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Managerial Economics

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MANAGERIAL ECONOMICS
(MBAGE101)

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Unit 01: Nature and Scope of Managerial Economics

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Objective

- Explain the nature and scope of managerial economics
- Identify the role of economics in decision making
- Discuss the concepts of economic analysis

Introduction

"The purpose of studying economics is not to acquire a set of ready-made answers to economic questions, but to avoid being deceived by economists." **Joan Robinson**

When we start studying about Managerial Economics, we are not sure about the subject matter. It has both the words- Management and Economics which many a times confuses a student. Basically, management cannot do without economics as management implies making choices and economics helps in making those choices. Economics is a subject that del as with the study of households. The activity performed by individuals is divided into economic and non-economic activity. Economics can be divided into two broad categories, microeconomics, and macroeconomics. Macroeconomics as the name suggests is the study of the overall economy and its aggregates such as Gross National Product, Inflation, Unemployment, Exports, Imports, Taxation Policy etc.

Macroeconomics addresses questions about changes in investment, governments pending, employment, prices, exchange rate of the rupee and so on. Importantly, only aggregate levels of these variables are considered in the study of macroeconomics. But hidden in the aggregate data are changes in output of several individual firms, the consumption decision of consumers like you, and the changes in the prices of goods and services.

Although macroeconomic issues are important and occupy the time of media and command the attention of the newspapers, micro aspects of the economy are also important and often are of more direct application to the day-to-day problems facing a manager. Microeconomics deals with individual actors in the economy such as firms and individuals. Managerial economics can be thought of as applied microeconomics and its focus is on the interaction of firms and individuals in markets

Definitions

Economics is "the study of the behavior of human beings in producing, distributing and consuming material goods and services in a world of scarce resources."- **Campbell McConnel**

"Management is the discipline of organizing and allocating a firm's scarce resources to achieve its desired objectives."**Peter Drucker**

Managerial Economics is, "the use of economic analysis in the formulation of business policies." **Joel Dean**

"The method of reasoning involved in the derivation of some economic theorem.". **William Baumol**

William H. Meckling, the former dean of the Graduate School of Management at the University of Rochester, expressed a similar sentiment in an interview conducted by The Wall Street Journal. In his view, "economics is a discipline that can help students solve the sort of problems they meet within the firm."

Economics is a social science, since it deals with the society as a whole and human behaviour in particular, and studies the production, distribution and consumption.

All these definitions point out that managerial economics is a combination of economics and management so as to facilitate the organisation to make decisions with optimum results. Managerial economics is a means to an end to managers in any business, in terms of finding the most efficient way of allocating scarce organisational resources.

1.1 Scope of Managerial Economics

Managerial economics encompasses all the subjects that are related to management, be it marketing, finance, accounting, management science or strategy. As it has evolved in undergraduate and graduate programs over the past half century, managerial economics is essentially a course in applied microeconomics that includes selected quantitative techniques common to other disciplines such as linear programming (management science), regression analysis (statistics, econometrics, and management science), capital budgeting (finance), and cost analysis (managerial and cost accounting). From our perspective as economists, we see that many disciplines in business studies have drawn from the core of microeconomics for concepts and theoretical support. For example, the economic analysis of demand and price elasticity can be found in most marketing texts. The division of markets into four types—perfect competition, pure monopoly, monopolistic competition, and oligopoly—is generally the basis for the analysis of the competitive environment presented in books on corporate strategy and marketing strategy.

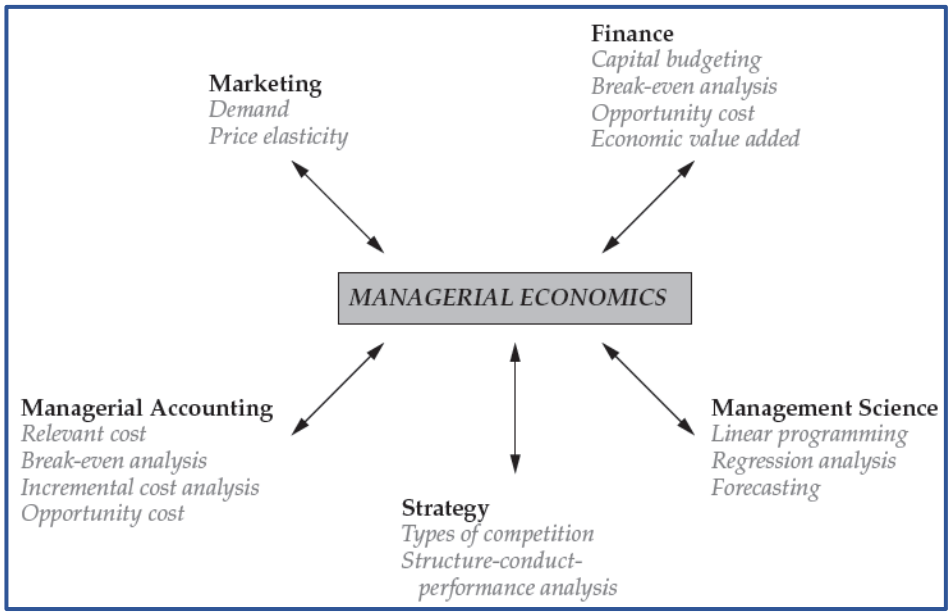


Figure 1: Managerial Economics and Other Disciplines

There are several other examples to be found. The economic concept of opportunity cost serves as the foundation for the analysis of relevant cost in managerial accounting and for the use of the "hurdle rate" in finance. Opportunity cost also plays an important part in understanding how

firms create "economic value" for their shareholders. Finally, in recent years, certain authors have linked their managerial economics texts thematically with strategy and human resources

Figure 1 shows the relationship of Managerial Economics with other business disciplines. Both the subjects derive components and principles from each other. However, management being the young partner in this partnership, it is much more dependent on economics for the theoretical construct.

1.2 Basic Terms and Concepts

For purposes of study and teaching, economics is divided into two broad categories: microeconomics and macroeconomics. The former concerns the study of individual consumers and producers in specific markets, and the latter deals with the aggregate economy. Topics in microeconomics include supply and demand in individual markets, the pricing of specific outputs and inputs (also called factors of production, or resources), production and cost structures for individual goods and services, and the distribution of income and output in the population. Topics in macroeconomics include analysis of the gross domestic product (also referred to as "national income analysis"), unemployment, inflation, fiscal and monetary policy, and the trade and financial relationships among nations.

Microeconomics is the category that is most used in managerial economics. However, certain aspects of macroeconomics must also be included because decisions by managers of firms are influenced by their views of the current and future conditions of the macro economy. For example, we can well imagine that the management of a company producing capital equipment (e.g., computers, machine tools, trucks, or robotic instruments) would indeed be remiss if they did not factor into their sales forecast some consideration of the macroeconomic outlook. For these and other companies whose businesses are particularly sensitive to the business cycle, a recession would have an unfavourable effect on their sales, whereas a robust period of economic expansion would be beneficial. However, for the most part, managerial economics is based on the variables, models, and concepts that embody microeconomic theory.

As defined in the previous section, economics is the study of how choices are made regarding the use of scarce resources in the production, consumption, and distribution of goods and services. The key term is scarce resources. Scarcity can be defined as a condition in which resources are not available to satisfy all the needs and wants of a specified group of people. Although scarcity refers to the supply of a resource, it makes sense only in relation to the demand for the resource. For example, there is only one Mona Lisa. Therefore, we can safely say that the supply of this work of art by da Vinci is limited. Nevertheless, if for some strange reason no one wanted this magnificent work of art, then in purely economic terms it would not be considered scarce. Let us take another example: broken glass on the streets of Chandigarh City. Here we have a case of a "resource" that is not scarce, not only because there is a lot of broken glass to be found, but also because nobody wants it! Now if you have been to the Chandigarh rock garden, then you understand how this resource has been optimally used. The once-plentiful resource would fast become a "scarce" commodity.

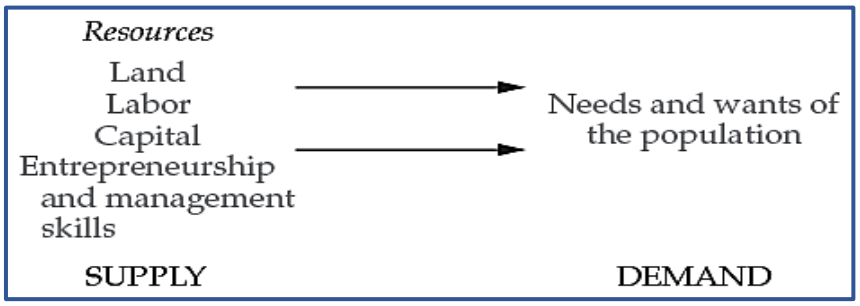


Figure 2: Factors of Production and Scarcity

Lionel Robbins talked about scarcity of resources when he wrote, 'Economics is the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses'. The factors of production- land, labour, capital and enterprise are all scarce resources with multiple uses. They are used as per the priority of the use and the profitability associated with it.

Figure 2 shows the scarcity of the resources and the demand & supply of these resources. The demand is always greater than the supply of factors and therefore scarcity persists.

Case Study: Guns and butter is a classical example to show the trade-off between two diametrically opposite goods in the allocation of resources. The study of budgets of various countries all over the world show that though guns are a negative good, but the allocation of resources is much higher as compared to butter which is a positive good. The intent of the "guns versus butter" example is to illustrate that scarcity force a country to choose the amounts of resources that it wants to allocate between defense and peacetime goods and services. In so doing, its people must reckon with the opportunity cost of their decision. This type of cost can be defined as the amount or subjective value that must be sacrificed in choosing one activity over the next best alternative. In the "guns versus butter" example, one activity involves the production of war goods and services, and the other pertains to the production of peacetime goods and services. Because of the scarcity of resources, the more that the country allocates to guns, the less it will have to produce butter, and vice versa. The opportunity cost of additional units of guns are the units of butter that the country must forgo in the resource allocation process. The opposite would apply as resources are allocated more to produce butter than guns

1.3 Basic Economic Questions

The problem of scarcity leads us to the next set of process in decision making that is the basic questions that are arise from the problem of scarcity. Because of the predominance of the market process in the U.S. economy, our discussion of the allocation of scarce resources is based on the assumption that managers operate primarily through the mechanisms of supply, demand, and material incentive (i.e., the profit motive). Their decisions about what goods to produce, how they should be produced, and for whom they should be produced are essentially market oriented. That is, firms choose to produce certain goods and services because, given the demand for these products and the cost of using scarce resources, they can earn sufficient profit to justify their particular use of these resources. Moreover, they combine their scarce resources to produce maximum output in the least costly way. Finally, they supply these goods and services to those segments of the population expected to provide the most material reward for their efforts.

Table 1.1 compares the three basic questions from the standpoint of a country and from the standpoint of a company, where they form the basis of the economic decisions for the firm. From the firm's point of view, question 1 is the product decision. At some particular time, a firm may decide to provide new or different goods or services or to stop providing a particular good or service. For example, consider Apple's decision to get into the music business by offering its iPod and iTunes music download service. Another good example is the various "non-computer-service" businesses that have gotten into the market for providing cloud-computing services. For example, telecom companies such as Verizon, AT&T, Deutsche Telecom, and British Telecom (BT) all provide cloud-computing services. Even companies such as Amazon and Dell have gotten into this market. Question 2 is a basic part of a manager's responsibility. It involves personnel practices such as hiring and firing, as well as questions concerning the purchase of items ranging from raw materials to capital equipment. For example, the decision to automate certain clerical activities using a network of personal computers results in a more capital-intensive mode of production. The resolution to use more supplementary, part-time workers in place of full-time workers is another example of a management decision concerning how goods and services should be produced. A third example involves the selection of materials in the production of a certain item (e.g., the combination of steel, aluminium, and plastic used in an automobile).

The firm's decision concerning question 3 is not completely analogous to that of a country. Actually, a firm's decision regarding market segmentation (a term used in the marketing field) is closely related to question 1 for a country. In deciding on what segment of the market to focus, the firm is not literally deciding who gets the good or service. For example, suppose a firm decides to target a certain demographic segment by selling only a "high-end" or premium version of a product. However, the way in which a company markets the product (which includes its pricing and distribution policies) makes certain segments of the market more likely to purchase the product.

Perhaps one of the best ways to link the economic problem of making choices under conditions of scarcity with the tasks of a manager is to consider the view put forth by Professor Robert Anthony that a manager is essentially a person who is responsible for the allocation of a firm's scarce resources. It is interesting to note that "managers" or "management skills" was not delineated as a separate factor of production by early economic theorists. The four traditional categories of resources are land, labor, capital, and entrepreneurship. The last category can be treated as broad enough to include management, but the two classifications do involve different characteristics or skills.

The term entrepreneurship is generally associated with the ownership of the means of production. In addition, it implies willingness to take certain risks in the pursuit of goals (e.g., starting a new business, producing a new product, or providing a different kind of service). Management, in contrast, involves the ability to organize and administer various tasks in pursuit of certain objectives. An important part of a manager's jobis to monitor and guide people in an organization.

From the Standpoint of a Country	From the Standpoint of a Company
1. What goods and services should be produced?	1. The product decision
2. How should these goods and services be produced?	2. The hiring, staffing, procurement, and capital budgeting decisions
3. For whom should these goods and services be produced?	3. The market segmentation decision

Peter Drucker, the father of management wrote about the role of management, "It is "management" that determines what is needed and what has to be achieved (in an organization). Management is work. Indeed, it is the specific work of a modern society, the work that distinguishes our society from all earlier ones. . . . As work, management has its own skills, its own tools, its own techniques."

1.4 Economic Principles

Key economic principles that are relevant to managerial decisions are discussed in the following sub-sections.

Division of Labour

I put the division of labor first mainly because Adam Smith did argue that division of labor is the key cause of improving standards of living. Modern economics doesn't do much with the concept of division of labor, but two closely related concepts are important:

1. Returns to Scale: Returns to scale may be increasing, constant or decreasing. Increasing returns to scale is the case that leads to special results, and division of labor is one cause (arguably the main cause) of increasing returns to scale.
2. Virtuous Circles in Economic Growth: For Smith, a major consequence of division of labor and resulting increasing productivity was a "virtuous circle" of continuing growth. Modern "virtuous circle" theories have more dimensions, but division of labor and increasing returns to scale are among them.

Opportunity Cost

The idea is that anything you must give up in order to carry out a particular decision is a cost of that decision. This concept is applied again and again throughout modern economics.

1. Scarcity: According to modern economics, scarcity exists whenever there is an opportunity cost, that is, where-ever a meaningful choice has to be made.
2. Production Possibility Frontier: The production possibility frontier is the diagrammatic representation of scarcity in production.

3. Comparative Advantage: A very important principle in itself and a key to understanding of international trade the principle of comparative advantage is at the same time an application of the opportunity cost principle to trade.
4. Discounting of Investment Returns: Another application of the opportunity cost principle that is very important in itself, this one tells us how to handle opportunities that come at different times.

Equimarginal Principle

This is the diagnostic principle for economic efficiency. It has wide applications in modern economics. Two of the most important are key principles of economics in themselves:

1. The Fundamental Principle of Microeconomics: This principle describes the circumstances under which market outcomes are efficient.
2. The Externality Principle: It describes some important circumstances in which the markets are not efficient.
3. Marginal Analysis: It is also an important principle in itself and very widely applied in Notes modern economics. There is no major topic in microeconomics that does not apply marginal analysis and opportunity cost.

Market Equilibrium

The market equilibrium model could be broken down into several principles — the definitions of supply, demand, quantity supplied and demanded and equilibrium, at least — but these all complement one another so strongly that there is not much profit in taking them separately. However, there are many applications and at least four important subsidiary principles:

1. Elasticity and Revenue: These ideas are a key to understanding how market changes transform society.
2. The Entry Principle: This tells us that, when entry into a field of activity is free, profits (beyond opportunity costs) will be eliminated by increasing competition. This has a somewhat different significance depending on whether competition is "perfect" or monopolistic.
3. Cobweb Adjustment: This might give the explanations when the market does not move smoothly to equilibrium, but overshoots.
4. Competition vs. Monopoly: Why economists tend to think highly of competition, and lowly of monopoly.

Diminishing Returns

Perhaps the best-known of major economic principles, the Principle of Diminishing Returns is much more reliable in short-run than in long-run applications, so the Long Run/Short Run dichotomy is an important subsidiary principle. Modern economists think of diminishing returns mainly in marginal terms, so marginal analysis and the equimarginal principle are closely associated.

Game Equilibrium

Game theory allows strategy to be part of the story. One result is that we have to allow for several kinds of equilibriums.

1. Non-cooperative equilibrium
    (a) Prisoners' Dilemma (dominant strategy) equilibrium

(b) Nash (best response) equilibrium, (but not all Nash equilibrium are dominant strategy equilibrium),

2. Cooperative equilibrium
3. Oligopoly

Measurement Principles

Economics is multidimensional, and that creates some difficulties in measuring things like production, incomes, and price levels. Some of the problems can be solved more or less fully.

1. Value Added and Double Counting: One for which we have a pretty complete solution is the problem of double counting: the solution is, use value added.
2. "Real" Values and Index Numbers: Since we measure production and related quantities in dollar terms, we have to correct for inflation. Index numbers are a pretty good workable solution, but there are some problems and criticisms.
3. Measurement of Inequality: Another issue is that the "average income" may not mean very much, because nobody is average and income is unequally distributed. Even if we cannot correct for that we can get a rough measure of the relative inequality and see where it is going.

Medium of Exchange

Money is whatever is generally acceptable as a medium of exchange. That means a bank, or similar institution, can literally create money, so long as people trust the bank enough to accept its paper as a medium of exchange. We might call this magical fact the Fiduciary Principle.

Income-Expenditure Equilibrium

Like the market equilibrium principle, but even more so, this model pulls together a number of subsidiary principles that complement one another and together constitute the "Keynesian" theory of aggregate demand. The implications of this theory are less controversial than the word "Keynesian" is — controversy has to do more with the details than the applications. Among the subsidiary principles are

1. Coordination Failure
2. The income-consumption relationship
3. The Multiplier
4. Unplanned inventory investment
5. Fiscal Policy
6. The Marginal Efficiency of Investment
7. The influence of money on interest
8. Real Money Balances
9. Monetary Policy

Surprise Principle

People respond differently to the same stimuli if the stimuli come as a surprise than they would if the stimuli do not come as a surprise. This new economic principle plays the key role with respect to aggregate supply that "Income-Expenditure Equilibrium" plays with respect to aggregate demand.

Rational Expectations: People don't want too many unpleasant surprises. If they use the information available to them efficiently, then they won't be surprised in the

same way very often. This can lead to:

1. Policy ineffectiveness
2. Permanence
3. Path Dependence

1.5 Firm and Forms of Ownership

Economics as a subject is applicable to all types of organisations, though it finds special application in business firms. This brings forth some pertinent questions like: what is a firm; who identifies the factors of production; who collects the factors and puts them to productive use; and so on. A firm is an entity that draws various types of factors of production in different amounts from the economy, and converts them into desirable output(s), through a process with the help of suitable technology. Economists have identified five factors of production, namely land, labour, capital, enterprise and organisation, of which, enterprise and organisation are relatively new entrants. In today's world we add technology to it too because it has become one of the most important parts of the production process. The factors of production are supposed to produce optimally but that is only possible if they are used in the right proportion and the right environment is created for them to function. The process of identifying the potential sources of the factors such as land, labour, and capital, collecting them in required quantities and assigning them specific tasks as per their skills is the subject matter of organisation. Using these factors of production for economic activities, without any certainty of returns is the function of enterprise, or the entrepreneur. Hence, we can say that an entrepreneur is a person (or group of persons) who decide(s) to undertake the responsibility of the inherent risks in starting a business.

There are four main factors of production, namely, land, labour, capital, and enterprise. In current scenario, we add technology to it.

Firm is an entity that brings together all the factors of production and provides the environment for them to perform optimally.

The focal point of understanding the functioning of the factors of production is firms. There are various types of firms, and they have their own unique features. This section of the chapter is focused on understanding the types of firms and how they perform.

Types of Firms

The success of every business depends largely on its organisation; and the form of ownership is a significant aspect of any organisation. Businesses may be organised in various forms, depending on their size, nature and need for resources. Legal framework of the economy also plays a significant role in choice of form of ownership. Figure 3 shows the various forms of ownership

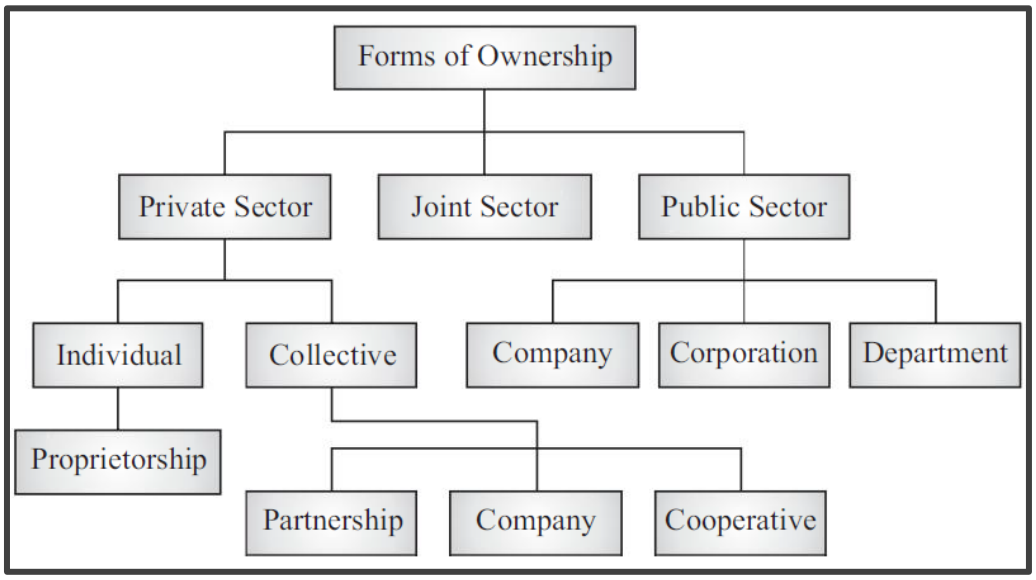


Figure 3: Types of Ownership

Private Sector

As per the classical thought of economics, the government sector should act as a facilitator for the market. They believed in laissez faire economy which talks about the market forces maintain the equilibrium in the economy. In such a situation the private sector is the core of the economy it dominates the business frontier. The private sector may be defined as when ownership is in the hands of individuals, whether independently, or as a small group, or in a large number, without any investment from the government, then the setup is referred to as private sector.

In the early years of organised economic activities only the private sector existed, while other sectors came at a very later stage. Proponents of private sector believe that businesses should always be in the hands of individuals. The reason cited has been that the root of all economic activities is profit making, and that governments cannot run organisations with profit motive. The supporters of the public sector argue that private sector is selective in its investments. It invests only in areas which are profitable, and this leads to exploitation of factors, especially of labour. The government sector does equitable distribution of factors. It is inclusive in nature which leads to balanced economic development.

Sole Proprietorship

Sole proprietorship is the most ancient form of ownership; its roots can be tracked back to the development of civilised living, private ownership of resources and advent of the benefits of exchange. Primitive societies were created based on sharing of resources, whether natural, or manmade. This sense of sharing resulted in the advent of exchange, which emerged as the mother of all economic activities. Then money was invented for convenience and can undoubtedly be termed as one of the most wonderful inventions by mankind. Thus, began the process of private ownership of resources, accumulation of wealth and capital formation.

> Sole proprietorship firm is one in which an individual invests own (or borrowed) capital, uses own skills in management, and is solely responsible for the results of operations.

You may find numerous proprietorship firms existing all around you; kirana stores, retail outlets, restaurants, hotels, small/cottage industries are only few examples of such sole proprietorship. In fact, many of the modern big business houses were started as ownership firms and were eventually converted into limited companies.

We may, thus, define sole proprietorship, or single owner, or proprietary firm as one in which an individual invests own (or borrowed) capital, uses own skills in management, and is solely responsible for the results of operations. The profits or losses are not shared with anyone.

Partnership

Due to the inherent limitations of a single owner organisation, investors invented another form of organisation, which solved many of the problems of proprietorship and still could retain all its advantages. This form is known as partnership, in which two or more individuals decide to start a common business. As per Section 4 of Indian Partnership Act 1932, a partnership is "relation between persons who have agreed to share the profits of a business carried on by all or any of them acting for all". Persons who have entered into partnership are individually regarded as 'partners 'and collectively as a 'firm'. Here it is important to understand that the term "firm" is only a commercial notion, and has no legal personality apart from the partners, except for purposes of assessment of income tax. A partnership firm cannot become a member of another firm, though its partners can join another firm as partners.

Limited Liability Partnership (LLP) The Limited Liability Partnership Act of India 2008, has changed the face of partnership to promote entrepreneurship and innovation in the country. The rules of Act of1932 are not applicable to the firms established under this Act. It is a legal entity with an existence separate from its owners. It has perpetual existence. Any change in the partners shall have no impact on the existence, rights or liabilities of the LLP firm.

Characteristics of Partnership As per the Act of 1932, partnership must simultaneously satisfy all of the following aspects, also regarded as the essential conditions of partnership:

1. Association of two or more persons A partnership cannot exist unless at least two persons join hands. At the same time, there is an upper limit to the number of members. A partnership cannot have more than 20 partners.

2. Agreement to voluntarily form partnership Partnership arises from a contract that all the partners agree to form a fi rm. The agreement is to share the profits emerging from the business, which also implies sharing the losses; however, agreement to share losses is not essential. This contract may be explicit or implied, and would take either of the following forms:
    i. it may be for a certain specified period and a specific purpose, or
    ii. it may be for a certain specified period and any purpose, or
    iii. it may be for an uncertain period and a specific purpose, or
    iv. it may be for an uncertain period and any purpose.

An heir of a partner does not automatically become a partner, unless other members agree to induct the heir(s) as partners.

3. Business carried out by all or anyone acting for all Partners are mutual agents for each other and principal for themselves. All of them may actively manage the business, or any one of them may conduct the business under implied authority to do so by all other partners. All the partners are bound by an actor decision taken by any one of them in normal course of business.
4. Partnership deed Partnership is created as an agreement. It is not necessary to prepare this agreement in writing, though it is strongly desired that the agreement is prepared in writing, in order to avoid any dispute arising in future. The document, thus, created is called a Partnership Deed. A typical partnership deed normally consists of following information:
    i. Name and location of firm, and nature of business
    ii. Name of partners, their respective shares, powers, obligations and duties
    iii. Date of commencement of partnership
    iv. Duration of firm
    v. Capital employed by different partners
    vi. Manner in which profits (losses) are to be shared among partners
    vii. Salaries (if any) payable to partners
    viii. Rules regarding operation of bank accounts
    ix. Interest on partners' capital, loans, drawings, etc.
    x. Provision for admission, retirement or expulsion of partners
    xi. Settlements on dissolution of the firm

Joint Stock Company or Company

The most important type of business organisation today is the joint stock company, commonly called "company". A joint stock company gets this name from its characteristic that it is a business entity in which stocks can be bought and owned by the shareholders. Each shareholder owns company stock in proportion as per their shares (certificates of ownership). This results in unequal ownership among the shareholders. Shareholders may sell their stock or transfer them without affecting the existence of the entity. In India a Joint Stock Company is established under the Companies Act 1956, which was amended in 2013. The details of functions and scope of the company are governed by Memorandum of Association signed among members. The Memorandum contains the name of the company, the location of the head office, its aims and objectives, the amount of share capital, the kind(s) and value(s) of shares and a declaration that the liability is limited. Articles of Association, containing the rules and regulation of the company are also drafted. These two documents are submitted to the Registrar of Joint Stock Company. The company comes into existence only after the Registrar of Companies issues a certificate of incorporation. The owners' capital in a joint stock company is invested in the form of shares; hence the owners are regarded as shareholders and there may be various categories of shareholders with the two major ones being common shareholders and preference shareholders. These categories are

A joint stock company in India is established under Companies Act 1956, amended in 2013.

on basis of the claim on dividend. The profit earned is divided in the form of dividends on the basis of shares. Besides raising capital by shares, the company may also raise funds by bonds and debentures, which have a priority in the claim for repayment, irrespective of profits or losses. Owners of bonds and debentures are the creditors of the company. The liability of each shareholder is limited to the proportion of shares held by him/her; therefore a joint stock company is also known as a limited company. In the event of inability of a company y to repay loan or interest amount the creditors can raise their claim on assets of the company and not on the personal belongings of shareholders. This is the biggest advantage of a limited company over all other forms of business. The overall governance of a company is in the hands of a Board of Directors, which is a body elected by the shareholders.

A joint stock company is a legal entity and its existence is independent of its members. It has a name, a seal and an authorised signatory; it has the right to own, buy, sell and transfer property; it can sue and can be sued in its own name. For all practical purposes, a joint stock company is like a person, but it exists only in contemplation of law, and is strictly governed by the clauses laid in the Memorandum of Association. A joint stock company has two basic forms, namely, Private Limited Company and Public Limited Company. Let us explain each in details.

Private Limited Company: The maximum number of shareholders in such a company is limited to 50. The shares of the company are transferable only among the members. This type of company is free from the necessity of submitting certain returns to the Registrar. But a private limited company has to operate under certain restrictions: it can neither issue a prospectus, nor can it raise capital by selling its shares to outside public other than the members.

The maximum number of shareholders in a private limited company is limited to 50.

Public Limited Company: The joint stock company may take the form of a public limited company, in which there is no limit on the maximum number of members, though the minimum number of members is seven. Such a company has to submit certain statements and its balance sheet to the Registrar of joint stock companies on an annual basis. It can invite the public to buy shares by issuing a prospectus. One feature of a public limited company is that, its business cannot be started unless the minimum capital laid down as per law has been subscribed.

There is no limit on the maximum number of members in a public limited company, though the minimum number of members is 7.

Cooperatives: A cooperative is a non-profit, non-political, non-religious, voluntary organisation, formed with an economic objective. The main principles of cooperation are:

i. It is based on mutual help and self-reliance. This can be neatly summed up as "each for all and all for each".
ii. Dealings are confined to members only.
iii. Its objective is not earning profits but to encourage mutuality and cooperation.

The principle of cooperation has been given a much-extended application. Cooperative societies have been formed for several purposes. Primarily cooperation may be divided in two broad categories: producers' cooperation and consumer's cooperation. Let us explain both in details.

A cooperative is a non-profit, non-political, non-religious, voluntary organisation, formed with an economic objective.

