the adaptive expectations hypothesis. According to this hypothesis, the expected rate of inflation always lags behind the actual rate. But if the actual rate remains constant the expected rate would ultimately become equal to it. This leads to the conclusion that a short-run trade off exists between unemployment and inflation, but there is no long run trade-off between the two unless it continuously rising inflation rate is tolerated.

Its Criticisms: The accelerationist hypothesis of Friedman has been criticized on the following grounds.

1. The vertical long-run Phillips curve relates to steady rate of inflation. But this is not a correct view because the economy is always passing through a series of disequilibrium positions with little tendency to approach a steady state. In such a situation, expectations may be disappointed year after year.
2. Friedman does not give a new theory of how expectations are formed that would be free from theoretical and statistical bias. This makes his position unclear.
3. The vertical long-run Phillips curve implies that all expectations, are satisfied and that people correctly anticipate the future inflation rates. Critics point out that people do not anticipate inflation rates correctly, particularly when some prices are almost certain to rise faster than others. There are bound to be disequilibria between supply and demand caused by uncertainty about the future and that is bound to increase the rate of unemployment. Far from curing unemployment, a dose of inflation is likely to make it worse.

4. In one of his writings Friedman himself accepts the possibility that the' long-run Phillips curve might not just be vertical, but could be positively sloped with increasing doses of inflation leading to increasing unemployment.
5. Some economists have argued that wage rates have not increased at a high rate of unemployment.
6. It is believed that workers have a money illusion. They are more concerned with the increase in their money wage rates than real wage rates.
7. Some economists regard the natural rate of unemployment as a mere abstraction because Friedman has not tried to define it in concrete terms.
8. Saul Hyman has estimated that the long-run Phillips curve is not vertical but is negatively sloped. According to Hyman, the unemployment rate can be permanently reduced if we are prepared to accept an increase in inflation rate.

Conclusion: The vertical Phillips curve has been accepted by the majority of economists. They agree that at unemployment rate of about 4 per cent, the Phillips curve becomes vertical and the trade-off between unemployment and Inflation disappears. It is impossible to .educe unemployment below this level because of market imperfections.

Rational Expectations and Long-Run Phillips Curve: Economists belonging to the rational expectations school have denied the possibility of any trade-off between inflation and unemployment even during the long run. According to them, the assumption implicit in Friedman's version that price expectations are formed mainly on the basis of the experience of past Inflation is unrealistic. When people base their price expectations on this assumption, they are irrational: If they think like this during a period of rising prices, they will find that they were wrong. But rational people will not commit this mistake. Rather, they will use all available information to forecast future Inflation more accurately.

It is assumed that people have all the relevant information. Any discrepancy between the actual and expected rates of inflation is only in the nature of a random error. Thus there is no possibility for the' actual rate of unemployment to differ from the natural rate even temporarily. When people act rationally, they know that past increases in prices and the rate of change in prices have invariably been accompanied by equal proportional changes in the quantity of money. When people act on this knowledge, it leads to the conclusion that there is no trade-off between inflation. and unemployment either in the short run or in the long run. This implies that monetary and fiscal measures are unable to influence the level of production and unemployment.

Prof. Gordon does not agree with the views of rational expectationists. In fact, he rejects the logic of rational expectation hypothesis entirely. He assigns two reasons for this first, individuals do not know enough about the structure of the economy to estimate the market clearing price level and stick with adaptive expectations; and second, if individuals gradually learn about the structure of the economic system by a least-squares learning method, rational expectation closely approximate to adaptive expectations.

Policy Implications of the Phillips Curve: The Phillips curve has important policy implications. It suggests the extent which monetary and fiscal policies can be used to control inflation without hi levels of unemployment. In other words, it provides a guideline to the authorities ' about the rate of inflation which can be tolerated with a given level of unemployment. For this purpose, it is important to 'know the exact position of the Phillips curve. While explaining the natural rate of unemployment, Friedman pointed out. that the only scope of public policy in influencing the level of unemployment, lies in the short run in keeping with the position of the Phillips curve. He ruled out the possibility of influencing the. Long-run rate of unemployment because of the vertical Phillips curve.

According to him, the trade-off between unemployment and inflation does not exist and has never existed. However rapid the inflation might be, unemployment always tends to fall back to. its natural rate which is not some irreducible minimum of unemployment. It can be lowered by removing obstacles in the labor market by reducing frictions. Therefore, public policy should improve the institutional structure to make the labor market responsive changing patterns of demand. Moreover, some level of unemployment must be accepted as natural because of the existence of large number of part-time till workers, unemployment compensation and other institutional factors.

Another implication is that unemployment is not a fitting aim for monetary expansion, according to Friedman. Therefore, employment above the natural rate can be reached at the cost of accelerating inflation, if monetary policy is adopted. In his words, 'A little inflation will provide a boost at first-like a small dose of a drug for a new addict-but then it takes more and more inflation to provide the boost, just it takes a bigger and bigger dose of a drug to give a hardened addict a high." Thus if the government wants to have a genuine full employment level at the natural rate, it must not use monetary policy to remove institutional restraints, restrictive practices, barriers to mobility, trade union coercion and similar obstacles to both the workers and the employers.

But economists do not agree with Friedman. They suggest that it is possible to reduce the natural rate of unemployment through labor market policies, whereby labor market fan be made more efficient. So the natural rate of unemployment can be reduced by shifting the long-run vertical Phillips curve to the left.

Stagflation

Stagflation is new term which has been added to economic literature in the 1970s. The word stagflation" is the combination of stag plus flatiron, taking 'stag' from stagnation and 'flation' from inflation. Thus it is a paradoxical situation where the economy experiences stagnation or unemployment along with a high rate of inflation. It is, therefore, also called inflationary recession. The level of stagflation is measured in the **US** by the "discomfort index" which is a combination of' the unemployment rate and the inflation rate measured by the price deflator for **GNP**.

One of the principal causes of stagflation has been restriction in the aggregate supply. When aggregate supply is reduced, there is a fall in output and employment and the price

level rises. A reduction in aggregate supply may be due to a restriction in labor supply. The restriction in labor supply, in turn, may be caused by a rise in money wages on account of strong unions or by a rise in the legal minimum wage rate, or by increased tax rates which reduce work-effort on the part of workers. When wages rise, firms are forced to reduce production and employment. Consequently, there is a fall in real income and consumer expenditure. Since the decline in consumption will be less than the fall in real income, there will be excess demand in the commodity market which will push up the price level. The rise in the price level, in turn, reduces output and employment in the following three ways:

(a) It reduces the real quantity of money, raises interest rates and brings a fall in investment expenditure.

(b) The rise in the price level reduces the real value of cash balances with the government and the private sector via the Pigou effect which reduces their consumption expenditure.

(c) The rise in prices of domestic goods makes exports dearer to foreigners and make foreign goods relatively more attractive to domestic consumers, thereby adversely affecting domestic output and employment.

Another cause of restriction in aggregate supply is the increase in indirect taxes by central, state and local governments.. When indirect taxes are increased, they raise costs and prices and reduce output and employment. Moreover, when the government increases taxes, it leads to the transfer of real purchasing power from the people to the government. As a result; aggregate demand falls, and output and. employment are adversely affected. If, however, the government increases it expenditure equal to the increase in tax revenue, it would raise the, price level further due to increase in additional demand.

Often, economies impose direct controls as a means of controlling inflation. But when, such controls are removed, decontrolled sectors raise prices of their.products with the result that wages rise and the wage-price spiral spreads to the entire economy. This, in turn, adversely affects production and employment through a decline in the real quantity of money, rise in interest rates, and fall in investment via the Pigou affected exports becoming dearer and imports attractive. They contribute to stagflation.

Restriction on aggregate supply may also be caused by external factors such as rise in the world prices of food grains and crude oil prices. In all these cases, the domestic price level is raised by outside forces. When international prices of food grains and crude oil rise, they lead to the outflow of purchasing power away from domestic consumers. They accentuate inflation, raise wages and prices. As a result, the real quantity of money declines, interest rates rise and investment declines, via the Pigou effect, and making exports dearer and imports attractive, domestic output and employment decline,' They lead to stagflation.

Causes of Inflation

Inflation is caused when the aggregate demand exceeds the aggregate supply of goods and services. We analyze the factors which lead to increase in demand and the shortage of supply.

Factors Affecting Demand: Both Keynesians and monetarists believe that inflation is caused by increase in the aggregate demand. They point towards .the following factors which raise it.

1. **Increase in Money Supply**: Inflation is caused by an increase in the supply of money which leads to increase in aggregate demand. The higher the growth rate of the nominal money supply, the higher is the rate of inflation. Modern quantity theorists do not believe that true inflation starts after the full employment level. This view is realistic because all advanced countries are faced with high levels of unemployment and high rates of inflation.
2. **Increase in Disposable Income:** When the disposable income of the people Increases, it raises their demand for goods and services disposable, income may Increase with the rise in national income or reduction in taxes or reduction in the saving of the people.
3. **Increase in public Expenditure**: Government activities have been expanding much, with the result that government expenditure has also been increasing at a phenomenal rate, thereby raising aggregate demand for goods and services. Governments of both developed and developing countries are providing more facilities under public utilities and social, service, and also nationalizing industries and starting public enterprises with the result that they help in increasing aggregate demand.
4. **Increase in Consumer Spending:** The demand for goods and services increases when consumer expenditure increases, Consumers may spend more due to conspicuous consumption or demonstration effect. They may also spend more when they are given credit facilities to buy good on hire-purchase and installment basis.
5. **Cheap Monetary Policy:** Cheap monetary policy or the policy of credit expansion also leads to increase in the money supply which raises the demand for goods and services in the economy. When credit expands, it raises the money income of the borrowers which, in turn, raises aggregate demand relative to supply, thereby leading to inflation. This is also known as credit-induced inflation.
6. **Deficit Financing:** In order to meet its mounting expense the government resorts to deficit financing by borrowing from the public and even by printing more notes. This raises aggregate demand ill relation. to aggregate supply, thereby leading to inflationary rise in prices. This .is also known as deficit induced inflation.
7. **Expansion of the Private Sector:** The expansion of the private sector also tends to raise the aggregate demand. For huge investments increase employment and income, thereby creating more demand for goods and services. But it takes time for the output to enter the market.
8. **Black Money:** The existence of black money in all countries due to corruption, tax evasion etc. increases the aggregate demand. People spend such unearned money extravagantly, thereby creating unnecessary demand for commodities: This tends to raise the price level further.

9. **Repayment of Public Debt:** Whenever the government repays its, past internal debt to the public, it leads to increase in the money supply with the public. This tends to raise the aggregate deman9 for goods and services.
10. **Increase in Exports**: When the demand for domestically produced goods increases in foreign countries, this raises the earnings of industries producing export commodities. These" in turn, create more demand for goods and service within the economy.

Factors Affecting Supply: There are also certain factors, which operate on the opposite side and tend to reduce the aggregate supply. Some of the factors are as follows:

1. **Shortage of Factors of Production:** One of the important causes affect in the supplies of goods is the shortage of such factors as labor, raw material, power supply, capital etc. They lead to excess capacity and reduction in industrial production.
2. **Industrial Disputes**: In countries where trade unions are powerful, the; also help in curtailing production. Trade unions resort to strikes and if they happen to be unreasonable from the employers' viewpoint and are prolonged; they force the employers to declare lock-outs. In both cases, industrial production falls; thereby reducing supplies of goods. If the unions succeed in rising a money wages of their members to a very high level than the productivity of labor, this also tends to reduce production and supplies of goods.
3. **Natural Calamities:** Drought or floods is a factor which adversely affects the supplies of agricultural products. The latter, in turn, create shortages of food products and raw materials, thereby helping inflationary pressures.
4. **Artificial Scarcities:** Artificial scarcities are created by hoarders and speculators who indulge in black marketing. Thus they are instrumental in reducing supplies of goods arid raising their prices.
5. **Increase in Exports:** When the country produces more goods for export than for domestic consumption, this creates shortages of goods in the domestic market. This leads to inflation in the economy.
6. **Lop-sided Production:** If the stress is on the production of comfort, luxuries, or basic products to the neglect of essential consumer goods in the country; this creates shortages of consumer goods. This again causes inflation.
7. **Law of Diminishing Returns:** If industries in the country are using old machines and outmoded methods of production, the law of diminishing returns operates. This raises cost per unit of production, thereby raising the prices of products.
8. **International Factors:** In modern times, inflation is a worldwide phenomenon. When prices rise in major industrial countries, their effects spread, to almost all countries with which they have trade relations. Often the rise in the' price of a basic raw material like petrol in the international market leads to rise in the price of all related commodities in a country.

8.7 MEASURES TO CONTROL INFLATION

We have studied above that inflation is caused by the failure of aggregate supply to equal the increase in aggregate demand. Inflation can, therefore, be controlled by increasing the supplies and reducing money incomes in order to control aggregate demand. The various methods are usually grouped under three heads: monetary measures, fiscal measures and other measures.

1. Monetary Measures: Monetary measures aim at reducing money incomes.

a) **Credit Control:** One of the important monetary measures is monetary policy. The central bank of the country adopts a number of methods to control the quantity and quality of credit. For this purpose, it raises the bank rates, sells securities in the open market, raises the reserve ratio, and -adopts a number of selective credit control measures, such as raising margin requirements and regulating consumer credit. Monetary policy may not be effective in controlling inflation, if inflation is due to cost-push factors. Monetary policy can only be helpful in controlling inflation due to demand-pull factors.

b) **Demonetizations of Currency:** However, one of the monetary measures is to demonetize currency of higher denominations. Such a measure is usually adopted when there is abundance of black money in the country.

c) **Issue of New Currency:** The most extreme monetary measure is the issue of new currency in place of the old currency. Under this system, one new note is exchanged for a number of notes of the old currency. The value of bank deposits is also fixed accordingly. Such a measure is adopted when there is an excessive issue of notes and there is hyper inflation in the country. It is very effective measure but is inequitable because it hurts the small depositors the most.