Producers' Cooperative In this form of cooperation, workers are their own masters i.e., the business is owned by them. Surpluses (Profits), if any, are divided among all the members. Thus, profits go to the actual workers instead of enriching a few individuals. Nothing could be more attractive and fairer than this. You must have, by now, conceptualised a producers' cooperation to be the idealised form of company? Let us sound a warning bell here, as the claims of fair division of profits are all theory; reality may be strikingly different! Unless all the members of cooperative work in tandem with loyalty and beyond individual interests, a producers' cooperative may not work efficiently. For example, Indian Fertilisers and Farmers Cooperative (IFFCO) has proved to be great success.

Consumers' Cooperative: Persons living in a particular place, or working in an establishment, may combine together to open different types of cooperative societies. Typical examples are multi-purpose stores, credit societies and housing societies. This form of cooperation has been very successful. You can find around you many such types of consumers' cooperatives; may be the house you live in is part of such cooperative effort!

Cooperatives in India

Bhagini Nivedita Co-operative Bank Ltd. (BNCB) was established in the year 1974 at Pune Maharashtra. This bank is mainly focused on women. The objective of this cooperative bank was to encourage banking in the masses and specially amongst women. The percentage of women shareholders in the bank is about 69 percent. The highlight of this bank is that it provides loans at reasonable rates. The reason for targeting women is that repayment rates is much higher from women, and they also do not have assets in their name which makes them vulnerable, and they lack financial security. The recovery rate of this bank is 98 percent. Bhagini

Nivedita Sahakari Bank believes that women have inherent and latent capacities in them, which must be channelized properly and effectively to attain the desired goal. This women run bank helps men too.

Source:Success-Book.pdf (ncui.coop)

Public Sector

Public sector is that segment of economy where government is the investor and the owner of a business. The public sector came into existence as an outcome of two major revolutions: Communism and Great Depression. Although deliberation on these two issues is out of scope of this book, still we shall briefly touch them one by one. Karl Marx propounded the theory of public ownership of all resources and gave the logic that the entire society is a community and all resources, whether natural or manmade, should be owned by the community as a whole and not by any individual. This is regarded as communism. Many countries were deeply influenced by the Marxist theory and adopted Communism as national economic philosophy. Another major event that had drawn the attention of economists and thinkers alike was the Great Depression. Another great economist, John Maynard Keynes recommended that in order to break the impasse, the government should enter into business activities, because only government can invest in the areas where profits are not certain. As a result, governments of nations, the world over, forayed into business activities, giving rise to another sector in the economy, regarded as the public sector. In many countries, including India, the two sectors continue to coexist even today.

As we have discussed the various types of business organisations under private sector, we shall

hereafter learn about forms of organisations under public sector.

i. **Corporate (or Company)**: Just like private sector when government invests in production activities and enters the market, such firms are called Public Sector Units (PSUs) or Public Sector Enterprise (PSEs). These PSUs (or PSEs) have to operate on the same ground as any other joint stock company, with the single exception that there are no shareholders, as the government owns the entire or controlling amount of invested capital. These units play very significant role in many respects like: employment generation; development of products where private sector does not want to enter; balanced economic development and equitable distribution of national wealth. In India, SAIL, ONGC, NTPC, GAIL, BSNL are some of the examples of PSUs.

ii. **Corporation or Board**: Another structure of organisation is in the form of a corporation or a board. The corporation or the board normally controls some of the economic activities, especially where the government feels that government intervention is necessary for equal distribution of economic resources. Such a corporation does not aim at revenue generation; it rather aims at optimum utilisation of national resources and welfare maximisation of groups of small economic units like

household and cottage industries. In India, typical examples are Khadi and Village Industries Corporation (KVIC), Coir Board, Food Corporation of India and Railway Board.

iii. Department A Department is run for a specific purpose related to social utility, such as education, health, civil administration, etc. These Departments normally function under the directives of relevant ministries, at the appropriate level. For example, in India, police, excise and education (up to secondary) are the responsibility of State Governments, whereas telecommunication, post and telegraph, customs, etc., are under the Central Government. These Departments help the government in smooth delivery of welfare measures, maintenance of law and order and equality of opportunities. Though these are not part of economic activities, yet Departments facilitate economic activities by providing a safe and constructive environment.

Case Study: Public Sector Enterprises in India

Public sector enterprises (PSEs), also known as state-owned enterprises (SOEs), have been one of the key drivers of economic development in several countries. They are more popular in emerging economies. In India, post-independence, PSEs have played an important role in development and have been responsible for creating a strong industrial base. After independence, the government followed a socialist model with a public-sector led industrial development – the Feldman- Mahalanobis model, which focused on developing a strong capital base through PSEs in core sectors such as railways, steel, power, oil, telecommunications, mining, and transportation. Studies show that Indian PSEs have contributed to the development of backward regions, environment protection, promotion of green and energy efficient technologies, capacity building, promotion of social infrastructure such as education and healthcare. PSEs have presence in several sectors spanning both goods and services, and many of them are engaged in international trade. They have helped to meet the country's energy and food security needs and have supported the implementation of government schemes and policies.

Source:https://icrier.org/pdf/Working_Paper_388.pdf

Functions of a Firm

A firm performs a number of functions that are both economic and managerial in nature.

Production function

The Production function undertakes the activities necessary to provide the organisation's products or services. Its main responsibilities are: production planning and scheduling control and supervision of the production workforce managing product quality (including process control and monitoring maintenance of plant and equipment control of inventory deciding the best production methods and factory layout.

Close collaboration will usually be necessary between Production and various other functions within the organisation, for example:

- Research and Development, concerning the implications of product design for production methods and cost
- Marketing, concerning desired product functionality, appearance, quality, durability and so on
- Finance, concerning the availability of funds for purchase of new equipment and the acceptability of inventory levels.

- Human Resource Management, concerning staff motivation implications of job design and production methods.

Purchasing function

The Purchasing function is concerned with acquiring goods and services for use by the organisation. These will include, for example, raw materials and components for manufacturing and also production equipment. The responsibilities of this function usually extend to buying goods and services for the entire organisation (not just the Production function), including, for example, office equipment, furniture, computer equipment and stationery. In buying goods and services, purchasing managers must take into account a number of factors – collectively referred to as 'the Purchasing Mix', namely, Quantity, Quality, Price and Delivery.

- Quantity: Buying in large quantities can attract price discounts and prevent inventory running out. On the other hand, there are substantial costs involved in carrying a high level of inventory.
- Quality: There will usually be a trade-off between price and quality in acquiring goods and services. Consequently, Production, R&D and Marketing Functions will need to be consulted to determine an acceptable level of quality which will depend on how important quality is as an attribute of the final product or service of the organisation.
- Price: Other things being equal, the purchasing manager will look for the best price deal when procuring goods and services, although price must be considered in conjunction with quality and supplier reliability, in order to achieve best value, rather than lowest price only.
- Delivery: The time between placing an order and receiving the goods or services, the lead time, can be critical for production planning and scheduling and also has implications for inventory control. Suppliers must therefore be evaluated in terms of their reliability and capability for on time delivery.

In short, the 'purchasing mix' can be considered as making sure that the organisation has the right amount, of the right quality, at the right price, in the right place at the right time.

Research and Development function

The Research and Development (R&D) function is concerned with developing new products or processes and improving existing products/processes. R&D activities must be closely coordinated with the organisation's marketing activities to ensure that the organisation is providing exactly what its customers want in the most efficient, effective and economical way.

Marketing Function

Marketing is concerned with identifying and satisfying customers needs at the right price. Marketing involves researching what customers want and analysing how the organisation can satisfy these wants. Marketing activities range from the 'strategic', concerned with the choice of product markets (and how to compete in them, for example, on price or product differentiation) to the operational, arranging sales promotions (e.g., offering a 25 per cent discount), producing literature such as product catalogues and brochures, placing advertisements in the appropriate media and so on. A fundamental activity in marketing is managing the Marketing Mix consisting of the '4Ps': Product, Price, Promotion and Place.

- Product. Having the right product in terms of benefits that customers value.
- Price. Setting the right price which is consistent with potential customers' perception of the value offered by the product.
- Promotion. Promoting the product in a way which creates maximum customer awareness and persuades potential customers to make the decision to purchase the product.
- Place. Making the product available in the right place at the right time – including choosing appropriate distribution channels.

Human Resources function

The Human Resources function is concerned with the following:

- Recruitment and selection: Ensuring that the right people are recruited to the right jobs.
- Training and development: Enabling employees to carry out their responsibilities effectively and make use of their potential.
- Employee relations: Including negotiations overpay and conditions.
- Grievance procedures and disciplinary matters: Dealing with complaints from employees or from the employer.
- Health and Safety matters: Making sure employees work in a healthy and safe environment.
- Redundancy procedures: Administering a proper system that is seen to be fair to all concerned when deciding on redundancies and agreeing redundancy payments.

Accounting and Finance function

The Accounting and Finance function is concerned with the following:

- *Financial record keeping* of transactions involving monetary inflows or outflows.
- *Preparing financial statements* (the income statement, balance sheet and cash flow statement) for reporting to external parties such as shareholders. The financial statements are also the starting point for calculating any tax due on business profits.
- *Payroll administration* Paying wages and salaries and maintaining appropriate income tax and national insurance records.
- *Preparing management accounting* information and analysis to help managers to plan, control and make decisions.

Summary

Managerial economics is a discipline that combines microeconomic theory with management practice. Microeconomics is the study of how choices are made to allocate scarce resources with competing uses. It is the study of individual units and this is then combined with macroeconomics which is the study of aggregates. An important function of a manager is to decide how to allocate a firm's scarce resources. Economics helps in the managers to make the decisions regarding the allocation of these scarce resources. Firms are integral part of the business environment where the principles of economics and management come together. Different forms of firms have different characteristics which have different mix of these two academic streams. This chapter discusses the concept of managerial economics and the basic economic questions that are answered. The economic principles are dealt in detail with appropriate examples. The later part of the chapter looks into firms and its types.

Keywords

Economics*:* Economics is a social science, since it deals with the society as a whole and human behaviour in particular, and studies the production, distribution and consumption.

Microeconomics: It is the study of individuals which is the basic of classical economics.

Macroeconomics*:* It is the study of aggregates which emerged from Keynesian economics.

Managerial Economics: The use of economic analysis to make business decisions involving the best useof a firm's scarce resources.

Opportunity Cost*:* The amount or subjective value for gone in choosing one activity over the next best alternative. This cost must be considered whenever decisions are made under conditions of scarcity.

Scarcity*:* A condition that exists when resources are limited relative to the demand for their use. In the market process, the extent of this condition is reflected in the price of resources or the goods and services they produce

***Firm**:* It is an entity that brings together all the factors of production and provides the environment for them to perform optimally.

Self Assessment

1. Which of the following is the best definition of managerial economics? Managerial economics is

A. a distinct field of economic theory.
B. a field that applies economic theory and the tools of decision science.
C. a field that combines economic theory and mathematics.
D. none of the above.

2. The value of an economic theory in practice is determined by

A. how accurate the assumptions are
B. how well the theory can be represented by a graph.
C. how well the theory can predict or explain.
D. how parsimonious the model is.

3. Management decision problems are comprised of three elements. Which of the following is not one of them?

A. Profitability
B. Alternatives
C. Constraint
D. Objectives

4. Which of the following areas of economic theory is the single most important element of managerial economics?

A. Mathematical economics
B. Econometrics
C. Macroeconomics
D. Microeconomics

5. Which of the following is defined as the study of the aggregate economy studied as a whole?

A. Mathematical economics
B. Econometrics
C. Macroeconomics
D. Microeconomics

6. The first stage in the five-step decision process described in the text is to

A. define the problem.
B. select the best possible solution.
C. determine the objective.
D. identify possible solutions.

7. The economic term for the costs associated with negotiating and enforcing a contract is

A. opportunity costs.
B. real costs.
C. functional costs.
D. transaction costs.

8. The tendency for managers to operate a firm in a way that maximizes their personal utility rather than the firm's profits is referred to as the
A. consumer utility incentive.
B. principal-agent problem.
C. hidden agenda scenario.
D. Modigliani hypothesis.

9. The last stage in the five-step decision process described in the text is to
A. determine the objective.
B. select the best possible solution.
C. implement the decision.
D. explain the decision to managers.

10. Which of the following is an example of a resource constraint?
A. Pollution control laws
B. Inadequate demand
C. Excessive production costs
D. Inadequate financial capital

11. A large organization with separate legal entity is known as
A. Sole proprietorship
B. Partnership
C. Joint Stock Company
D. None of the above

12. Deferred shares are generally issued to
A. Promoters
B. Government
C. General public
D. Managing agents

13. The minimum members in public limited company are
A. Four
B. Two
C. Eight
D. Seven

14. Provision of residential accommodation to the members at reasonable rates is the objective of
A. Consumer cooperative
B. Credit cooperative
C. Housing cooperative
D. Producer's cooperative

15. The maximum number of partners allowed in the banking business are
A. Two

B. Twenty
C. No limit
D. Ten

Answer for Self Assessment

1.	B	2.	C	3.	A	4.	C	5.	D
6.	A	7.	A	8.	B	9.	B	10.	D
11.	C	12.	B	13.	D	14.	C	15.	D

Review Questions

1. What are the principles of Managerial Economics?
2. "Managerial Economics is a combination of management and economics". Elaborate the statement.
3. In case of sole proprietorship, if the person dies then what happens to her assets.
4. What are the various types of firms? Which of them is the most common in emerging economies and why?
5. How has the Public Sector Units helped the Indian economy?

Further Reading

1. Managerial Economics- Principles and Worldwide Applications By Salvatore, Dominick and Rastogi, Siddhartha K., Oxford University Press.
2. Managerial Economics- Economic Tools for Today's Decision Makers by Keat Paul G, Young Philip K. Y, Erfle Stephen and Banerjee Sreejata., Pearson Education, India
3. Managerial Economics by Geetika, Piyali Ghosh, and Purba Roy Choudhary, McGraw Hill Education (India) Private Limited

Unit 02: Demand and Supply Analysis

CONTENTS

Objectives

- Introduce the basics of demand and supply and their relevance in economic decision-making.
- Explain the law of demand and exceptions to the law.
- Analyse the different determinants of demand and supply and their effects on demand and supply curves.
- Develop an understanding of demand and supply functions in determining market equilibrium.
- Introduce the concepts of market equilibrium and disequilibrium.

Example: India is a country where people mainly travel for work or pilgrimages. Religious tourism comprises of about 60 percent of total internal tourism in India. For such type of travel people require affordable places which are clean and safe. The new found spending capacity of people because of the opening up of the economy also has increased travel and needing hotels.

Introduction

The pandemic situation all over the world has created an economic crisis and the growth rates of countries have plummeted. People in millions have lost their jobs or taken pay cuts which has affected their purchasing power. On the other hand, the producers also got affected because of the lockdown which impacted both production and the supply chain. In this chapter, we will discuss these two important concepts of microeconomics which forms the basis for more complex concepts. Demand and supply form the basis for most of the major decisions made in business. We will initiate the discussion by introducing terms like wants, desire and then we will move to demand. The determinants of demand and all the dimensions of law of demand will be discussed in detail. We will then move to the components of supply. The interplay between demand and supply which leads to equilibrium price will be discussed in the last part of the chapter.

2.1 Demand

There are three terms that are used interchangeably by common people while talking about the goods and services they purchase- want, desire and demand. However, in economics all the three terms have different meaning. A person may desire to have a multi-story house in a posh locality, but this desire will only turn into demand if the individual has enough money to buy it. Demand for a good or service is defined as "**quantity of goods or service purchased at a given price within a fixed period and other things remaining the same (ceteris paribus)**". The willingness to buy the product backed by the ability to buy makes a want or a desire a demand. Demand is effective desire as it is backed by the willingness and ability to pay.

Demand is quantity of goods or service purchased at a given price within a fixed period and other things remaining the same

Determinants of demand

The various determinants of demand are the following

Price of the good

The price of the good and the demand generally have a negative relationship. It is considered to be the most important determinant of demand. If other determinants are held constant, if the price of the good goes up then the demand for the product will go down and if the price goes down then the demand will increase. This is a very common phenomenon which we observe in all the markets. For example, tomato ketchup is made when tomato prices are low, people shop more when sales are announced etc. The inverse relationship between price and demand is also known as the Law of Demand (this will be discussed in the next part).

Price and demand have negative relationship.

Income of the consumer

There is a direct relationship between demand and income of the consumer. As the income of the consumer increases, demand for goods and services also go up. There is a limit to which the consumption will increase with the increase in income. Engel (1857) first mentioned the fact that with increase in income after a point, there is a decline in consumption expenditure, especially of food. This has given rise to two types of goods- ***normal goods*** and ***inferior goods***. Normal goods are the ones whose demand has positive relationship with income. Inferior goods are the ones whose demand falls with the increase in income. Classic example from India is the demand for coarse grains which has gone down amongst the low-income group as they have started consuming wheat with increase in income. People also substitute better quality of goods like ghee for oil, real gold or silver jewellery in place of brass or other cheap metal jewellery.

Income and demand have positive relationship.

Normal goods have positive relationship between income and demand. Inferior goods have negative relationship with income.

Price of related goods

This is the third most important factor which determines demand. In this the demand for a commodity is dependent on another commodity which may be a ***substitute or complementary.*** Substitute goods are those which can be used in place of another. Example is toothpaste and toothpowder. Complementary goods are those which must be used together to enjoy complete satisfaction of consumption. Example pen and ink which need to be consumed together. The behaviour of demand in response to price changes depending on whether they are substitutes or complementary. In case of substitutes, there is direct relationship between price and demand that is if the price of toothpaste increases, then the demand for toothpowder will go up. In case of complementary goods, there is inverse relationship between price and demand. It means that if the price of pen goes up, then the demand for ink goes down.

In case of substitutes, there is direct relationship between demand and price. In case of complementary goods, there is inverse relationship between the two variables.

Taste and preferences

This is a qualitative factor that impacts the demand for a product. Factors like age, gender, place of residence, education, profession, advertising etc impact the taste and preference of the consumer which in turn effects the demand for a product. Many a times we see an exception to the law of demand because of the taste and preferences of the consumers. The companies in the free market advertise to influence the taste and preferences of the consumers.

Advertising

Advertising has gained remarkable grounds as a determinant of demand especially in the modern age of cutthroat competition among brands. Firms make heavy expenditure on advertising to generate awareness about the various features of the product like price, quality, and its placement in the society. The primary motive behind advertising is to stimulate demand for the brand. There are instances when advertisement has changed the tastes and preferences of the people to such an extent that the lifestyles of changed. In India it is very common to gift sweets on any happy occasions however Cadbury India roped in Amitabh Bachchan as a celebrity endorser with the tagline *k*uchh meetha ho jaaye. This brought about a change in the consumption pattern where people have started moving away from traditional sweets to chocolates as gifts during festive occasions. Another example is of Virat Kohli endorsing **Too Yum,** a baked snack which is considered to be a healthy alternative to other fried snacks. A factor which needs to be kept in mind regarding advertisement is that it is very expensive and adds to the cost of the product. Therefore, it must be used very judiciously so as to balance out the negatives from the benefits of advertisement.

Consumer's expectation of future income and price

Consumers do not make purchases only based on current income and current price structure. In case of durables when demand can be postponed, consumers decide their purchase based on future price and income. If they expect their income to increase or price to fall in future, they will postpone the demand; on the other hand, if they expect prices to increase in future they will hasten the purchase. An example is the purchase of cars which is influenced by the announcements made in the budget.

Population

Size of the population, age distribution and gender distribution affect aggregate demand.If the population of a country is constantly increasing, more food items and other goods and services are required to satisfy the needs of the people.Age distribution determines what kind of commodities will be demanded if the population is mostly young as in the case of India, the demand for development goods like education, employment, FMCG will be high.On the other hand, if we have old population then the demand for health-related products will be high.

2.2 Law of Demand

Table1: Market Demand Schedule

Price	Q_{D1}	Q_{D2}	Q_{D3}	Q_M
20	0	2	3	5
15	1	2	5	8
10	2	3	7	12
5	3	4	8	15

This table shows the demand for samosa in three different markets and then the combined demand is shown as market demand. It is very evident from this example that there is an inverse relationship between demand and price. We can observe that as the price of samosa is going down, the demand is increasing in all the markets. This is the law of demand.

The Law of demand explains the functional relationship between price of a commodity and the quantity demanded of the commodity. It is observed that the price and the demand are inversely related which means that the two move in the opposite direction. An increase in the price leads to a fall in quantity demanded and vice versa. This relationship can be stated as "Other things being equal, the demand for a commodity varies inversely as the price".

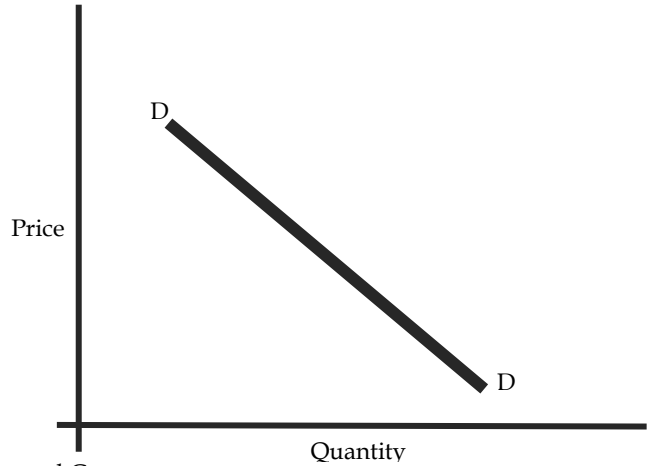


Fig.1 Demand Curve

This figure is a graphical representation of the law of demand. The demand curve DD is downward sloping because of the inverse relationship between the two variables.

Changes in Demand

The demand for a product can change on two accounts, firstly if the price of the commodity changes and secondly if factors other than price change.In case of the price changing there is a movement along the demand curve.It leads to expansion or contraction in demand which shows the effect of change in price on change in demand.

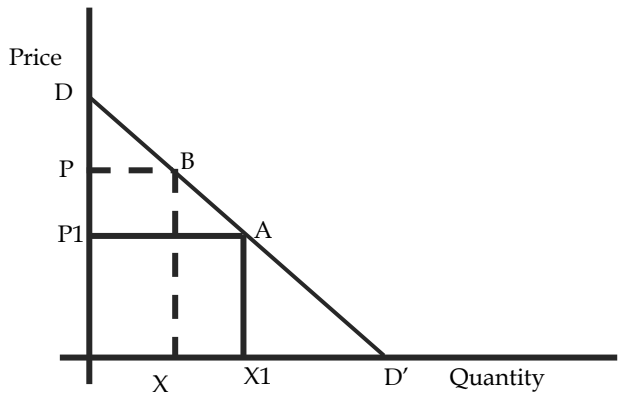


Fig.2: Expansion and Contraction in Demand

This graph shows the relationship between price and demand when the price is P the demand is X when the price reduces to P1 the demand increases to X1.There is a movement from point B to point A in the same demand curve DD′. This shows the expansion in demand.

On the other hand, if factors other than price change the effect of demand is shown by a shift in the demand curve. The demand curve shift outwards in case of an increase and it may shift inwards in case of a decrease in demand. An important point that needs to be kept in mind when there is an increase or decrease in demand is that the price of the product remains constant at the same price the demand curve shifts which shows the impact on demand

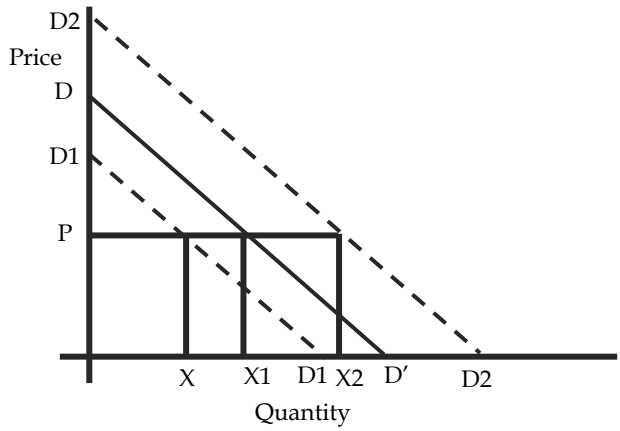


Fig. 3: Increase and Decrease in Demand

The above figure shows the change in demand because of factors other than price. It is evident from this figure that the original demand curve is DD and when the price is P the demand for the product is X1.The demand curve then shifts to D1D1 and there is no change in price but the quantity demanded comes down to X. Similarly the demand curve shift to be to D2D2 and again there is no change in price but there is increase in demand to X2.This shift in the demand curve from DD to D1D1 and D2D2 shows the increase or decrease in the demand because of factors other than price.

2.3 Exceptions to the Law of Demand

Giffen goods

The case of Giffen goods needs to be introduced to understand it in the correct context.This is a concept that was given by Sir Robert Giffen and it has been named after him.These are the goods which are considered inferior by the consumers but in the individual consumption basket they occupy a significant place. Historically the example that was given was from Ireland regarding the consumption of meat and bread. Bread was the inferior commodity and with the increase in price the consumption of bread went up as it was still the cheapest food. In India we often give the example of wheat and bajra because as the price of the coarse grains increased the consumption also increased till the time the price of wheat did not come down.

Snob appeal

It is the opposite of Giffen goods these are those goods for which the consumer measure measures the satisfaction not by their utility but by the social status it is an example of vicious consumption where the demand for the social status of the product the most common example of this is the diamonds which are which do not have any resale value but they are both because of their status of social value there are similar products in the market another example is iPhone which is consumed more for its social value than its real value. These goods are also known as Veblen goods which has been named after the famous economist Thorstein Veblen who gave the concept of Veblen paradox.

Demonstration effect

These are those goods which are consumed by the behaviour of others. When a person's behaviour is influenced by observing the behaviour of others then it is known as demonstration effect. One of the very common examples is fashion where people buy clothes by looking at the consumption pattern of others. The demand for most of the luxury products are governed by the demonstration effect. In all these cases price is not a governing parameter but rather the people around you who consume it influence the behaviour.

Future expectation of prices

It has been observed that when the prices are rising and it is expected that they will continue to rise in future, consumers buy more to keep a stock of the good. This happens when there is a natural calamity like a famine or a flood. People expect that because of these natural calamities there will be a shortage of supply of goods, and they anticipate an increase in the prices, so they stock a good amount of this commodity. Mainly the product that is stocked is food grains. Share market is another example where the demand of the shares is directly related to the share prices. As per the rules of speculation it is anticipated that if the prices are going up for a particular stock, then the demand would increase and does become an exception to the law of demand.

Insignificant proportion of income spent

Things which are of very low value like Salt, Matchbox, Pitambari (substance used to clean brass metals in India) are not impacted by the price of the product they have got limited use and therefore a very insignificant amount of the income spent on them even if there is a large increase in the price of these products it has negligible impact on the money spent as these goods have limited use the people cannot increase their consumption significantly.

2.4 Market Supply

Supply is the specific quantity of output that the producers are willing and able to make available to consumers at a particular price over a given period. In one sense, supply is the mirror image of demand. Individuals' supply of the factors of production or inputs to market mirrors other individuals' demand for these factors. For example, if we want to rest instead of weeding the garden, we hire someone: we demand labour. For many goods, however, the supply process is more complicated than demand.

Supply is not simply the number of a commodity a shopkeeper has on the shelf, such as10 oranges or 10 packet of chips, because supply represents the entire relationship between the quantity available for sale and all possible prices charged for that good. The specific quantity Notes desired to sell of a good at a given price is known as the quantity supplied. Typically, a time period is also given when describing quantity supplied. For example, when the price of an umbrella is 100, the quantity supplied is 500 umbrellas a week.

The supply of produced goods (tangibles) is usually indirect, and the supply of non-produced goods (intangibles) are more direct. Individuals supply their labour in the form of services directly to the goods market. For example, an independent contractor may repair a washing machine. The contractor supplies his labour directly.

2.5 Determinants of Supply

These are the following determinants of supply.

Price of the commodity

Just like demand the most important determinant of supply is price. But unlike demand supply is positively related to price of the commodity. With all the factors remaining the same if the price of product rises supplies would find it profitable to sell more. Thus, price has a positive effect on quantity supplied. Relation between price and quantity supplied is the basis of law of supply.

Cost of production

Production requires the transformation of various inputs into output and involves cost that includes price of all the inputs like wages, rent, interest and profit.If the cost of production increases because of the increase in the price of all or certain raw material supply will automatically get reduced. For example, there is a manufacturer of cotton shirts. If the price of raw cotton increases, then the cost of production of shirts would go up and as a result the supply of shirts will come down.

State of technology

Technology has positive relation with supply and improved technology reduces the cost of production per unit of output which enhances the productivity and in turn increases the supply of the product. In current times there has been mechanization in agriculture and therefore the productivity has gone up. As a result, the production of food grains has increased exponentially in India.

Number of firms

With increase in the number of producers of a particular product the supply of the product in the market will increase if the entries and restricted new forms will continue to enter the market does increasing the supply and degree of competition this is an example of a perfectly competitive market however in an imperfect market like a monopolistic competition where the supply when the entry of firms is relaxed the supply of products goes on increasing in the long run the aggregate supply of the product curve shifts right due to an increase in the supply of the product which is visible in a perfectly competitive market

2.6 Law of Supply

According to the Law of Supply, other things remaining constant, higher the price of a commodity,higher will be the quantity supplied and vice versa. There is a positive relationship between supply and price of a commodity.

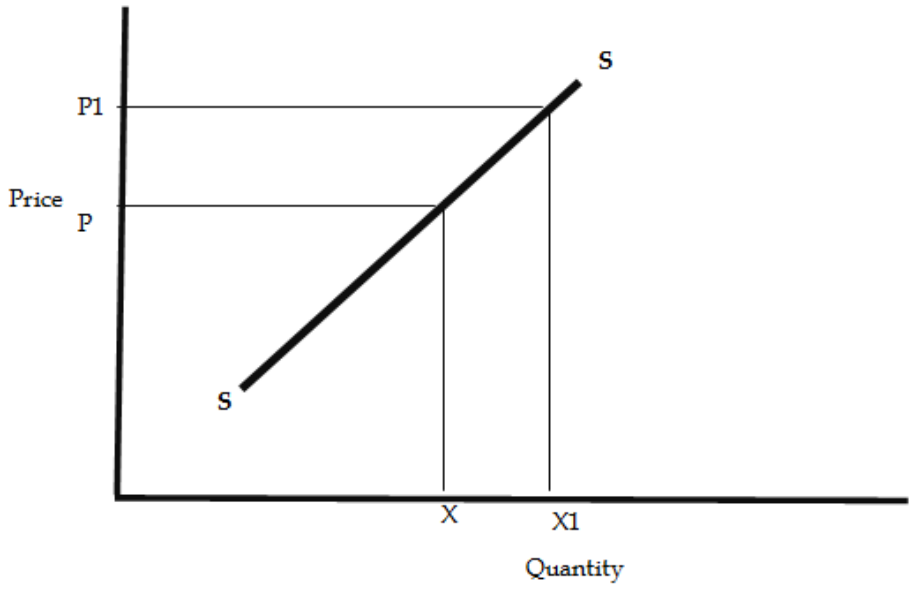
As in the case of quantity demanded, price is the major determinant of quantity supplied. In graphical terms

> The Law of Supply states that other things remaining the same, the higher the price of a commodity, the greater is the quantity supplied.

supply refers to the entire supply curve because a supply curve tells us how much of a commodity will be offered for sale at various prices. Quantity supplied refers to a point on a supply curve. In case, the price of a good rises, individuals and firms can rearrange their activities in order to supply more of that good to the market, substituting production of that good for production of other goods.

With the firms, there is another explanation. Assuming firm's costs are constant, higher price means higher profits (the difference between a firm's revenues and its costs). The expectation of those higher profits leads it to increase output as price rises, which is what the law of supply states.

Fig. 4: Law of Supply



Shift in Supply Curve

2.7 Equilibrium

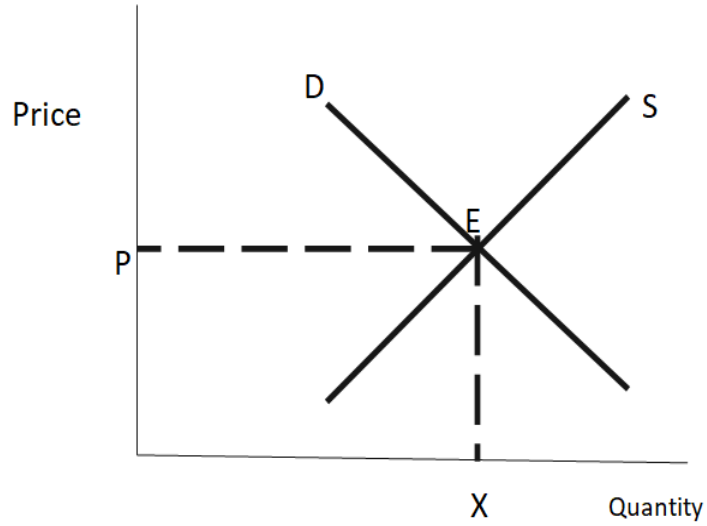
You must have understood by now that demand and supply are interrelated. Ata particular price the quantity bought by the buyer as well as the quantity sold by the seller are both performed willingly. We know the prices of the goods before we buy them. Similarly, the seller knows the prices of the goods before he supplies it to the market. Naturally, a point of meeting of the demand and supply has to be there and this is the point of market equilibrium (Fig.7). The market equilibrium is a point where the supply and demand are balanced, other things remaining constant. Graphically, it can be represented as given below. We can notice that the equilibrium is achieved at Rs. 30, (Table.2) when both the quantity supplied and the quantity demanded are in equilibrium or perfectly matched.

Table 2: Relationship between Price and Quantity Supplied and Quantity Demanded

Price per pen	Demand	Supply
10	200	75
20	175	115
30	**150**	**150**
40	100	200

When the market price is less than equilibrium price, the demand for the commodity will be more than what can be supplied. In the above example if the price is Rs.20 per pen, the demand will be 175 numbers while the supply will be 115numbers. More consumers will want to buy it at that price but the supplier will not supply at such a low price. When the price is above or more than the equilibrium price, the demand will come down, as people will not be willing to pay that much and

wait for the prices to fall. When the market price increases to Rs.40, the demand will fall to 100 numbers even though the suppliers will be willing to supply 200. An excess supply will in this case lead to losses as the consumers will not buy it.



Summary

Why is the analysis of demand and supply so important? The analysis of the demand for a particular commodity determines the quantity to be supplied into the market. We have seen that various factors affect the demand as well as supply. A sum total of all the factors or influences, determine the demand as well as the supply. We know the goods are always scarce or limited and the wants are unlimited. All other things remaining unchanged, i.e., income, government, policies and special influences, price is the major fact that distributes the scarce goods among the demand of various consumers. When the production falls, supply falls, prices rise and the demand gets adjusted accordingly. When there is increase in production as a result of better technology or reduction in the cost of production, prices fall and the demand gets adjusted accordingly. Analysis of the demand and supply is thus crucial while studying any sector.

Keywords

Demand Curve: The graphical representation of the demand schedule is called the demand curve.

Demand Schedule: The tabular representation of quantity, demand and price.

Demand: Demand is the quantity of goods (or services) that can be purchased by buyer at a particular price.

Equilibrium Price: The price at which the demand and supply are in equilibrium.

Law of Demand: The law of demand states that demand is inversely proportional to price, i.e., for an increase in price the quantity demanded decreases.

Law of Supply: The law of supply states that for an increase in price the supply also increases.

Market Demand: The sum of all individual demand is called the market demand.

Supply Curve: The graphical representation of the supply schedule is called the supply curve.

Supply Schedule: The tabulation representation of quantity supplied and price.

Supply: Supply refers to the quantity of good or commodities that are supplied to the market at a particular price.

Self Assessment

1. Which of the following is not a determinant of a consumer's demand for a commodity?

A. Income

B. Population
C. Prices of related goods
D. Tastes

2. The law of demand refers to them
A. inverse relationship between the price of a commodity and the quantity demanded of the commodity per time period.
B. direct relationship between the desire a consumer has for a commodity and the amount ofthe commodity that the consumer demands.
C. inverse relationship between a consumer's income and the amount of a commodity that the consumer demands.
D. direct relationship between population and the market demand for a commodity.

3. If the price of a good increases, then
A. the demand for complementary goods will increase.
B. the demand for the good will increase.
C. the demand for substitute goods will increase.
D. the demand for the good will decrease.

4. If consumer income declines, then the demand for
A. normal goods will increase.
B. inferior goods will increase.
C. substitute goods will increase.
D. complementary goods will increase.

5. Which of the following will cause a decrease in quantity demanded while leaving demand unchanged?
A. An increase in the price of a complementary good.
B. An increase in income when the good is inferior.
C. A decrease in the price of a substitute good.
D. An increase in the price of the good.

6. The market supply curve shows
A. the effect on market demand of a change in the supply of a good or service.
B. the quantity of a good that firms would offer for sale at different prices.
C. the quantity of a good that consumers would be willing to buy at different prices.
D. All of the above are correct.

7. If automobile manufacturers are producing cars faster than people want to buy them,
A. there is an excess supply and price can be expected to decrease.
B. there is an excess supply and price can be expected to increase.
C. there is an excess demand and price can be expected to decrease.
D. there is an excess demand and price can be expected to increase.

8. If a computer software company introduces a new program and finds that orders from wholesalers far exceed the number of units that are being produced,
A. there is an excess supply and price can be expected to decrease.
B. there is an excess supply and price can be expected to increase.
C. there is an excess demand and price can be expected to decrease.

D. there is an excess demand and price can be expected to increase.

9. An increase in the supply of a good will cause
A. an increase in equilibrium price and quantity.
B. a decrease in equilibrium price and quantity.
C. an increase in equilibrium price and a decrease in equilibrium quantity.
D. a decrease in equilibrium price and an increase in equilibrium quantity.

10. Assume that firms in an industry observe a 10% increase in the productivity of labor, but to get there they had to increase the cost of labor by 5%. What should be expected to happen in the output market as a result of this development?
A. The supply should increase
B. The supply should decrease
C. The supply should remain unchanged
D. The demand should increase

11. Market equilibrium refers to a situation in which market price
A. is high enough to allow firms to earn a fair profit.
B. is low enough for consumers to buy all that they want.
C. is at a level where there is neither a shortage nor a surplus.
D. is just above the intersection of the market supply and demand curves.

12. If the price of a good increases while the quantity of the good exchanged on markets increases, then the most likely explanation is that there has been
A. an increase in demand.
B. a decrease in demand.
C. an increase in supply.
D. a decrease in supply.

13. If the price of a good decreases while the quantity of the good exchanged on markets increases, then the most likely explanation is that there has been
A. an increase in demand.
B. a decrease in demand.
C. an increase in supply.
D. a decrease in supply.

14. If the price of a good increases while the quantity of the good exchanged on markets decreases, then the most likely explanation is that there has been
A. an increase in demand.
B. a decrease in demand.
C. an increase in supply.
D. a decrease in supply.

15. If the price of a good decreases while the quantity of the good exchanged on markets decreases, then the most likely explanation is that there has been
A. an increase in demand.
B. a decrease in demand.

C. an increase in supply.

D. a decrease in supply.

Answers for Self Assessment

1.	B	2.	A	3.	D	4.	B	5.	D
6.	B	7.	A	8.	D	9.	D	10.	A
11.	C	12.	A	13.	C	14.	D	15.	B

Review Questions

1. Define demand giving suitable examples example.
2. Distinguish between complementary goods and substitute goods and give suitable examples from the Indian market.
3. Explain the concept of supply and what are the determinants of law of supply.
4. What are the factors that cause a shift in the demand curve?
5. If the demand is fixed but the supply of the product increases what happens to equilibrium price and quantity.
6. What are the various exceptions to the law of demand apart from the examples given in this reading material?
7. Explain the concept of equilibrium.

Further Reading

1. Managerial Economics- Principles and Worldwide Applications By Salvatore, Dominick and Rastogi, Siddhartha K., Oxford University Press.
2. Managerial Economics- Economic Tools for Today's Decision Makers by Keat Paul G, Young Philip K. Y, Erfle Stephen and Banerjee Sreejata., Pearson Education, India
3. Managerial Economics by Geetika, Piyali Ghosh, and Purba Roy Choudhary, McGraw Hill Education (India) Private Limited

Unit 03: Demand Estimation

CONTENTS

Objectives

- understand the basics of business forecasting
- understand the various methods of forecasting
- evaluate the methods of forecasting

Introduction

Emerging competition in marketplace is propelling managements to hear the voice of their customers. To survive in the market, management must be forward-looking and carry out market and demand analyses of products and develop strategic business policies. However, when it comes to working out methods and methodologies of demand forecasting, it presents a strange dilemma. Demand Burke had said that "You can never plan the future by the past", whereas Patrick Henry opines that, "I know of no way of judging the future but by the past". As an essential part of project formulation and appraisal, market and demand analysis is vital so that capacity and facility location can be planned and implemented in line with the market requirements. A major error in demand forecast can throw painstaking capital expenditure on plant capacity and other hardware facility totally out of gear. Such decisions are not easily reversible. Metal Box of India, a premier company in the field of metal, plastic and cardboard packaging became kick owing to ill-timed diversification into manufacture of bearings.

3.1 Levels of Demand Forecasting

Demand forecasting can be at the level of a firm or an industry or at the national or national or international level:

Firm Level

If the exercise aims at forecasting demand of firm's products locally at state, region or national level, it is a micro-level of demand forecasting. Sometimes, forecasts are required for company's products in specific industry or market segment.

Industry Level

Such a demand forecasting exercise focuses on an industry for the region and/or national level. These forecasts may be undertaken by a group of companies or by industry/trade associations.

National Level

Demand forecasts at national level include parameters like national income, expenditure, index of industrial and/or agricultural production etc. Estimating aggregate demand of products at national level facilitates governmental decisions for imports, exports, pricing policy etc.

International Level

Companies operating in multinational markets would require similar forecasting of demands for its products, trends in consumption etc. at international level Managerial Economists play a leading role in masterminding these forecasts at firm, industry, national and international levels. Time horizon of these demand forecasts usually varies from 1 to 5 years and in rare instances up to 10 years.

3.2 Time Horizon for Demand Forecasting

Market and demand analysis of various types are undertaken to meet specific requirements of planning and decision making. For example, short-term decisions in production planning, distribution etc. and selling individual products would require short-term forecast, up to one year time horizon, which must be fairly accurate for specific product items. For long-term planning, time horizon being four to five years, information required from demand analysis would be for broad product groups for facilitating choice of technology, machine tools and other hardware's and their location. Various time horizons and corresponding information requirements are as below:

Short Term Forecasting

Time period is less than one year. Some inputs are fixed, and the others are variable. Manager must take decision regarding the combination of the variable input and fixed input. The aim is to avoid overproduction or underproduction in short period.

Long Term Forecasting

Longer-term forecasting is also undertaken to determine trends in technology development to choose the technology for backing up and funding its research and development. It helps in taking long term decisions regarding capacity building, investment, manpower planning.

3.3 Categorization by Nature of Goods

The categorization by nature of goods is of two types- Consumer goods and Capital goods.

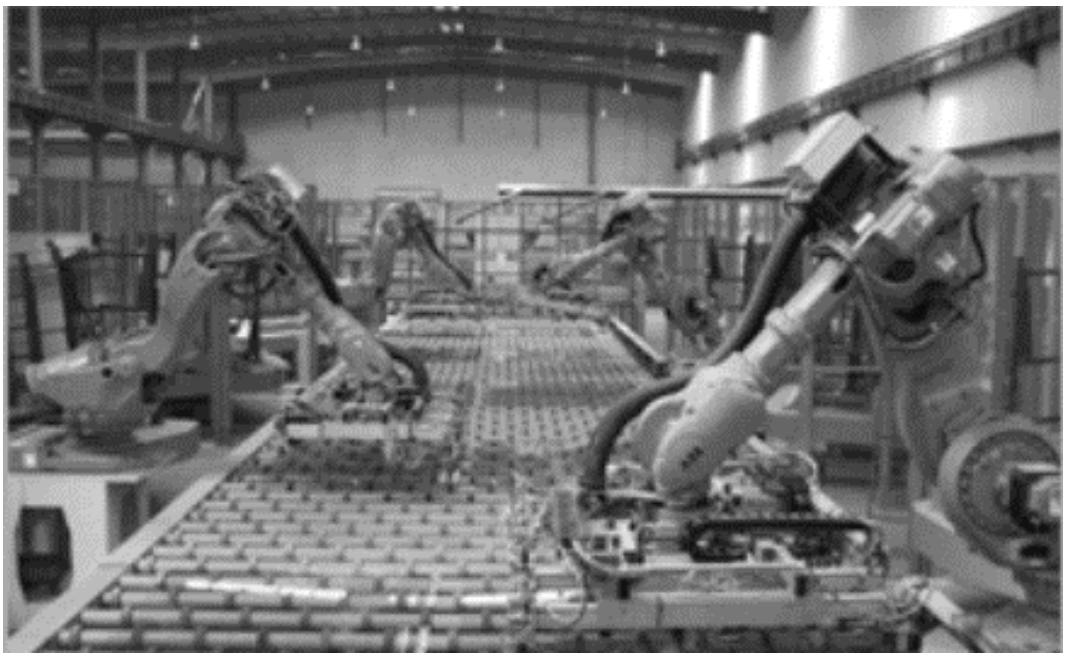
Consumer Goods

Consumer goods these are the goods which are consumed by people in their natural course. These are the final product which is ready for consumption. In terms of economics there are intermediate goods and consumer goods. When we are talking about demand forecasting we talk about the final consumption goods which are the consumer goods. Examples of consumer goods are clothing food white products and other such goods which are used in daily life.

Capital Goods

Capital goods are man-made equipment to produce goods and series. Demand of consumer goods is autonomous and is forecast by direct measurements. However, demand forecast for capital goods is indirect and derived. Their demand is dependent upon profitability of the industries using this equipment and the ratio for production to installed capacity (also called occupacity). For example, demand for cement manufacturing machinery will depend not only on the profitability of cement industry by also on the current surplus capacity in the industry. If surplus capacity is low or negligible, one can expect major expansion of existing cement manufacturing units. Similarly, demand for commercial vehicles is dependent upon

- growth of Indian economy
- growth pattern of different modes of transport-rail, river, air and sea
- availability of bank finance for leasing etc.
- growth of replacement market of commercial vehicles



Why to go for Demand Forecasting?

All business planning starts with forecasting. Capital investment, like procurement of raw materials and production planning, must relate to demand forecasting. High volume, high technology, mass production systems have further high-lighted the importance of accurate demand forecasts. Even in a batch type production, any major mismatch between forecast and manufacture will lead to higher capital tied up in finished products which are slow in selling. If we segregate the advantages of demand forecasting, then the following are the few advantages.

Increase Supply Chain Efficiency

Demand forecasting helps to create a smooth supply chain. When the suppliers are aware of the demand in the market for their product, they can organize the sales in a non-disruptive manner. The amount of stock that must be held is also known which ensures efficient utilization of the resources. The production is better scheduled which helps to schedule the maintenance and shutdown in a more efficient manner without disturbing the flow of goods. Demand forecasting is also needed to take advantage of periods when there is spike in demand. When the producers know the demand pattern in advance, they book raw materials and other inputs in adequate quantity during high sale season so that supply chain is not disrupted.

Improve Labour Management

Demand forecasting ensures that labour is used optimally by the organization. The labour use is to be matched with the sales of the organization. If during the peak season of sales, there is labour shortage then it poses a problem as buyers would switch to other sellers. This switch might be temporary but will certainly lead to loosing out certain probable customers. Similarly, if labour is abundant in comparison to sales, then revenue loss takes place. An important point to be noted here is that labour management is effective in case of temporary workers. In case of permanent workers, they cannot be terminated in case of seasonal swing in sales. However, demand forecasting helps to know the lean periods when labour can be trained, and their skills upgraded.

Insure Adequate Cash Flow

The cash flow of the organization can be maintained adequately when there is demand forecasting. Inadequate cash hampers the payment to the vendors, and it affects the supply in the organization. On the other hand, if there is excess cash with the organization it shows ineffective utilization of the resources. Demand forecasting helps to understand the trend of sales and supply which enables the organization to maintain adequate cash balance with themselves.

Create Accurate Budgeting

Accurate demand forecasting helps to prepare an accurate budget. Along with the master budget, an organization should prepare sub budgets for marketing, overheads, cash flow, production, sales. If the demand has been forecasted with minimal error, then the flexible budget helps the organization to manage their funds in the most appropriate manner and to shift the funds to the areas where they are much needed. The payment to the various vendors can also be timed well if the timing of the sales has been forecasted. If you have a flexible budget, such as tying marketing spending to sales, you can shift paid marketing efforts such as advertising and free marketing efforts such as a social media campaign between slow and busy periods.

Criteria for Good Forecasting Method

Accuracy in forecast

Accuracy in forecast is measured in terms of past forecasts against current sales and by the percentage of deviation from actual demand. It is important to not only check the accuracy of past forecasts but also the validity of assumptions in practice. Forecasts being future-oriented, cannot be always accurate although accuracy is the most important criterion.

Plausibility of forecasts

Forecasts of demand must be reasonable, consistent and plausible. Assumptions made should stand scrutiny and techniques adopted must be commensurate. Explanatory note on these aspects must be available in the write-up on methods and methodology employed in forecasting.

Economy of forecasts

Forecasting exercise should not be expensive in terms of efforts and costs. Additional costs of ways and means for improving the accuracy of forecasts should not exceed the extra gain expected.

Quick Results

Method of forecasting chosen should be capable of yielding quick and useful results. If method selected takes fat too long a time to yield accurate forecast, it may not be conducive for taking quick and effective decisions. Always remember not to make best enemy of `good'.

Availability and Timeliness

Methodology of forecasting should be such that it can easily be updated when changes occur in the demand relationships.

Durability

Demand forecasts should not be changed frequently. Durability of forecast is subject to the followings:

- Simple and reasonable relationship between price and demand, advertisement and sales, level of income and volume of sales etc
- Stability of relationship between the above variables

Flexibility

Flexibility of forecast is an added advantage. It is desirable to be able to adjust `coefficient' of variables from time to time to cope with the changing conditions.

3.4 Methods Of Forecasting- Demand

To facilitate proper and reliable appraisal of investment proposal, we require a reasonably accurate forecast of demand. Starting with qualitative methods like surveyof collective opinions, buyers' intention, Delphi approach and its variant, a number of quantitative methods are used for compiling and computing demand forecasts as detailed below:

Collective Opinion Survey

Sales personnel are closest to the customers and have an intimate feel of the market. Thus they are most suited to assess consumers reaction to company's products. Herein each salesperson makes an estimate of the expected sales in their respective area, territory, state and/or region, These estimates are collated, reviewed and revised to take into account changes in design/features of products, changes in selling prices, projected advertising and sales promotion campaigns and anticipated changes in competitors: marketing policies covering product, people, price, promotion and place. Opinions of all managers involved at various levels of sales organisation are also included in the survey. Thus "collective opinion survey forms the basis of market analysis and demand forecasting.

In consumers' opinion survey, buyers are asked about their future buying intentions of products.

Although this method is simple, direct, firsthand, and most acceptable, it suffers from following weaknesses:

1. Estimates are based n personal judgement which may not be free from bias
2. Adding together demand estimates of individual salespersons to obtain total demand of the country maybe risky as each person has knowledge about a small portion of market only
3. Salesperson may not prepare the demand estimates with the requisite seriousness and care Project Formulation and Appraisal
4. Owing to limited experience, usually in their employment, salesperson may not have the requisite knowledge and experience

This method may be useful for long-term forecasts. It is also used for new products or new variants of existing products.

Survey of Customers Intention

Another method of demand forecasting is to carry out a survey of what consumers prefer and intend to buy. If the product is sold to a few large industrial buyers, survey would involve interviewing them. If it is a consumer durable product, a sample survey is carried out for questioning a few representative consumers about what they are planning or intending to buy. It is neither realistic nor desirable to query all consumers either through direct contact or through printed questionnaire by mail.

These surveys serve useful purpose in establishing relationships between:

- demand and price
- demand and income of consumers
- demand and expenditure on advertisement etc.

This method is preferred when bulk of the sales is to institutions and industrial buyers and only a few of them must be contacted.

Disadvantages are that customers may not know total requirements; in some cases, they are not certain about quantity to be purchased. Besides during shortages there is a tendency to inflate their requirements. Survey method is not useful for households - interviewing them is not only difficult

out but also expensive. They are not able to give precise idea about their intentions particularly when alternative products are available in the market.

Sales force Composite Method

Salespeople are in direct contact with the customers and therefore they are in the best position to forecast demand. In the sales force composite method, each salesperson is asked about their estimated sales targets in their respective zones and then the estimated sales of all the salespersons are added together to get a forecast of future sales. Estimates may also be made by surveying the sales manager, sales representatives, salespersons, distributors, and others who are directly in contact with the sales process. This method is preferred because it is easy to administer and is very cost effective. However, there can be serious issues if the sales targets are over ambitious or the salesperson is biased. This method is best suited for short term forecasting.

Expert opinion method

in this method opinion is seat from expert regarding demand forecasting there are various sub methods by which data can be collected and polluted to get the exact figures regarding future demand.

Group Discussion Method

In this method the people at managerial posts form a group and carry out brainstorming process. This is a method which was developed by Osborne in 1953. The group discussion may be both positive as well as negative. Many organizations encourage negative brainstorming to know the shortcomings of future techniques for augmenting sales. In the current pandemic situation this method has been widely used as physical presence of experts was not required and brain storming could be carried over various online platforms.

Delphi Method of Demand Forecasting

This method was developed by RAND Corporation at the beginning of the cold war. Delphi method is a group process and aims at achieving a `consensus 'of the members. Herein experts in the field of marketing research and demand forecasting are engaged in

- analyzing economic conditions
- carrying out sample surveys of market conducting opinion polls

Based on the above, demand forecast is worked out in following steps:

1. Coordinator sends out a set of questions in writing to all the experts co-opted on the panel who are requested to write back a brief prediction.
2. Written predictions of experts are collated, edited, and summarized together by the coordinator.
3. Based on the summary, Coordinator designs a new set of questions and gives them to the same experts who answer back again in writing.
4. Coordinator repeats the process of collating, editing, and summarizing the responses.
5. Steps 3 and 4 are repeated by the coordinator to experts with diverse backgrounds until consensus is reached.

If there is divergence of opinions and hence conclusions, Coordinator has to sort it out through mutual discussions. Coordinator has to have the necessary experience and background as he plays a key role in designing structured 'questionnaires and synthesizing the data.

Direct interaction among experts is avoided nor their identify is disclosed. Procedure also avoids inter-personnel conflicts nor strong-willed experts are able to dominate the group. This method is also used for technology forecasting.

Market simulation

Market simulation is a method where laboratory is created to understand the behaviour of the customers. The organisation creates a virtual market, and the customers are asked to shop with some given money. In this virtual market which is created the organization of the behaviour off the consumers to understand their buying pattern. This is different from a survey method because here

it is not asked what the consumer will buy but rather the consumer is observed to get a real time analysis of the behavioural pattern of the consumer.

Grabor-Granger test is a very commonly used method for market stimulation this is a method that was developed in the 1960s where the customers were divided into two groups. One group was shown the current product first and then they were shown the new product. On the other hand, the other group was shown the new product right away and their behaviour was observed.

The market simulation method is very useful because it tells the actual behaviour of the customers and how they react to changes in the product, their packaging, the size of the product, their placement in the market, and other changes which the organization wants to bring about in the product.

3.5 Nominal Croup Technique

This is a further modification of Delphi method of forecasting. A panel of seven to ten experts is formed and allowed to interact, discuss 'and rank all the suggestions in descending order as per the following procedure:

1. Experts sit around a table in full view of one another and are asked to speak to each other.
2. Facilitator hands over copies of questionnaire needing a forecast and each expert are expected to write down a list of ideas about the questions.
3. After everyone has written down their ideas, Facilitator asks each expert to share one idea out of own list with the group. The idea shared is written on the `flip chart' which everyone can see.
4. Experts give ideas in rotation until all of them are written on the `flip chart'. No discussion takes place in this phase and usually 15 to 25 ideas emerge from this format.
5. In the next phase, experts discuss ideas presented by them. Facilitator ensures that all ideas have been adequately discussed. During discussions similar ideas are combined and paraphrased appropriately. This reduces the number of ideas.
6. After completing group discussions, experts are asked to give in writing ranks to ideas according to their perception of priority.

Simple Average Method

Among the quantitative techniques for demand analysis, simple Average Method is the first one that comes to one's mind. Herein, we take simple average of all past periods - simple monthly average of all consumption figures collected every month for the last twelve months or simple quarterly average of consumption figures collected for several quarters in the immediate past. Thus

$$Simple\ Average = \frac{Sum\ of\ Demands\ of\ all\ periods}{Number\ of\ periods}$$

Moving Average Method

Method of Simple Average is faulted because of all past periods are given same importance whereas it is justifiable to accord higher importance to recent past periods. Moving Average Method takes a fixed number of periods and after the elapse of each period, data for the oldest time period is discarded and the most recent past period is included. Whatever the period selected, it must be kept constant – it may be three, four or twenty periods by once it decided, we must continue with same number of periods.

$$Simple\ Average = \frac{Sum\ of\ Demands\ of\ chosen\ periods}{Number\ of\ chosen\ periods}$$

Weighted Moving Average

In Moving Average Method, weighted given to the selected number of periods is same. This has been refined to include the Weighted Moving Average which allows varying weightages for demands in old periods. Depending upon the age of the period, with-age can be varied:

$$Weigted\ Moving\ Average = W1D1 + W2D2 + \cdots . WnDn$$

Where W1, W2, ..Wn are the weights for the different time periods in percentages so that

W1+W2+….Wn=1

This method has the advantage that it allows forecaster to compensate for some known trend in demand or seasonality of demand by carefully fitting appropriate coefficients of weighted to those periods. The weightages have to be decided by the forecast analysts and this decision is critical to the accuracy of demand forecast.

Regression Analysis

Past data is used to establish a functional relationship between two variables. For example, demand for consumer goods has a relationship with disposable income of individuals and family; demand for tractors is linked to the agriculture income and demand for cement, bricks etc. is dependent upon value of construction contracts at any time. Forecasters collect data and build relationship through co-relation and regression analysis of variables.

Econometric Models

Econometric models are more complex and comprehensive as they interweave different factors together simultaneously. For example, demand for passenger transport is not only dependent upon the population of the city, geographical area, industrial units, their location etc.

Time Series Analysis

In this section, we continue to explore time series forecasting. However, instead of visual estimation, a more precise statistical technique will be employed: the method of least squares. This method was introduced earlier in this chapter and was used to estimate demand. Whereas demand estimation requires the use of one or more independent variables, and the interactive relationship between these variables is of great importance, in the context of time series analysis there is only one independent variable: time. Thus, this system of forecasting is "naive" because it does not explain the reason for the changes; it merely says that the series of numbers to be projected changes as a function of time.

Despite the mechanical nature of this type of forecast, time series analysis has much to recommend it:

1. It is easy to calculate. A large number of software packages is available.
2. It does not require much judgment or analytical skill by the analyst.
3. It describes the line with the best possible fit and provides information regarding statistical errors and statistical significance.
4. It is usually reasonably reliable in the short run, unless an absolute turn in the series occurs.

The fact that time series analysis does not take into consideration causative factors does not mean that an analyst using this method should not consider additional information about changes in the underlying forces. Any analyst using this naïve method of prediction should try to fine-tune the conclusions based on information that could alter the results.

When data are collected over several periods in the past, they usually exhibit four different characteristics:

Trend

This is the direction of movement of the data over a relatively long period of time, either upward or downward.

Cyclical fluctuations

These are deviations from the trend due to general economic conditions. For instance, if one were to observe data for the GDP over time, a long-run upward trend would be evident. Also evident in this series would be movement around that trend as the economy rises more quickly or less quickly (or actually declines).

Seasonal fluctuations

A pattern that repeats annually is characteristic of many products. Fashions have spring and fall seasons. In the soft drink industry, the expectation is for higher sales during the warmer period's of the year (i.e., June through September). Thus, time series in which data are collected more frequently than annually (monthly, quarterly) can exhibit seasonal variations.

Irregular

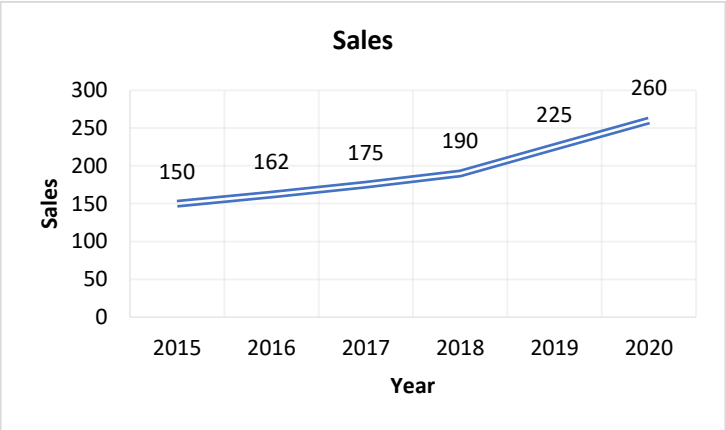
Departures from norm may be caused by special events or may just represent "noise" in the series. They occur randomly and thus cannot be predicted.