2. **Fiscal Measures:** Monetary policy alone is incapable of controlling inflation. It should, therefore, be supplemented by fiscal measures. Fiscal measures are highly effective for controlling government expenditure, personal consumption expenditure, and private and public investment. The principal fiscal measures are the following:

a) **Reduction in Unnecessary Expenditure:** The government should reduce unnecessary expenditure on non-development activities in order to curb inflation. This will also put a check on private expenditure which is dependent upon government demand for goods and services. But it is not easy to cut government expenditure. Though economy measures are always welcome but it becomes difficult to distinguish between essential and non-essential expenditure. Therefore, this measure should be supplemented by taxation.

b) **Increase in Taxes:** To cut personal consumption expenditure, the rates of personal, corporate and commodity taxes should be raised and even new taxes should be levied, but the rates of taxes should not be so high as to discourage saving, investment and production. Rather, the tax system should provide larger incentives to those who save, invest and produce more. Further, to bring more revenue into the tax-net, the government should penalize the tax evaders by imposing heavy fines. Such measures' are bound to be effective in controlling inflation. To increase the supply of goods within the country, the government should reduce import duties and increase export duties.

c) **Increase in Savings:** Another measure is to increase savings on the part or the people. This will tend to reduce disposable income with the people, and hence personal consumption expenditure. But due to the rising cost of living, people are not in a position to save much voluntarily. Keynes, therefore, advocated compulsory savings or what he called 'deferred payment' where the saver gets his money back after some years. For this purpose, the government should float public 10ansJarrying high rates of interest, start saving schemes with prize money, or lottery for long periods, etc. It should also introduce compulsory provident fund, provident fund-cum-pension schemes, etc. compulsorily. All such measures to increase savings are likely to be effective in controlling inflation.

d) **Surplus Budgets:** An important measure is to adopt anti-inflationary budgetary policy. For this purpose, the government should give up deficit financing and instead have surplus budgets. It means collecting more in revenues and spending less.

e) **Public Debt:** At the same time, it should stop repayment of public debt and postpone it to some future date till inflationary pressures are controlled within the economy. Instead, the government should borrow more to 'reduce money supply with the public.

Like the monetary measures, fiscal measures alone cannot help in controlling inflation. They should be supplemented by monetary, non-monetary and non-fiscal measures.

3. Other Measures: The other types of measures are those which aim at increasing aggregate supply and reducing aggregate demand directly.

a) **To Increase Production:** The following measures should be adopted to increase production: (i) One of the foremost measures to control inflation is to increase the production of essential consumer goods like food, clothing, kerosene oil, sugar, vegetable oils, etc. (ii) If there is need, raw materials for such products may be imported on preferential basis to increase the production of essential commodities. (iii) Efforts should also be made to increase productivity. For this purpose, industrial peace should be maintained through agreements with trade

unions, binding them not to resort to strikes for some time. (iv)The policy of rationalization of industries should be adopted as a long-term measure. Rationalization increases productivity and production of industries through the use of brain, brawn and bullion. (v) All possible help in the form of latest technology, raw materials, financial help, subsidies, etc. should be provided to different consumer goods sectors .to increase production.

b) **Rational Wage Policy:** Another important measure is to adopt a rational wage and income policy. Under hyperinflation, there is a wage-price spiral. To control this, the government should freeze wages, incomes, profits, dividends, bonus, etc. But such a drastic measure can only be adopted for a short period and by antagonizing both workers and industrialists. Therefore, the best course is to link Increase in wages to increase in productivity. This will have a dual effect. It will control wage and at the same time increase productivity, and hence production of goods in the economy.

c) **Price Control:** Price control and rationing, is another measure of direct control to check inflation. Price control means fixing an upper limit for the prices of essential consumer goods. They are the maximum prices fixed by law and anybody charging more than these prices is punished by law. But it is difficult to administer price control.

d) **Rationing:** Rationing aims at distributing consumption of scarce goods so as to make them available to a large number of consumers. It is applied to essential consumer goods such as wheat, rice, sugar, kerosene oil, etc. It is meant to stabilize the prices of necessaries and assure distributive justice. But it is very inconvenient for consumers because it leads to queues, artificial shortages, corruption and black marketing. Keynes did not favor rationing for it "Involves a great deal of waste, both of resources and of employment."

Conclusion: From the various monetary, fiscal and other measures discussed above, it becomes clear that to control inflation, the government should adopt all measures simultaneously. Inflation is like a hydra-headed monster which should be fought by using all the weapons at the command of the government.

Effects of Inflation: Inflation affects different people differently. This is because of the fall in the value of money. When price rises or the value of money falls, some groups of the society gain, some lose and some stand in between. Broadly speaking, there lire two economic groups in every society, the fixed income' group and the 11exible income group. People belonging to the first group lose and those belonging to the second group gain. The reason is that the price movements in the case of different goods, services, assets, etc. are not uniform. When there is inflation, most prices are rising, but the rates of increase of individual prices differ much. Prices of some goods and services rise faster, of others slowly and of still others remain unchanged. We discuss below the effects of inflation on redistribution of income and wealth, production, and on the society as a whole.

It is also known as effects of changes in the value of money.

1. Effects on Redistribution of Income and Wealth

There are two ways to measure the effects of inflation on the redistributiol1 income and wealth in a society. First, on the basis of the change in the real value of such factor incomes as wages, salaries, rents, interest, dividends and profits. Second, on the basis of the size distribution of income over time as a result of inflation, i.e. whether the incomes of the rich have increased and that of middle and poor classes have declined with inflation. Inflation brings about shifts in the distribution of real income from those whose money incomes relatively inflexible to those whose money incomes are relatively flexible. The poor and middle classes suffer because their wages and salaries are more or less fixed but the prices of commodities continue to rise. They become more impoverished. On the other hand, businessmen, industrialists, traders, real estate holders, speculators, and others with variable incomes gain during rising price. The latter category of persons becomes rich at the cost of the former group. There is unjustified transfer of income and wealth from the poor to the rich. As a result the rich roll in wealth and indulge in conspicuous consumption, while the poor and middle classes live in abject misery and poverty. But which income group of society gains or loses from inflation depends on who anticipates inflation and who does not. Those who correctly anticipate inflation, they can adjust their present earnings, buying, borrowing, and lending activities against the loss of income and wealth due to inflation. They, therefore, do not get hurt by the inflation. Failure to anticipate .inflation correctly leads to redistribution of income and wealth. In practice, all persons are unable to anticipate and predict the rate of inflation correctly so that they cannot adjust their economic behavior accordingly. As a result, some persons gain while others lose. The net result is a redistribution of income and wealth. The effects of inflation on different groups of society are discussed below.

a) **Debtors and Creditors.** During periods of rising prices, debtors gain and creditors lose. When prices rise the value of money falls. Though debtors return the same amount of money, but they pay less in terms of goods and services. This is because the value of money is less than when they borrowed the money. Thus the burden of the debt is reduced and debtors gain. On the other hand, creditors lose. Although they get back the same amount of money which they lent, they receive less in real terms because the value of' money falls. Thus inflation brings about a redistribution of real wealth in favor of debtors at the cost of creditors.

b) **Salaried Persons.** Salaried workers such as clerks, teachers, and other white collar persons lose when there is inflation. The reason is that their salaries are slow to adjust when prices are rising.

c) **Wage Earners.** Wage earners may gain or lose depending upon the speed with which their wages adjust to rising prices. If their unions are strong, they may get their wages linked to the cost of living index. In this way, they may be able to protect themselves from the bad effects of inflation. But the problem is that there is often a time lag between the raising of wages by employers and the rise in

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prices. So workers lose because by the time wages are raised, the cost of living index may have increased further. But where the unions have entered into contractual wages for a fixed period, the workers lose when prices continue to rise during the period of contract. On the whole, the wage earners are in the same position as the while collar persons.

d) **Fixed Income Group.** The recipients of transfer payments such as pensions, unemployment insurance, social security, etc. and recipients of interest and rent live on fixed incomes. Pensioners get fixed pensions. Similarly the renter class consisting of interest and rent receivers get fixed payments. The same is the case with the holders of fixed interest bearing securities, debentures and deposits. All such persons lose because they receive fixed payments, while the value of money continues to fall with rising prices. Among these groups, the recipients of transfer payments belong to the lower income group and the rentier class to the upper income group. Inflation redistributes income from these two groups towards the middle income group comprising traders and businessmen.

e) **Equity Holders or Investors.** Persons who hold shares or stocks of companies gain during inflation. For when prices are rising, business activities expand which increase profits of companies. As profits increase, dividends on equities also increase at a faster rate than prices. But those who invest in debentures, securities, bonds, etc. which carry a fixed interest rate lose during inflation because they receive a fixed sum while the purchasing power is falling.

f) **Businessman.** Business of all types, such as producers, traders and real estate holders gain during periods of rising prices. Take producers first. When prices are rising, the value of their inventories (goods in stock) rise in the same proportion. So they profit more when they sell their stored commodities. The same is the case with traders in the short run. But .producers profit more in another way. Their costs do not rise to the extent of the rise in the prices of their goods. This is because prices of raw materials and other inputs and wages do not rise immediately to the level of the price rise. The holders of real estates also profit. during inflation because the prices of .landed property increase much faster than the general price level.

g) **Agriculturists.** Agriculturists are of three types, landlords, peasant proprietors, and landless agricultural workers. Landlords lose during rising prices because they get fixed rents. But peasant proprietors who own and cultivate their farms gain. Prices of farm products increase more than the cost of production. For prices of inputs and land revenue do not rise to the same extent as the rise in the prices of farm products. On the other hand, the landless agricultural workers are hit hard by rising prices. Their wages are not raised by the farm owners, because trade unionism is absent among them. But the prices of consumer goods rise rapidly. So landless agricultural workers are losers.

h) **Government.** The government as a debtor gains at the expense of households who are its principal creditors. This is 'because interest rates on government bonds are fixed and are not raised to offset expected rise in prices. The government in turn, levies less tax to service and retire its debt. With inflation, even the real value of taxes is reduced. Thus redistribution of wealth in favor of the government accrues as a benefit to the tax-payers. Since the tax-payers of the government are high-income groups, they are also the creditors of the government because it is they, who hold government bonds. As creditors, the real value of their assets declines and tax-payers, the real value of their liabilities also declines, during inflation. The extent to which they will be gainers or losers on the whole is a very complicated calculation.

Conclusion: Thus inflation redistributes income from wage earners and fixed income groups to profit recipients, find from creditors to debtors. In so far has wealth redistributions are concerned, the very poor and the very rich are more likely to lose than middle income groups. This is because the poor hold what little wealth they have in monetary forms and has few debts, whereas, the very rich hold a substantial part of their wealth in bonds and have relatively, few debts. On the other hand, the middle income groups are likely to be heavily in debt and hold some wealth in common stock as well as in real assets.

2. Effects on Production

When prices start rising production is encouraged. Producers earn wind-fall profits in the future. The invest more in anticipation of higher profits in the future. This tends to increase employment, production and income. But this is only possible up to the full employment level. Farther increase in investment beyond this level will lead to severe inflationary pressures within the economy because Price rise more than production as the resources are fully employed. So inflation adversely affects production after. the level of full employment. The adverse effects of inflation on production are discussed below.

(1) **Misallocation of Resources.** Inflation causes misallocation of resources when producers divert resources from the production of essential to non-essential goods from which they expect higher profits.

(2) **Changes in the System of Transactions.** Inflation leads to changes in transactions pattern of producers. They hold a smaller stock of real money holdings against unexpected contingencies than before. They devote more time and attention to converting money into inventories or other financial or real assets. It means that time and energy are diverted from the production of good and services, and some resources are used wastefully.

(3) **Reduction in Production.** Inflation adversely affects the volume of production because of the expectation of rising prices along with rising costs of inputs bring uncertainty. This reduces production.

(4) **Fall in Quality.** Continuous rise in prices creates a sellers' market. In such situation, producers preclude and sell sub-standard commodities in order to earn higher profits. They also indulge in adulteration of commodities.

(5) **Hoarding and Black marketing.** To profit more from rising pries, producers hoard stocks of their comm0dities: Consequently an artificial! scarcity of commodities is created in the market!;' Then the producers sell their products in the black market which increase inflationary pressures.

(6) **Reduction in Saving.** When 'prices rise rapidly, the propensity to save declines because more money is needed to buy goods and services than before. Reduced saving adversely affects investment and capital formation. As a result, production is hindered.

(7) **Hinders Foreign Capital.** Inflation hinders the inflow of foreign capital because the rising costs of materials and other inputs make foreign investment less profitable.

(8) **Encourages Speculation.** Rapidly rising prices create uncertainty among producers who indulge in speculative activities in order to make quick profits. Instead of engaging themselves in productive activities, they speculate in various types of raw materials required in production.

3. Other Effects

Inflation leads to a number of other effects which are discussed as under.

(1) **Government**:   Inflation affects the government in various ways. It helps the government in financing its activities through inflationary finance. As the money income of the people increases, government collects that in the form of taxes on incomes 'and commodities. So, the revenues of the government increase during rising prices. Moreover, the real burden of 'the public debt decreases when prices are rising. But the government expenses also increase with rising production costs of public projects and. enterprises and increase in administrative expenses as prices and wages rise. On the whole, the government gains under inflation for rising wages and profits spread an illusion of prosperity within the country.

(2) **Balance of Payments.** Inflation involves the sacrificing of the advantages of international specialization and division of labor. It affects adversely the balance of payments of a country. When prices rise more rapidly in the home country than in foreign countries, domestic products become costlier compared to foreign products. This tends to increase imports and reduce exports, thereby making the balance of payments unfavorable for the country. This happens only when the country follows a fixed exchange rate policy. But there is no adverse impact on the balance of payments if the country is on the flexible exchange rate system.

(3) **Exchange Rate.** When prices rise more rapidly in the home country than in foreign countries, it lowers the exchange rate in relation to foreign currencies. .

(4) Collapse of the Monetary System. If hyperinflation persists and the value of money continues to fall many times in a day, it ultimately leads to the collapse of the monetary system, as happened in Germany after World War.

(5) Social. Inflation is socially harmful. By widening the gulf between the rich arid the poor, rising prices create discontentment among the masses. Pressed by the rising cost of living, workers resort to strikes which lead to loss in production. Lured by profit, people resort to hoarding, black marketing, adulteration, manufacture of substandard commodities, speculation etc. Corruption spreads in every walk of life. All this reduces the efficiency of the economy.

(6) Political. Rising prices also encourage agitations and protests by political parties opposed to the government. And if they gather momentum and become unhandy they may bring the downfall of the government. Many governments have been sacrificed at the altar of inflation.

8.8 MEASURES OF PRICES & INFLATION

Inflation (or Deflation) is a macroeconomic concept referring to an increase (decrease) in the absolute price level over some defined time period. An increase in the price of all goods has the effect of reducing the purchasing power of money and money incomes and thus must be taken into account when planning future economic activity.

Inflation is difficult to measure because it represents the percentage change over time of a nonexistent economic variable--the price level 'P_t'.

$$\% \ \Delta P_t = (P_t - P_{t-1})/P_{t-1}$$

Unlike **GDP** or other national income measures, no single observable measure exists to represent the aggregate price level. Thus economists rely on a price index based on some well-defined market-basket of goods as a proxy to measure the level of prices and changes in prices over time.

The most common measure of inflation is that of the **Consumer Price Index** or 'CPI' as calculated by the Bureau of Labor Statistics (the BLS). This particular index is based on the prices of a basket of goods which represents the purchasing behavior of some average urban consumer. The CPI, also known as the **Laspeyres Index**, is calculated using a weighted average of current to past price ratios for this basket of goods:

$$\text{CPI}_t \ = \ \Sigma w_{i,t}[P_{i,t} / P_{i,o}] \qquad \textbf{(1)}$$

These weights '$w_{i,t}$' are based on the expenditure patterns of the consumer in a base period (currently 1982-84) reflecting the importance of each item relative to the overall level of consumer expenditure in that base period or:

$$w_i = \frac{P_{i,o} Q_{i,o}}{\Sigma [P_{i,o}Q_{i,o}]} \qquad (2)$$

Thus

$$CPI_t = \frac{\Sigma[P_{i,t}Q_{i,o}]}{\Sigma[P_{i,o}Q_{i,o}]} \qquad (3)$$

where '$Q_{i,o}$' represents the quantity of the ith good consumed in the base time period (t = 0), '$P_{i,o}$' represents the price of the ith good in the base time period, and '$P_{i,t}$' represents the price of the same good in the current time period 't'.

A measure of inflation is then developed by computing the percentage change in CPI from one time period to the next:

$$\pi_t = \%\Delta \, (CPI) = \frac{CPI_t - CPI_{t-1}}{CPI_{t-1}} \qquad (4)$$

It is important to note that the CPI is not a perfect measure of the price level or changes in the price level because this index is computed using base-period quantities (reflecting buying behavior and preferences in the base year), it does not allow for substitution among goods as relative prices change. For example, it might be that the overall rate of inflation is 5%. However, within that value some goods might be rising by 3-4% and other goods by 6-7%. Consumers will attempt to soften the effects of increasing prices on household budgets by substituting away from the relatively more expensive goods and towards the relatively cheaper good. This behavior is not captured in the CPI.

A second problem with the CPI is that it does not allow for changes in product *quality* over time. It may be that prices are rising due to improved quality of the good being purchased such that this good does not have to be replaced as often. Quality changes can also show up in the size of the good in question. Over the past generation, housing prices have been rising. But during this same period of time, the average size of a housing unit (in terms of square footage, number of bedrooms and baths, size of the garage and lot) has also increased.

Finally, the CPI does not allow for the inclusion of new goods and services as they emerge into the market place. A fixed basket of goods based on 1982/84 preferences ignores DVD players, PDA's, cell phones, audio CD's and many other goods that perhaps lead to improvements in living standards or life style.

A common use of this measure of inflation is to add an inflation premium to interest rates to allow for expectations about future inflation. As stated above inflation erodes the **purchasing power** of money over time. Individual lending money in an inflationary environment will be repaid in dollars which possess less purchasing power upon maturity

of the debt contract. An inflation premium is often built in to **nominal interest rates** protect against this loss of purchasing power. However, at the time the debt contract is developed the inflation premium is based on expected rates of future inflation. If these expectations differ from actual inflation rates during the life of the debt contract either the lender or borrower can be adversely affected.

The inflation premium represents the difference between nominal interest market rates **'i$_{market}$'** (i.e., those interest rates published in the paper or posted on the wall at a bank) and the desired real rate of interest 'r*' which usually reflects the rate of **real economic growth** (the amount of reward that should accrue to the lender for lending to a productive economy). Thus the nominal rate of interest (holding risk constant) on a short-term debt contract (one year or less) is developed as follows:

$$i_{market} = r* + E[\pi_t] \qquad \textbf{(5)}$$

where 'E$[\pi_t]$' represents the expected rate of inflation. At the termination of the debt contract an ex-**post real rate of interest 'r'** can be developed as follows:

$$r = i_{market} - \pi \qquad \textbf{(6)}$$

Thus the **Real Interest Rate** represents the real return to lenders measured in terms of the **purchasing power** of interest paid. For example suppose we have the following:

A one year loan (N = 1) with the following terms:
- Principal 'P' = $1000, and
- **Nominal rate of interest** 'i' = 5%.

At the time the loan is made, the price of a common commodity 'Gasoline' (P$_{gas}$) is equal to $1.00/gal. In **real terms** the lender is providing the borrower with the **purchasing power** equivalent to 1000 gallons of gasoline.

At the termination of the loan the borrower repays the principal 'P' of $1000 plus an interest payment 'I' of $50 ($1000 x 0.05). If when the loan is repaid one year later, the price of gasoline P$_{gas}$' has risen to $1.03/gal. (*a 3% rate of inflation*); the purchasing power of the principal plus interest ($1050) will be equal to 1019 gallons of gasoline. In real terms, the purchasing power of the lender has increased by roughly 2%.

If the price of gasoline had risen to $1.07 (a 7% rate of inflation) then the purchasing power of the repayment would have been equal to 981 ($1050/$1.07) gallons of gasoline. In this case the lender provided the opportunity for the borrower to acquire 1000 gallons of gasoline and at the termination of the loan the borrower repaid to the lender the ability to acquire only 981 gallons. An unexpectedly high rate of inflation had had an adverse impact on the lender -- a negative real rate of return.

If $E[\pi_{(t)}]$ is greater than π_t then 'r' will exceed 'r*' to the benefit of lenders (real returns to lending greater than desired and perhaps greater than the rate of real economic growth) as shown by the following operation -- substituting (5) into (6) we have:

$$r = r^* + E[\pi] - \pi$$

If the opposite is true, then benefits will accrue to the borrower.

During the 1980's, many economists have felt that the real rate of interest was abnormally high (i.e., in excess of 2.5-3%). This may be explained in part due to the inflationary expectations that built up in the late 1970's and early 1980's. Nominal interest rates have taken these expectations into account.

Over time, changes in market interest rates may be attributed to changes either in the real desired rate 'r' or due to changes in inflationary expectations. Changes in the desired real rate reflect the behavior in the market for loan able funds. If the supply of these funds (public and private savings) exceeds the demand for these funds (public and private borrowing) then the desired rate should fall in reaction to a surplus of these funds. In periods of economic growth the opposite is true. The growing economy is sustained in part by increased borrowing activity for inventory investment and investment in new capital stock to allow for increased production to meet growth in aggregate demand.

Changes in inflationary expectations tend to be a more complicated matter. One may hypothesize that current inflationary expectations are based on the history of past actual rates of inflation. A formal model that may help in understanding the development of these expectations is that of the **Adaptive Expectations** model. This model is based on the notion that economic agents slowly adapt to a changing inflationary environment. This may have been the case in the late 1960's and early 1970's. During the 1960's, the inflation rate was relatively low in the 2-4% range. Basically, during this period time inflation was not considered to be a major economic problem. Thus in the next decade when actual inflation began to creep up towards the double-digits, many individuals and institutions were surprised. Forecasts of future inflation (based on recent historical experience) consistently lagged behind an accelerating actual rate of inflation.

In the early to mid-1980's the actual rate of inflation was de-accelerating, a phenomenon known as **disinflation**. During this period, economic agent's expected rates of inflation were greater than what actually occurred. These agents were slow to adapt thus putting upward pressure on ex-post real interest rates.

A different price index, known as the GDP Deflator or the **Paasche Index**, is constructed using current expenditure shares [to represent the spending habits as reflected in current GDP via Q(i,t)] and is defined by the following equation:

$$P_t = \Sigma [P_{i,t}Q_{i,t}] / \Sigma [P_{i,o}Q_{i,t}]$$

where '$Q_{i,t}$' represents the quantities produced and sold of the i-th good in the current time period '$P_{i,t}$' represents the current price of that i-th good and '$P_{i,o}$' represents the base

(1996) price of that same good. This measure can be interpreted as the ratio of actual spending in the current year **(NGDP)** and the level of expenditure on that same quantity of goods if prices had not changed **(RGDP)** -- spending in base-year prices.

Meaning of Deflation: Deflation is the inverse of inflation. Deflation may be defined as a situation of falling prices, or what is the same thing as saying, the rising value of money.

Deflation and Disinflation: However, every fall in prices is not to be defined as deflation. Deflation is a persistent downward movement in the price level at a substantial rate that typically continues for a number of years. A period, in which the price level rose by 3 per cent in one, fell by 2 per cent in a second year, rose by 4 per cent in a third, and fell by 3 per cent in a fourth would hardly deserve to be described as a period characterized by alternating year of deflation.

We can distinguish between two types of fall in prices:

> Fall in prices not accompanied by any decrease in the level of output; and
> Fall in prices accompanied by decrees in the level of output.

When the price level falls and it does not adversely affect the level of employment, output and income in the economy, we will not call such a price fall as deflationary. Rather, we can use the term disinflation for such a situation. On the contrary, if fall in the price level is accompanied by a fall in the level of output also, we will call this type of fall as deflation.

Causes of Deflation: Deflation will occur in either of the following two situations:

(a) When the aggregate demand falls, and / or
(b) When the supply rises.

Deflation arises due to deficiency of demand; there are too many goods chasing too little income. A few important factors that may cause deflation can be grouped in two parts as:
a. Factors on the demand side, and
b. Factors on the supply side.

a. Factors on the Demand side: On the demand side the major factors that work to cause deflation are as follows:

(i) Money Shortage. Money shortage in the economy may not be the result of two factors. First, the note-issuing authority may decide the cut the supply of currency in pursuit of its own defined objective. Secondly, the commercial banks may choose to contract their deposits and credit.

(ii)   Fall in Disposable Income. Disposable income in the economy may fall either through a fall in national income itself or due to higher rates of taxation. Either of the situations will lead to a contraction in consumer expenditure and hence in aggregate demand, resulting in a deficiency of demand to lift the available supplies.

(iii)   Fall in Business outlays. Fall in investment may be the result of a number of factors like accumulating stocks of goods with the producers, falling profit margins, etc. Any cut in investment and production program will have an adverse effect on the level of income and employment in the country, and will breed deflationary forces.

b. Factors on the supply side: On the supply side, deflation may be caused by a glut of commodities which may result from over-investment and over-production. If the level of demand is adequate enough to absorb the existing level of production, this situation, sooner or later, is going to lead to this type of glut, and breed deflationary forces in the economy.

Deflationary Gap: Corresponding to the inflationary gap is the deflationary gap which appears when total expenditures at the full employment level are insufficient to maintain that level of income. In other words, the excess of aggregate supply over the aggregate demand at the full employment level is called the deflationary gap. The reason for deflationary gap is that the excess supply brings the price level down at the full employment level. This can be explained by means of a diagram.
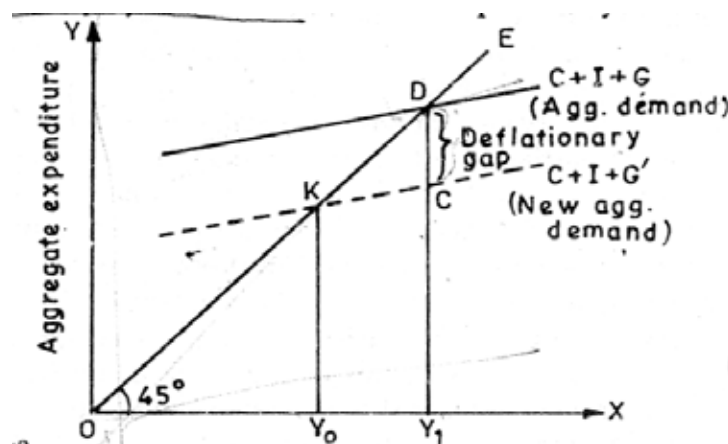

Fig 8.2 Diagram Showing the Deflationary Gap

In the above diagram the total expenditure of the economy is shown by C + I + G Function. This function intersects the 45^0 line at point D which gives at the equilibrium income OY_F, which may be assumed as full employment income at current prices. Let us suppose that the government expenditure for some reasons decreases, which gives the economy new expenditure function C + I + G. Consequently, there will be no change in the money income because the economy is assumed to the at full employment level. At the full employment level of income, the aggregate supply (money income) is OY_F

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($=DY_F$) which is more than the aggregate demand (total expenditure) CY_F. The deflationary gap is CD. The gap CD, between expenditures and the full employment level of the equilibrium level of OY^0, the gap will disappear. The deflationary gap is, therefore, defined as the amount by which total spending falls short of the full employment level of income, will require a drop in national income. When income is decreased to the equilibrium level of OY^0, the gap will disappear. The deflationary gap is, therefore, defined as the amount by which total spending falls short of the full employment level of income at existing prices.

Effects of Deflation: We, in the developing world, have become much accustomed to the rising price that we hardly think of the impact falling prices—deflationary forces—may have on an economy. If a little serious thinking was to be given to this aspect of phenomenon, one would shudder to think of the adverse effect that deflation may have on an economy. We can study these effects under two headings as given below:
   a) Effect on economic activity, and
   b) Effect on distribution of income

a) Effect on economic activity: Deflation has an adverse effect on the level of activity in an economy. Deflation leads to depression. Depression is a phase of economic activity characterized by shrinking investment, shrinking production, shrinking employment of factor service and shrinking income. Once started, the deflationary process is self-generation in character. What harm a worst type of depression can do to an economy can be well-illustrated by the experience of the United States during the thirties of the present century. It was hit by server depression. A few statistics will help to explain the impact of this depression. During 1930-32 about, 5,000 banks in the United States failed, meaning a whole or partial loss of their accumulated savings by about million people. Business profits sank to zero and the failure rate for business went up by one-half, and construction activity fell to only 5 percent of its 1929 level. For workers, the depression was catastrophic. For those who stayed employed, the average weekly wage was down by about a third but the problem was more seem incredible. Formerly prosperous businessmen could be seen on street corners selling apples and at night they would go "home" to tar paper shacks, or old car bodies, or discarded packing cases near the railroad yards or the town dump, which they, with not little venom, named "**Homervilles**" (Grand Place).
Such could be the horrors of depression set by deflationary movement of prices.

b) Effect on Distribution of Income: Ordinarily, all those economic groups who gain during inflation tend to lose during deflation. Conversely, those groups who lose during inflation tend to gain during deflation. Consumers, creditors, small investors, wage and salary earners and groups with fixed incomes will gain during deflation, because their incomes will fetch more goods and services. Businessmen, debtors, farmers, investors in equities and similar economic groups will be hit most during deflation. But a careful thought will reveal that particularly all economic grou8ps are adversely affected by deflation. As already portrayed above, deflation is accompanied by a depression in economic activity. In a worst sort of depression, employment is the major casualty. Laborers and similar factors may find it hard to retain their old jobs; retrenchment may

leave them unemployed on roads. Moreover, the wages would has to be cut drastically if at the all they can be allowed to continue in their old jobs. In this type of situation, where everyone is clamoring for some paid job, wage falls lead the price declines rather than following them. At low prices, there is hardly any incentive for the producers and investors to expand the size of output, or even to continue the production activities. Firms after firms start crashing, factors are rendered unemployed, and the whole economy is trapped in the quagmire of depression.