3.6 Methods of Trend Projection

There are three methods by which the trend can be projected they are the graphical method the least square method and the ARIMA(Box Jenkins method).

Graphical Method

In the graphical method the past values of the variables are shown on the vertical axis and time is taken on the horizontal axis. The data is then plotted on a graph and a line is passed through them the movements of the series is assessed and future values off the variable of forecasted.



In the above figure the sales data for six years have been plotted. dub graph shows that sales has been increasing over the period of time. The problem with this method is that the projections are not very accurate as it's very simple method without applying much technique.

Least square method

least square method is a very powerful play to estimate the coefficients off a linear function it is a statistical method which uses the minimizations of squared deviations between the line of best fit and the original observations. It is an algebraic method baby fit the data on a variable and time in the form of an equation and then we predict demand for a future period. These equations are turned as normal equations and the task of least squares method is to find the values of the coefficients in these equations.

the equation for linear trend is given as follows

$$\boldsymbol{Y = a + bX}$$

where a is the intercept of the demand curve, be is the slope of the curve which is also termed as the regression coefficient and ex is the deviation from mean of the independent variable, in this case time. the normal equation in this model would be

$$\boldsymbol{\Sigma Y = na + b\Sigma X}$$

$$\boldsymbol{\Sigma XY = a\,\Sigma X + b\Sigma X^2}$$

In order to solve the trend equation, we need to solve these two simultaneous equations by the principle of least square. the values of the coefficients as obtained on solving the normal equations are

a= $\overline{Y} - b\overline{X}$

$$b = \frac{\Sigma\left(Y - \overline{Y}\right)(X - \overline{X})}{\Sigma(X - \overline{X})}$$

once the coefficients of the trend equation are estimated we can easily predict the trend for future. Least square estimation is also used extensively to estimate regression equations.

ARIMA method

the autoregressive integrated moving average (ARIMA) method has been given by Box and Jenkins and therefore it is also known as the Box-Jenkins method. It is considered to be one of the most sophisticated techniques of forecasting as it combines moving average and autoregressive technique. This method is very useful when the series are very complicated and there is no definite pattern to the data. However, we need sophisticated computer software to use this method, we can use Eviews software for the calculation, but this makes it a bit complex and is not very popular among people.

Summary

Economic and financial evaluation of an investment proposal must always-be used on reasonably accurate market and demand analysis for forecasting. Depending upon demand pattern, length/time horizon of forecast, level of noise and degree of accuracy required, a suitable method of demand forecasting should be selected as cost of operating not-so-accurate forecast can be exorbitant. Although forecasts are usually made with the help of statistical models, individuals can use the past data intuitively and forecast future events. The experience confirms that with a host of factors impacting on demand pattern --- noise level, complexity of operation etc., subjective approach decreases the level of accuracy. Forecasting models are more reliable methods of ascertaining demand although a few individuals can consistently forecast better than models.

Keywords

Compound growth rate: Forecasting by projecting the average growth rate of the past into the future.

Delphi method: A form of expert opinion forecasting that uses a series of written questions and answers to obtain a consensual forecast, most employed in forecasting technological trends.

Econometric forecasting model*:* A quantitative, causal method that uses several independent variables to explain the dependent variable to before cast. Econometric forecasting employs both single- and multiple-equation models.

Economic indicators: A barometric method of forecasting in which economic data are formed into indexes to reflect the state of the economy. Indexes of leading, coincident, and lagging indicators are used to forecast changes in economic activity.

Moving average method*:* A smoothing technique that compensates for seasonal fluctuations.

Naive forecasting: Quantitative forecasting that projects past data without explaining the reasons for future trends.

Self Assessment

1. Which of the following is not true for forecasting?

A. Forecasts are rarely perfect

B. The underlying casual system will remain same in the future

C. Forecast for group of items is accurate than individual item

D. Short range forecasts are less accurate than long range forecasts

2. A qualitative forecast

A. predicts the quality of a new product.

B. predicts the direction, but not the magnitude, of change in a variable.

C. is a forecast that is classified on a numerical scale from 1 (poor quality) to 10 (perfect quality).

D. is a forecast that is based on econometric methods.

3. Which of the following is not a qualitative forecasting technique?
A. Surveys of consumer expenditure plans
B. Perspectives of foreign advisory councils
C. Consumer intention polling
D. Time-series analysis

4. The first step in time-series analysis is to
A. perform preliminary regression calculations.
B. calculate a moving average.
C. plot the data on a graph.
D. identify relevant correlated variables.

5. Forecasts are referred to as naive if they
A. are based only on past values of the variable.
B. are short-term forecasts.
C. are long-term forecasts.
D. generally, result in incorrect forecasts.

6. Time-series analysis is based on the assumption that
A. random error terms are normally distributed.
B. there are dependable correlations between the variable to be forecast and other independent variables.
C. past patterns in the variable to be forecast will continue unchanged into the future.
D. the data do not exhibit a trend.

7. Which of the following is not one of the four types of variation that is estimated in time-series analysis?
A. Predictable
B. Trend
C. Cyclical
D. Irregular

8. The cyclical component of time-series data is usually estimated using
A. linear regression analysis.
B. moving averages.
C. exponential smoothing.
D. qualitative methods.

9. In time-series analysis, which source of variation can be estimated by the ratio-to-trend method?
A. Cyclical
B. Trend
C. Seasonal
D. Irregular

10. Trend projection is an example of which kind of forecasting?
A. Qualitative
B. Time-series
C. Barometric
D. Econometric

11. Turning points in the level of economic activity can be forecast by using
A. Time-series analysis
B. Exponential smoothing
C. Barometric methods
D. Moving average

12. Econometric forecasts require
A. accurate estimates of the coefficients of structural equations.
B. forecasts of future values of exogenous variables.
C. appropriate theoretical models.
D. all of the above.

13. Delphi method is used for
A. Judgmental forecast
B. Time series forecast
C. Associative model
D. All of the above

14. A linear trend equation has the form
A. X=a-bt
B. X=a+bt
C. X=2a-bt
D. X=2a+bt

15. If regression analysis is used to estimate the linear relationship between the natural logarithm of the variable to be forecast and time, then the slope estimate is equal to
A. the linear trend.
B. the natural logarithm of the rate of growth.
C. the natural logarithm of one plus the rate of growth.
D. the natural logarithm of the square root of the rate of growth.

Answer for Self Assessment

1.	D	2.	B	3.	D	4.	C	5.	A
6.	C	7.	A	8.	D	9.	C	10.	B
11.	C	12.	D	13.	A	14.	B	15.	C

Review Questions

- Why is demand forecasting important for organizations?
- What are the qualitative methods of forecasting?
- Critically evaluate the qualitative and quantitative techniques of forecasting?
- How is the market simulation method better than the survey method?
- If you have to forecast the sale of besan (chickpea flour) for your organization, what method would you use and why?

Further Reading

- Managerial Economics- Principles and Worldwide Applications by Salvatore, Dominick and Rastogi, Siddhartha K., Oxford University Press.
- Managerial Economics- Economic Tools for Today's Decision Makers by Keat Paul G, Young Philip K. Y, Erfle Stephen and Banerjee Sreejata., Pearson Education, India
- Managerial Economics by Geetika, Piyali Ghosh, and Purba Roy Choudhary, McGraw Hill Education (India) Private Limited

Unit 04: Cost Theory and Estimation

CONTENTS

Objectives

Define the cost function and explain the difference between a short-runand a long-run cost function.

Define the various types of cost

Analyse costing in the short run and long run

Evaluate the concept of economies of scale

Analyse Learner Curve

Introduction

Ms Tulika was opening a new Oxygen plant looking at the business opportunity and the social requirement. She had approached a company manufacturing the machine for oxygen making and the price quoted by the firm was INR 2 crores. Her bank approved her loan for the said amount. Suddenly while surfing the net for business opportunities to learn more about oxygen plants, she came across another firm from New Delhi which is manufacturing and supplying oxygen making plants. She spoke to her other business partners and they decided to contact the new vendor. She visited their website but was not able to get much information from there. She then called at the number that was given in the website. She spoke to Swati who informed her that it was her father who carried out the dealing part. on contacting they found out that this firm was supplying the same machine for rupees 1,00,00,000. Initially the partners were surprised about the validity of this new firm as there was a 50% reduction in the cost. They then decided to contact the firm in person and went to New Delhi to have a look at their office. On visiting the site define and out that this new firm was assembling the plant and one of the parts was being imported from Germany. However, as deva buying things in bulk quantity and they had a higher sales turnover than the previous vendor they were able to cut costs.

Cost is a sacrifice orforegoing that hasoccurred or has potential to occur in future,measured in monetary terms.

Whatever we are buying repay a particular price for the product. The product that what buy us go through a production process and at every step of this process some value addition is done. There are costs that must be bornefor the value addition which may be monetary or non-monetary. Cost is the sacrifice that is made to produce a product. In economics we take both the costs to have a better understanding of the production process add this also helps with the firms to realise their objective which may be profit maximization or sales maximization. In either case the cost plays a very important role to determine the price of the product.The total cost along with the total revenue help to determine the profit of a firm. The price of the product is determined on the basis of the cost of the firm.

4.1 Kind of costs

There are variety of costs which arises in an organization as per the circumstances. The cost may be monetary cost or non monetary costs. There are number of implicit costs as well in the organization specially if the organization is a sole proprietorship or a small firm which is just starting up.Asper deep concepts of economics cost is a function of output and there is difference between accounting cost and economic cost. In this section we will discuss the various types of costs which accrue to a firm.

1. ***Accounting costs***: the accounting section of an organization only takes into account that cost those costs which can be measured in terms of money they are also known as nominal costs a few examples of these costs are the wages and salaries paid rent paid advertising expenses selling expenses, interest on loans, stationary charges, telephone charges, etc. another names given for these type of course is explicit costs which means that these costs are tangible and the organization is aware of them. These costs are recorded in the books of accounts.
2. ***Real cost***: the real costs are much wider in scope and cover all the aspects regarding costs for the production of a unit of the product it also includes the non monetary costs all the psychological costs which accrue to a firm. for example if a new start up is Bing organized the owners sacrifices on his time with his family his friends, uses his own resources. These sacrifices cannot be measured in terms of money but they are cost to the production. They are known as real costs. however, as per the accounting principles it does not qualify as cost because there is no flow of cash in these transactions and therefore they do not become a part of the book of accounts. in modern time the real costs have become very significant because the compensation paid to the employees is based on the principle of real cops.
3. ***Opportunity cost***: this is one of the most important concepts of economics and a lot of micro economic concepts are based on opportunity cost this is the cost of the next best alternative available to a producer or a person. Money has got different users as does all the other girls. For example if an individual has ₹10000 it has alternative users like buying a kindle, saving the money, investing it into equity or starring the cash in hand.
4. ***Out of pocketcosts:*** are those costs that improve current cash payments to outsiders. For example, wages and salaries paid to the employees are out-of pocket costs. Other examples of out-of-pocket costs are payment of rent, interest, transport charges, etc. On the other hand, book costs are those business costs, which do not involve any cash payments but for them a provision is made in the books of account to include them in profit and loss accounts and take tax advantages. For example, salary of owner manager, if not paid, is a book cost. The interest cost of owner's own fund and depreciation cost are other examples of book cost.
5. ***Past costs*** are actual costs incurred in the past and they are always contained in the income statements. Their measurement is essentially a record keeping activity. These costs can only be observed and evaluated in retrospect. If they are regarded as excessive,

management can indulge in post-mortem checks just to find out the factors responsible for the excessive costs, if any, without being able to do anything about reducing them.

6. ***Future costs*** are those costs that are likely to be incurred in future periods. Since the future is uncertain, these costs have to be estimated and cannot be expected to be absolutely correct figures. Past costs serve as the basis for projecting future costs. In periods of inflation and deflation, the two cost concepts differ significantly.
7. ***Sunk costs*** are expenditures that have been made in the past or must be paid in the future as part of contractual agreement or previous decision. For example, the money already paid for machinery, equipment, inventory and future rental payments on a warehouse that must be paid as part of a long-term lease agreement are sunk costs. In general, sunk costs are not relevant to economic decisions. For example, the purchase of specialized equipment designed to order for a plant. We assume that the equipment can be used to do only what it was originally designed for and cannot be converted for alternative use. The expenditure on this equipment is a sunk cost. Also, because this equipment has no alternative use its opportunity cost is zero and, hence, sunk costs are not relevant to economic decisions. Sometimes the sunk costs are also called as non-avoidable or non-escapable costs.
8. ***Fixed costs*** are that part of the total cost of the firm which does not change with output. Expenditures on depreciation, rent of land and buildings, property taxes, and interest payment on bonds are examples of fixed costs. Given a capacity, fixed costs remain the same irrespective of actual output.
9. ***Variable costs***, on the other hand, change with changes in output. Examples of variable costs are wages and expenses on raw material.

4.2 Short Run Cost

The short run is defined as a period in which the supply of at least one element of the inputs cannot be changed. To illustrate, certain inputs like machinery, buildings, etc., cannot be changed by the firm whenever it so desires. It takes time to replace, add or dismantle them. Short-run costs are the costs that can vary with the degree of utilisation of plant and other fixed factors. In other words, these costs relate to the variation in output, given plant capacity. Short-run costs are, therefore, of two types: fixed costs and variable costs. In the short-run, fixed costs remain unchanged while variable costs fluctuate with output.

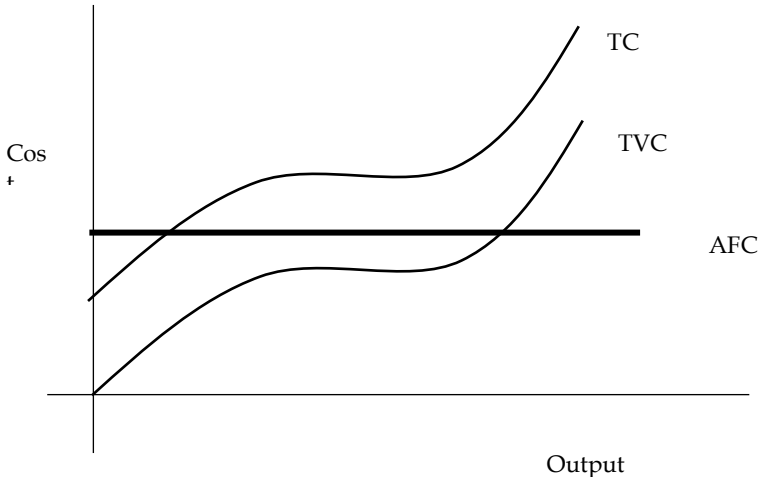
To analyse the short run cost functions, it is necessary to understand the three main classification of cost.

Total Costs

Three concepts of total cost in the short run must be considered: total fixed cost (TFC), total variable cost (TVC), and total cost (TC). Total fixed costs are the total costs per period of time incurred by the firm for fixed inputs. Since the amount of the fixed inputs is fixed, the total fixed cost will be the same regardless of the firm's output rate. Table 9.1 shows the costs of a firm in the short run. According to this table, the firm's total fixed costs are Rs. 100.

Quantity	TFC	TVC	TC	MC	AFC	AVC	ATC
0	100	0	100				
1	100	50	150	50	100	50	150
2	100	90	190	40	50	45	95
3	100	120	220	30	33	40	73.3
4	100	140	240	20	25	35	60

5	100	150	250	10	20	30	50
6	100	156	256	6	16.7	26	42.7
7	100	175	275	19	14.3	25	39.3
8	100	208	308	33	12.5	26	38.5
9	100	270	370	62	11.1	30	41.1
10	100	350	450	80	10	35	45



Total variable costs are the total costs incurred by the firm for variable inputs. To obtain total variable cost we must know the price of the variable inputs. Suppose if we have two variable inputs viz. labour (V1) and raw material (V2) and the corresponding prices of these inputs are P1 and P2, then the total variable cost (TVC) = P1 * V1 + P2 * V2. They go up as the firm's output rises, since higher output rates require higher variable input rates, which mean bigger variable costs.

Finally, total costs are the sum of total fixed costs and total variable costs. To derive the total cost column in Table 4.1, add total fixed cost and total variable. cost at each output. The firm's total cost function corresponding to the data given in Table 4.1 is shown graphically in Figure 4.1. Since total fixed costs are constant, the total fixed cost curve is simply a horizontal line at Rs.100. And because total cost is the sum of total variable costs and total fixed costs, the total cost curve has the same shape as the total variable cost curve but lies above it by a vertical distance of Rs. 100.

Corresponding to our discussion above we can define the following for the short run:

TC = TFC + TVC

Where,

TC = total cost

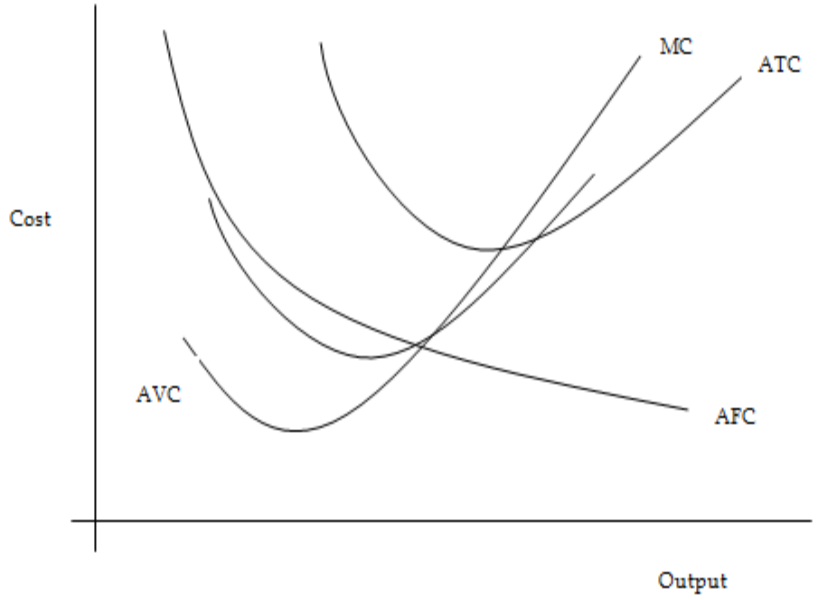
TFC = total fixed costs

TVC = total variable costs

Average Fixed Costs

While the total cost functions are of great importance, managers must beinterested as well in the average cost functions and the marginal cost functionas well. There are three average cost concepts corresponding to the three totalcost concepts. These are average fixed cost (AFC), average variable cost(AVC), and average total cost (ATC). Figure 4.2 show typical average fixedcost function graphically. Average fixed cost is the total fixed cost divided byoutput. Average fixed cost declines as output (Q) increases. Thus we canwrite average fixed cost as:

AFC = TFC/Q



Average Variable Costs

Average variable cost is the total variable cost divided by output. Figure 9.2shows the average variable cost function graphically. At first, output increases resulting in decrease in average variable cost, but beyond a point, they result in higher average variable cost.

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

Q = output

TVC = total variable costs

AVC = average variable cost

Average Total Cost

Average total cost (ATC) is the sum of the average fixed cost and average variable cost. In other words, ATC is total cost divided by output. Thus,

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

Figure 4.2 shows the average total cost function graphically. Since ATC is sum of the AFC and AVC, ATC curve always exceeds AVC curve. Also, since AFC falls as output increases, AVC and ATC get closer as output rises. Note that ATC curve is nearer the AFC curve at initial levels of output, but is nearer the AVC curve at later levels of output. This indicates that at lower levels of output fixed costs are more important part of the total cost, while at higher levels of output the variable element of cost becomes more important.

Marginal Cost

Marginal cost (MC) is the addition to either total cost or total variable cost resulting from the addition of one unit of output. Thus,

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

Where,

MC = marginal cost

Δ Q = change in output

Δ TC = change in total cost due to change in output

ΔTVC = change in total variable cost due to change in output

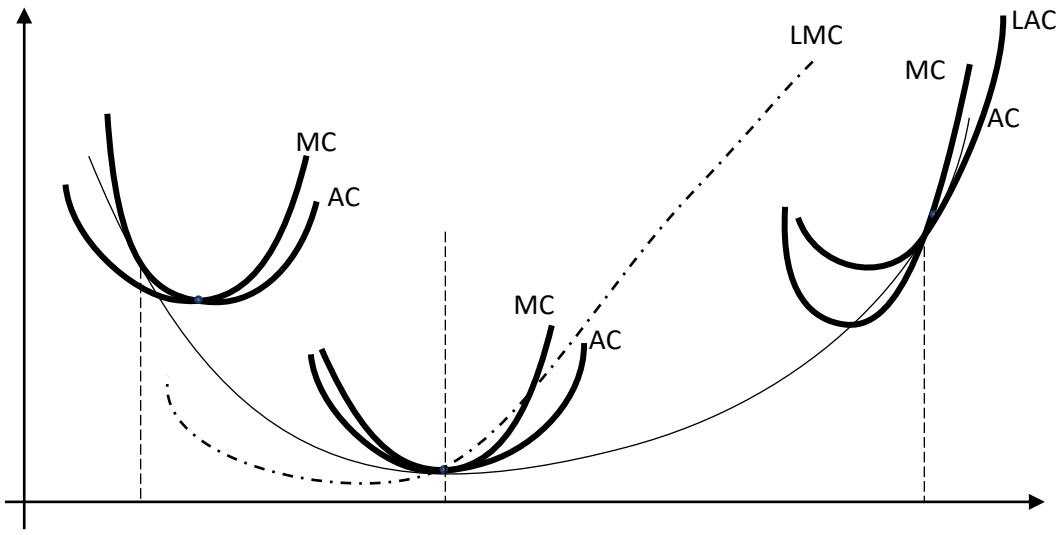
The two definitions are the same because, when output increases, total cost increases by the same amount as the increase in total variable cost (since fixed cost remains constant). Figure 4.2 shows the marginal cost function graphically. At low output levels, marginal cost may decrease with increase in output, but after reaching a minimum, it goes up with further increase in output. The reason for this behavior is found in diminishing marginal returns. 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 additional unit of output and therefore, also the cost which can be "saved" by reducing total output by the additional 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 between Marginal Cost and Average Costs

The relationships between the various average and marginal cost curves are illustrated in Figure 4.2. The figure shows typical AFC, AVC, ATC, and MC curves but is not drawn to scale for the data given in Table 4.1. The MC cuts both AVC and ATC at their minimum. When both the MC and AVC are falling, AVC will fall at a slower rate. When both the MC and AVC are 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 as 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 MC curve cuts the ATC curve at the latter's minimum point. This is because MC can be defined as the addition either to TC or TVC resulting from one more unit of output. However, no such relationship exists between MC and AFC, because the two are not related; MC by definition includes only those costs which change with output, and FC by definition is independent of output.

4.3 Long Run Cost

Long run is defined as a period in which all inputs are changed with changes in output. Long-run costs, are costs that can vary with the size of plant and with other facilities normally regarded as fixed in the short-run. In fact, in the long-run there are no fixed inputs and therefore no fixed costs, i.e., all costs are variable. The long run cost curve is also known as Planning Cost function the Long Run Cost Curve is known as Planning Curve.



The long run cost output relationship can be shown with the help of a long run cost curve. The long run average cost curve (LRAC) is derived from short run average cost curves (SRAC).

Most firms will have many alternative plant sizes to choose from, and there is a short run average cost curve corresponding to each. A few of the short run average cost curves for these plants are shown in Figure 4.3, although many more may exist. Only one point of a very small arc of each short run cost curve will lie on the long run average cost function. Thus long run average cost curve can be shown as the smooth U-shaped curve. Corresponding to this long run average cost curve is a long run marginal cost (LRMC) curve, which intersects LRAC at its minimum point, which is also the minimum point of short run average cost curve.

SRC=SRMC and LRAC=LRMC

4.4 Economies of scale

We have seen in the preceding section that larger plant will lead to lower average cost in the long run. However, beyond some point, successively larger plants will mean higher average costs. Exactly, why is the long run average cost (LRAC) curve U-shaped? What determines the shape of LARC curve?

This point needs further explanation. It must be emphasized here that the law of diminishing returns is not applicable in the long run as all inputs are variable. Also, we assume that resource prices are constant. What then, is our explanation? The U-shaped LRAC curve is explainable in terms of what economists call economies of scale and diseconomies of scale.

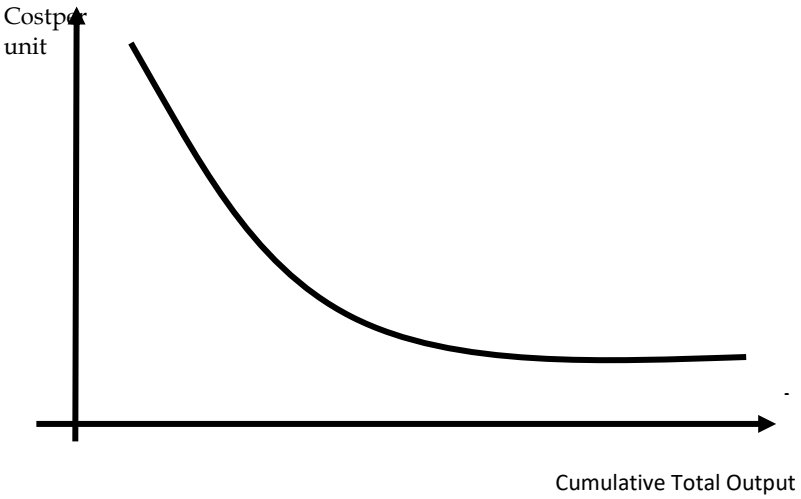
Economies and diseconomies of scale are concerned with behaviour of average cost curve as the plant size is increased. If LRAC declines as output increases, then we say that the firm enjoys economies of scale. If, instead, the LRAC increases as output increases, then we have diseconomies of scale.

Finally, if LRAC is constant as output increases, then we have constant returns to scale implying we have neither economy of scale nor diseconomies of scale. Economies of scale explain the down sloping part of the LRAC curve. As the size of the plant increases, LRAC typically declines over some range of output for several reasons. The most important is that, as the scale of output is expanded, there is greater potential for specialization of productive factors. This is most notable about labour but may apply to other factors as well. Other factors contributing to declining LRAC include ability to use more advanced technologies and more efficient capital equipment; managerial specialization: opportunity to take advantage of lower costs (discounts) for some inputs by purchasing larger quantities; effective utilization of by products, etc.

But, after sometime, expansion of a firm's output may give rise to diseconomies, and therefore, higher average costs. Further expansion of output beyond a reasonable level may lead to problems of overcrowding of labour, managerial inefficiencies, etc., pushing up the average costs. In this section, we examined the shape of the LRAC curve. In other words, we have analysed the relationship between firm's output and its long run average costs. The economies of scale and diseconomies of scale are sometimes called as internal economies of scale and internal diseconomies of scale respectively. This is because the changes in long run average costs result solely from the individual firm's adjustment of its output. On the other hand, there may exist external economies of scale. The external economies also help in cutting down production costs. With the expansion of an industry, certain specialized firms also come up for working up the by-products and waste materials. Similarly, with the expansion of the industry, certain specialized units may come up for supplying raw material, tools, etc., to the firms in the industry. Moreover, they can combine to undertake research etc., whose benefit will accrue to all firms in the industry. Thus, a firm benefit from expansion of the industry. These benefits are external to the firm, in the sense that these have arisen not because of any effort on the part of the firm but have accrued to it due to expansion of industry. All these external economies help in reducing production costs

4.5 Learner curve

Learning Curve is a modern concept which came in the post Keynesian era. Kenneth J. Arrow was one of the pioneers who gave this concept and called it "learning by doing". The learning curve effect is usually expressed as a constant percentage. This percentage represents the proportion by which cost per unit of output declines with the increase in cumulative output in each successive time period.



The algebraic expression of the relationship is

$$C = aA^b$$

Where

C=input cost of Qth unit of output,

Q = successive unit of output produced,

a = input cost per unit of output in the first period

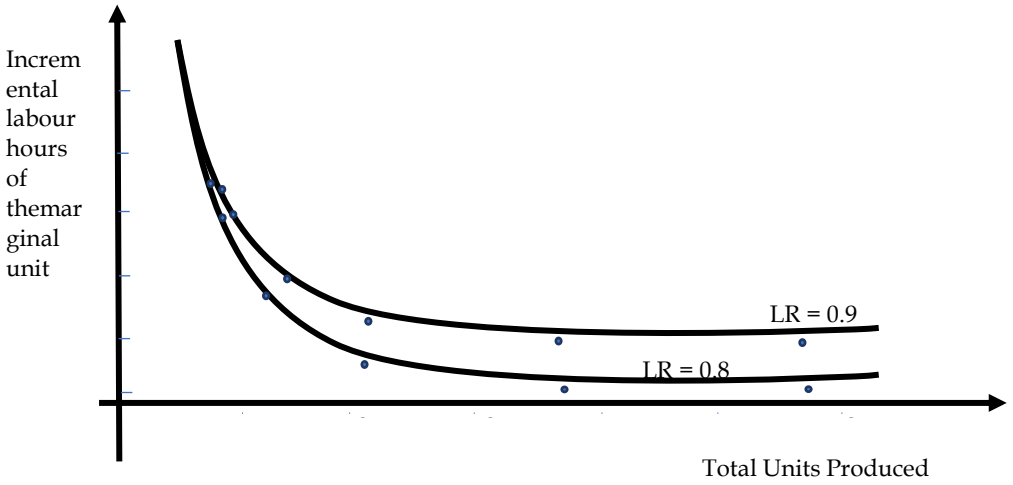
b= rate of decline in cost per unit of output in the successive period.

Since the learning curve is downward sloping, the value of b is negative.

Effects of Learning Curves on Variable Costs per Unit and Profit

A common form of learning curve is based on reduction of labour hours per extra unit of output by a constant fraction each time the total output is doubled.

Suppose the labour requirement is reduced by 10% with each doubling of output. Incremental labour requirement for the ith unit is 0.9 times the incremental labour needed for the ith unit. The factor 0.9 is called the learning rate for the particular work process.The equation for the learning curve in the above example is Li — 0.9Li,/2, in which L is incremental labour per unit. If the first unit of output requires 1,000 labour hours, the second will need 900 units, the fourth 810 units, and so on.



The learning curve is often made use of in developing new products and projecting the profitability of such products in the face of rapid technological change. Various other costs such as indirect labour, power, etc. depend on the time re-quired to complete a job.