Measures to Check Deflation: Measures to check deflation take the same form as are used to check inflation, viz.
- Monetary measures,
- Fiscal measures, and
- Non-monetary measures; only that these measures have to operate in the reverse direction.

Money Measures: Various monetary instruments can be used to expand the supply of credit in an economy. For example, a fall in the bank rate will lower the cost of credit and increase its availability. Similarly, the purchase of securities by the central bank will lead to an increase in the cash balances with the commercial banks; such an increase will enable them to create more credit. Likewise, lowering of cash reserve requirements will also facilitate the creation of credit by banks. Various qualitative measures can also be so operated as to increase the flow of credit in desired channels.

However, the monetary measures are plagued by various limitations. Besides the limitations already mentioned earlier in the form of the absence of central bank's effective control over the money market and its inability to direct the various constitutes of the money market to follow the path chalked down by it, there is another inherent limitation in the use of monetary measures as anti-deflationary tools. While the controls imposed on the expansion of credit may have some deterrent effect in ordinary market conditions, they hardly help when it is desired that the volume of credit in the economy should increase. In this type of situation, it is lack of demand that plays havoc with the economic system. Easy availability of credit may not be sufficient to induce the investors to borrow and undertake economic activities. What is required is that initial pull of demand should be provided so as to set in a sequential chain of higher demand, higher production and higher income. A suitable fiscal policy, rather than a monetary policy, may more easily perform the trick.

Article IV.

Fiscal Measures: Anti-inflationary fiscal policy consists of increased public spending. Keynes and later economists have put much emphasis on public spending to push up employment and the level of income in an economy. To make up for the decline of private spending and push up employment and income, public spending on public works programs has been advocated. These programs include such schemes as construction of roads, dams, parks, etc. These programs should be financed through borrowings from banks. This will provide employment to the unemployed increase the incomes of the people, raise the aggregate demand and thus lead to increased employment. In short, public spending increases employment directly and indirectly. It increases employment

directly by giving work to the unemployed; it increases employment indirectly by raising the income and aggregate demand for goods and services. When once employment has started rising, multiplier effect will come into play and push up production and employment still further.

Non-Monetary Measures: Provision of subsides and arrangement of easy availability of consumer goods on schemes like hire-purchase may help to stimulate demand, and thus be instrumental in fighting deflation.

To sum up, deflation results from lack of aggregate demand and hence it need be fought with all command. The strategy is to raise the level of demand in the economy. In this strategy, major role is to be played by fiscal authorities.

Comparison between Inflation and Deflation: Inflation is a state of rising prices; deflation is a state of falling prices. Both of these situations have adverse effects on an economy. First, we take inflation. Inflation leads to an unjust distribution o income by penalizing those who save and rewarding those who spend. There is a classic example of the two young men who inherited fabulous wealth. One of them sat quietly on it by investing it in fixed income earning bonds and fixed deposits. The other, more liberal in his approach, made good of it by filling up his garage with empty soda and whisky bottles. When Germany was hit by hyper-inflation, the former found his assets reduced to naught, whereas the latter could ear handsome income from his garbage. This type of effect on saving may adversely affect capital formation and investment if hyper-inflation continues for a fairly long period of time. Inflation, if not controlled by suitable monetary and fiscal measures, may end up by adversely affecting the level of economic activity. It will happen, if inflation creates uncertainties and instabilities of worst order.

Similarly, deflation also adversely affects an economy hit by it. In a sate of falling prices, the entrepreneur is generally prone to cut down on their investment expenditure. With their unsold, but consumers are going without them since they do not have ade1quate purchasing power?

There is hardly anything to choose between inflation and deflation. Both create instabilities of worst kind. But, if the choice is limited to these two phenomena, one will prefer inflation to deflation, as Keynes pointed out "Inflation is unjust and deflation is inexpedient, of the two, deflations is worse."

Deflation hits at the very existence of the individuals, and breeds squalor and misery all around. Inflation creates inequalities, perpetuates and sustains them, but at least it offers expanding work opportunities as long as 'boom' lasts. Deflation will lead to an equal distribution of poverty, in which all the economic groups will suffer. Inflation will create income which all the economic distributed among all the sections of the society. But as long as inflation creates income it is to be preferred to deflation during which all activities come to standstill.

8.9 MONETARY AND FISCAL POLICIES IN DEVELOPING COUNTRIES

As you all know that the ultimate objective of the developing countries is to attain the highest level of economic growth. These countries posses enormous natural and manpower resources, but most of these resources are unutilized or underutilized. The process of economic development has started with a low key-not and the real rate of economic growth has been far below the targeted rate of growth. The main obstacles have been the paucity of capital resource, technical know-how, and lack of well-defined order of priorities. The State in the recent past has started taking an active and keep interest in the developmental activities, but it has attained limited success. The State is equipped with monetary and fiscal policies to keep an over-all control over the economy. We shall not examine the role, efficacy, and limitations of monetary and fiscal policies in the developing countries.

8.9.1 MONETARY POLICY

Meaning of Monetary Policy: Monetary policy, generally, refers to those policy measures of the central bank which are adapted to control and regulate the supply of money, the cost and availability of credit in a country. Monetary policy consists of those monetary decisions and measures the aim of which is to influence the monetary system. According to Paul Einzig, an ideal monetary policy may be defined "as the effort to reduce to a minimum the disadvantages and increase the advantages, resulting from the existence and operation of a monetary system."

Broadly speaking, by monetary policy is meant the policy pursued by the central bank of a country for administering and controlling country's money supply including currency and demand deposits and managing the foreign exchange rates. The central bank of a country through its monetary policy manipulates the money supply, credit, government expenditure, and rates of interest in such a manner so that the monetary system may be benefited to the maximum extent.

Objectives of Monetary Policy: Economists have conflicting and divergent views as regard the objectives of monetary policy. Economists have from time to time mentioned different objectives of the monetary policy. In fact the objectives of monetary policy change according to the changes in the business activities an level of economic development. Broadly speaking, the following are the main objectives of monetary policy:

1. Stability of Exchange Rates;
2. Price Stability;
3. Neutrality of Money;
4. Full Employment; and
5. Economic Growth with Stability.

We shall now discuss in brief each one of the above objectives of the monetary policy.

1. Stability of Exchange Rates: Most of the economics of the world today are open economies.   These economies have maintained trade relations with other countries. International trade transactions take place on the basis of a fixed rate of exchange. Any change in the equilibrium rate of exchange will have deep repercussions on the balance of payments of a country. It is, therefore, essential to maintain stability in the exchange rates.

In gold standard, the exchange rate stability was maintained through the automatic working of the system. Free movement of gold from one country to another helped in correcting the disequilibrium in the balance of payments, whenever and d wherever it arose.   But, the country had to sacrifice the domestic price stability for the sake of stability in exchange rates. The gold standard was finally abandoned after World War I, and since then the objective of stability of exchange rates has lost its significance. However, in paper currency standard, stability of exchange rates is maintained through the device of devaluation or overvaluation of the currency, as the case may be. Now, in most of the countries the monetary policy is directed towards achieving economic stability.

2. Price Stability: Economists like Gustav Cassel and Keynes argue that domestic price stability should be the main objective of central bank's monetary policy.   Violent fluctuations in prices create the problem of inflation and deflation which cause enormous hardships to consumers, wage-earners and other factor-owners. Both post-war inflation and great depression of 30s have convinced the economists that the objective of monetary policy should be the stabilization of the domestic price level even if this stabilization may mean destabilization of the exchange rates.

The objective of price stability has been criticized on several grounds.   Modern economists believe that the objective of monetary policy should not be restricted only to the price stability but to the stabilization of the economic activity at full employment level in the economy. Moreover, the term 'price stability' is very vague. Price level may mean wholesale prices, retail prices, labor prices, and so on. The stabilization of general price level is compatible with rising or falling of individual prices.   Above all, the objective of price stability ignores the realistic requirements of a dynamic society. Thus, on account of the aforesaid limitations the objective of price stability has lost its significance in present times.   It is now resorted to along with the currently more important objective, i.e. full employment.

3. Neutrality of Money: Prof. Hayek and some other economists belonging to the a Austrian School have emphasized upon the neutrality of money as the objective of monetary policy. The neutral money policy is based upon the assumption that money should only play the role of medium of exchange and should not work as a measure of value. In other words, the money supply should be regulated in such a manner that it may

not affect the output, price, employment, etc. It is only by keeping the supply of money as constant that it can play neutral role.

It is; however, wrong to assume that by keeping the supply of money as constant the fluctuations in the price level can be avoided. Even the money supply remains unchanged, but if velocity of circulation increases or decreases, it will definitely disturb the price level. Thus, it is clear that the monetary authority cannot make the money neutral just by keeping its supply unchanged.

4. Full Employment: Full employment refers to a situation in which all those who are able and willing to work at he prevailing rates of wages get employment opportunities. Full employment, however, does not mean complete or total employment. Even at full employment level 2% to 5% resources may remain unemployed. Various forms of unemployment like involuntary unemployment, seasonal unemployment, frictional unemployment and structural unemployment may exist at full employment level. It may not be very difficult for most countries to achieve the level of full employment but the real problem is how to maintain it in the long run. Periodical fluctuations in the business activities may cause unemployment in the economic system.   The monetary policy, therefore, should be directed to ensure that current investment exceeds current saving and this can be done by creation of credit money or by the creation of additional bank deposits or by higher velocity of circulation. When full employment is achieved, efforts should be made to maintain equality between saving and investment at the full employment level. According to Crowther, **"the obvious objective of the monetary policy of a country should be to attain equilibrium between saving and investment at the point of full employment."**

5. **Economic Growth with Stability**: While for most of the developed countries the objective of monetary policy is to maintain equality between saving and investment at ht full employment level, the monetary policy in the undeveloped countries is directed towards achieving high rate of economic growth.   Monetary authority in an underdeveloped economy can use different tools to promote economic growth.

Economic growth refers to a process whereby an economy's real national income increases over a long period of time. By increase in real national income we mean more availability of goods and services in a country during a given period of time.   Thus, economic growth means the transformation of society of a country from a state of under development to a high level of economic achievement.

The main hindrance in economic growth is the lack of investment activities in the underdeveloped countries. Monetary policy can play a very crucial role in promoting the investment activities. Monetary policy can also discourage investment in less-productive or less-useful activities. In other words, monetary policy may be a mixture of 'cheap' and 'tight' monetary management, so as to encourage and discourage investment according to the requirement, so as to encourage and discourage investment according to the requirements of business activities. Besides, the monetary policy should also aim at maintaining stability in the economy.   Monetary policy should be directed towards achieving high rate of growth over a long period of time.

Monetary Policy in a Developing Economy: Prof. Ragnar Nurkse defines underdeveloped countries as "those which compared with the advanced countries are under-equipped with capital in relation to their population and natural resources." Underdeveloped countries do posses plenty of natural and manpower resources but they are unutilized or underutilized. Most of the underdeveloped countries suffer from the problems of low level of real per capita income, business fluctuations, price instability, lack of credit facilities, lack of capital formation, balance of payments disequilibrium, etc. An effective and proper monetary policy will not only provide adequate financial resources for economic development but also help the underdeveloped countries to set up and accelerate the rate of output, employment and income. It may also help these countries in containing inflationary pressures and achieving balance of payment equilibrium.

The following are the main objectives of monetary policy in a developing economy:

1. Inducement to Saving: Capital formation which is a prerequisite to economic growth depends upon saving. Monetary policy in an underdeveloped country helps in promoting savings, their mobilization, and their investment in productive activities. Monetary authority has to provide adequate banking institutions, which may later on be utilized for investment purposes. In order to induce savings, the monetary authority has to offer various incentives to the savers in the form of high rate of interest, safety of deposits, etc.

2. Investment of Savings: According to Prof. Meier and Prof. Baldwin, "the problem of inadequate savings cannot be solved merely by creating new institutions, but the problem can be solved only by saving profitable investment of savings." The objective of economic growth cannot be achieved unless and until the savings are utilized in productive investment activities. The rate of investment is very low in underdeveloped countries on account of the absence of profitable productive activities, lack of entrepreneurial ability and low marginal efficiency of capital. The central bank in such a situation can resort to cheap money policy to promote investment activities.

3. Appropriate Policy as regard to Rate of Interest: The structure of the rate of interest is generally not conductive to economic growth in underdeveloped countries—the rates of interest do not only differ according to different time-schedules but these also differ in different regions and business activities. High rate of interest, as they are generally witnessed in underdeveloped countries, discourage both public and private investment. The monetary authority, therefore, is required to formulate such a policy as regards the rate of interest which may induce the investors to go in for more loans and advances from the commercial banks and other financial institutions.

4. Maintenance and Monetary Equilibrium: Monetary policy in an underdeveloped country should be directed towards achieving equality between demand for money and supply of money. In the initial stages of economic development there is need to expand credit facilities but once a certain level of growth is achieved credit restrictions of various kinds must be imposed by the central bank. In practice, however, it is very difficult to

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say as to when the monetary authority should impose credit restrictions to control the supply of money.

5. To make Balance of Payment Favorable: Most of the underdeveloped countries have to import capital goods, machinery, equipments, technical know-how, etc. in the initial stage of their development. Consequently, their imports exceed the exports and balance of payments becomes unfavorable. Monetary policy should be directed towards maintaining stability in exchange rates and removing disequilibrium in the balance of payments.

6. Price Stability: Internal price stability is an important objective of monetary policy in underdeveloped countries. Violent fluctuations in the internal price level not only disrupt the smooth working of an economy but these also lead to insecurity and social injustice. While inflation creates enormous hardships for the wage-earners and consumers, deflation proves disastrous for both entrepreneurs and wage-earners. Increasing cost of labor and material also increases the cost of various projects, which adversely affect the rate of economic growth.

It should be noted that the effects of price instability are always cumulative in character. Therefore, monetary authority in a developing country should pursue such a monetary policy which may help in maintaining price stability over a long period so that the development activities may go uninterrupted. Different monetary measures can be a adopted for inflationary and deflationary conditions. If inflationary pressures are mounting in the economy, the monetary authority can resort to stringent monetary action, so as to restrict the supply of money and credit in the country. For example, measures like high bank rate, selling of government securities, raising the reserve ratio, raising the margin requirement, etc., can be adopted to contain inflation. Likewise, a different set of measures like lowering the bank rate, purchasing government securities in open market, lowering reserve ratio, reducing the margin requirements, etc., can be adopted to control deflation.

Thus, it is clear that the monetary authority in a developing economy can follow the policy of monetary expansion and monetary contraction to stabilize the internal price level. We can, therefore, conclude that the ultimate objective of monetary policy in the developing countries is to achieve sustained economic growth with stability.

Limitations of Monetary Policy in Developing Countries: Monetary policy can play a very crucial and significant role in the economic development of developing countries. However, the success of the monetary policy is limited by certain factors, the more important amongst these are as follows:

1. **Underdeveloped Monetary and Capital Market**. Most of the developing countries do not have a well-developed and fully-organized money and capital market. In the absence of such developed money markets it is not possible to effectively implement the various credit control policies by the central bank.

2. **Lack of Integrated Structure of Rate of Interest**. In the developing countries a sizable proportion of the total financial resources come from the unorganized banking sector. In the absence of an integrated and well-organized structure of rate of interest the central bank fails to influence the market rate of interest through changes in the bank rate. In fact, any increase or decrease in the bank rate must be reflected in the form of increased or decreased market rate of interest, but it does not happen in the developing countries.

3. **Banking Habits of the People**. In the developing countries most of the exchange transactions are conducted with the help of money. People very seldom use credit instruments to perform exchange transactions. It is for this reason that the credit control policy of the central bank does not have desired effect on the business activities.

4. **Lack of Co-operation by the Commercial Bank**. Commercial banks are the institutions which help in the implementation of the monetary policy pursued by the central bank. In developing countries, however, the commercial banks fail to provide sufficient co-operation to the central bank and in some cases they also flout the directives given by the central bank. Monetary policy cannot succeed unless and until there is a proper coordination and co-operation between the central bank and commercial banks.

5. **Literacy and Social Obstacles**. Most of the developing countries suffer from mass illiteracy, superstitions, dogmatism and other social evils. People do not understand the significance of banking institutions. Neither they keep their deposits with the banks nor do they avail the opportunities of loans and advances from the banks. The success of monetary policy depends upon the widespread banking institutions, banking habits of the people, adequate development of credit facilities, adequate quantity of bank deposits, entrepreneurial ability, etc.

In brief, the monetary policy in a developing country suffers from several limitations. The monetary authority on the one hand, has to create conditions whereby the banking and financial institutions may flourish, and, on the other hand, it has to exercise various restrictions and controls to regulate the supply of current and credit in economy. The monetary authority has also to manipulate the credit policy in such a way as to step up saving and investment activities for accelerating the rate of economic growth.

8.9.2 FISCAL POLICY

Monetary policy alone cannot achieve the objectives of sustained economic growth, stability and social justice in a developing economy. It is, therefore, essential to supplement the monetary policy by an effective fiscal policy. Monetary and fiscal policies taken together can prove to be very effective in achieving the objective of growth with stability.

Meaning of Fiscal Policy: Fiscal policy refers to government spending, taxing, borrowing and debt management. The government through its fiscal policy can influence

the nature of economic activities in a country. According to Arthur Smithies, **"Fiscal policy is a policy under which the government uses its expenditure and revenue programs to produce desirable effects and avoid undesirable effects on national income, production and employment."** Fiscal policy is used as a balancing device in the development of an economy. It refers to a process of shaping public taxation and public expenditure so as to help dampen the swings of the business cycle and to contribute towards the maintenance of a progressive, high employment economy free from excessive inflation or deflation. In other words, the modern fiscal policy is a technique to attain and maintain full employment by manipulating public expenditure and revenue in such a way as to keep equilibrium between effective demand and supply of goods and services at a particular time. In brief, the modern fiscal policy is nothing but the application of principle of **functional finance**.

There are mainly three constituents of the fiscal policy; these are:
- Taxation policy,
- Public expenditure policy, and
- Public debt policy.

All these constituents must work together to make the fiscal policy sound and effective.

Objective of Fiscal Policy in a Developing Country: The objectives of fiscal policy differ from country to country according to the level of economic advancement. The role of fiscal policy in developed countries is to maintain the level of full employment, and to stabilize the rate of growth. While in an underdeveloped and developing economy, the role of fiscal policy is to accelerate the rate of capital formation and investment, change the pattern of investment, maintaining adequate supply of essential consumer goods on the one hand, and capital goods on the other, encourage, the investment activities into socially desirable channels, maintaining price stability, and above all to make the distribution of national product just and equitable.

These objectives of fiscal policy may come in conflict with one another. For example, the objective of high rate of economic growth may come in conflict with the distributive objective of the fiscal policy. Likewise, equitable distribution of income and wealth may adversely affect the inducement to produce more and thus retard the rate of economic growth. Thus, reconciliation has to be achieved between these conflicting objectives of fiscal policy. The main objectives of fiscal policy in a developing economy may be summarized as follows:

1. Mobilization of Resources: Most of the developing countries are caught in the 'vicious circle of poverty.' Prof. Higgins remarks that "the road to the growth of developing economies is paved with vicious circles." Vicious circle of poverty refers to the circular constellation of forces, tending to act and react in such a way as to keep a poor country in a state of poverty. The most important objective of fiscal policy in a developing country should be to break this vicious circle of poverty.

In order to achieve the above objective it is of utmost importance to increase the rate of investment and capital formation to accelerate the rate of growth. The government may resort to voluntary and forced saving to collect enough resources for investment.

'Incremental saving 'ratio', i.e. the marginal propensity to save, can be maximized by a number of methods which may include direct physical controls, increase in the rates of existing taxes, imposition of new taxes, operating surplus of the public enterprises, public borrowings, deficit financing, etc.

Growth breeds inflation. It is, therefore, essential to contain inflationary pressure in the economy through the curtailment of consumption expenditure and avoidance of unproductive investment. In developing countries, the level of per capital income is very low. As a result of this, adequate voluntary savings do not take place. The government, therefore, has to depend on taxation and public borrowings for raising revenue resources to finance development programs.

2. Acceleration of Economic Growth: The aim of fiscal policy in a developing country is to accelerate the rate of growth so that the real national income of the country may increase in the long run. The government, through its taxation policy, public borrowings, deficit financing, etc., can provide incentives for saving and investment. The revenue resources collected through taxes should be invested in productive activities. Public expenditure should be diverted towards new and more useful development activities. The government may also grant tax relief and subsidies to the entrepreneurial class to boost the investment activities. Expansion of investment opportunities will certainly have a favorable effect on the level of business activities and rate of economic growth.

3. To Minimize the Inequalit8ies of Income and Wealth: To maintain the equality for income and wealth is not only an objective of economic growth, but a precondition to it. The government, therefore, should formulate its fiscal policy in such a manner so that it may reduce the inequalities of income and wealth. A mere increase in national income does not necessarily promote economic growth. It is all the more essential to reduce the existing inequalities of income and wealth. Extreme inequalities create political and social discontentment and generate instability in the economy. The following measures can be taken to reduce the inequalities of income and wealth:

a) Progressive taxes may be imposed on the rich people so that the unnecessary consumption expenditure is curtailed.
b) The poorer section of the society should be exempted from taxes.
c) Luxury goods should be highly taxed and the proceeds so collected be diverted to productive investment activities.
d) The government must spend more on the social services or on the items which benefit the poor people most.
e) The fiscal policy must discourage unearned income.

In brief, the problem of reducing inequalities of income and wealth may be solved through redistributive public expenditure and redistributive tax policy.

4. To Increase Employment Opportunities: One of the important objectives of fiscal policy in a developing country is to increase the employment was regarded as the most important objective under the influence of Keynes. Prof. Lewis is of the opinion that without providing full employment to the available manpower, the objective of economic growth will remain incomplete. The government through her fiscal policy can help in creating and promoting an atmosphere where people may get employment opportunities.

The government in a developing country can resort to the following methods to raise the level of employment in the country.

1. **Public Spending**. Public expenditure is the most potent weapon to fight against unemployment. The level of employment depends upon effective demand. The government can influence effective demand either by making more public expenditure or by resorting to such fiscal methods which may raise the level of private expenditure. The role of public expenditure becomes very significant during the period of depression when the private entrepreneurs are not keen to take up investment activities. The government can resort to 'counter cyclical fiscal policy,' which means that taxes and government spending be varied in an anti-cyclical direction; government spending being cut and taxes increased in the expanding phase of cycle, and government spending increased and taxes cut during the contraction phase. Increased government expenditure will open new job opportunities in the economy, which mean creation of demand for goods and services.

   Mention may also be made of 'pump priming' and 'compensatory expenditure' to raise the level of employment in the economy, Pump priming refers to increase in private expenditure through an injection of fresh purchasing power in the form of an increase in private expenditure through an injection of fresh purchasing power in the form of an increase in public expenditure. It is argued that such an initial public expenditure may set in motion a process of recovery from the condition of depression. Pump-priming is based on the assumption that a temporary additional expenditure will generate lasting process to raise the level of employment and income. Compensatory expenditure, on the other hand, refers to the variations in the government budget expenditure to compensate the deficiency in private demand so as to maintain high level of investment, employment and income stability. In the words of Keynes, "government expenditure becomes a balancing factor in order to maintain national income at a given level. Such expenditure may be progressively raised during depression phase of the business cycle, and progressively reduced in the recovery phase."

2. **Taxation Policy:** Taxation policy of the government can play a very important role in raising the level of employment in a developing economy. Unemployment is the result of low propensity to consume. The government can resort to *redistributive tax policy* to remove the deficiency in the propensity to consume. While the rich people have a low propensity to consume the poor have a very high

propensity. The government can impose heavy takes on the rich people and the proceeds of these taxes may be distributed among the poor. Progressive taxes on the rich persons are socially desirable and economically advantageous. It should, however, be noted that the progressive taxes should not adversely affect the inducement to save and invest. Similarly, the money transferred from the rich to the poor should not be wasted on conspicuous expenditure but utilized for essential consumption expenditure and investment.

While explaining the effect of taxation policy o employment it would be pertinent to mention the idea of '*functional finance*' which was propounded by Prof. A. P. Lerner. The central idea behind the theory of functional finance is that fiscal policy be judged by its effects on the economy as a whole and not by any established doctrine of finance.

3. **Public Debt Policy**. Taxation policy does not prove to be very effective in the developing countries. People in these countries have a low level of per capita income, therefore, the scope of raising the tax rates or imposing fresh taxes is very limited. The government, therefore, has to resort to public borrowing to meet the various public expenditure obligations.

   Public debt policy can be used to control the non-essential private consumption expenditure and to raise small savings for financing the development expenditure. The government for this purpose can issue debentures, bonds, etc., with attractive rates of interest to encourage people to purchase these titles. In case the government fails to collect sufficient finance through these methods, it may resort to compulsory savings of the public.

   We cannot, however, depend very much upon public debt policy for raising the level of employment in a developing economy. Public debt will prove effective only when these debts are collected through the idle balance with the people. If the public borrowing results in a fall in current consumption expenditure or is financed through curtailment in investment, it will not have desired effects on the level of employment and income.

4. **Price Stability**. As we have already discussed, a developing country does not posses adequate capital resources of finance developmental expenditure. The scope of taxes and public borrowing is also limited. Therefore, the government has to resort to deficit financing. In most of the developing countries deficits in the State's budget are met by printing more currency notes. Increase in the supply of money creates inflationary conditions in the economy. Increasing prices do not only create hardships for the wage-earners and customers, these also raise the cost of development projects. Though some economists have favored mild inflation as an incentive for capital formation, they have emphasized that large-scale inflation would retard economic growth.

Thus, fiscal policy should aim at curbing inflationary pressure inherent in a developing economy. While the demand for consumer goods is very large, the supply remains relatively inelastic due to imperfections of markets and structural rigidities, which impede the supply of essential goods. Imbalance between the demand and the supply leads to inflationary pressure in the economy. On account of increase in the prices of essential goods, the demand for increase in the wage rates gains momentum, and thus the economy is caught in the vicious circle of high prices and high wages. Thus, a demand-pull inflation tends to generate cost-push inflation in a developing country.

A package of fiscal measures can be adopted to contain inflation. Some of the important measures are given below:

a) The excess purchasing power of the people should be withdrawn through taxes, compulsory savings and public borrowings.
b) Some anti-inflationary taxes like super tax, expenditure tax, taxes on luxury items etc., should be imposed.
c) Besides liquid assets, cash-balances and capital assets should also be taxed.
d) The policy must be progressive so that it may affect only that section of the society which is benefited most by inflation and does not harm the poorer section.
e) Tax policy should encourage voluntary savings and control non-essential consumption expenditure.

Fiscal measures may have limited success to check inflationary pressures; therefore, these must be supplemented with monetary measures to make them more effective. Though deflationary conditions are not so common in developing countries as inflationary conditions, but if such a situation occurs, an appropriate fiscal policy with emphasis on public expenditure can be followed to relieve the economy from the quagmire of depression.

Limitations of Fiscal Policy in Developing Countries: Fiscal policy has achieved great success in the developed countries, but in case of developing countries it suffers from several limitations. In fact, the nature and fundamental characteristics of the developing countries are responsible for partial success of the fiscal policy. Some of the limitations of the fiscal policy are as follows:

First, the tax structure in the developing countries is rigid and narrow. There is complete absence of conditions conductive to the growth of well-knit and integrated tax policy.