Summary

In this chapter we have understood the concept of cost and how it evolves in various time frame. Afirm should be aware of the environment in which it is working so as to estimate the cost because it becomes the pivot for the determination of price and also helps an organization to estimate the growth. The objective of the firm that is whether it wants to maximise profit or sales also has an impact on the costing of the firm. If the organization is profit oriented, then opportunity cost and accounting costs play a major role in maximising profits. On the other hand, if the objective is to maximise sales then the firm would try to minimised it pause so as to have optimum utilization of all the resources.

In short run, the total cost consists of fixed and variable costs. A firm's marginal cost is the additional variable cost associated with each additional unit of output. The average variable cost is the total variable cost divided by the number of units of output. When there is a single variable input, the presence of diminishing returns determines the shape of cost curves. In particular, there is an inverse relationship between the marginal product of the variable input and the marginal cost of production. The average variable cost and average total cost curves are U-shaped. The short run marginal cost curve increases beyond a certain point, and cuts both average total cost curve and average variable cost curve from below at their minimum points.

In the long run, all inputs to the production process are variable. Thus, in the long run, total costs are identical to variable costs. The long run average cost function shows the minimum cost for each output level when a desired scale of plant can be built. The long run average cost curve is important to managers because it shows the extent to which larger plants have cost advantages over smaller ones.

Economies or diseconomies of scale arise either due to the internal factors pertaining to the expansion of output by a firm, or due to the external factors such as industry expansion. In contrast, economies of scope result from product diversification. Thus, the scale-economies have reference to an increase in volume of production, whereas the scope-economies have reference to an improvement in the variety of products from the existing plant and equipment. These cost concepts and analysis have a lot of applications in real world decision-making process such as optimum output, optimum product-mix, breakeven output, profit contribution, operating leverage, etc.

Keywords

Average fixed cost (AFC). The fixed cost per unit of output

Average variable cost (AVC). The variable cost per unit of output.

Average total cost (AC or ATC). The total cost per unit of output.

Economies of scale, also called increasing returns to scale, IRTS. The reduction in the unit cost of production as the firm increases its capacity (i.e., increases all its inputs). It is considered a long run phenomenon.

Learning curve. The relationship between the unit cost of labor and the total amount of output produced by labor that is directly associated with the production process (i.e., "direct labor"). Essentially this concept is based on the principle that one improves with practice. The resulting productivity gains lead to a reduction in the direct labor cost of producing a unit of output.

Marginal cost (MC). The cost to a firm of producing an additional unit of an output.

Opportunity cost. The amount of subjective value forgone in choosing one activity over the next best alternative

Total cost (TC). The total cost of production, including both total variable and total fixed costs.

Self Assessment

1. Which of the following is a variable cost?

A. Interest payments
B. Raw materials costs
C. Property taxes
D. All of the above are variable costs

2. Which of the following is an implicit cost?

A. The salary earned by a corporate executive
B. Depreciation in the value of a company-owned car as it wears out
C. Property taxes
D. All of the above are implicit costs.

3. If the output levels at which short-run marginal and average cost curves reach a minimum are listed in order from smallest to greatest, then the order would be

A. AVC, MC, ATC
B. ATC, AVC, MC
C. MC, AVC, ATC
D. AVC, ATC, MC

4. The long-run average cost curve is at a minimum at a level of output where

A. the firm is experiencing constant returns to scale.
B. it is equal to long-run marginal cost.
C. the long-run average cost curve is tangent to the lowest point on a short-run average total cost curve.
D. all of the above occur.

5. If a firm has a downward sloping long-run average cost curve, then

A. it is experiencing decreasing returns to scale.
B. it is experiencing decreasing returns.
C. it is a natural monopoly.
D. marginal cost is greater than average cost.

6. One reason that a firm may experience increasing returns to scale is that greater levels of output make it possible for the firm to

A. employ more specialized machinery.
B. obtain bulk purchase discounts.
C. employ a greater division of labor.
D. all of the above are correct.

7. One reason that a firm may experience decreasing returns to scale is that greater levels of output can result in

A. a greater division of labor.
B. an increase in meetings and paperwork.
C. smaller inventories per unit of output.

D. all of the above are correct.

8. Economies of scale exist when
A. the firm is too large and too diversified
B. a firm's decision to hire additional inputs does not result in an increase in the price of inputs
C. the long-run cost of producing a unit of output falls as the output increases
D. the firm is too small and too specialized

9. Economies of scope exist when
A. a fall in wages reduces average cost
B. greater experience in producing the product reduces average cost
C. doubling factor input doubles output
D. changing the mix of production reduces average cost.

10. Economies of scale is also known as
A. Benefitting scale
B. Returns to scale
C. Law of variable proportions
D. None of the above

11. The concept that occurs when some activity is being performed outside a firm but within an industry is known to be
A. Economies of scale
B. Internal economies of scale
C. External economies of scale
D. Diseconomies of scale

12. Learning curves represent the relationship between
A. average variable cost and the number of units produced per time period.
B. average variable cost and the cumulative number of units produced.
C. total cost and technology.
D. average variable cost and the rate of increase in technology.

13. A learning curve describes
A. the increase in production time as the total number of units produced increases.
B. the rate at which an organization acquires new information.
C. the amount of production time per unit as the total number of units produced increases.
D. the increase in number of units produced per unit time as the total number of units produced increases.

14. Limitations of the learning-curve approach include
A. learning curves are only valid when considering relatively simple production processes.
B. learning curves are only valid when the total number of units produced is relatively small.
C. learning curves must be redeveloped whenever the product or production process is modified.
D. learning curves are only applicable when considering a highly automated process.

15. Another name for the learning curve is a(n)

A. experience curve.

B. exponential curve.

C. production curve.

D. growth curve.

Answers for Self Assessment

1.	B	2.	B	3.	C	4.	D	5.	C
6.	D	7.	B	8.	C	9.	D	10.	B
11.	B	12.	B	13.	C	14.	C	15.	A

Review Questions

1. Explain why short run marginal cost is greater than long run marginal cost beyond the point at which they are equal?
2. Explain long run cost curves.
3. What is more important for the firm, external or internal economies and why?
4. How does the concept of Lerner curve help in cost estimation?
5. "In the long run all the costs are variable". Explain the concept.
6. Explain the concept of opportunity cost and why is it important in economics.

Further readings

1. Managerial Economics- Principles and Worldwide Applications By Salvatore,Dominick and Rastogi, Siddhartha K., Oxford University Press.
2. Managerial Economics- Economic Tools for Today's Decision Makers by Keat Paul G, Young Philip K. Y, Erfle Stephen and Banerjee Sreejata., Pearson Education, India
3. Managerial Economics by Geetika, Piyali Ghosh, and Purba Roy Choudhary, McGraw Hill Education (India) Private Limited

Unit 05: Production Theory

CONTENTS

Objective

- To understand the concept of Production.
- To analyse the production function in the various time frames.
- To evaluate the concept of learner curve

Introduction

The production function is a statement of the relationship between a firm's scarce resources (i.e., its inputs) and the output that results from the use of these resources. Economic cost analysis can then be seen as the application of a monetary unit such as rupees to measure the value of this input usage in the production process. Production process involves the transformation of inputs into output. The inputs could be land, labour, capital, entrepreneurship etc. and the output could be goods or services. In a production process managers take four types of decisions: (a) whether to produce or not, (b) how much output to produce,(c) what input combination to use, and (d) what type of technology to use.

In this chapter we will discuss the production function with single variable and then two variables. The law of diminishing returns will be discussed with one factor as variable, and all the other factors are fixed. In case of two inputs, the isoquants will be discussed. We will then move to finding the optimum combination of inputs to get a particular level of output. The long run production function with all the variables changing-returns to scale will be discussed.

5.1 Production Function

If we want to produce bread, we will need a baker, flour, baking oven, a room and some other tools. All of these are the factors of production or inputs that is land, labour, capital, enterprise, and technology. The produce is bread. The production function is the functional relationship between these inputs and output. It shows the maximum output which can be obtained for a given combination of inputs. It expresses the technological relationship between inputs and output of a product.

Q= f (X1, X2, ..., Xk)

Where,

Q= level of output

X1, X2, ..., Xk= inputs used in production

The production function can be rewritten so as to include the various factors of production.

$$\mathbf{Q=f(L,K, l, E, T)}$$

Where L: Labour

K: Capital

l: Land

E: Enterprise

T: Technology

5.2 Production function with one variable input

If there are only two factors of production, labour and capital then the production function in the short run will be:

$$\boldsymbol{Q = f\ (L, \overline{K})}$$

where Q = output

L = labour

$\overline{K}$= fixed capital

The variable input can be combined with the fixed input to produce different levels of output.

Total, Average, and Marginal Product

The production function given above shows us the maximum total product (TP) that can be obtained using different combinations of quantities of inputs. Suppose the metal parts company decides to know the output level for different input levels of labour using fixed five machine tools. Table 5.1 explains the total output for different levels of variable input. In this example, the TP rises with increase in labour up to a point (six workers), becomes constant between sixth and seventh workers, and then declines.

Table 5.1 TP, AP and MP of labour with capital fixed at 5 units

Number of Labour	Total Product (TP)	Average Product (AP=TP/Q)	Marginal Product (MP=ΔTP/ΔQ)
0	0	0	0
1	10	10	10
2	28	14	18
3	54	18	26
4	76	19	22
5	90	18	14
6	96	16	6
7	96	13.5	0
8	92	11.5	-4

Two other important concepts are the average product (AP) and the marginal product (MP) of an input.

Average Product

The AP of an input is the TP divided by the amount of input used to produce this amount of output. Thus, AP is the output-input ratio for each level of variable input usage. The MP of an input is the addition to TP resulting from the addition of one unit of input, when the amounts of other inputs are constant. In our example of machine parts production process, the AP of labour is the TP divided by the number of workers.

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

As shown in Table 5.1, the APL first rises, reaches maximum at 19, and then declines thereafter.

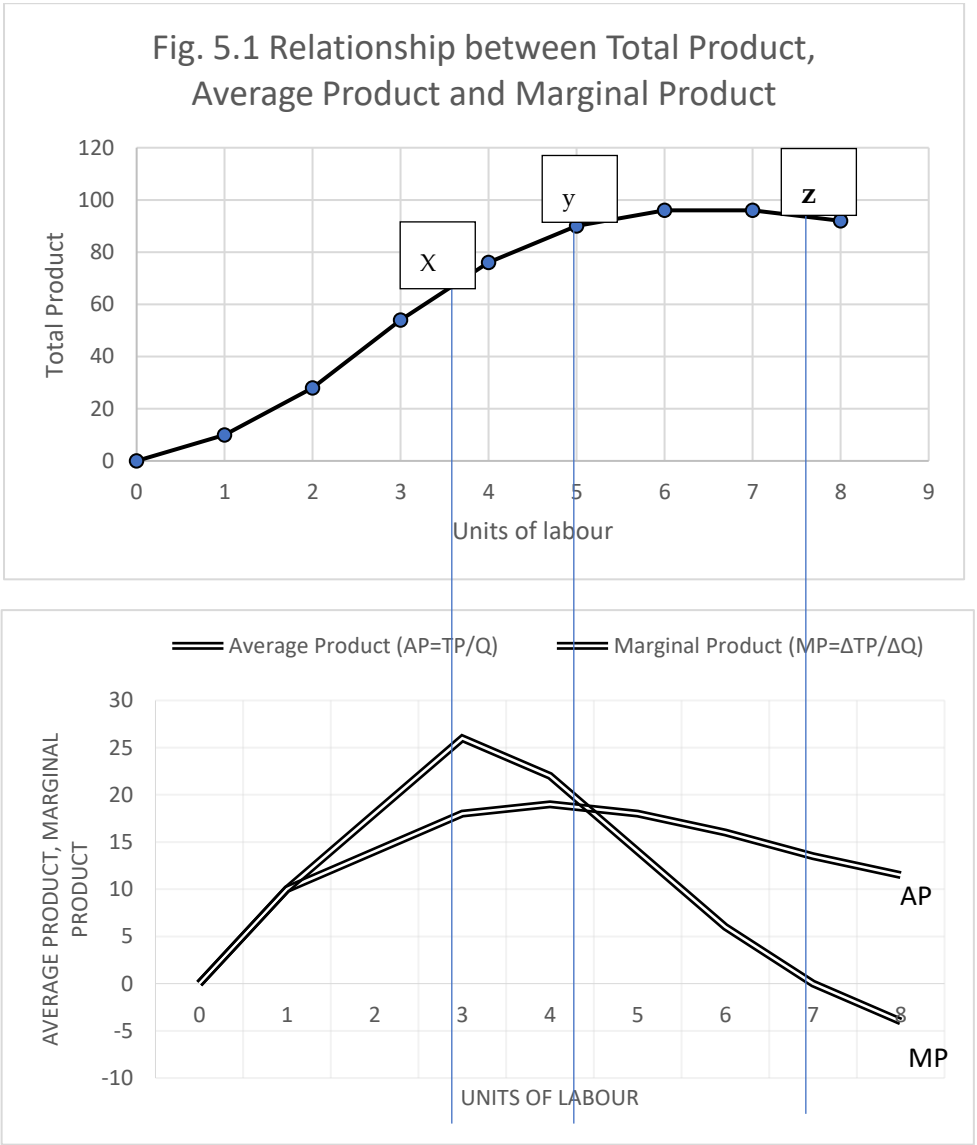
Marginal Product

The MP of labour is the additional output attribute able to using one additional worker with use of other input (service of five machine tools) fixed.

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

The graphical representation between the three is shown in Fig. 5.1

Fig. 5.1 Relationship between Total Product, Average Product and Marginal Product



Relationship between TP, MP and AP Curves

Examine Table 5.1 and its graphical presentation in Figure 5.1. We canestablish the following relationship between TP, MP, and AP curves.

1. A. If MP > 0, TP will be rising as L increases. The TP curve begins at the origin, increases at an increasing rate over the range 0 to 3, and then increases at a decreasing rate. The MP reaches a maximum at 3, which corresponds to an inflection point (x) on the TP curve. At the inflection point, the TP curve changes from increasing at an increasing rate to increasing at a decreasing rate.
   B. If MP = 0, TP will be constant as L increases. The TP is constant between workers 6 and 7.
   C. If MP < 0, TP will be declining as L increases. The TP declines beyond7. Also, the TP curve reaches a maximum when MP = 0 and then starts declining when MP < 0.
2. MP intersects AP (MP = AP) at the maximum point on the AP curve. This occurs at labour input rate 4.5. Also, observe that whenever MP >AP, the AP is rising (upto number of workers 4.5) — it makes no difference whether MP is rising or falling. When MP < AP (from number of workers 4.5), the AP is falling. Therefore, the intersection must occur at the maximum point of AP. It is important to understand why. The key is that AP increases as long as the MP is greater than AP. And APdecreases as long as MP is less than AP. Since AP is positively or negatively sloped depending on whether MP is above or below AP, it follows that MP = AP at the highest point on the AP curve.

This relationship between MP and AP is not unique to economics. The same can be applied to sports as well.

If there is a shooter say Abhinav Bindra who in his 30 shots has an average score of 8 points. In his next shot if he gets 9.5, then the marginal product is 9.5 and the average product shifts to 8.04 (249.5/31). Thus, marginal product is more than the average product.

5.3 Law of Variable Proportions

The slope of the MP curve in Figure 5.1 illustrates an important principle, the law of diminishing marginal returns. As the number of units of the variable input increases, the other inputs held constant (fixed), there exists a point beyond which the MP of the variable input declines. Table 5.1 illustrates this law. Observe that MP was increasing up to the addition of 4th worker (input); beyond this the MP decreases. What this law says is that MP may rise or stay constant for some time, but as we keep increasing the units of variable input, MP should start falling. It may keep falling and turn negative, or may stay positive all the time. Consider another example for clarity. Single application of fertilizers may increase the output by 50%, a second application by another 30% and the third by 20% and so on. However, if you were to apply fertilizer five to six times in a year, the output may drop to zero Three things should be noted concerning the law of diminishing marginal returns.

1. This law is an empirical generalization, not a deduction from physical or biological laws.
2. It is assumed that technology remains fixed. The law of diminishing marginal returns cannot predict the effect of an additional unit of input when technology is allowed to change.
3. It is assumed that there is at least one input whose quantity is being held constant (fixed). In other words, the law of diminishing marginal returns does not apply to cases where all inputs are variable.

Stages of Production

Based on the behaviour of MP and AP, economists have classified production into three stages:

Stage 1: MP > 0, AP rising. Thus, MP > AP.

Stage 2: MP > 0, but AP is falling. MP < AP but TP is increasing (because MP > 0).

Stage 3: MP < 0. In this case TP is falling.

These results are illustrated in Figure 5.1. No profit-maximising producer would produce in stages I or III. In stage I, by adding one more unit of labour, the producer can increase the AP of all units. Thus, it would be unwise on the part of the producer to stop the production in this stage. As for stage III, it does not pay the producer to be in this region because by reducing the labour input the total output can be increased and the cost of a unit of labour can be saved.

Thus, the economically meaningful range is given by stage II. In Figure5.1 at the point of inflection (x), we saw earlier that MP is maximised. At point y, since AP is maximized, we have AP = MP. At point z, TP reaches a maximum. Thus, MP = 0 at this point. If the variable input is free then the optimum level of output is at point z where TP is maximized. However, in practice no input will be freely available. The producer has to pay a price for it. Suppose the producer pays Rs. 200 per worker per day and the price of a unit of output (say one apple) is Rs. 10. In this case the producer will keep on hiring additional workers as long as (price of a unit of output) * (marginal product of labour) > (price of a unit of labour)

That is, marginal revenue of product (MRP) of labour > PLOn a similar analogy,(price of a unit of output) * (marginal product of capital) > (price of a unit of capital). That is, marginal revenue of product (MRP) of capital > PK

The left side denotes the increase in revenue and the right side denotes the increase in the cost of adding one more unit of labour. As long as the increment to revenues exceeds the increment to costs, the profit of the producer will increase. As we increase the units of labour, we see that MP diminishes. We assume that the prices of inputs and output do not change. In this case, as MP declines, revenues will start falling, and a point will come when the increase in revenue equals the increase in cost. At this point the producer will stop adding more units of input. With further addition, since MP declines, the additional revenues would be less than the additional costs, and the profit of the producer would decline.

Thus, profit maximization implies that a producer with no control over prices will increase the use of an input until—

Value of marginal product (MP) = Price of a unit of variable input

5.4 Production with two variable inputs

Now we turn to the case of production where two inputs (say capital and labour) are variable. Although, we restrict our analysis to two variable inputs, all of the results hold for more than two also. We are restricting our analysis to two variable inputs because it simply allows us the scope for graphical analysis. When analysing production with more than one variable input, we cannot simply use sets of AP and MP curves, because these curves were derived holding the use of all other inputs fixed and letting the use of only one input vary. If we change the level of fixed input, the TP, AP and MP curves would shift. In the case of two variable inputs, changing the use of one input would cause a shift in the MP and Upcurve's of the other input. For example, an increase in capital would probably result in an increase in the MP of labour over a wide range of labour use.

Production Isoquants

In Greek the word 'iso' means 'equal' or 'same'. A production isoquant (equal output curve) is the locus of all those combinations of two inputs which yields a given level of output. With two variable inputs, capital and labour, the isoquant gives the different combinations of capital and labour, that produces the same level of output. For example, 15 units of output can be produced using either 28 units of capital (K) or 7 units of labour (L) or K=18 and L=8 or any other combination. These four combinations of capital and labour are four points on the isoquant associated with 5 units of output as shown in Figure 5.2. And if we assume that capital and labour are continuously divisible, there would be many more combinations on this isoquant.

If we want to write the production function, we write it as follows

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

where $\overline{Q}$ = constant output

L = Labour

K = Capital

Fig. 5.2 Production Isoquant showing production of 15 units of output with various labour and capital combinations

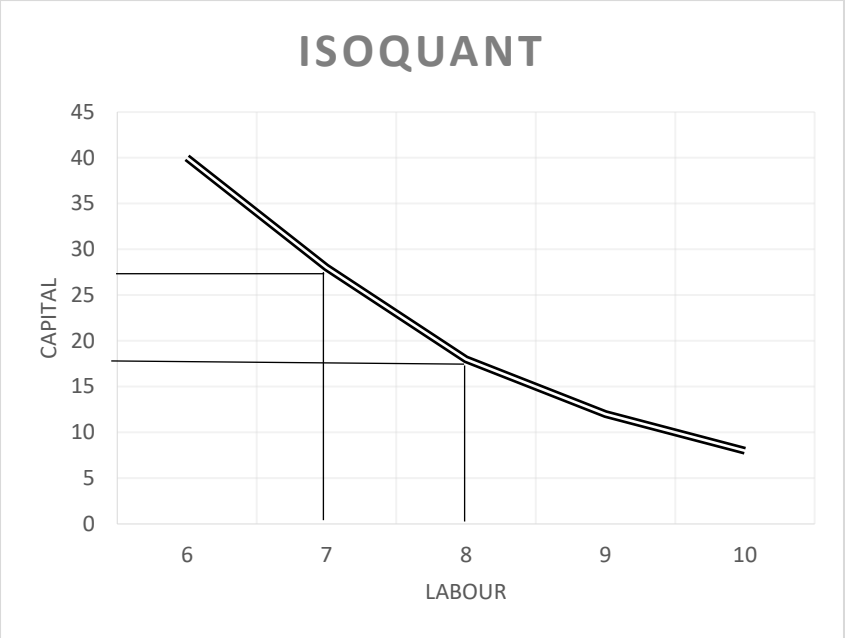
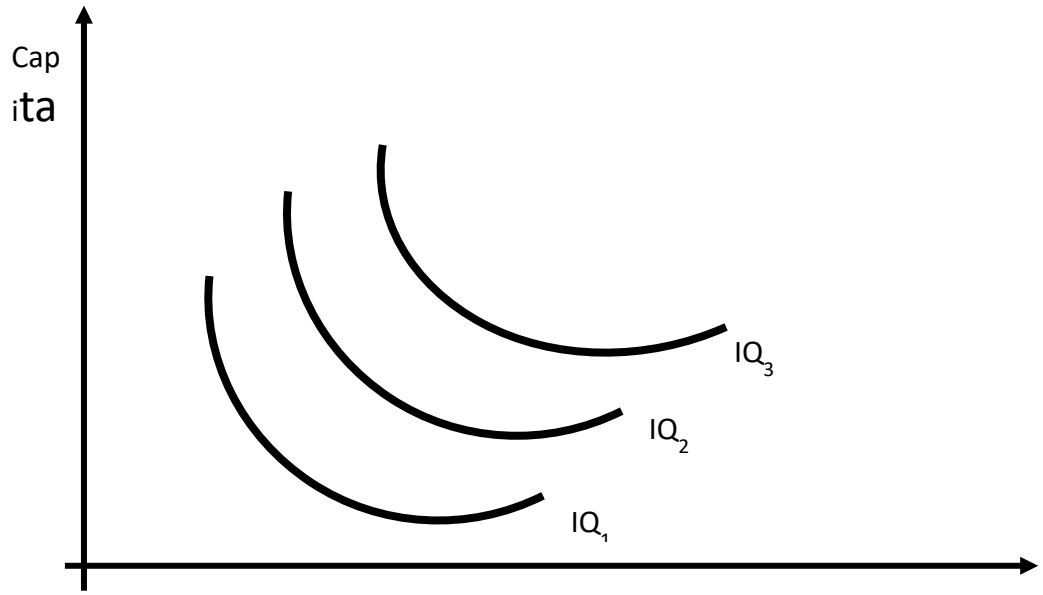


Fig 5.3: Isoquant Map



Now let us assume that capital, labour, and output are continuously divisible in order to set forth the typically assumed characteristics of isoquants. Figure 5.3illustrates three such isoquants. Isoquant I show all the combinations of capital and labour that will produce 10 units of output. Similarly, isoquant II shows the various combinations of capital and labour that can be used to produce 15 units of output. Isoquant III shows all combinations that can produce 20 units of output. Each capital-labour combination can be on only one isoquant. That is, isoquants cannot intersect. These isoquants are only three of an infinite number of isoquants that could be drawn. A group of isoquants is called an isoquant map. In an isoquant map, all isoquants lying above and to the right of a given isoquant indicate higher levels of output. Thus, in Figure 5.3 isoquant II indicates a higher level of output than isoquant I, and isoquant III indicates a higher level of output than isoquant II.

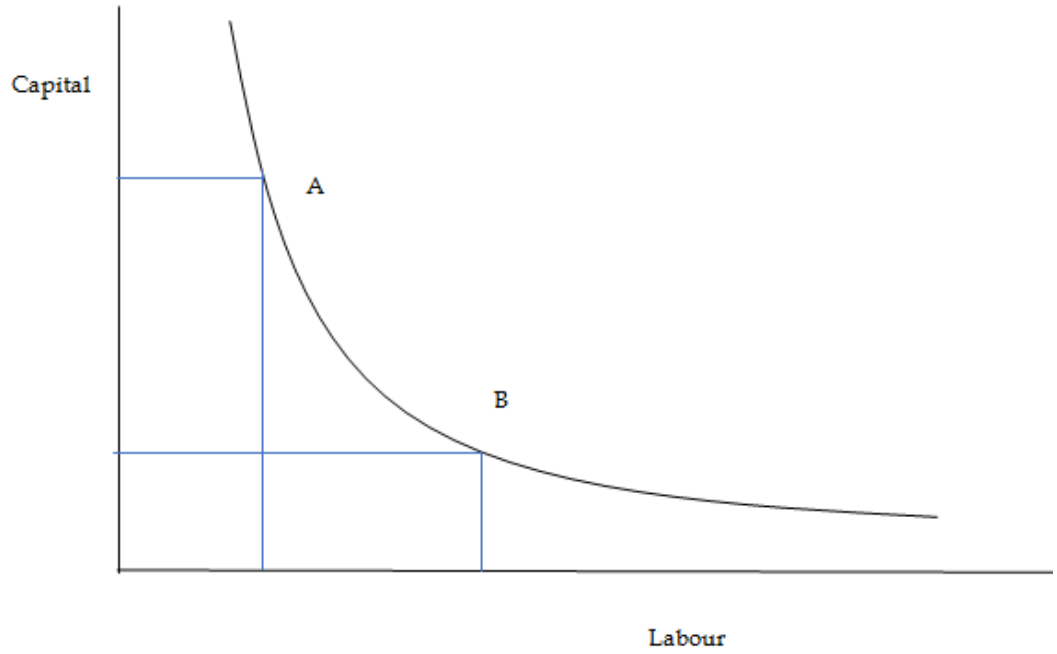
Marginal Rate of Technical Substitution

The rate, at which one input can be substituted for another input, if output remains constant, is called the marginal rate of technical substitution (MRTS). It is defined in case of two inputs, capital and labour, as the amount of capital that can be replaced by an extra unit of labour, without affecting total output.

$$MRTS_{LK} = -\frac{\Delta K}{\Delta L} \; or \; MRTS_{LK} = \frac{MP_L}{MP_K}$$

It is customary to define the MRTS as a positive number, since **ΔK/ΔL**, them slope of the isoquant, is negative. Over the relevant range of production, the MRTS diminishes. That is, more and more labour is substituted for capital while holding output constant, the absolute value of **ΔK/ΔL** decreases.

For example, let us assume that 10 pairs of shoes can be produced using either 8units of capital and2 units of labour or 4 units each of capital and of labour or 2 units of capital and 8 units of labour. From Figure 5.4 the MRTS of labour for capital between points a and b is equal to ΔK/ΔL = (4–8) / (4–2)= –4/2 = –2 or | 2 |. Between points b and c, the MRTS is equal to –2/4 =–½ or | ½ |. The MRTS has decreased because capital and labour are not perfect substitutes for each other. Therefore, as more of labour is added, less of capital can be used (in exchange for another unit of labour) while keeping the output level constant.



There is a simple relationship between MRTS of labour for capital and them marginal product MPK and MPL of capital and labour respectively. Since along an isoquant, the level of output remains the same, if ΔL units of labour are substituted for ΔK units of capital, the increase in output due to ΔL units of labour namely, ΔL * MP_L should match the decrease in output due to a decrease of ΔK units of capital (namely, ΔK * MP_K). In other words, along an isoquant,

$$\Delta L * MP_L = \Delta K * MP_K$$

Which is equal to

$$\left|\frac{\Delta K}{\Delta L}\right| = \frac{MP_L}{MP_K}$$

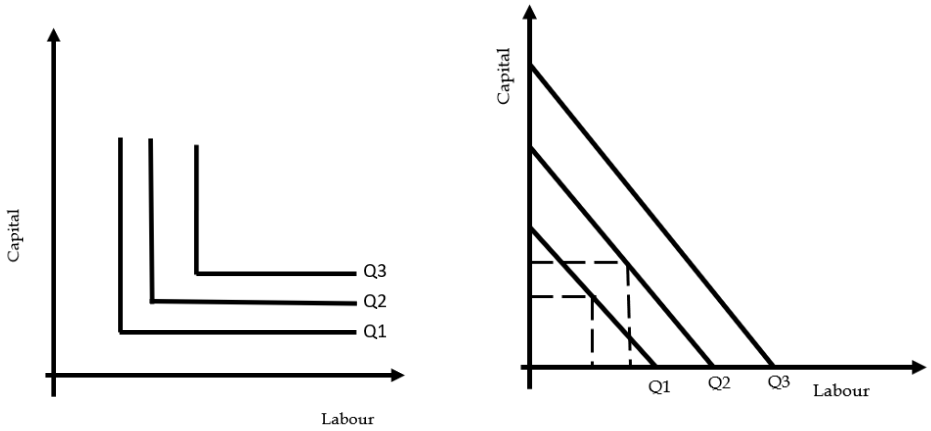
However, as we have seen earlier ΔK/ΔL is equal to MRTS of L for K, and hence, we get the following expression for MRTS of L for K as the ratio of the corresponding marginal products.

$$MRTS_{L\ for\ K} = \frac{MP_L}{MP_K}$$

Different Types of Isoquants

There are vast differences among inputs in how readily they can be substituted for one another. For example, in some extreme production process, one input can perfectly be substituted for another; whereas in some other extreme production process no substitution is possible. On the other hand, in most of the production processes what we see is imperfect substitution of inputs. These three general shapes that an isoquant might have are shown in Figure 5.5. In panel I, the isoquants are right angles implying that the two inputs a and b must be used in fixed proportion and they are not at all substitutable. For instance, there is no substitution possible between the tyres and a battery in an automobile production process. The MRTS in all such cases would, therefore, be zero. The other extreme case would be where the inputs a and b are perfect substitutes as shown in panel II. The isoquants in this category will bea straight line with constant slope or MRTS. A good example of this type would be natural gas and fuel oil, which are close substitutes in energy production.