Secondly, a sizable portion of the developing countries is non-monetized. As a result of this, the fiscal measures pursued by the government do not prove to be very effective and fruitful.

Thirdly, there is lack of statistical information as regard to the income, expenditure, saving, investment, employment, etc. Lack of adequate data makes it difficult for the public authorities to formulate a rational and effective fiscal policy.

Fourthly, unless the people understand the implications of the fiscal policy and fully co-operate with the government in its implementation, it cannot succeed. In developing countries, majority of the people are illiterate, and they do not understand the implications of fiscal policy.

Fifthly, people are not conscious about their responsibilities and role in the developmental programs. There are cases of large-scale tax evasion with their impact on the fiscal policy as well. In the event of tax evasion the government may fail to collect the stipulated amount from the taxes.

Lastly, fiscal policy or for that matter any other policy requires an efficient administrative machinery to formulate and successfully implement the policy.   In developing countries, different political groups and parties work on different lines and in different directions to achieve their political ends without bothering about the welfare of the people at large. The administration is corrupt and inefficient, and is incapable to execute the fiscal policy honestly and effectively.

8.9.3 FISCAL AND MONETARY INTERACTIONS

For monetary policy to be effective it is necessary that the monetary authority should have an effective say in regulating money supply which, in turn, requires that the monetary authority must have a reasonable degree of control over the creation of reserve money. Obviously, there are exogenous factors such as movements in the foreign exchange assets which affect the level of reserve money. The degree of independence in regulating reserve money depends upon the institutional arrangement governing the functioning of the monetary authority. Over the years, the practice has grown under which the entire budget deficit of the Central Government has been taken over by the Reserve Bank of India, leading to an automatic monetization of the deficit.

The issues that arise in the coordination of fiscal and monetary policies in India can be understood by a brief review of the borrowing programs of the Government. There has been a significant rise in government borrowing since 1971. The volume of treasury bills outstanding including those funded into special securities rose from Rs. 2,500 crore in March 1971 to Rs. 39,700 crore in March 1987. Other marketable debt of the Central Government rose during the same period from Rs. 4,000 crore to Rs. 42,000 crore. Marketable debt of the State Governments too rose sharply from Rs. 1,200 crore in 1971 to Rs. 7,200 crore in 1986.   Net Reserve Bank credit to Government also rose significantly from Rs. 3,800 crore in 1971 to Rs. 45,800 crore in 1987. Out of the increase in treasury bills and other marketable debt outstanding of the order of Rs. 81,900 crore, the absorption by the Reserve Bank accounted for about 60 per cent. The Reserve Bank owned more than 93 per cent of treasury bills outstanding in 1987.

The developments mentioned above highlight two important features of the Government borrowing program. First, the scale of borrowing was maintained at relatively high level and budgetary deficit represented by the increase in volume of treasury bills outstanding has gone up sharply. Government finances have come under increasing pressure in recent years. Surpluses on revenue account have given way to deficits. Interest payments as a proportion of tax receipts have shown a sharp rise to 35 per cent in 1992-93. Secondly, the market borrowings of the Government have generally been at lower than market rates even though the rates of return offered on other types of borrowings have been high taking into account the fiscal concession. The discount rates on treasury bills which had risen 4.6 per cent per annum in mid-1974 have been pegged at that level and even today remain at that level. Banks and the life insurance and general insurance enterprises are required to invest a prescribed proportion of the funds mobilized by them in Government securities commercial banks could not absorb fally the Government securities which were floated. As the earnings from holding these securities were not attractive and the banks had other alternative avenues for utilizing their funds more profitably, they held Government securities only to the extent they were required to hold them under statutory obligations. In these circumstances, the Reserve Bank of India, which manages the public debt, becomes the residual to Government securities and treasury bills. As Government incurred deficits every year, the question of retirement of treasury bills did not arise. The Reserve Bank had, therefore, to address itself to the difficult task of neutralizing to the extent possible the expansionary impact of deficits after taking into account the short-term movements in its holding of net foreign exchange assets the increasing liquidity of the baking system resulting from rising levels of reserve money had to be continually mopped up. The instrument of open market operations is not available for this task, given the interest rate structure. The task of absorbing excess liquidity in the system had to be undertaken mainly by increasing the CRR. At some point, this can result in some crowding out of the credit to commercial sector. With frequent and sharp increase the CRR has reached its statutory limit.

The forth budget deficits and their absorption by the reserve Bank highlight not only the close link between fiscal policy and monetary policy cut also the need for close coordination between the two. The essence of coordination between fiscal policy and monetary policy lies in reaching an agreement on the extent of expansion in Reserve Bank credit to Government year to year. This will set a limit on the extent of fiscal deficit and its magnetization and thereby provide greater manipulability to the monetary authorities to regulate the money. Its in this context that introduction of a system of monetary targeting mutually agreed upon between the Government and the central bank assumes added significance.

8.10 REVIEW QUESTIONS
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1. Give a critical assessment of anyone theory of inflation and .give reasons for selecting this particular theory
2. What is inflationary-gap? Examine the usefulness of this concept in analyzing a process of inflation.
3. Distinguish between demand-pull and cost-push inflation. How have these two views on inflation been reconciled?
4. "The distinction between cost-push and demand-pull inflation is unworkable, irrelevant and even meaningless." Do you agree with this view. Give reasons in support of your answer.
5. Discuss the theory of structural inflation.
6. Distinguish between demand-pull and cost-push inflation. How have these two views on inflation been reconciled
7. "The distinction between cost-push and demand-pull inflation is unworkable, irrelevant and even meaningless." Do you agree with this view? Give reasons in support of your answer.
8. Discuss the theory of structural inflation.
9. Write notes on:
   - Open and Suppressed Inflation,
   - Markup Inflation,
   - Stagflation,
   - Sectoral Inflation.
10. Explain Bent Hansen's Excess Demand Inflation Theory.
11. Is inflation a purely monetary or purely non-monetary or an institutional phenomenon? Write in the context of a developed country. Discuss the theory of the Phillips curve and bring out its apparent policy implications.
12. How does, the Phillips curve explain the trade-off between unemployment and inflation? Discuss its policy implications.
13. Explain the phenomenon of stagflation. Suggest measures to control it.
14. What is inflation? Explain its economic effects on different people.
15. Discuss the causes of inflation. How can it be controlled?

TRADE BARRIERS AND PROTECTIONISM

Structure

9.1 Free Trade versus Protection

9.2 Arguments for Protection

9.3 Demerits of Protection

9.4 Trade Barriers

9.5 Tariff Barriers

9.6 Non Tariff Barriers-Extent and Effects

9.7 Review Questions

9.1 FREE TRADE VERSUS PROTECTION

Free trade refers to the trade that is free from all artificial barriers to trade like tariffs, quantitative restrictions, exchange controls, etc. Protection, on the other hand, refers to the government policy of protection to the domestic industries from foreign competition. There are a number of arguments for and against both free trade and protection.

Arguments for Free Trade: The important arguments in favor of free trade are as follows:
- Free trade leads to the most economic utilization of the productive resources of the world because under free trade each country will specialize in the production of those goods for which it is best suited and will import from other countries those goods which can be produced domestically only at a comparative disadvantage.
- Under free trade, division of labor occurs on an international scale leading to greater specialization, efficiency and economy in production.
- As there will be intense competition under free trade, the inefficient producers are compelled either to improve their efficiency or to quit.
- Free trade helps to break domestic monopolies and free the consumers from exploitation.
- Free trade benefits the consumers in different ways. It enables them to obtain goods from the cheapest source. Free trade also makes available large varieties of goods.
- Further, under free trade there is no much scope for corruption which is rampant under protection.

9.2 ARGUMENTS FOR PROTECTION

Theoretically speaking, free trade has certain virtues, as we have seen above. But, in reality, government is encouraged to resort to some manner of protective measures to safeguard the national interest. There are a number of arguments put forward in favor of protection. Some of these arguments are very valid while some others are not. We provide below the gist of the popular arguments for protection.

- **Infant Industry Argument:** The infant industry argument advanced by Alexander Hamilton, Frederick List and others assert that a new industry having a potential comparative advantage may not get started in a country unless it is given temporary protection against foreign competition. An established industry is normally much stronger than an infant one because of the advantageous position of the established industry like its longstanding experience, internal and external economies, resource position, market power, etc. Hence, if the infant is to compete with such a powerful foreign competitor, it will be a competition between unequal and this would result in the ruin of the infant industry. Therefore, if a new industry having a potential comparative advantage is not protected against the competition of an unequally powerful foreign industry, it will be denying the country the chance to develop the industry for which it has sufficient potential. The intention is not to give protection for ever but only for a period to enable the new industry to overcome its teething troubles. The policy of protection has been well expressed in the following words: "Nurse the baby, protect the child and free the adult". The infant industry argument, however, has not been received favorably by some economists. They argue that an infant will always be an infant if it is given protection. Further, it is very difficult for a government to identify an industry that deserves infant industry protection. "The infant industry argument boils down to a case for the removal of obstacles to the growth of the infants. It does not demonstrate that a tariff is the most efficient means of attaining the objective.

- **Diversification Argument:** It is necessary to have a diversified industrial structure for an economy to be strong and reasonably self-sufficient. An economy that depends on a very limited number of industries is subject to many risks. A depression or recession in these industries will seriously affect the economy. A country relying too much on foreign countries runs a number of risks. Changes in political relations and international economic conditions may put the country into difficulties. Hence, a diversified industrial structure is necessary to maintain stability and acquire strength. It is, therefore, advised to develop a range of industries by according protection to those which require it.

- **Improving the Terms of Trade:** It is argued that the terms of trade can be improved by imposing import duty or quota. By imposing tariff the country expects to obtain larger quantity of imports for a given amount of exports, or conversely, to part with a lesser quantity of exports for a given amount of imports.

But the terms of trade could be expected to improve only if the foreign supply is inelastic. If the foreign supply is very much elastic a tariff or a quota is unlikely to improve the terms of trade, there is also the possibility that the foreign countries will retaliate by imposing counter tariffs und quotas. The validity of this argument is therefore, questionable.

- **Improving Balance of Payments:** This is a very common ground for protection. By restricting imports, a country may try to improve its balance of payments position. The developing countries, especially, may have the problem of foreign exchange shortage. Hence, it is necessary to control imports so that the limited foreign exchange will be available for importing the necessary items. In developing countries, generally, there is a preference for foreign goods. Under such circumstances it is necessary to control unnecessary imports lest the balance of payments position become critical.

- **Anti-Dumping Protection:** It is also resorted to as an anti-dumping measure. Dumping, certainly, can do harm to the domestic industry; the relief the consumers get will only be temporary. It is possible that after ruining the domestic industry by dumping, the foreign firms will obtain monopoly powers and exploit the home market. Sometimes, dumping represents a transmission of the recession abroad to the home country. These factors point out the need to protect domestic industries against dumping.

- **Bargaining:** It is argued that a country which already has a tariff can use it as a means of bargaining to obtain from other countries lower duties on its exports. It has been pointed out, however, that the bargaining lever, instead of being used to gain tariff concessions from foreign powers, may be employed by others to extract additional protection from the home government.

- **Employment Argument Protection:** It has been advocated also as a measure to stimulate domestic economy and expand employment opportunities. Restriction of imports will stimulate import competing industries and its spread effects will help the growth of other industries. These, naturally, create more employment opportunities. This method of employment generation, however, has some problems. First, when we reduce imports from foreign countries employment and income will shrink abroad and this is likely to lead to a fall in the demand for our exports. Secondly, the foreign countries will be tempted to retaliate in order to protect their employment.

- **National Defense:** Even if purely economic factors do not justify such a course of action, certain industries will have to be developed domestically due to strategic reasons. Depending on foreign countries for our defense requirements is rather foolish because factors like change in political relations can do serious damage to a country's defense interest. Hence, it is advisable to develop defense and other industries of strategic importance by providing protection if they cannot survive without protection.

- **Key Industry Argument:** It is also argued that a country should develop its own key industries because the development of other industries and the economy depends a lot on the output of the key industries. Hence, if we do not have our own source of supply of key inputs, we will be placing ourselves at the mercy of the foreign suppliers. The key industries should therefore be given protection if that is necessary for their growth and survival. The arguments mentioned above have been generally regarded as 'serious'. There are, however, a number of other arguments also which have been branded as 'nonsense', 'fallacious', 'special interest', etc.

- **Keeping Money at Home:** This argument is well expressed in the form of a remark falsely attributed to Abraham Lincoln: "I do not know much about the tariff, but I know this much: When we buy manufactured goods abroad we get the goods and the foreigner gets money. When we buy the manufactured goods at home we get both the goods and the money". As Beveridge rightly reacted, this "argument has no merits; the only sensible words in it are the first eight words." The fact that imports are ultimately paid for by exports clearly shows that the 'keeping money at home' argument for protection has no sense in it.

- **The Pauper Labor Argument:** The essence of this argument is that if in the home country the wage level is substantially high compared to foreign countries, the foreign producers will dominate the home market because the cheap labor will allow them to sell goods cheaper than the domestic goods and this will affect the interests of the domestic labor. This argument does not recognize the fact that high wages are usually associated with high productivity. Further, labor cost differences may not be a determining factor.

- **Size of the Home Market:** It is argued that protection will enlarge the market for agricultural products because agriculture derives large benefits not only directly from the protective duties levied on competitive farm products of foreign origin but also, indirectly from the increase in the purchasing power of the workers employed in industries similarly protected. It may be pointed out against this that protection of agriculture will harm the non-agriculturists due to the high prices of agricultural products and the protection of industries will harm agriculturists and other consumers due to high prices encouraged by protection.

- **Equalization of Costs of Production:** Some protectionists have advocated import duties to equalize the costs of production between foreign and domestic producers and to neutralize any advantage the foreigner may have over the domestic producers in terms of lower taxes, cheaper labor, or other costs. This argument allegedly implies a spirit of 'fair competition', not the exclusion of imports. When, however, by reason of actual cost structure or artificial measures, costs of production become identical, the very basis of international trade disappears. The logical consequence of this pseudo-scientific method is the elimination of trade between nations. Thus, the equalization of costs of production argument

for protection is utterly fallacious and is one of the most deceitful ever advanced in support of protection.