Fig. 5.5 Different shapes of Isoquants



Economic region of Production

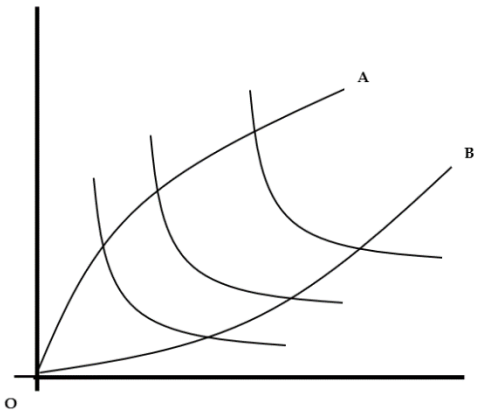


Fig. 5.6 Economic Region of Production

The economic region of production is when the slope of the isoquants is negative. Beyond the economic region, the slope of the isoquants become positive which means that the quantity of both the inputs must be increased to increase the output. Above OA and below OB, the slope of the isoquants is positive, which implies that increase in both capital and labour are required to maintain a certain output rate. If this is the case, the MP of one or other input must be negative. Above OA, the MP of capital is negative. Thus, output will increase if less capital is used, while the amount of labour is held constant. Below OB, the MP of labour is negative. Thus, output will increase if less labour is used, while the amount of capital is held constant. The lines OA and OB are called ridge lines. And the region bounded by these ridge lines is called economic region of production. This means the region of production beyond the ridge lines is economically in-efficient.

5.5 The Optimal Combination of Inputs

The discussion on Isoquants and production function reveals that various quantity of output can be produced by changing the quantity of inputs or the input combinations. The manager is now confronted with the question of which input combination to use which gives optimal results. She must find the optimal combination of inputs. While all the input combinations are technically efficient, the final decision to employ a particular input combination is purely an economic decision and rests on cost (expenditure). Thus, the production manager can make either of the following two input choice decisions:

1. Choose the input combination that yields the maximum level of output with a given level of expenditure.
2. Choose the input combination that leads to the lowest cost of producing a given level of output

Thus, the decision is to minimize cost subject to an output constraint or maximize the output subject to a cost constraint. We will now discuss these two fundamental principles. Before doing this we will introduce the concept is cost, which shows all combinations of inputs that can be used for a given cost.

Isocost Line

Recall that a universally accepted objective of any firm is to maximise profit. If the firm maximises profit, it will necessarily minimise cost for producing a given level of output or maximise output for a given level of cost. Suppose there are 2 inputs: capital (K) and labour (L) that are variable in the relevant time period. What combination of (K,L) should the firm choose in order to maximise output for a given level of cost? If there are 2 inputs, K,L, then given the price of capital (Pk) and the price of labour (PL), it is possible to determine the alternative combinations of (K,L) that can be purchased for a given level of expenditure. Suppose C is total expenditure, then

$$\boldsymbol{C = P_L * L + P_K * K}$$

This linear function can be plotted on a graph

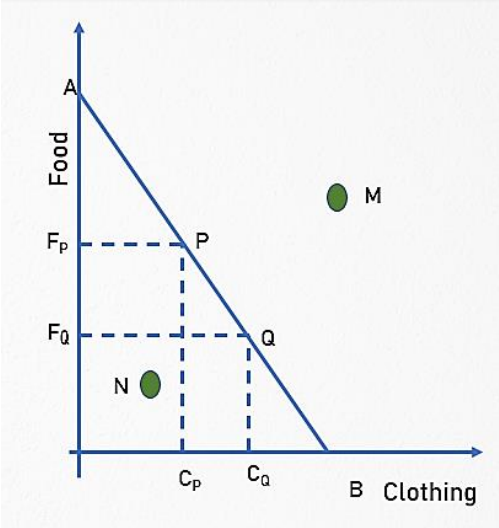


Fig. 5.7 Isocost line

If only capital is purchased, then the maximum amount that can be bought is by point A in figure 5.7. If only labor is purchased, then the maximum amount of labor that can be purchased is C/PL shown by point B in the figure. The 2 points A and B can be joined by a straight line. This straight line is called the isocost line or equal cost line. It shows the alternative combinations of (K,L) that can be purchased for the given expenditure level C. Any point to the right and above the isocost is not attainable as it involves a level of expenditure greater than C and any point to the left and below the iso-cost such as N is attainable, although it implies the firm is spending less than C.

Optimal Combination of Inputs: The Long Run

When both capital and labour are variable, determining the optimal input rates of capital and labour requires the technical information from the production function i.e. the isoquants be combined with market data on input prices i.e. the isocost function. If we superimpose the relevant isocost curve on the firm's isoquant map, we can readily determine graphically as to which combination of inputs maximise the output for a given level of expenditure.

Consider the problem of minimising the cost of a given rate of output. Specifically, if the firm wants to produce 100 units of output at minimum cost. Two production isoquants have been drawn in Figure 5.8. Three possible combinations (amongst several more combinations) are indicated by points A, Z and B in Figure 5.8. Obviously, the firm should pick the point on the lower isocost that is point Z. In fact, Z is the minimum cost combination of capital and labour. At Z the isocost is tangent to the 100-unit isoquant.

Alternatively, consider the problem of maximising output subject to a given cost amount. You should satisfy yourself that among all possible output levels, the maximum amount will be represented by the isoquant that is tangent to the relevant isocost line. Suppose the budget of the firm increases to the amount shown by the higher of the two isocost lines in Figure 5.8, point Q or 150units of output is the maximum attainable given the new cost constraint in Figure 5.8.

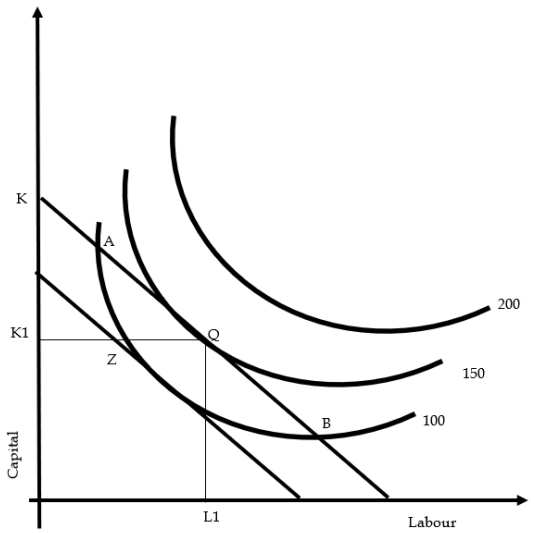
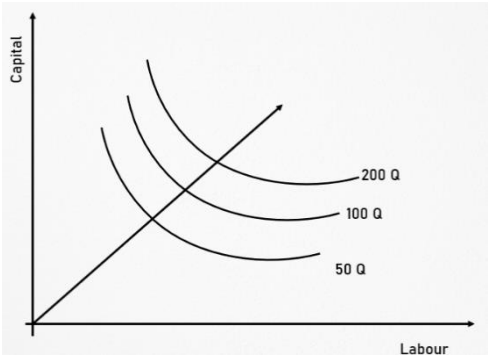


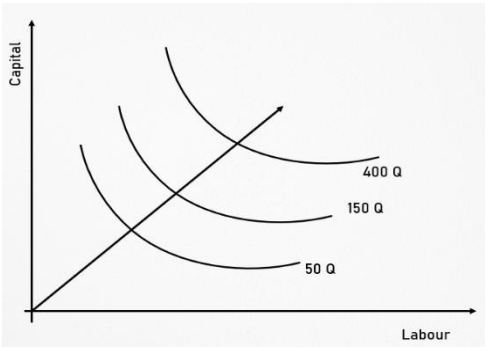
Fig. 5.8. Optimal Combination of Inputs

Regardless of the production objective, efficient production requires that the isoquant be tangent to the isocost function. If the problem is to maximise output, subject to a cost constraint or to minimise cost for a given level of output, the same efficiency condition holds true in both situations. Intuitively, ifit is possible to substitute one input for another to keep output constant while reducing total cost, the firm is not using the least cost combination of inputs. In such a situation, the firm should substitute one input for another.

5.6 Returns to Scale

Another important attribute of production function is how output responds in the long run to changes in the scale of the firm that is when all inputs are increased in the same proportion (by say 20percent), how does output change. Clearly, there are 3 possibilities. If output increases by more than an increase in inputs (by more than 20 percent), then the situation is one of increasing returns to scale (IRS). If output increases by less than the increase in inputs, then it is a case of decreasing returns to scale (DRS). Lastly, output may increase by the same proportion as inputs. For example, a doubling of inputs may lead to a doubling of output. This is a case of constant returns to scale (CRS).





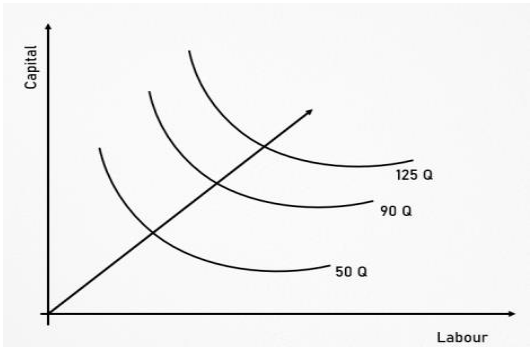


Fig. 5.9 Returns to Scale using Isoquants

These three figures are showing constant returns to scale, increasing returns to scale and decreasing returns to scale respectively (starting from the first figure on the left in the previous page).

Summary

This chapter looks at the production function which tells us about the output with the given level of inputs. There is various level of output with the change in the combination of inputs. The task of the manager is to choose the optimum combination which maximises profit with a given cost.

The law of diminishing marginal returns states that as equal increments of variable input are added to fixed input, a point will eventually be reached where corresponding increments to output begin to decline. We have also seen the relations between the marginal product, average product, and total product.

There are three stages of production. Stage I is characterized by MP>0 and MP>AP. Stage II is characterized by MP>0 and MP<AP. Stage III is characterized by MP<0. The economically meaningful range is Stage II. The production manager maximizes the profit at a point where the value of marginal product equals the price of the output.

A production isoquant consists of all the combinations of two inputs that will yield the same maximum output. The marginal rate of technical substitution is WK/WL, holding output constant. The law of diminishing marginal rate of substitution implies the rate at which one input can be substituted for another input if output remains constant. An isocost line consists of all the combinations of inputs which have the same total cost. The absolute slope of the isocost line is the input price ratio. Returns to scale, a long run concept, involves the effect on output of changing all inputs by same proportion and in the same direction.

Keywords

Inputs: The resources used in the production process. Examples in economic analysis generally involve the inputs capital (representing the fixed input) and labor (representing the variable input). Other terms used in reference to these resources are factors and factors of production.

Isocost: A line representing different combinations of two inputs that a firm can purchase with the same amount of money. In production analysis, the isocost indicates a firm's budget constraint.

Isoquant: A curve representing different combinations of two inputs that produce the same level of output.

Law of diminishing returns: A law stating that as additional units of a variable input are added to a fixed input, at some point the additional output (i.e., the marginal product) will start to diminish. Because at least one input is required to be fixed for this law to take effect, this law is considered a short-run phenomenon.

Long-run production function: The maximum quantity of a good or service that can be produced by a set of inputs, assuming the firm is free to vary the amount of all inputs being used.

Production function: The maximum quantity of a good or service that can be produced by a set of inputs. Production functions are divided into two types: short run and long run.

Returns to scale: The increase in output that results from an increase in all of a firm's inputs by some proportion. If the output increases by a greater proportion than the increase in inputs, the firm

is experiencing increasing returns to scale. If the output increases by the same proportion as the inputs, the firm is experiencing constant returns to scale. Finally, if the output increases by a smaller proportion than the increase in inputs, the firm is experiencing decreasing returns to scale.

Self Assessment

1. Which of the following is an example of a capital input?

A. Money.

B. Shares of stock.

C. Long-term bonds.

D. A hammer.

2. Which of the following is an example of an intermediate product?

A. A personal computer.

B. A barrel of crude oil.

C. A sports car.

D. A house.

3. Which of the following is an assumption associated with the definition of a production function?

A. Technology remains constant.

B. Both inputs and outputs are measured in monetary units.

C. The function shows the maximum level of output possible with a given combination of inputs.

D. All units of the inputs are homogeneous.

4. The marginal product of labor is equal to

A. the additional labor required to produce one more unit of output.

B. average product when average product is at a minimum.

C. the additional output produced by hiring one more unit of labor.

D. the slope of a ray drawn from the origin to a point on the total product curve.

5. The average product of labor is equal to

A. the additional labor required to produce one more unit of output.

B. marginal product when average product is at a minimum.

C. the additional output produced by hiring one more unit of labor.

D. the slope of a ray drawn from the origin to a point on the total product curve.

6. An isoquant that is
A. further from the origin represents greater output.
B. flatter represents the trade-offs between inputs that are poor substitutes.
C. negatively sloped represents input combinations associated with Stage I of production.
D. All of the above are correct.

7. The absolute value of the slope of a convex isoquant
A. is equal to the marginal rate of technical substitution.
B. is equal to the ratio of the marginal products of the two inputs.
C. decreases from left to right.
D. All of the above are correct.

8. The combination of inputs is optimal
A. at points of tangency between isoquants and isocosts.
B. if the marginal revenue product is equal to the marginal resource cost for all inputs.
C. if the marginal rate of technical substitution between every pair of inputs is equal to the ratio of the prices of those inputs.
D. All of the above are correct.

9. An isocost line will be shifted further away from the origin
A. if the prices of both inputs increase.
B. if total cost increases.
C. if there is an advance in technology.
D. All of the above are correct.

10. If isoquants are plotted on a graph with capital measured on the vertical axis and labor on the horizontal axis, then an increase in the wage rate will cause the isocost line
A. to become steeper and the optimal quantity of labor will decrease.
B. to become steeper and the optimal quantity of labor will increase.
C. to become flatter and the optimal quantity of labor will decrease.
D. to become flatter and the optimal quantity of labor will increase.

11. The long-run average cost curve is at a minimum at a level of output where
A. the firm is experiencing constant returns to scale.
B. it is equal to long-run marginal cost.
C. the long-run average cost curve is tangent to the lowest point on a short-run average total cost curve.
D. all of the above occur.

12. If a firm has a downward sloping long-run average cost curve, then
A. it is experiencing decreasing returns to scale.
B. it is experiencing decreasing returns.
C. it is a natural monopoly.
D. marginal cost is greater than average cost.

13. One reason that a firm may experience increasing returns to scale is that greater levels of output make it possible for the firm to

A. employ more specialized machinery.

B. obtain bulk purchase discounts.

C. employ a greater division of labor.

D. All of the above are correct.

14. One reason that a firm may experience decreasing returns to scale is that greater levels of output can result in

A. a greater division of labor.

B. an increase in meetings and paperwork.

C. smaller inventories per unit of output.

D. All of the above are correct.

15. Economies of scope refers to the decrease in average total cost that can occur when a firm

A. produces more than one product.

B. has monopoly power in world markets.

C. controls the raw materials used as inputs.

D. narrows the scope of its regional markets.

Answers for Self Assessment

1.	D	2.	B	3.	B	4.	C	5.	D
6.	A	7.	D	8.	D	9.	B	10.	A
11.	D	12.	C	13.	D	14.	B	15.	A

Review Questions

1. Define an isoquant. Can it be concave to the origin?
2. Explain the concept of Marginal rate of Technical Substitution.
3. Differentiate between straight line and right-angled isoquants.
4. Explain the optimum input combination concept.
5. Explain the three phases of returns to scale.

Further readings

1. Managerial Economics- Principles and Worldwide Applications By Salvatore, Dominick and Rastogi, Siddhartha K., Oxford University Press.
2. Managerial Economics- Economic Tools for Today's Decision Makers by Keat Paul G, Young Philip K. Y, Erfle Stephen and Banerjee Sreejata., Pearson Education, India
3. Managerial Economics by Geetika, Piyali Ghosh, and Purba Roy Choudhary, McGraw Hill Education (India) Private Limited

Unit 06: Market Structure

CONTENTS

Objective

To understand the concept of the market

To evaluate output and price in perfect competition

To evaluate output and price in Monopoly and Monopolistic

Introduction

Market structure refers to arrangements that bring buyers and sellers together. The market for a product may also refers to the whole region where buyers and sellers of that product are spread and there is such free competition that one price for the product prevails in the entire region. Whether a firm can be regarded as competitive depends on several factors such as the number of firms in the industry, degree of rivalry, degree of homogeneity of the product, economies of scale and easiness with which any firm can enter in the market and exit from it. In previous times a market meant a physical place where the buyers and sellers interacted with each other. However, in today's age, e-commerce has taken over and virtual markets have become the new normal.

Markets are classified based on place, nature of products, area served and competition. Economics classifies markets based on competition. Based on these characteristics, especially in terms of degree of competition, a market can be classified as a perfectly competitive market, monopoly, duopoly, oligopoly, and monopolistic competition. In this chapter we will study the different forms of the market and investigate how price and output are determined in them.

The features of the four main types of markets on the basis of competition are showcased in Fig. 6.1. Perfect competition and Monopoly are two different poles in competitive market. Perfect competition is the representation of a laissez faire market where customer is the king and only those sellers survive who compete and capture the market. Monopoly on the other hand is a market which has one seller and represents a sellers' market as she dictates the terms of sales. There are no substitutes available to the customer.

In terms of market power, monopolistic competition and oligopoly are somewhere between the two extremes of perfect competition and monopoly. From pedagogical standpoint, it is easier to understand and appreciate the particulars of monopolistic competition and oligopoly if there is first a thorough understanding of perfect competition and monopoly. This explains why we first cover perfect

Fig. 6.1 Different Types of Market

competition and monopoly in this chapter and the other two market types separately in the next one. Before proceeding to our first case of pricing and output decisions in perfect competition, let us elaborate further on market structure and the meaning of competition in economic analysis.

6.1 The Meaning of Competition

In economic analysis, the most important indicator of the degree of competition is the ability of firms to control the price and use it as a competitive weapon. The extreme form of competition is "perfect" competition. In this market, the competition is so intense, and the firms are so evenly divided that no one seller or group of sellers can exercise any control over the price. That is, they are all price takers.

A second key measure of competition in economic analysis is the ability of a firm to earn an "above normal" or "economic" profit in the long run. Market entry and exit most directly affects the ability of a firm to earn economic profit in the long run. In perfect competition, entry into the market is easy. Therefore, if firms are observed to be earning economic profit, over time the entry of new firms eager to partake in these profits quickly reduces the ability of both incumbents and new entrants to earn economic profit. The same applies to monopolistic competition.

Non price competition plays a secondary role in determining the degree of competition in economic analysis. However, we recognize that non price factors often come to mind first when people think about how firms compete with one another. Non price competition involves firms trying to gain an advantage over one another by differentiating their products using such means as advertising, promotion, the development of new products and product features, and customer service.

Example: In India if we look at the competition between the mobile brands like Oppo and Samsung, we witness the use of celebrity endorsement. It is much clear in case of Coke and Pepsi where big Hindi film stars are used to pitch for the brand.

The extent to which buyers and sellers have information about the price of the product and the product itself (e.g., product quality, reliability, and integrity) can also be a factor in determining a firm's market power or competitive advantage.

Example: Romila goes to a shop to buy her groceries and buys a bottle of 1 kg honey. The next day she sees the advertisement of the particular brand of honey which is giving free one kilogram of basmati rice with it. She feels cheated and wants to go back to the shop to speak to the shopkeeper. But the shopkeeper was able to do this because of the lack of information with Romila and other such buyers which gives market power to the seller.

6.2 Price and Output Determination in Perfect Competition

It is the most basic type of market which represents free competition in the market. The markets for agricultural products (e.g., corn, wheat, coffee, pork bellies), financial instruments (e.g., stocks, bonds, foreign exchange), precious metals (e.g., gold, silver, platinum), and the global petroleum industry provide good examples of this type of market. In each market, the products are standardized commodities, and supply and demand are clearly the primary determinants of their market price.2 Of course, it is precisely because of this those sellers sometimes form cartels in order to raise the price or to keep it from falling. OPEC and the International Coffee Growers Association are good examples of this.

Features of Perfect Competition

1. Presence of large number of buyers and sellers
2. Homogeneous product
3. Freedom of entry and exit
4. Perfect knowledge
5. Perfect mobility of resources
6. Firms are price taker
7. Perfectly elastic demand curve
8. Perfect mobility of factors of production
9. Price determined by market and firm is a price taker.
10. No selling costs

Assumptions of Perfect Competition

Let us summarize the key assumptions made in analysing the

firm's output decision in perfect competition.

1. The firm operates in a perfectly competitive market and therefore is a price taker.
2. The firm makes the distinction between the short run and the long run.
3. The firm's objective is to maximize its profit in the short run. If it cannot earn a profit, then it seeks to minimize its loss.
4. The firm includes its opportunity cost of operating in a particular market as part of its total cost of production.

Demand and Revenue of a Firm

As per the assumption of rationality, the firms aim at profit maximisation. In a perfectly competitive market, the firms are price taker, and they aim at selling to their maximum capacity so as to maximise their profits. The price is given to a firm and they can only adjust their quantity. The Total Revenue (TR) depends only on quantity and not on price. Total Revenue is the multiplication of Price and Quantity

$$TR=PXQ$$

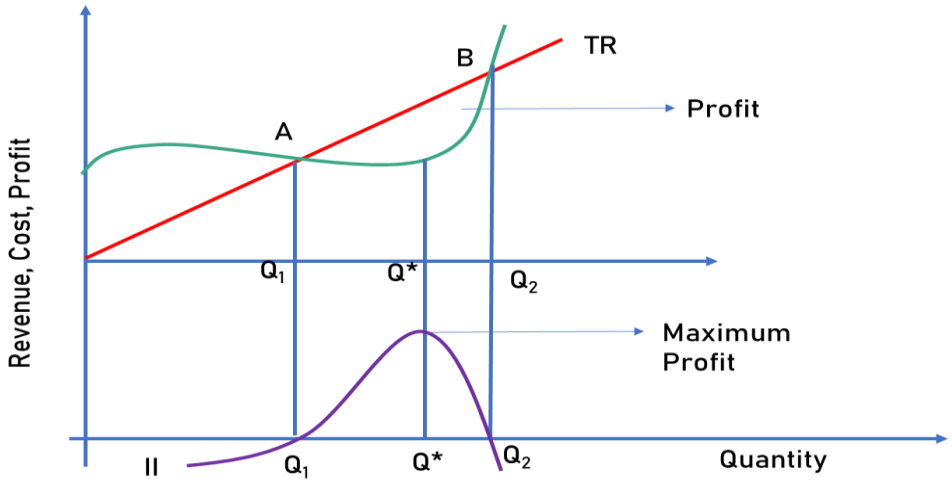
Marginal Revenue is the additional revenue earned divided by selling an extra unit of the good.

$$MR= \Delta TR/\Delta Q$$

In Perfect Competition the average revenue is equal to marginal revenue is equal to price

$$AR=MR=P$$

To know the quantity that each firm is ready to sell at the given price, the concept of cost is introduced. TR is the total revenue curve which is increasing.TC curve has been drawn on the assumption of the Law of Variable Proportions. Profit is the difference between total revenue and total cost.

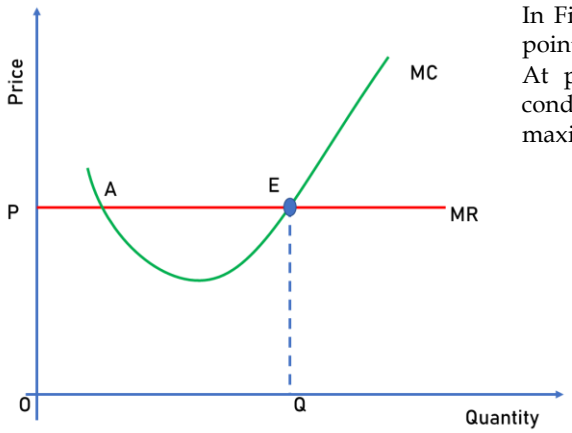


Profit curve begins from the negative, which means any output less than Q1 is not profitable for the firm, similarly any output more than Q2 is also not profitable. The point of maximum profit is the point of least cost. The total cost of producing any output less than Q1 is more than the revenue earned and therefore, it is not profitable for the firm. At point A, TR and TC become equal. The firm starts earning profit as it goes beyond point A and the profit continues till point Q2. However, the profit is maximum at Q^* where the total revenue is maximum and total cost is minimum. Any rational firm will produce at this level of production.

Profit Maximisation- Marginal Revenue- Marginal Cost Approach

To determine equilibrium for perfectly competitive firm, we need to find the level of output that would maximise its profit. To maximise its profits for each unit of increased output, firm compares additional revenue generated by selling that unit of output [that is marginal revenue (MR)] with additional cost incurred in producing that unit of output [the marginal cost (MC)]. As long as,

- MR > MC, additional production adds to profit, thus firm should produce this additional unit of output.
- MR < MC, additional production reduces profit, thus firm should not produce this additional unit of output, instead decreasing production would add to firm's profits.
- MR = MC, additional production does not impact profit, hence it provides a point where firm is indifferent in increasing or decreasing level of output, hence defines its equilibrium level of output.



In Fig. 6.2, MR and MC curves intersects at point E giving equilibrium level of output Q. At point E, both necessary and sufficient conditions are fulfilled. Thus, we get profit maximising level of output.

Fig.6.2Equilibrium of a firm using Marginal Revenue and Marginal Cost approach

Equilibrium under Perfect Competition

Short run equilibrium

A perfectly competitive firm faces constant prices and horizontal demand curve. Firm has to decide in the short-run whether to produce or shut-down temporarily and how much to produce? In the long-run firm has to decide, whether to enter, stay or leave the industry; also whether to increase or decrease the plant size.

The two conditions for equilibrium are:

1. The Marginal Revenue should be equal to Marginal Cost.
2. The slope of Marginal Cost curve should be greater than the slope of the Marginal Revenue curve.

These two conditions are not enough to let us know whether the firm will close down or will continue producing the goods. To know this we have to find out whether the firm is earning profit or loss.

If at the equilibrium level the Average Revenue is greater than Average Cost then the firm enjoys profit and if it is reverse then the firm faces a loss.

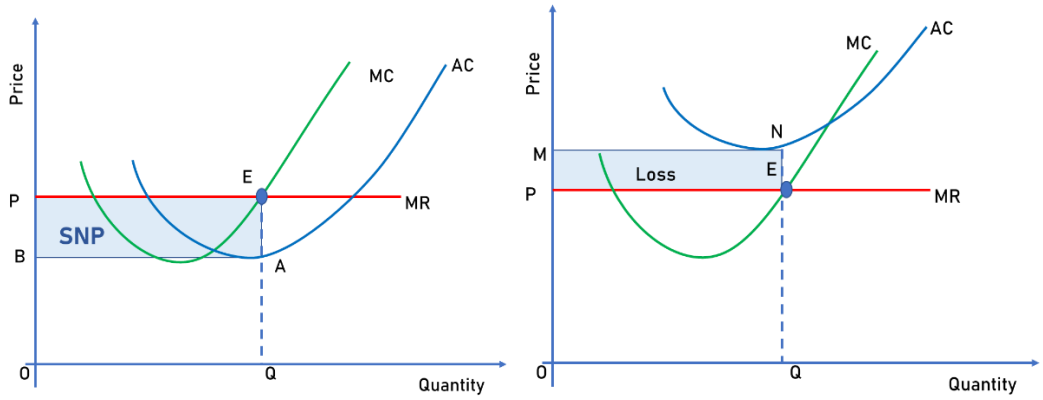


Fig. 6.3 Firms profit and loss with equilibrium

The obvious question that comes to our mind is that should a firm continue to remain in the market if it is suffering losses. To make this point clear it is essential to differentiate between fixed cost and variable cost. Fixed cost is the cost we incur on the fixed factor of production. While variable cost is the cost incurred on the variable factors of production. If a firm is producing continuously then it incurs both- the fixed cost and the variable cost. So as long as firm is recovering its variable cost, firm will continue to produce. Now, consider the following expression for Total cost:

Total Cost = Total Fixed Cost + Total Variable Cost

On dividing this equation by Q, we get the expression for the Average total cost (ATC) as a linear function of average fixed cost (AFC) and average variable cost (AVC).

ATC = AFC + AVC

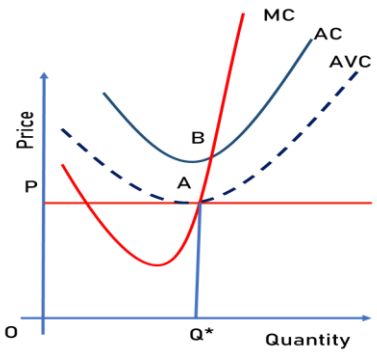


Fig. 6.4 Shut down point of a firm

A perfectly competitive firm takes prices as given because it does not have any control over prices. Consider Fig. 6.4 above. A firm facing market price P < SATC (Short-run Average Total Cost), suffers losses in the short-run. It may decide to continue or shut-down the production. This dilemma results because in the short-run firm incurs not only the variable cost but also the fixed

cost. On shutting down, firm will get rid of the variable cost, but it will still have to bear the fixed cost. The Short-run Average Variable Cost (SRAV) curve represents the variable cost incurred in the production process. As long as, AR is greater than SAVC, firm is able to recover variable cost. Here, P < SATC, but it is equal to minimum SAVC. Thus, this firm though suffers a loss, will minimise its losses by continuing production, as it may recover some component of fixed cost. **Point A**(where MC = minimum SAVC) represents the Shut-down point. If prices (AR) become less than SAVC at equilibrium level of output; firm will minimise its losses by shutting down, as now it is not able to recover even its variable cost. By shutting down, it will just have to suffer the loss from fixed costs and not any additional variable costs.

Long-run Equilibrium

In the long-run, all factors of production are variable, which means that there is no difference between variable cost and fixed cost, hence ATC becomes important in making production decisions. In the long-run firm faces decisions like— whether to enter, stay or leave the industry; and whether to increase or decrease the plant size.

If price (AR) is greater than AC then firms would be making super-normal profit, this would attract new firms to enter the industry and push the price down because of increased supply in the industry. On the other hand, if price (AR) is lower than AC, then some firms would leave industry because they are unable to recover their opportunity cost, in such case there will be a decline in supply which will push the price up. Hence in either situation, whether P (AR) is greater or lower than AC, firms would keep entering or leaving respectively till P or AR is equal to AC.

So in long-run, we have the following two conditions giving the equilibrium level of output:

1. P (or AR or MR) = MC and
2. AR = AC

From these two equations we get, P = MC = AC. And since, MC and AC are equal only at the minimum of AC, so price line (or AR curve) should be tangent to AC curve at the long-run equilibrium level of output.

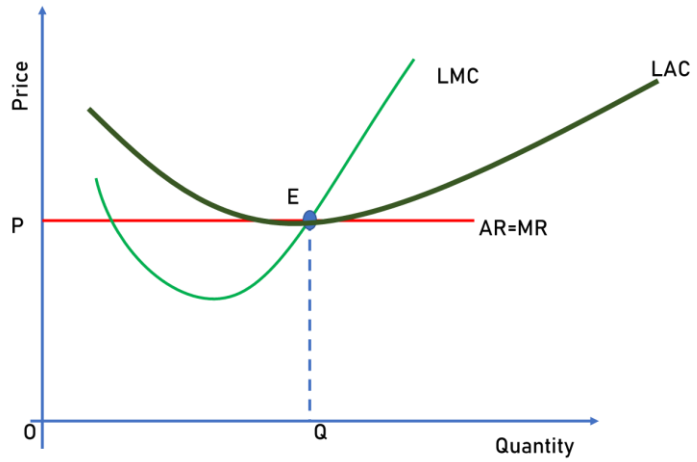


Fig. 6.5 Long run equilibrium of a firm

Since in the long-run firm operates at the minimum of AC curve, this signifies that firm is operating with the plant of optimum size. When firm operates with optimum size, it means that it is enjoying all possible economies of scale or it has exhausted the economies of scale, and has no incentive to move to any other point.

6.3 Monopoly

Monopoly can be described as a market situation where a single firm controls the entire supply of a product which has no close substitutes. The market structure characteristics of monopoly are listed below:

1. Presence of large number of buyers and single seller

2. Single product
3. Restricted entry
4. No difference between industry and firm
5. Independent decision making

Though perfect competition and monopoly are the two extreme cases of market structure, they both have one thing in common – they do not have to compete with other individual participants in the market. Sellers in perfect competition are so small that they can ignore each other. At the other extreme, the monopolist is the only seller in the market and has no competitors. The market or industry demand curve and that of the individual firm are the same under monopoly since the industry consists of only one firm.

Managers of firms in a perfectly competitive market facing a horizontal demand curve would have no control over the price and they simply choose the profit maximising output. However, the monopoly firm, facing a downward-sloping demand curve (see Figure 6.6) has power to control the price of its product. If the demand for the product remains unchanged, the monopoly firm can raise the price as much as it wishes by reducing its output. On the other hand, if the monopoly firm wishes to sell a larger quantity of its product it must lower the price because total supply in the market will increase to the extent that its output increases. While an individual firm under perfect competition is a price-taker, a monopolist firm is a price-maker. It may, however, be noted that to have price setting power a monopoly must not only be the sole seller of the product but also sell a product which does not have close substitutes.

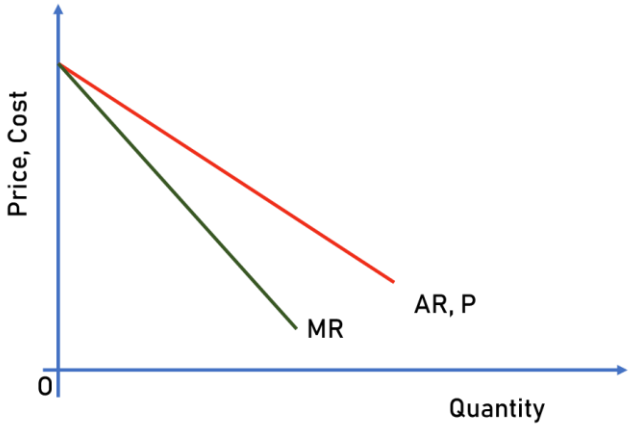


Fig.6.5 Demand Curve under Monopoly

Reasons for Monopoly

Restriction by Law

Such a barrier emerges when the government makes it a law not to allow any competition in the production and distribution of a particular product. Majority of the State Electricity Boards in India can be cited as a typical example of such a barrier.

Control Over Key Raw Materials

When the strategic raw material to produce a particular commodity is scarce and is fully controlled by a single firm, this firm may not be allowing the use of this important raw material by any other firm and may acquire the monopoly status. Many governments restrict private players and monopolies, especially in strategic sectors.

Specialised know how

Like the key raw material, the specific techniques of production of a particular commodity may not be available to any other form and use of this technique by others will be restricted through patents, trademarks another intellectual property rights. There are many companies especially in the field of technology who patent their process and from monopolies. One such firm is Intel who manufacture integrated chips that are patented, and it has a monopoly in the IC market.

Economies of scale

A very important reason behind creation of monopolies is the attainment of economies of scale. It is often referred as innocent of structural barriers. If a firm long run minimum cost of production or its most efficient scale of production coincides with the size of the market, then the large size firms find profitable to eliminate competition in the long run through price cutting in the short run. Once monopoly is established it becomes almost impossible for new firms to enter the market and survive. Thus, economies of scale play a major role in restricting entry of new players or removing existing players from the market.

Small market size

Another possibility is with the market size is so small that there is no scope for multiple players and hence the most efficient player attains a monopoly status.

6.4 Types of Monopoly

On the basis of the different barriers various types of monopoly are created which are elaborated here.

1. ***Legal monopoly:*** Some monopoly is a created by the laws of a country in the greater public interest. If the government of the nation feels that private control may lead to disparity in distribution of wealth or imbalance growth of the economy it may keep the resources in its own control by imposing legal restrictions on the entry of other players.
2. ***Economic monopoly:*** whenever competition is eliminated due to economic or managerial inefficiency of other players or due to superior efficiency of a particular player the monopoly thus created is regarded as economic monopoly. commits monopoly or trust exists when an individual or firm can explicitly force competition competitors out of business by slashing prices buying up and holding supplies bribery or intimidation(Clayton antitrust act of 1914).

Example- in the Field of computers operating systems Microsoft or MSOffice has become a very popular name and it has acquired a virtual monopoly go to superior efficiency. there are other substitutes like Linux but they are not close competitors of Microsoft.

3. ***Natural monopoly:*** when the size of the market is so small that it can accommodate only one player A natural monopoly is formed. A natural monopoly is formed. In other words in other words when only one views the entire profit maximising output due to the small size of the market and other firms may not be able to survive in that market a natural monopoly is created.
4. ***Regional monopoly:*** sometimes geographical or territorial aspects also help in creation of monopolies even W go under geographical indicators clause of trips has allowed protection of intellectual property rights emerging from possession of a natural resource especially to a region. GIS tagging off Kolhapur chappals, Banarsi saree etc op current examples.

Demand And Marginal Revenue Curves for A Monopoly Firm

The demand curve of the monopolist is highly price inelastic because there is no close substitute and consumers have no or very little choice. Hence, if consumers want to consume the product, they would have to buy it at the price charged by the monopolist. Does this imply that monopoly price will be high? To a large extent, yes but not always. Monopoly is also governed by market demand for its product and the forces affecting demand also affect the monopoly not perfectly inelastic because pure monopoly does not exist in real life. Hence, it faces a normal downward sloping curve. The bottom line is thus clear, the monopolist cannot set both price and quantity at its own will.

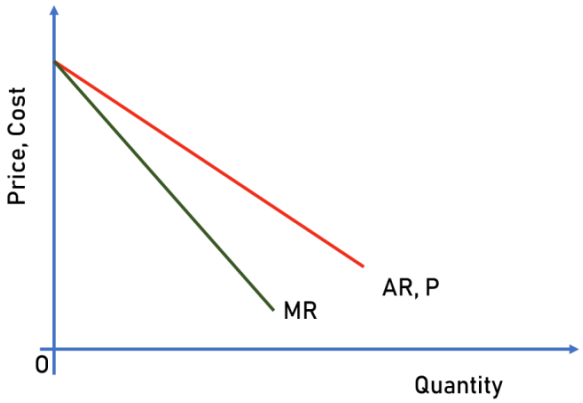


Fig. 6.6 Demand and Marginal Revenue Curve of a Monopoly firm

The Average Revenue curve is the demand curve of the firm and it also determines the slope of MR curve. In case of perfect competition, the demand curve is perfectly elastic; hence the AR curve of a perfectly competitive firm is parallel to the X axis and coincides with MR curve. In monopoly, however, the AR and MR curves would look like those given in Figure 6.6. The reason is that a monopoly firm faces a normal demand curve which is highly inelastic, therefore, AR curve would be downward sloping, and the MR curve would lie below the AR curve. Letus explain the reason. As mentioned before, the monopolist has to lower the price of all units of its product, if it wants to sell an additional unit. As such, the addition to revenue resulting from selling this additional unit would be less than price the firm would receive for the unit. The addition to the total revenue is marginal revenue. Hence for a monopolist, MR is less than price and the MR curve would lie below the AR curve. In fact, for a linear demand curve, the slope of MR is twice that of AR and the MR curve would lie halfway between the AR curve and price axis.

Price and output decision in short run

We assume here that in order to maximise profit a monopoly form follows the rule of Marginal Revenue equating Marginal Cost when Marginal Cost is rising. Similar, to the case of perfect competition a monopoly firm may earn super normal profit or normal profit or even losses in the short run. However, it is a negative slope of the demand curve that is instrumental for chances of monopoly profits in the short run. If the firm earns super normal profit in short run the reason would be reaping up of benefits of supplying a product which not only is unique but also has negligible cross elasticity.

Case of Super Normal Profit

The first case that is discussed is that of super normal profits. Following the conditions of profit maximization, the point of equilibrium is E and the equilibrium output is OQ as shown in the figure 6.7 now what will be the price at which monopoly firm would reach equilibrium?

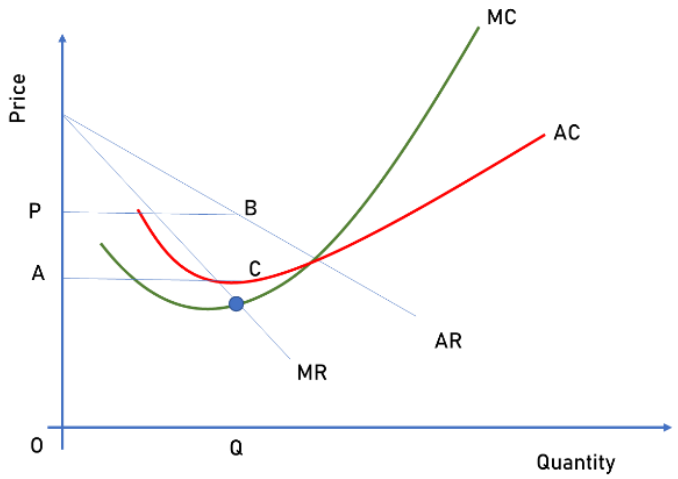


Fig. 6.7 Super Normal Profits of a Monopoly Firm

This price would be determined by the forces of demand because the monopolist would like to sell its entire product and hence it would charge a price which is the equilibrium price. Since this equilibrium price is more than average cost the firm earns super normal profits. The total revenue earned by the firm by selling OQ at OP is given by the rectangular area OPBQ where the total cost incurred is given by the rectangular area OACQ. Therefore, the total profit earned with a firm is given by the rectangular region APBC.

Case of Normal Profit

There may be situations when a monopoly firm may earn just Normal Profits in the short run. This is technically possible because in the earlier years of operations the firm may be producing at high cost and maybe just able to manage normal profit.

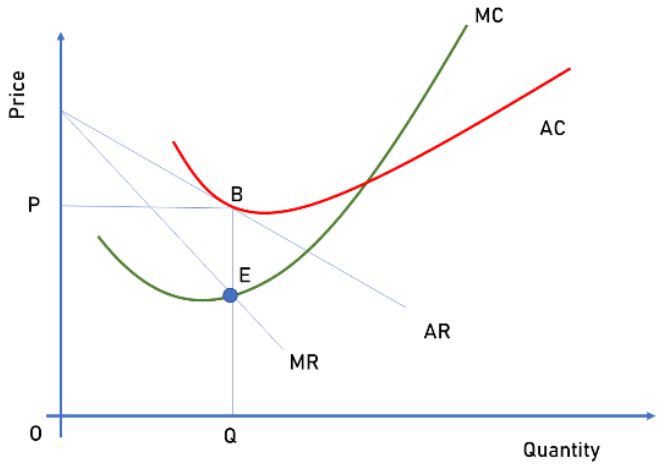


Fig. 6.8 Normal Profits of a Monopoly Firm

Graphically it can be shown when the average cost curve is tangent to the average revenue curve. At E the output that maximise profits is OQ and the equilibrium price is OP. The total revenue earned by the firm by selling OQ is the rectangular area OPBQ and the total cost of producing OQ is also given by the same area. Profit is the difference between the total revenue and total cost is therefore here it is zero.

Case of Loss

There is a general perception amongst readers that as monopoly firm has single seller therefore, it does not suffer from losses, but this is a myth. The conditions under which a monopoly firm may have losses are firstly in the early years Monopoly firm may not be very efficient to attain low cost of production. Moreover, the size of the market in the early years may be small. Hence, in order to sell the entire output the firm may have to suffer losses. Another reason maybe a monopoly firm to strengthen its position in the market and to discourage competitors from entering the market may charge a low price to capture the market. But this is only a short run phenomenon as in the long run firm with either start earning economies of scale thus reducing its average cost or would close down altogether.

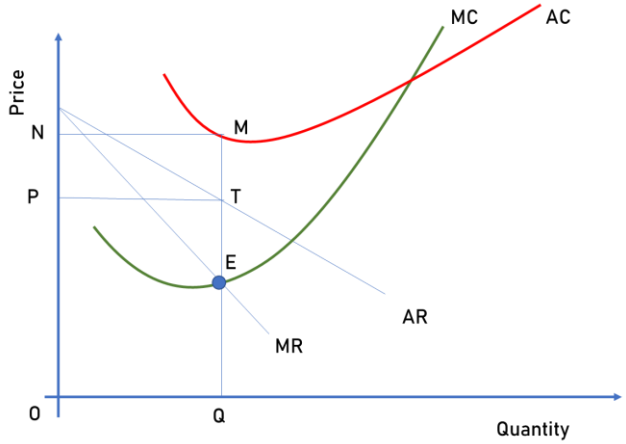


Fig. 6.9 Loss of a Monopoly Firm

The case of loss is shown in figure 6.9 in which the equilibrium point is E and the equilibrium level of output is OQ with the price at OP. The firm earns a total revenue given by the rectangular area OPTQ. But the cost of producing OQ level of output is given by the rectangular area ONMQ. Thus, the total cost of producing is more than total revenue and hence the losses for the firm.

Price and Output Decision in the Long Run

Monopolised is in full control of the market price therefore they do not incur losses in the long run. It would instead try to reduce its cost of production by increasing control of raw materials and other inputs or else it would close down just like a loss-making firm under perfect competition. In fact, the monopolist would try to earn at least normal profit in the long run and may earn super normal profit due to entry restrictions in the market. This is to say the time in apply firm would either normal profit or super normal profit but would not incur loss in the long run.

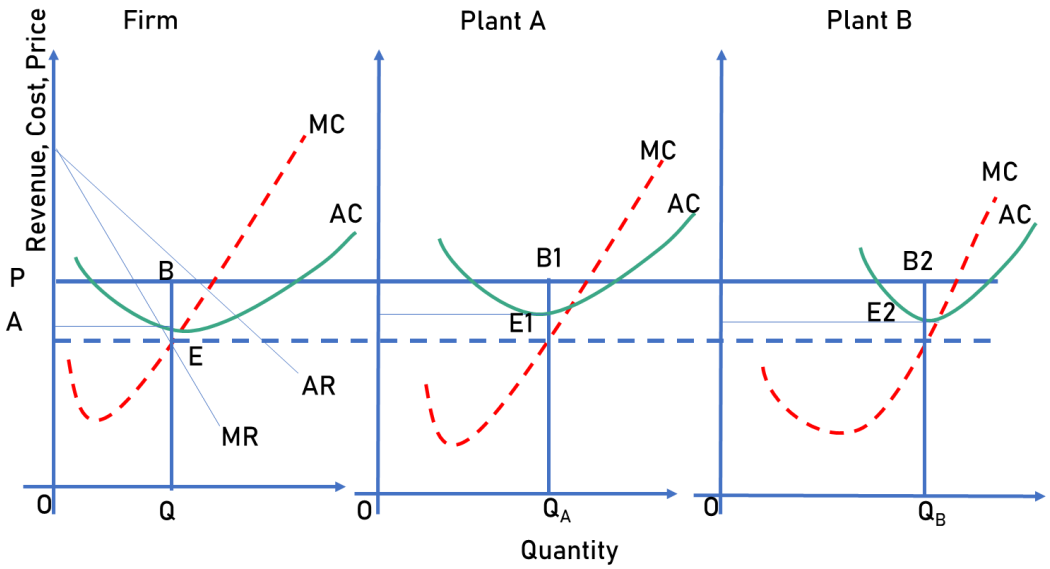
Suppose in the long run monopoly firm earns super normal profit. Since it charges a high price, this would attract competition and this high price would make it possible for a new entrant to survive. In this case the market situation would change to competition and would no longer remain a monopoly. Therefore, to retain its monopoly power the firm may have to resort to a low price and earn only normal profit even in the long run so as to create an economic barrier to new entrant. Consider the case in which a monopoly is created due to small size of market in which only one firm can optimally operate or in which the firm has complete control over important inputs or technical know-how then the firm would continue to retain its monopoly power and earn super normal profit in the long run.

Supply curve of a Monopoly firm

From our previous discussion on demand and supply you must recollect the supply curve tells us the quantity that the firm chooses to supply at a particular price. In perfect competition firms equate price of the product with their individual marginal cost of production and thus, determine the supply curve in the short run. But a monopolist is a price maker, the firm itself sets the price of the product it sells, instead of taking the price. Thus, it does equate marginal cost with marginal revenue for profit maximization, but unlike perfect competition, it cannot equate its price to marginal revenue. Supply of the good by the monopolist at a given price would be determined by both the market demand and the marginal cost curve. As such there is no supply curve for a monopolist.

Price and Output Decision of a Multi-Plant Monopoly

So far we have assumed that the monopoly firm produces its entire output in one plant and thus faces a single cost function. However, in real life it is possible that the monopolist produces a homogeneous product in different plants. In such a situation how would the firm determine the total output at which it can maximise its profit? This assumes paramount significance because even though the firm has different cost functions from multiple plans it faces the same demand function for the entire market. A multi plant monopolist must take decisions: first like a single plant firm it has to decide on how much to produce and what price to sell at, so as to maximise its profit; second, it has to decide on how to allocate the profit maximising output between the plants. It is assumed that the monopolist faces the same demand curve and hence the same average revenue and marginal revenue curve for the entire market.



To understand this phenomenon, let us take the case of monopoly firm which produces into plants, and. Two plants may appear simplistic, but it would certainly not affect the understanding of the decision-making process even when there are more than two plants. Let us further assume that each of these two plants face different cost functions. Marginal cost would then be summation of cost functions of the two plants.

$MC=MC_A+MC_B$ (1)

Given the marginal revenue and marginal cost curves, the firm decide the profit maximising level of output and would allocate this output between the two plants on the basis of principles of marginalism:

$MR=MC_A=MC_B$

In other words, the monopolist would be able to maximise its profit by producing an output where marginal cost of plant A is equal to marginal revenue and marginal cost of plant B is also equal to marginal revenue. Now how would this happen? If $MC_A<MC_B$, the monopolist would increase production in plant A, which has lower marginal cost and reduce production and plant B, which has a higher marginal cost, till the conditions given an equation (1) is satisfied. The equilibrium of multi-plant monopolist can be understood with the help of the diagrams figure 6.10

In the first part of figure 6.10, the market demand for the product of monopolist as shown by OQ which is the profit maximising output satisfying the condition MR=MC, when MC is rising. OP is the equilibrium price and APBE is the total profit of the firm. In the next section the cost function of plant A in which marginal cost is lesser is shown and the last part of the figure shows the cost function of plant B in which marginal cost is greater. Since the market is one hence only one price prevails. This is shown by the line P which determines average revenue in both the plants. In order to decide how much the output will be produced individually in A and B, the firm produces till MC_A and MC_B are individually equal to MR, which is naturally same for both plants.

$Q_A+Q_B= OQ$

Price Discrimination under Monopoly

A seller indulges in price discrimination when he sells the same product at different prices to different buyers. Price discrimination is 'personal' when different prices are charged from different persons, 'local' when different prices are charged from people living in different localities, and 'according to use' when, for example, higher rates are charged for commercial use of electricity as compared to domestic use.

Price discrimination is possible when the seller is able to distinguish individual units bought by single buyer or to separate buyers into classes where resale among classes is not possible. Thus, price discrimination is possible in case of personal services of doctors and lawyers. It is also possible when markets are too distant or are separated by tariff barriers. There may be a legal sanction for price discrimination as in the case of electricity charges from domestic and industrial

users. It is also possible when some people are prejudiced against a particular market and prefer a posh market or when some people are too lethargic to move away from the nearest shopping centre.

Case 1: Equilibrium under Price Discrimination

A monopolist firm sells a single product in two different markets either different elasticity of demand. Resale among the customers is not possible. The firm must decide how much total output should be produced and how it should be distributed between sub-markets and what prices should be charged in the two sub-markets. It is assumed that production takes place at the same point.

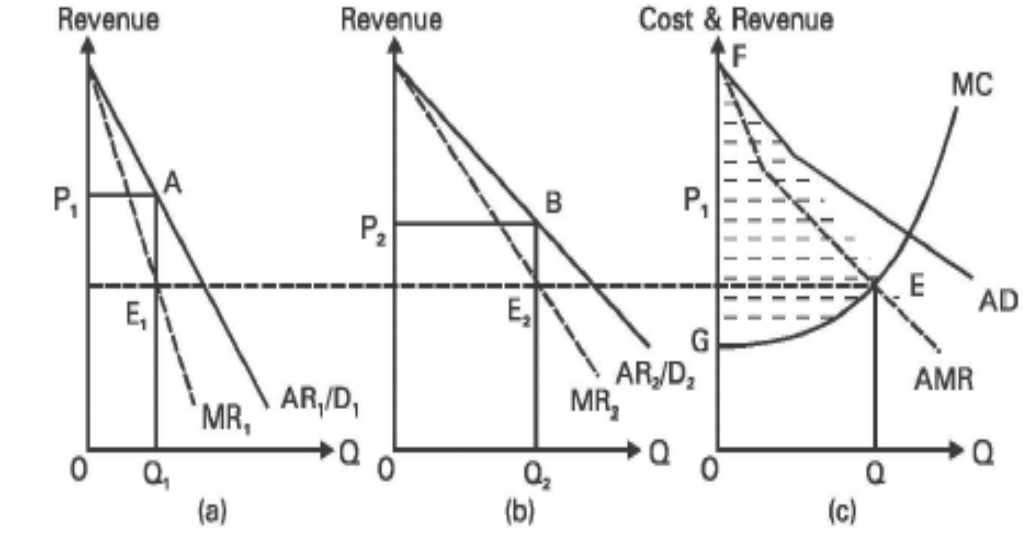


Fig. 6.11 Price Discrimination

Figure 6.11 shows the equilibrium of a monopolist under the two sub-markets. It may be observed that the monopolist faces a less elastic demand curve in sub-market 1 as compared to2. The aggregate demand and MR curves are shown in part (c). Profits are maximised where MC curve meets the MR curve from below, i.e., at point E. The total profits are represented by the shaded area EFG lying between the MR and MC curves. The monopolist would produce Q units of output. In order to know the distribution of Q in two sub-markets the equilibrium aggregate MR is equated to MR_1 and MR_2 at points E_1 and E_2 respectively. The monopolist would sell amount Q_1 in sub-market 1 at a price P_1. He would sell amount Q_2 at a price P_2 in sub-market 2.It should be noted that $Q = Q_1+Q_2$.

Case 2: Dumping

This is a special case when the firm is a monopolistic in the domestic market but faces perfect competition in the world market. Figure 10.7 shows the equilibrium of such a firm. ARH and MRH are the average and marginal revenue curves respectively which the firm faces in the home market. ARW or MRW is horizontal straight line at the level of prices Pw, prevailing in the world market. MC denotes the marginal cost curve. The aggregate MR curve is given by the curve AFEG which is the lateral summation of MRW and MRH. The profits are maximised when aggregate MR=MC, i.e., at point E. The firm would sell total output Q. In the home market, the firm would equate MRH to the equilibrium MC. Thus, the firm would sell QH units in the domestic market at a price PH which is higher than the international price PW. The remaining amount (Q-QH) would be sold in the world market at price PW. The area AFED denotes the total profits of this firm. The producer is said to be 'dumping' in the world market since he is charging less price in the world market than in the home market.

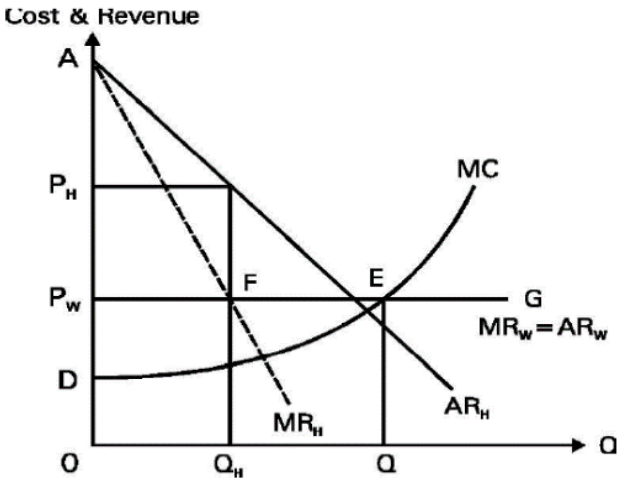


Fig.6.12 Dumping in Monopoly Firm

6.5 Monopolistic Competition

Monopolistic competition has an element of product differentiation. We can define a monopolistic competitive market as a market in which there are a large number of firms and the products in the market are close but not perfect substitute. The real world is widely populated by monopolistic competition. Perhaps half of the economy's total production comes from monopolistically competitive firms. The best examples of monopolistic competition come can be retail trade including restaurants, clothing stores, and convenience stores.

Features of Monopolistic Competition

Monopolistic competition is a form of market structure in which a large number of independent firms are supplying products that are slightly differentiated from the point of view of buyers. Thus, the products of the competing firms are close but not perfect substitutes because buyers do not regard them as identical. This situation arises when the same commodity is being sold under different brand names, each brand being slightly different from the others. For example, Luxor, Cello, Reynolds, Linc, Parker, Pik are the brands for pens. Each firm is, therefore, the sole producer of a particular brand or "product". It is a monopolist as far as that particular brand is concerned. However, since the various brands are close substitutes, a large number of "monopoly" producers of these brands are involved in keen competition with one another. This type of market structure, where there is competition among a large number of "monopolists" is called monopolistic competition.

The differentiation among competing products or brands may be based on real or imaginary differences in quality. Real differences among brands refer to palpable differences in quality such as shape, flavour, colour, packing, after sales service, warranty period, etc. In contrast, imaginary differences mean quality differences which are not really palpable but buyers are made to imagine or are "conditioned" to believe that such differences exist and are important. Advertising often has the effect of making buyers imagine or believe that the advertised brand has different qualities. When there is product differentiation, each firm has some degree of control over price.

As a result, under monopolistic competition, the demand or average revenue curve of an individual firm is a gradually falling curve. It is highly elastic but not perfectly so. Therefore, the marginal revenue curve of the firm is also falling and lies below the average revenue curve at all levels of output. It is in this respect that monopolistic competition differs from perfect competition.

In addition to product differentiation, the other three basic characteristics of monopolistic competition are:

1. There are a large number of independent sellers (and buyers) in the market.
2. The relative (proportionate) market shares of all sellers are insignificant and equal. That is, seller concentration in the market is almost non-existent.

3. There are neither any legal nor any economic barriers against the entry of new firms into the market. New firms are free to enter the market and existing firms are free to leave the market.

In other words, product differentiation is the only characteristic that distinguishes monopolistic competition from perfect competition. Firms selling slightly differentiated products under different brand names compete not only through variations in price but also through variations in product quality (product variation) and changes in advertising or selling costs. Thus, under monopolistic competition, an individual firm has to maximise profits in relation to variations in three policy variables, namely, price, product quality, and selling costs. (In contrast, under perfect competition there is competition only through price variation).

Assumptions in Analysing Firm Behaviour

We analyse the conditions and process of long run equilibrium under monopolistic competition with the assumption that competing firms keep their selling costs and product quality constant and compete only through price variation. We then assume that

1. The demand curve of each individual firm has the same shape (elasticity) and position (distance from the y-axis). That is, we assume the demand curves of all firms to be symmetrical. This assumption implies that market share of every firm is the same and equal to a constant proportion of total market demand. That is, if total market demand is Q and an individual firm's demand is q then q=KQ, where K is a constant fraction for all firms.
2. The cost curves, both average and marginal, are symmetrical for each firm.

These two assumptions are 'heroic' or unrealistic, but we need to make them for logical convenience in order to analyse the long run equilibrium of a typical firm under monopolistic competition.

Price and Output Decisions

Short-Run Equilibrium Under the Monopolistic Competition

Firms under monopolistic competition attain equilibrium when (1) MC = MR and (2) slope of MC > slope of MR. The firm's equilibrium is defined at the point E in the following figure. At this price OP, AR > AC, the firm earns a profit of PQRS. The firm may earn a profit or incurs loss or be at a no loss no profit position depending upon the demand condition and the position of the cost-curves;

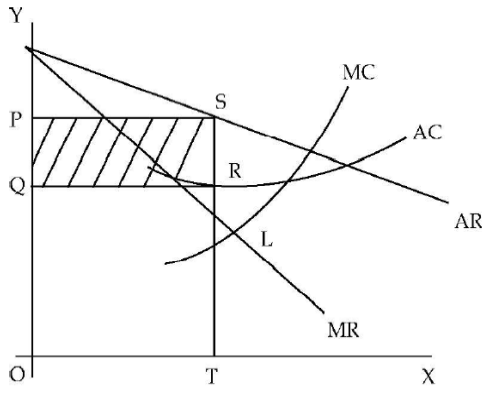


Fig. 6.13 Short Run Equilibrium of Monopolistic Firm

Long-Run Equilibrium Under the Monopolistic Competition

In the long-run, price cutting, expansion and contraction of output and new entry are possible, i.e., firms may compete with one another through price or non-price competition. The abnormal profit earned in the short-run will attract new entries, therefore the amount sold at any given price will fall resulting in the shift of demand curve until the abnormal profits are wiped out. There is no profit no loss situation since the total cost and the total revenue are equal.