- **Strategic Trade Policy:** Strategic trade policy which advocates protection and government cooperation to certain high-tech industries in the developed countries is somewhat similar to the infant industry argument applied to the developing countries. The argument is that government support should be accorded to gain comparative advantage in the high technology industries which are crucial to the future of the nation such as semiconductors, computers, telecommunications, etc. It is also argued that State support to certain industries become essential to prevent market monopolization. For example, outside the former Soviet Union, only three firms build large passenger jets. If European governments do not subsidize the Airbus Industries, only the two American companies, Boeing Company and Mc-Donnell-Douglas Corporation, will remain.

The off cited examples of industries developed with the support of the strategic trade policy include the steel industry in Japan in the 1950s, semiconductors in the 1970s and 1980s, and the development of the supersonic aircraft, Concorde, in Europe in the 1970s and the development of the Airbus aircraft in the 1980s.As Salvatore observes, while strategic trade policy can theoretically improve the market outcome in oligopolistic markets subject to extensive economies and increase the nation's growth and welfare, even the originators and popularizes of this theory recognize the serious difficulties in carrying it out. The following difficulties are pointed out in particular. First, it is extremely difficult to choose the winners (i.e. choose the industries that will provide large external economies in the future) and devise appropriate policies to successfully nurture them. Secondly, since most leading nations undertake strategic trade policies at the same time, their efforts are largely neutralized so that the potential benefits to each may be small. Thirdly, when a country does achieve substantial success with strategic trade policy, this comes at the expense of other countries (i.e., it is a 'beggar-thy-neighbor' policy) and so, other countries are likely to retaliate.

9.3 DEMERITS OF PROTECTION

The following defects are generally attributed to protection:
- Protection is against the interest of consumers as it increases price and reduces variety and choice.
- Protection makes producers and sellers less quality conscious.
- It encourages domestic monopolies.
- Even inefficient firms may feel secure under protection and it discourages' innovation.
- Protection leaves the arena open to corruption.
- It reduces the volume of foreign trade.
- Protection leads to uneconomic utilization of world's resources,

Fall and Rise of Protectionism: The period of over two-and-a-half decades until the early 1970s witnessed rapid expansion of the world output and trade. World trade, in fact,

grew much faster than the output. After the Second World War, there was progressive trade liberalization until the early seventies. Thanks to the efforts of GATT, the "tariff reductions in the industrial countries continued even after this. The average levels of tariff on manufactures in industrial countries is now about 3 per cent compared to 40 per cent in 1947.Although the period until the early 1970s was characterized by trade liberalization in general, there were several exceptions. In the developed countries, heavy protection was given to the agricultural sector through import restrictions and domestic subsidies. Further, in manufactured goods, textiles and clothing were subject to heavy protection. There was also protection associated with regional trade agreements like the EEC. Imports to developing countries were in general highly restrictive due to reasons such as balance of payments problems and the need to protect infant industries. In the industrial countries, anti dumping and countervailing duties began to assume more importance since the mid-sixties. The overall trend in the industrial countries, however, was one of liberalization. This trend was reversed in the seventies. Since about the mid-seventies, protectionism has grown in the developed countries. This has taken mainly the form of non-tariff barriers (NTBs).

The main reason for the growing protectionism in industrialized countries is the increasing competition they face from Japan and developing countries like, for example, the South-East Asian countries. Due to the fact that the competition has been very severe in the case of labor intensive products, the import competing industries in the advanced countries have been facing the threat of large retrenchments. Several other industries, like the automobile industry in the US, have also been facing similar problems. The demand for protection has, therefore, grown in the industrial countries in order to protect employment. Protective measures have also been employed to pressurize Japan and the developing countries to open up their markets for goods, services and investments of the industrial countries.

As mentioned earlier, the NTBs affect the exports of developing countries much more than those of the developed ones. In other words, the main target of the developed country imports restrictions in the last two decades, or so, have been the developing countries. By 1987, NTBs were estimated to have affected almost a third of OECD imports from developing countries. While developing countries as a group now face tariffs .10 per cent higher than the global average, the least developed countries face tariffs 30 per cent higher-because tariffs remain higher on the goods with greatest potential for the poorest countries, such as textiles, leather and agricultural commodities.

Labor intensive products like textiles, clothing and footwear are among the most highly protected imports. The restriction on the textiles and clothing, which account for nearly one-fourth of the developing country exports, has been exercised mainly by the Multi-Fiber Arrangement (MFA) which denies the developing countries an estimated $ 24 billion a year in terms of export earnings. Tariff escalation (i.e. increase in tariffs with the level of processing) is yet another important factor which discourages developing countries' manufactured goods. For example, while the tariff on raw sugar is less than 2 per cent, it is around 20 per cent for processed sugar products. The tariff escalation discourages the developing countries' graduation as exporters of manufactured goods

from commodity exporters. Tariff escalation affects a wide variety of products such as jute, spices, vegetables, vegetable oils, tropical fruits beverages, etc.

As the industrial countries face more competition, they increase protectionism. This encourages one to think that they wanted free trade only as long as they enjoyed a dominant position; when their dominance is challenged they increase the trade barriers giving one or other reason. One should not be surprised if tomorrow they restrict the imports from developing countries arguing that the cost advantage of the developing countries is because of the 'injustice' done to the labor by paying wages lower than that in the US or other industrial countries! Ironically, industrial countries are increasing trade restrictions while the developing countries are liberalizing trade.

Trade restrictions prove costly not only for the affected exporting country but also for the importing country restricting the trade. The consumers often pay a heavy price for protection. It is estimated that overall the American consumers pay as much as $ 75 billion a year more for goods on account of import fees and restrictions-a sum roughly equivalent to about a sixth of the US import bill. In Canada every dollar earned by workers who continue to hold their jobs because of protection of the textile and clothing industries costs society an estimated $ 70. In the United States, consumers paid $ 1, 14,000 a year for each job saved in the steel industry.

9.4 TRADE BARRIERS

Though there are a number of advocates of free trade, international trade is generally characterized by the existence of various trade barriers. Trade barriers refer to the government policies and measures which obstruct the free flow of goods and services across national borders. The main objectives of imposing trade barriers are:

- To protect domestic industries or certain other sectors of the economy from foreign competition
- To guard against dumping
- To promote indigenous research and development
- To conserve the foreign exchange resources of the country
- To make the Balance of Payments 'position more favorable
- To curb conspicuous consumption and mobilize revenue for the government.

Trade barriers may be broadly divided into two groups, namely, tariff barriers and non-tariff barriers (NBTs).

9.5 TARIFF BARRIERS

Tariff in international trade refer to the duties or taxes imposed on internationally graded commodities when they cross the national borders. Tariff is a very important instrument of trade protection. However, mostly because of the efforts of the GATT/WTO aimed at trade liberalization, in the Industrial countries, there has been a substantial reduction in the tariffs on manufactured goods over the last five decades, or so. In the developing

countries although the tariff rates are still fairly high, many of them have also been progressively reducing the tariff levels. Tariffs are generally regarded as less restrictive than other methods of protection like quantitative restrictions. Therefore, organizations like the WTO generally prefer tariff to non tariff barriers.

Classification of tariffs: There are different ways of classifying tariffs. First we shall classify it on the basis of the origin and destination of the goods crossing the national boundary, tariffs may be classified into the following three categories:

- **Export Duties:** An export duty is a tax imposed on a commodity originating from the duty levying country destined for some other country.

- **Import Duties:** An import duty is a tax imposed on a commodity originating abroad and destined for the duty-levying country.

- **Transit Duties:** A transit duty is a tax imposed on a commodity crossing the national frontier originating from and destined for other countries.

The second method of classifying is with reference to the basis for quantification of the tariff. Here we may have the following three-fold classification:

- **Specific Duties:** A specific duty is a flat sum per physical unit of the commodity imported or exported. Thus, a specific import duty is a fixed amount of duty levied upon each unit of the commodity imported.

- **Ad - Valorem Duties:** Ad - Valorem duties are levied as a fixed percentage of the value of the commodity imported/exported. Thus, while the specific duty is based on the quantum of the commodity imported/exported, the ad - valorem duty is based on the value of the commodity imported/exported.

- **Compound Duties:** When a commodity is subject to both specific and ad-valorem duties, the tariff is generally referred to as compound duty.

The third method is with respect to its application between different countries, the tariff system. Here it may be classified into the following three types:

- **Single-column Tariff:** The single-column, also known as uni-linear tariff system, provides a uniform rate of duty for all like commodities without making any discrimination between countries.

- **Double-Column Tariff:** Under the double-column tariff system, there are two rates of duty on some or all commodities. Thus, the double-column tariff discriminates between countries. The double-column tariff system maybe broadly divided into (a) general and conventional tariff and (b) maximum and minimum tariff. The general and conventional tariff system consists of two schedules of tariffs the general and the conventional. The general schedule is fixed by the

legislature at the very start while the conventional schedule results from the conclusion of commercial treaties with other countries. The maximum and minimum system consists of two autonomously determined schedules of tariff-the maximum and the minimum. The minimum schedule applies to those countries who have obtained the concession as a result of the treaty or through MFN (most favored nation).

- **Triple-Column Tariff:** The triple-column tariff system consists of three autonomously determined tariff schedules-the general, the intermediate and the preferential. The general and intermediate rates are similar to the maximum and minimum rates mentioned above under the double-column tariff system. The preferential rate was generally applied in the case of trade between the mother country and its colonies.

The fourth method is with reference to the purpose they serve. Here the tariffs may be classified into the following categories:

- **Revenue Tariff:** Sometimes the main intention of the government in imposing tariff may be to obtain revenue. When raising revenue is the primary motive, the rates of duty are generally low lest imports be highly discouraged, thus defeating the objective of mobilizing revenue for the government. Revenue tariffs tend to fall on articles of mass consumption.

- **Protective Tariff:** Protective tariff is intended, primarily, to accord protection to domestic industries from foreign competition. Naturally, the rates of duty tend to be very high in this case because, generally, only high rates of duty curtail imports to a significant extent.

- **Countervailing and Anti-Dumping Duties:** Countervailing duties may be imposed on certain imports when they have been subsidized by foreign governments. Anti-dumping duties are applied to imports which are being dumped on the domestic market at a price either below their cost of production or substantially lower than their domestic prices. Countervailing and anti-dumping duties are, generally, penalty duties as an addition to the regular rates.

Impact of Tariff: Tariff affects an economy in different ways. An import duty generally has the following effects:

- **Protective Effect:** An import duty is likely to increase the price of the imported goods. This increase in the price of imports is likely to reduce imports and increase the demand for domestic goods. Import duties may also enable the domestic industries to absorb higher production costs. Thus, as a result of the protection accorded by the tariff. The domestic industries are able to expand their output.

- **Consumption Effect:** The increase in prices resulting from the import duty usually reduces the consumption capacity of the people.

- **Redistribution Effect:** If the import duty causes an increase in the price of domestically produced goods, it amounts to redistribution of income between the consumers and producers in favor of the producers. Further, a part of the consumer income is transferred to the exchequer by means of the tariff.

- **Revenue Effect:** As mentioned above, a tariff means increased revenue for the government (unless, of course, the rate of tariff is so prohibitive that it completely stops the import of the commodity subject to the tariff).

- **Income and Employment Effect:** The tariff may cause a switch over from spending on foreign goods to spending on domestic goods. This higher spending within the country may cause an expansion of domestic income and employment.

- **Competitive Effect:** The competitive effect of the tariff is, in fact, an anti-competitive effect in the sense that protection of domestic industries from foreign competition may enable the domestic industries to obtain monopoly power with all its associated evils.

- **Terms of Trade Effect:** In a bid to maintain the previous level of imports to tariff imposing country, if the exporter reduces the prices, the tariff imposing country is able to get their imports at a cheaper price. This will, ceteris paribus, improve the terms of trade of the country imposing the tariff.

- **Balance of Payments Effect:** Tariffs, by reducing the volume of imports, may help the country to improve its Balance of Payments position.

Nominal and Effective Tariffs: Nominal tariff refers to the actual duty on an imported item. For example, if a commodity is subject to an import duty of 25 per cent ad-valorem, the nominal tariff is 25 per cent. Corden defines the effective protective rate as the percentage increase in value added per unit in an economic activity which is made possible by the tariff structure relative to the situation in the absence of tariffs but the same exchange rates. It depends not only on the tariff on the commodity produced but also on the input coefficients and the tariffs on the inputs. Effective protective rate of industry 'j' (E_j) may be defined as the difference between the industry's value added under protection (V_j) and under free market conditions (V_j) expressed as a percentage of free market value added. .

$$E_j = \frac{V_j - V_j}{V_j}$$

Obviously, the protective effect of a tariff on domestic manufacturing is larger when the import duty on the raw materials used in its manufacture is lower.

Optimum Tariff: As a country raises its tariff (import duty) unilaterally, the terms of trade may improve and the volume of trade may decline. The improvement in the terms of trade initially tends to more than offset the accompanying reduction in the volume of trade. Hence a higher trade indifference curve is reached and community welfare is enhanced. Beyond some point, however, it is likely that the detrimental effect of successive reductions in trade volume will begin to outweigh the positive effect of further improvements in the terms of trade so that community welfare begins to fall. Somewhere in between there must be a tariff which optimizes a country's welfare level under these conditions. Thus, the optimum tariff is the rate of tariff beyond which any further gain from an improvement in terms of trade would be more than offset by the accompanying decline in trade volume. By raising the rate of tariff beyond the optimum rate, it may be still possible to improve the country's terms of trade but the gain from this improvement in the terms of trade is more than offset by the decline in the volume of trade.   \

The magnitude of the optimum tariff depends upon the elasticity of the foreign offer curve. The less elastic the foreign offer curve is, the higher will be the optimum tariff. If the foreign offer curve is perfectly elastic, no tariff will yield the home country improved terms of trade. In the above analysis we have assumed that the foreign country does not retaliate against the imposition of tariff by the home country. However, the foreign country will be tempted to retaliate and the retaliation and counter retaliations might set off a tariff war affecting the interests of both the countries.

9.6 NON-TARIFF BARRIERS - EXTENT AND EFFECTS

Non-tariff barriers (NTBs). Some of which are described as new protectionism measure (as against tariffs which are regarded as traditional barriers) have grown considerably, particularly since the beginning of 1980s. The export growth of many developing countries has been seriously affected by NTBs. According to a World Bank study, NTBs in major industrial countries affect more than one-third of imports from developing countries, as compared to more than one fourth from all countries.

Over the years, the NTBs have been becoming more and more extensive and intensive. Today, they are confined to the labor intensive products where the developing countries have an advantage but also cover sophisticated products. Japan and the Newly Industrializing Countries (NICs) like S. Korea are also among the most affected countries by NTBs. The NTBs have come to affect the intra-OECD (i.e. trade between developed economies) also. The NTBs tend to offset favorable effects of the GATT negotiations, particularly of the Tokyo Round, on trade liberalizations like the reductions in the average levels of tariffs. As a matter of fact, several advanced countries like the US, who were the high priests of free trade, increasingly resort to several NTBs, particularly against the developing countries and also certain economically powerful countries such as Japan.
The NTBs fall in two categories.

- **The first category** includes those which are generally used by developing countries to prevent foreign exchange outflows, or those which result from their

chosen strategy of economic development. These are mostly traditional NTBs such as import licensing, import quotas, foreign exchange' regulations and canalization of imports

- **The Second category** of NTBs is those which are mostly used by developed economies to protect domestic industries which have lost international competitiveness and/or which are politically sensitive for governments of these countries. One of the important new protectionism measures under this category is the Voluntary EXp0l1 Restraint (VER).

The NTBs are less transparent, difficult to identify, and their impact on exporting countries is almost impossible to quantify. They contravene widely accepted principles of non-discrimination and transparency in measures to restrict trade. Above all, the costs to the country imposing the NTB, and to the world as a whole, are higher than under and equivalent tariff. Moreover, NTBs are unfair because they do not treat exporters equally. Often it is the exporters with the least bargaining power who export are most reduced. Although the NTBs are adopted to protect certain interests of the importing countries, the fact remains that both the exporting and importing countries is adversely affected by the protection. Non Tariff Barriers cause higher prices for consumers lost tariff revenue for governments, inefficient resource allocation, and diminished competition.

Non-Tariff Barriers seriously affect many exporting countries. As pointed out earlier, developing country exports to developed countries face considerable NTBs. In several cases, the impact is very severe. For example, the VER covering the tapioca exports of Thailand to the European Community, established in 1982, caused its tapioca exports to decline by 40 per cent and its export earnings fell by about $ 300 million (representing over 10 per cent of Thailand's total export earnings from the EC). However, such draconian VERs which not only reduces the growth rate but also the level of exports has not been widely applied to non apparel exports of developing Asian countries other than South Korea.

An Asian Development Bank study has brought out that with the reduction of the average tariff levels in the industrial countries, non-tariff barriers to imports of manufactures have increased in relative importance in these countries, including in categories of labor intensive and other products for which less developed countries have a strong comparative advantage. This study has also observed that through the exercise of various forms of administrative protection non-tariff barriers have increased in importance in absolute terms and have been applied with increasing discrimination, causing bilateral trade arrangements in many cases to reign over more globally efficient multilateral trade arrangements and threatening the gains, especially to less developed countries of negotiated tariff reductions.

Apparel exports of the developing countries are the most affected because of such barriers. This has been mostly via the Multi-Fiber Arrangement (MFA) which "constitutes a restrictive system, imposing economic costs on the economies of the developing as well as industrial countries. Several country studies cite instances of lost

apparel exports, declining production and employment due to reporting, certification and other problems involved in administering bilateral MFA agreements, whereby the system of administrative controls creates such uncertainties. Especially for new exporters of financially weak firms, that export production must be curtailed or abandoned by many firms. Another important cost of the MFA is rent seeking i.e., established exporters tend to enjoy greater than perfectly competitive returns from their exports sales since quota rights enable them to sell in protected markets. Non-Tariff Barriers also cause diversion of production and exports. For example, some Indian textile and apparel firms decided to set up manufacturing facilities in Nepal in order to circumvent MFA quota controls of their exports from India and to avoid the local costs of purchasing added quota rights. Similarly, exporters have attempted to diversify their exports to non-quota countries.

NTBs and India's Exports: The problem of NTBs on Indian exports has been growing. The ADB study of' the effects of NTBs on India's exports to developed countries has come to the following conclusion. Conventional NTBs generally do not exist in 'developing country markets at least for Indian exports. Their impact on exports of marine products and leather and leather goods to developed economies is somewhat marginal. Their potential adverse effects on India's emerging exports of temperate zone agro-products can be critical. Exports of metal goods and readymade garments from India have suffered on account of the NTBs in developed economies. Extension and inten-sification of NTBs is bound to severely restrict India's export expansion in these two relatively important export sectors of the economy. Apart from the actual imposition of these NTBs, the 'noise' created is often adequate to drive out exporters and induce a fall in exports. NTBs and their administration bring about undesirable change in the structure of domestic industry and in the distribution of rewards between rent, profit and wage incomes. The uncertainty they create clearly has an adverse effect on capacity creation and investment in the industry. As a factor responsible for an investment shortage, NTBs prevent the industry from making full List of technological potential and economies of scale. These facts were unambiguously brought out in the findings of our survey of garment firms in India.

The above mentioned study has also pointed out that in the case of NTDs; Indian exporters have not taken full advantage of the scope which exists. Thus improvements in domestic capability will surely yield export expansion, at least in the short run. The problem of NTBs for Indian exports has increased recently. The threat under the Super 301 and Special 301 is an indication of this. The indications are that India may have to face more problems in the future. NTBs are often employed when a country's exports to a country increase considerably, causing problems to the industries in importing countries, or when the exporting country does not toe the economic or political lines of the powerful importing country.

Forms of NTBs: There are different forms of NTBs. The NTBs which have significant restrictive effects are described as hardcore NTBs. These include import prohibitions, quantitative restrictions, Voluntary Export Restraints (VERs), variable levies, Multi-Fiber Arrangement (MFA) restrictions, and non-automatic licensing. Examples of NTBs excluded from this group include technical barriers (including health and safety

restrictions and standards), minimum pricing regulations, and the use 01' price investigations (for example, for countervailing and anti-dumping purposes) and price surveillance.

Voluntary Export Restraints (VERs): Voluntary Export Restraints (VERs) are bilateral arrangements instituted to restrain the rapid growth of exports of specific manufactured goods. The United States and the European Community have, thus, regulated the imports of several products. The recent advances in VERs and other new protectionism measures data from the establishment of the Multi-Fiber Arrangement (MFA) in the mid 1970s. Other bilateral arrangements have involved restraining the growth of specific exports from Japan and the newly industrializing countries. The VERs is usually highly discriminatory. The Uruguay Round Agreement has sought to abolish VER

Administered Protection: Administered Protection encompasses a wide range of bureaucratic government actions, which have grown in absolute as well as relative importance over the last decade or more: Most recent VERs is in fact regarded as the outgrowth of administered protection actions.

Important administrative protection measures include the following:

- **Safeguards:** Safeguard actions which under the WTO Articles enable countries to undertake temporary restrictions against 'influxes' threatening the viability of domestic industries have become a common form of administered protection. Although such measures are resorted to provide some breathing space and flexibility for structural adjustment, they often lead to some or other form of permanent barriers.

- **Health and Product Standards:** Several health and product standards imposed by the developed countries hinder the exports of developing countries because of the added costs or technical requirements. The need for maintaining health and product standards is unquestionable. The objection should be to their use with the deliberate intention of trade restriction or discrimination.

- **The Agreement on Technical Barriers to Trade** (also known as the Standards Code) evolved by the Tokyo Round of the GATT lays down that when governments or other bodies adopt technical regulation or standards for reasons of safety, health, consumer or environmental protection, or for other purposes, these should not create unnecessary obstacles to trade. Exporters from developing countries complain, however, that the Code is not respected by developed countries in several cases.

- **Customs Procedures** Certain customs procedures of many countries become trade barriers. For example, studies point out that frequent change of Japan's customs regulations are in themselves a significant barrier to exporters, especially those not affiliated with Japanese overseas joint-ventures. The Tokyo Round formulated a Customs Valuation Code intended to provide a uniform and neutral

system for the valuation of goods for custom purposes which will conform to the commercial realities and prevent the use of arbitrary or fictitious values.

- **Consular Formalities:** A number of countries insist on certain consular formalities like certification of export documents by the respective consulate of the importing country, in the exporting country. This becomes a trade barrier when the fees charged for this is very high or the procedure very cumbersome.

- **Licensing:** Many countries regulate foreign trade, particularly imports, by licensing. In most cases the purpose of import licensing is to restrict imports.

- **Government Procurement** These often tend to hinder free trade. The Tokyo Round has, therefore, formulated an agreement on government procurement with a view to secure greater international competition in government procurements.

- **State Trading:** State trading also hinders free trade many a times because of the counter trade practices, canalization etc. State trading was an important feature of the foreign trade of the centrally planned economies and also many other developing countries. With economic liberalization in most of these countries, the role of State trading has declined.

- **Monetary Controls:** In addition to foreign exchange regulations, other monetary controls are sometimes employed to regulate trade, particularly imports. For instance, to tide over the foreign exchange crisis in 1990-91 and 1991-92, the Reserve Bank of India took several measures which included a 25 per cent interest rate surcharge on bank credit for imports subject to a commercial rate of interest of a minimum 17 per cent, the requirement of substantially high cash margin requirement on most imports other than capital goods, and restrictions on the opening of letters of credit for imports.

- **Environmental Protection Laws:** The growing concern for environmental protection has led to the extension of environmental protection regulation to the imports. For example, the US Congress has framed a legislation to prohibit the import of shrimp harvested with commercial fishing technology which might adversely affect the endangered or threatened sea turtles unless the President certified that the supplying country has a turtle conservation programme comparable to that of the US.

- **Foreign Exchange Regulations:** Foreign exchange regulations are an important way of regulating imports in a number of countries. This is done by the State monopolizing the foreign exchange resources and not releasing foreign exchange for import of items which the government do not approve of for various reasons. Restrictions on currency convertibility can also adversely affect imports.

Quantitative Restrictions (Quotas): Quantitative restrictions or quotas are important means of restricting imports and exports. A quota represents a ceiling on the volume of

imports/exports. In this section, we confine ourselves to quantitative restrictions on imports i.e. import quotas.

Types of Import Quotas: There are five import types of import quotas, including import licensing.

- **Tariff Quota;** A tariff quota combines the features of tariff as well as of quota. Under a tariff quota, imports of a commodity up to specified volume are allowed duty free or at a special low rate, but any imports in excess of this limit are subject to duty/a higher rate of duty.

- **Unilateral Quota:** In the case of unilateral quota, a country unilaterally fixes a ceiling on the quantity of import of the commodity concerned.

- **Bilateral Quota:** A bilateral quota results from negotiation between the importing country and a particular supplier country, or between the importing country and export groups within the supplier country.

- **Mixing Quota:** Under the mixing quota, producers are obliged to utilize domestic raw materials up to a certain proportion in the production of a finished product.

- **Import Licensing:** Quota regulations are generally administered by means of import licensing. Under the import licensing system, prospective importers are obliged to obtain an import license which is necessary to obtain the foreign exchange to pay for the imports. In a large number of countries, import licensing has become a very powerful device for controlling the quantity of imports either of particular commodities or aggregate imports.

Impact of Quota: Like fiscal controls, quantitative restrictions on imports also have a number of effects on the economy. The following are, in general, the important economic effects of quotas.

Balance of Payments Effect: As quotas enable the country to limit the aggregate imports within specified limits, they help to improve the balance of payments position of the country.

- **Price Effect:** As quotas limit the total supply, it may cause an increase in the domestic prices.

- **Consumption Effect:** If quotas lead to an increase in prices, it may compel people to reduce their consumption of the commodity subject to quotas or some other commodities.

- **Protective Effect:** By guarding domestic industries against foreign competition to some extent, quotas encourage the expansion or domestic industries.

- **Redistributive Effect:** Quotas will also have redistributive effect if the fall in supply due to the import restrictions enables the domestic producers to raise prices. The rise in prices will result in the redistribution of income between the producers and consumers in favor of the producers.

- **Revenue Effect:** Quotas may also have a revenue effect. As quotas are administered by means of a license, government may obtain some revenue by charging a license fee.

Tariffs versus Quotas: Both tariffs and quotas have certain merits and demerits. Let us first examine the superiority of quotas over tariffs.

- As a protective measure, quota is more effective than the tariff. Tariff seeks to discourage imports by raising the price of imported articles. However it fails to restrict imports when the demand for imports is price inelastic. Especially in the case of the developing countries, the demand for many imports is price inelastic. Quota, on the other hand, is very effective in restricting the imports within the required limits.
- When compared to tariffs, quotas are much more precise and their effects much more certain. The reactions or responses to tariffs are not clear and accurately predictable but the effect of quota on imports is certain.
- It has been argued that "".quotas tend to be more flexible, more easily imposed, and more easily removed instruments of commercial policy than tariffs. Tariffs are often regarded as relatively permanent measures and rapidly build powerful vested interests which make them all the more difficult to remove.
- It has also been pointed out that quotas may also be employed as a measure to prevent the international transmission of severe recessions. Recession usually causes a decline in prices and this may encourage exports. A country may make use of quotas to guard against such recession induced exports into the country.

Quotas, however, have certain defects and tariffs are superior to quotas in some respects.

- The effects of quotas are more rigorous and arbitrary and they tend to distort international trade much more than tariffs. That is why WTO condemns quotas and prefers tariffs to quotas for controlling imports.
- Quotas tend to restrict competition much more than tariffs by helping importers and exporters to acquire monopoly power. If the import quotas are allocated only to a few importers, it may enable them to amass fortunes by exploiting the market. Similarly, quotas tend to promote concentration among foreign exporters.

Professor Kindleberger points out that "A significant difference between a tariff and a quota is that conversion of a tariff into quota which admits the same volume of imports may convert a potential into an actual monopoly and reduce welfare.

REVIEW QUESTIONS
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1. Give a brief and critical account of the arguments for protection.
2. Present your views on protection vs. liberal trade in respect of a developing country like India.
3. What are the advantages and disadvantages of free trade for a developing economy?
4. What, in your opinion, is the right trade strategy for India in the emerging international economic environment?
5. Review the trade liberalization in India and its impact and implications.
6. What are non-tariff barriers? Examine the impact of NTBs on exports of developing countries.
7. Discuss the trends in NTBs since the early 19705 and their impact.
8. Explain the impact of quota.

Rai Technology University

ENGINEERING MINDS

Rai Technology University Campus
Dhodballapur Nelmangala Road, SH -74, Off Highway 207, Dhodballapur Taluk, Bangalore - 561204
E-mail: info@raitechuniversity.in | Web: www.raitechuniversity.in