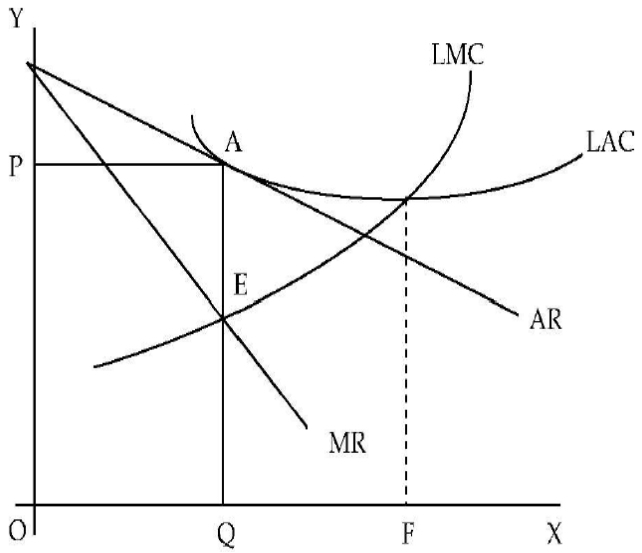


Fig.6.14 Long run equilibrium of Monopolistic Firm

However, because the firm's demand or average revenue curve is falling, the price is higher than marginal revenue. Hence, under monopolistic competition, even though the long run equilibrium price is = LAC, it is greater than LMC. This is because, at equilibrium, MR = LMC but price is greater than MR. (Under perfect competition, price = minimum LAC = LMC). Moreover, since the firm's demand or average revenue AR2 is falling on account of product differentiation, it can be a tangent to the U-shaped LAC curve only when LAC is also falling. As shown in Figure 6.14, the long run equilibrium position E will be at a point which is to the left of the minimum LAC. Thus, the long run equilibrium output Q is less than optimum output, QF (where LAC is at its minimum). The difference between E and Q = (F – OQ) shows the extent of excess or underutilised capacity. Equilibrium with excess capacity is therefore the necessary consequence of product differentiation and monopolistic competition.

Summary

This chapter examines the pricing and output decisions faced by firms in perfect competition, monopoly and monopolistic competition. In the case of perfect competition, the firm has virtually no power to set the price and is only able to decide to what extent (if at all) it wants to produce in this market, given the going market price. In the case of a monopoly, the firm is the entire market supply. This monopoly of supply gives the firm the power to set any price that it desires. In certain cases, this monopoly power is regulated by the government. In monopolistic competition, there is product differentiation, and it contains the features of both perfect competition and monopoly.

Keywords

Economic cost: All cost incurred to attract resources into a company's employ. Such cost includes explicit cost usually recognized on accounting records and opportunity cost.

Economic profit: Total revenue minus total economic cost. An amount of profit earned in a particular endeavour above the amount of profit that the firm could be earning in its next-best alternative activity. Also referred to as *abnormal profit* or *above or mal profit.*

Monopoly: A market in which there is only one seller for a particular good or service. There may be legal barriers to entry into this type of market (e.g., railway).

Monopolistic competition: A market distinguished from perfect competition in that each seller attempts to differentiate its product from those of its competitors (e.g., in terms of location, efficiency of service, product attributes, advertising, or promotion). Good examples of this type of market can be found in small businesses, particularly those in the retail trades.

Perfect competition: A market with four main characteristics:
(1) many relatively small buyers and sellers,
(2) a standardized product,
(3) easy entry and exit, and
(4) complete information by all market participants about the market price.
Firms in this type of market have absolutely no control over the price and must compete on the basis of the market price established by the forces of supply and demand.

Shutdown point: The point at which the firm must consider ceasing its production activity because the short-run loss suffered by operating would be equal to the short-run loss suffered by not operating (i.e., the operating loss 5 total fixed cost). In a perfectly competitive situation, this point is found at the lowest point of a firm's average variable cost curve. If the market price falls to this point, the firm should consider shutting down its operations. Any price lower than this would dictate that the firm should cease its operations in the short run.

Self Assessment

1. Which of the following is not a type of market structure?

A. Competitive monopoly
B. Oligopoly
C. Perfect competition
D. All of the above are types of market structures.

2. If the market demand curve for a commodity has a negative slope, then the market structure must be

A. perfect competition.
B. monopoly.
C. imperfect competition.
D. The market structure cannot be determined from the information given.

3. If a firm sells its output on a market that is characterized by many sellers and buyers, a homogeneous product, unlimited long-run resource mobility, and perfect knowledge, then the firm is a

A. a monopolist.
B. an oligopolist.
C. a perfect competitor.
D. a monopolistic competitor.

4. If one perfectly competitive firm increases its level of output, market supply

A. will increase and market price will fall.
B. will increase and market price will rise.
C. and market price will both remain constant.
D. will decrease and market price will rise.

5. Which of the following markets comes close to satisfying the assumptions of a perfectly competitive market structure?

A. The stock markets.
B. The market for agricultural commodities such as wheat or corn.
C. The market for petroleum and natural gas.
D. All of the above come close to satisfying the assumptions of perfect competition.

6. A perfectly competitive firm should reduce output or shut down in the short run if market price is equal to marginal cost and price is
A. greater than average total cost.
B. less than average total cost.
C. greater than average variable cost.
D. less than average variable cost.

7. A monopolized market is in long-run equilibrium when
A. zero economic profit is earned by the monopolist.
B. production takes place where price is equal to long-run marginal cost and long-run average cost.
C. production takes place where long-run marginal cost is equal to marginal revenue and price is not below long-run average cost.
D. All of the above are correct.

8. A natural monopoly refers to a monopoly that is defended from direct competition by
A. economies of scale over a broad range of output.
B. a government franchise.
C. control over a vital input.
D. a patent or copyright.

9. Which of the following is a barrier to entry that typically results in monopoly?
A. The firm controls the entire supply of a raw material.
B. Production of the industry's product is subject to economies of scale over a broad range of output.
C. Production of the industry's product requires a large initial capital investment.
D. The firm holds an exclusive government franchise.

10. Which of the following is an example of price discrimination?
A. It costs more to make a long-distance phone call during the day than it does late at night.
B. A ticket to the zoo costs less for a child than it does for an adult.
C. Regular gasoline costs less than premium gasoline.
D. All of the above are examples of price discrimination.

11. A firm that is engaging in price discrimination will
A. charge a higher price to consumers with a higher price elasticity of demand.
B. charge a higher price to consumers with a lower price elasticity of demand.
C. earn lower profits than a similar firm that does not engage in price discrimination.
D. generally be a perfectly competitive firm.

12. Persistent dumping refers to the practice of
A. international price discrimination.
B. charging a lower price on foreign markets where demand is more price elastic.
C. taking advantage of the segmentation of markets that results from domestic restrictions on imports.
D. All of the above are correct.

13. Which of the following industries is most likely to be monopolistically competitive?

A. The automobile industry

B. The steel industry

C. The car repair industry

D. The electrical generating industry

14. Which of the following is a characteristic of monopolistic competition?

A. Few sellers.

B. A differentiated product.

C. Easy entry into and exit from the industry.

D. All of the above are characteristics of monopolistic competition.

15. The demand curve faced by a monopolistically competitive firm is

A. perfectly elastic.

B. elastic.

C. unit elastic.

D. inelastic.

Answers for Self Assessment

1.	A	2.	D	3.	C	4.	C	5.	D
6.	D	7.	C	8.	A	9.	B	10.	C
11.	B	12.	D	13.	C	14.	A	15.	B

Review Questions

1. Why do economists consider zero economic profit to be "normal"?
2. Explain why the demand curve facing a perfectly competitive firm is assumed to be perfectly elastic (i.e., horizontal at the going market price).
3. In the short run, firms that seek to maximize their market share will tend to charge a lower price for their products than firms that seek to maximize their profit. Do you agree with this statement? Explain
4. Explain the key difference between perfect competition and monopolistic competition.

Further Readings

1. Managerial Economics- Principles and Worldwide Applications By Salvatore, Dominick and Rastogi, Siddhartha K., Oxford University Press.
2. Managerial Economics- Economic Tools for Today's Decision Makers by Keat Paul G, Young Philip K. Y, Erfle Stephen and Banerjee Sreejata., Pearson Education, India
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Unit 07: Oligopoly

CONTENTS

Objectives

- Examine the nature of Oligopoly Market
- Understand the features and assumptions of Oligopoly market
- Comprehend the various models of price determination in this market, with detailed analysis of cartelisation
- Identify the practice of price leadership

Introduction

Oligopoly refers to a market wherein only a few firms account for most or all of total production. Oligopoly refers to the presence of few sellers in the market selling the homogeneous or differentiated products. In other words, the Oligopoly market structure lies between the pure monopoly and monopolistic competition, where few sellers dominate the market and have control over the price of the product.

Under the Oligopoly market, a firm either produces homogeneous or heterogeneous products:

1. ***Homogeneous Product***: The firms producing the homogeneous products are called as Pure or Perfect Oligopoly. It is found in the case of industrial products such as cement, copper, steel, zinc, iron, etc. In case of agricultural products, it can be seen in case of su
2. ***Heterogeneous Product:*** The firms producing the heterogeneous products are called as Imperfect or Differentiated Oligopoly. Such type of Oligopoly is found in the production of consumer goods such as automobiles, soaps, detergents, television, refrigerators, etc.

7.1 Features of Oligopoly Market

1. ***Few Sellers***: Under the Oligopoly market, the sellers are few, and the customers are many. Few firms dominating the market enjoy a considerable control over the price of the product.
2. ***Interdependence***: It is one of the most important features of an Oligopoly market, wherein, the seller has to be cautious with respect to any action taken by the competing firms. Since there are few sellers in the market, if any firm makes a change in the price or promotional scheme, all other firms in the industry have to comply with it to remain in the competition. Thus, every firm remains alert to the actions of others and plan their counterattack beforehand to escape the turmoil. Hence, there is a complete interdependence among the sellers with respect to their price-output policies.
3. ***Advertising***: Under Oligopoly market, every firm advertises their products on a frequent basis with the intention to reach more and more customers and increase their customer base. This advertising makes the competition intense. If any firm does a lot of advertisement while the other remained silent, then you will observe that his customers are going to the firm which is continuously promoting its product. Thus, in order to be in the race, each firm spends lots of money on advertisement activities.
4. ***Competition***: It is genuine that with a few players in the market, there will be an intense competition among the sellers. Any move by one firm will have a considerable impact on its rivals. Thus, every seller keeps an eye over its rivals and be ready with the counterattack.
5. ***Entry and Exit Barriers***: The firms can easily exit the industry whenever they want, but has to face certain barriers to enter into it. These barriers could be Government license, Patent, large firm's economies of scale, high capital requirement, complex technology, etc. Also, sometimes the government regulations favour the existing large firms, thereby acting as a barrier for the new entrants.
6. ***Lack of Uniformity***: There is a lack of uniformity among the firms in terms of their size, some are big, and some are small. Since there are less number of firms, any action taken by one firm has a considerable effect on the other. Thus, every firm must keep a close eye on its counterpart and plan the promotional activities accordingly.

7.2 Causes for the Existence of Oligopoly

There are certain reasons which have led to the emergence of oligopoly. These are:

Large Investment of Capital: The number of firms in an industry may be small due to the large requirements of capital. No entrepreneur will like to venture into investing large sums in an industry in which addition to output to the existing level may depress prices. Further, the new entrant may also fear of provoking a price-war by the established firms in the industry. This is always true that in the midst of differentiated products, it is difficult to introduce a new product.

Control of Indispensable Resources: A few firms may control some indispensable resources which may enable them to secure several advantages in costs over all others. This enables them to operate profitably at a price at which others cannot survive.

Legal Restriction and Patents: In public utility sector, the entry of new firms is closely regulated through the grant of certificate by the State. This policy of exclusion of rivals may be due to diseconomies of small scale or of duplication of services. Another factor for the emergence of oligopoly is the patent right which a few firms acquire in matter of some goods. Patents have led to many important industrial monopolies in America and elsewhere.

Economies of Scale: Another factor responsible for emergence of oligopoly is the operations at large scale. In some industries, a few firms can meet the entire demand for the product. It is possible that the demand may be satisfied by a large number of firms, but small firms cannot secure the economies of large scale production. In the industries where there is a lot of mechanisation and where economies of large scale are considerable, only a few firms will survive. The firms attain such a huge size that just a few of them can satisfy the entire demand. For example, automobiles, steel industry, petroleum etc. Oligopolies are also found in local markets. In small towns, a few firms may be sufficient to satisfy the demand, e.g., petrol, banks, building material suppliers etc. The market is small and therefore can be satisfied by a few firms.

Superior Entrepreneurs: In some industries there may be some superior entrepreneurs whose costs are lower than inferior rivals. These entrepreneurs under sell and eliminate most of their rivals.

Mergers: Many oligopolies have been created by combining two or more independent firms. The combination of two or more firms into one firm is known a merger. The main motives of mergers include increasing market powers, more resources, economies of scale and market extensions etc.

Difficulties of Entry into the Industry: Lastly, oligopoly may come to exist because of difficulties of entry into the industry. One big difficulty in some industries is the large requirements of capital. Businessmen do not like to venture into those industries entry to which, even of one firm, is likely to depress prices to such an extent as to make it unprofitable for all. They may also be afraid of the price war that their entry may provoke from the established firms in the industry. Prospective entrants to an industry are also deterred by the difficulty of marketing new products or new brands in the presence of already well-established, well-entrenched brands.

7.3 Pricing in an Oligopolistic Market: Rivalry and Mutual Interdependence

Whether the sellers in an oligopolistic market compete against each other by differentiating their product, dominating market share, or both, the fact that there are relatively few sellers creates a situation where each is carefully watching the other as it sets its price. Economists refer to this pricing behaviour as mutual interdependence. This means that each seller is setting its price while explicitly considering the reaction by its competitors to the price that it establishes.

In the 1930s, economist Paul Sweezy provided an early insight into the pricing dynamics of mutual interdependence among oligopoly firms by developing a kinked demand curve model. The basic assumption of the Sweezy model is that a competitor (or competitors) will follow a price decrease but will not make a change in reaction to a price increase. Thus, the firm contemplating a price change may refrain from doing so for fear that quantities sold will be affected in such a way as to decrease profits.

If a firm lowers its price, this may have an immediate impact on the competition. This firm takes its action to increase sales by drawing customers away from the higher-priced competitors, but when competitors realize what is happening (i.e., their sales are declining), they will quickly follow the price cut to maintain their market share. If this firm undertakes the opposite action—a price increase—incorrectly assuming competitors will follow suit, its sales will drop markedly if competitors fail to do so.

It is easy to demonstrate the "kink" in such a demand curve with the graph in **Figure 7.1**. Let us assume the original price and quantity are found at point A. If the firm lowers its price, expecting that quantity demanded will move along the more elastic demand curve Df and this result materializes, then it will gain a relatively large quantity of additional sales for a relatively small decrease in price. If it lowers its price from P to P1, it will expect to increase its sales from Q to Q1. This is the relevant demand curve for the firm if other companies do not retaliate. Our firm would thus gain customers at the expense of competition. However, if competitors do react and match the price cut, our company will increase its sales only to Q 2, along demand curve Di; this is the relevant demand curve when all companies in the industry decrease their price equally. There will be a relatively small increase in sales because all prices in the industry are lower, but not nearly as much as the company expected when it reduced its price.

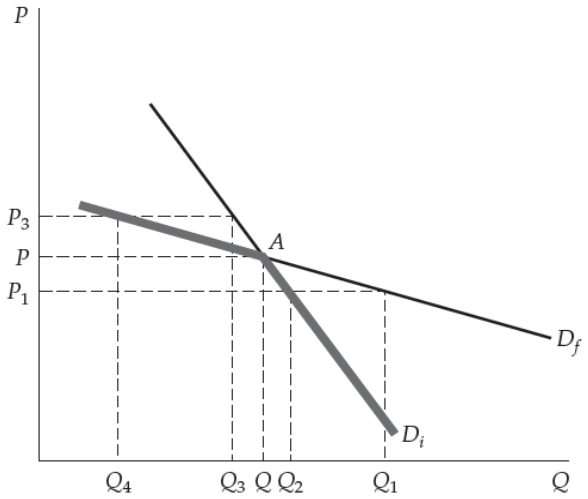

Fig. 7.1 Demand Curves for Oligopoly

In contrast, suppose our company decides to raise its price, anticipating that competitors will follow the increase. It thus expects to move along Di to Q3 when it boosts its price to P3. It would thus sustain some loss in sales while benefiting from a significantly higher price. However, suppose its competitors refuse to play along and keep their prices unchanged. The company's situation now becomes more precarious because its quantity sold drops to Q4: The demand curve for the firm alone is much more elastic than if all firms raise their prices in unison.

The prospect of being stung by such action will make the company much more loath to change its price from P. From that vantage point, it will appear to the company that the appropriate demand curve is Di if price is lowered and Df if the price is increased. The upper portion of Df and the lower portion of Di can be seen to form a kinked demand curve around point A; thus, the name of Sweezy's model. These relevant portions of the two demand curves are boldly outlined in **Figure 7.1**

Now that we have developed a demand curve for this oligopolist, we can also derive a marginal revenue curve. This marginal revenue curve will be discontinuous: there will be a gap at the point where the kink occurs. As we know, a company will maximize its profits at the point where marginal cost equals marginal revenue. The two marginal cost curves drawn in **Figure 7.2** both imply the same price and quantity at point A. Thus, a significant change in costs could occur for our firm, but it will not react by changing its price. The price may remain unchanged even if the demand curve moves to the right or left, as long as the kink remains at the same price level. Hence, it can be concluded that under the circumstances described, a kinked demand curve will result in price rigidities despite changes in demand and cost.

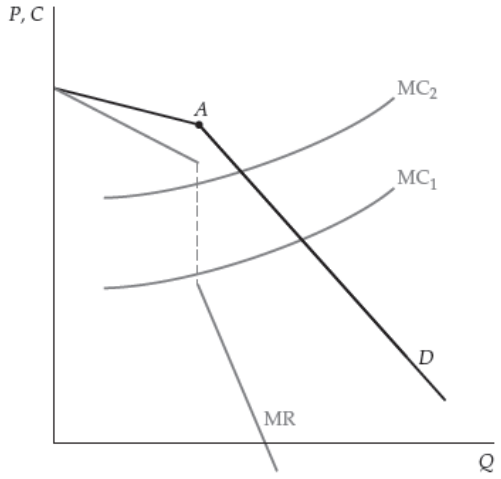

Fig. 7.2. Kinked demand curve

Over the years, the kinked demand curve has been challenged by other economists. In particular, Nobel Prize laureate George Stigler investigated several oligopolistic industries and found little empirical support for Sweezy's model. Stigler found that in these industries, price increases were followed as quickly as were price decreases. Such findings, of course, contradict the existence of the kink. Further, the model does not explain how the price was originally set at the kink. Was it originally set where marginal revenue equalled marginal cost, or was it by some other means, such as tradition?

7.4 Cartelisation

Competition is a very tough taskmaster. To survive in competition in the long run, a company must operate at its most efficient (minimum) cost point, and it will earn no more than a normal return. Thus, there is always an incentive for a company to try to become more powerful than its competitors—in the extreme, to become a monopolist. In an oligopolistic type of industry, where there are several powerful firms, it would probably be impossible for one firm to eliminate all the others. So, to reap the benefits of a monopoly (i.e., higher profits and the general creation of a more certain and less competitive environment), it may be advisable for companies in the industry to act together as if they were a monopoly. In other words, they all agree to cooperate with one another; they form a cartel. Cartel arrangements may be tacit, but in most cases some sort of formal agreement is reached. The motives for cartelization have been recognized for many years. Indeed, an early recognition can be found in a passage in Adam Smith's famous book written in 1776: "People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices."

In the U.S., cartels are illegal; however, internationally, there are no restrictions on cartel formation. The Organisation of Petroleum Exporting Countries (OPEC) is perhaps the best-known example of an international cartel. OPEC members meet regularly to decide how much oil each member of the cartel will be allowed to produce.

Cartels may not flourish in all oligopolistic markets. Following are some of the conditions that influence the formation of cartels.

1. The existence of a small number of large firms facilitates the policing of a collusive agreement.
2. Geographic proximity of the firms is favourable.
3. Homogeneity of the product makes it impossible for cartel participants to cheat on one another by emphasizing product differences.
4. The role of general business conditions presents somewhat contradictory arguments. Cartels are often established during depressed industry conditions, when companies attempt to forestall what they consider to be ruinous price cutting. However, it also appears that cartels disintegrate as demand for the product falls, and each member thinks it can do better outside the cartel. The cartel may then re-establish itself during the recovery period. Thus, cartels can form or fall apart during either phase of the business cycle.
5. Entry into the industry must be difficult. The case of OPEC is a good example. It is impossible for countries that do not possess the basic resource to begin petroleum production and compete for monopoly profits.
6. If cost conditions for the cartel members are similar and profitability thus will not differ greatly among members, cartels will be easier to maintain. Product homogeneity, mentioned earlier, will contribute to cost uniformity.

The ideal cartel will be powerful enough to establish monopoly prices and earn maximum monopoly profits for all the members combined. This situation is illustrated in Figure 7.3. For simplicity, assume there are only two firms in this oligopolistic industry. The total industry demand curve is shown in Figure 7.3 c. The marginal revenue curve is constructed for this demand curve in the usual manner. Each of the two competitors (illustrated in Figure 10.1a and b) has its respective average total cost and marginal cost curves, which can differ.

The two individual marginal cost curves are then added horizontally, and the result is plotted on the industry graph (MCT). Industry output will take place where MCT equals the industry marginal revenue, and the price charged will be found by drawing a vertical line to the demand curve (point A). This is, of course, the classic monopoly situation, and monopoly profits will be maximized at this point. The next step is to establish how much each of the two companies will sell at this price. For the entire industry output to be sold, each company will sell that output corresponding to the point at

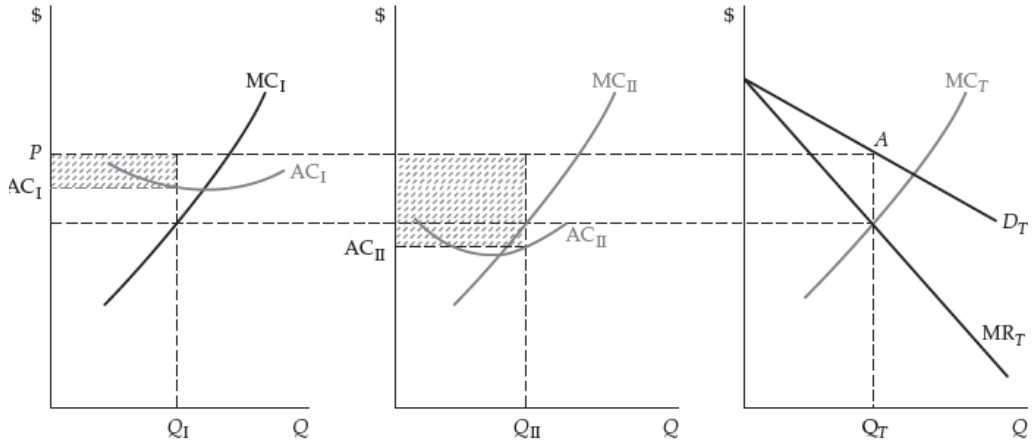

Fig. 7.3 Ideal Cartel

which a horizontal line drawn from the MCT = MRT intersection on the industry graph crosses the marginal cost curve of each of the two firms. It can be seen that each firm will produce different quantities and achieve different profits, depending on the level of the average total cost curve at the point of production. Generally, the lower average cost company will be the more profitable one (profits for the two companies are shown by the hatched areas in Figure 7.3). This result, although maximizing combined profits, may also be one of the reasons for the subversion of cartels. A very efficient company with low average costs, and most likely with excess capacity under cartel conditions, may find it profitable to cheat by offering its product at a lower price and capturing a larger share of the total business.

Such a cartel may be unstable. Unless strictly enforced, cartels will have a tendency to break down. Secret price cuts may be extremely profitable because (if the product is undifferentiated) the demand curve for an individual firm in a cartel will be quite elastic. Cartel subversion often occurs during slumps in demand because individual members will be looking to increase their share to avoid significant quantity decreases.

It must also be remembered that collusion is costly. First, there is the cost of forming the cartel. Second, there is a cost of monitoring the actions of the cartel members and of enforcing the rules to minimize cheating. There is also the potential cost of punishment by authorities. Thus, in the end, cartelization may not necessarily be profitable. In short, the additional revenues obtained by cartel members due to collusion must exceed the costs just described. We can, therefore, state that, although profit maximization is the incentive that leads to collusion, it may also be the cause of a cartel's breakdown.

Cartels often have agreements specifying the market share of each participant. Such allotments may be based on history, or they can be arranged to give each member a certain geographic area. Collusion can also exist in much more informal ways. Thus, physicians within a geographic area coincidentally charge similar fees for their services. Trade associations are often suspected of collecting and conveying information that will lead to the fixing of prices.

7.5 Price leadership

When collusive arrangements are not easily achieved, another type of pricing practice may occur under oligopolistic market conditions. This is the practice of price leadership, in which there is no formal or tacit agreement among the oligopolists to keep prices at the same level or change them by

the same amount. However, when a price movement is initiated by one of the firms, others will follow. Examples of such practices abound. You may have observed that at two or more gasoline stations at the same intersection, prices for each grade of gasoline are either identical or almost the same most of the time. Another example is automobile companies, which in recent years have come up with rebate programs. Surely you have seen advertisements offering "$1,000 cash or 3.9 percent financing." One company is usually the first to announce such a program; the others follow in short order. Another case is IBM. For many years, in the 1950s and 1960s, IBM was considered to be the price leader in the computer industry. In fact, IBM's prices were considered to form an "umbrella" for industry pricing. It was said that IBM would establish a price, and because it was the most powerful and preferred manufacturer and thus could command a higher price (an umbrella over the others), its competitors would tend to set their prices at some slightly lower level for similar equipment.

We just described two major variants of the price leadership phenomenon: barometric and dominant price leadership.

Barometric Price Leadership

There may not be a firm that dominates all the others and sets the price each time. One firm in the industry—and it does not always have to be the same one—will initiate a price change in response to economic conditions, and the other firms may or may not follow the leader. If the barometric price leadership model has misjudged the economic forces, the other companies may not change their prices or may effect changes of a different, possibly lesser, magnitude. If the firm has correctly gauged the sentiment of the industry, all the firms will settle in comfortably at the new price level. But if this does not happen, the price leader may have to retract the price change, or a series of iterations may be set in motion until a new price level, agreeable to all, is reached. Such a pattern of price changes has been observed in many industries, including automobiles, steel, and paper.

In more recent years, the airline industry has furnished several examples of price leadership that was not followed. An almost bizarre example occurred in August 1998. First, Delta Air Lines and American Airlines raised leisure fares by 4 percent. When Northwest Airlines refused to match the increase, it was rescinded. A few days later, Northwest raised its fares and was matched by the others. Two days later Northwest rescinded the increase, and within a day other airline followed. Then Northwest raised some of its fares again, only to pull some of them back, and actually decreased leisure fares in some of its markets. Other airlines then realigned their fares with those of Northwest. A similar case occurred more recently. Due to the increases in fuel costs in the summer of 2004, American Airlines announced that it was increasing prices on domestic flights by $5 on one-way trips and $10 on roundtrips. Some airlines went along with this increase. However, some low-cost airlines, including Southwest and JetBlue, refused to increase their fares. A day later, American and the other airlines retracted the increases.

Dominant Price Leadership

When an industry contains one company distinguished by its size and economic power relative to other firms, the dominant price leadership model emerges. The dominant company may well be the most efficient (i.e., lowest-cost) firm. It could, under certain circumstances, force its smaller competitors out of business by undercutting their prices, or it could buy them out on favourable terms. But such action could lead to an investigation and eventual suit by the U.S. Department of Justice under the Sherman Anti-Trust Act. To avoid such difficulties, the dominant company may actually act as a monopolist, setting its price at the point where it will maximize its profits, and it will permit the smaller companies to continue to exist and sell as much as they want at the price set by the leader. The theoretical explanation of the dominant price leadership model is quite straightforward and is presented in all microeconomics textbooks. We follow its development in figure 7.4.

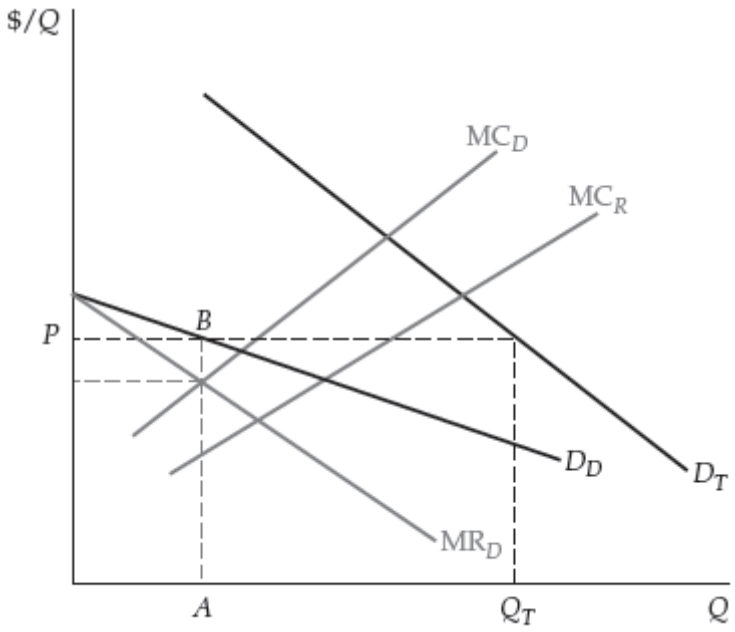

Fig. 7.4 Dominant Price Leadership

The demand curve for the entire industry is *DT*. The marginal cost curve of the dominant firm is MC*D*, and the sum of all the marginal cost curves of the follower firms is represented by MCR. The demand curve for the leader, DD, is derived by subtracting at each point the marginal cost curve of the followers from the total demand curve, DT. The reason is that if the small firms supply the product along their combined marginal cost curve, MCR, then the dominant firm will be left with product demand shown along DD. When the leader's
marginal revenue curve, MRD, is drawn in the usual manner, the leader can establish its profit-maximizing output A and its price at point B. This price is then accepted by the smaller firms in the industry, which will supply the rest of the market at this price. The followers are thus actually faced by a horizontal demand curve at price P.

Summary

Oligopoly is the most popular form of imperfect market system which has led to the development of advertising, sales promotion, and more complex structures. The basis of Oligopoly is stiff competition with the number of sellers limited and the goods are very close substitutes of each other. Paul Sweezy gave the kinked demand curve model to show price rigidity in the market and the reasons for it. Cartelisation and price leadership are two forms of cooperation. Cartels are formed to avoid the uncertainties of a possible reaction by one competitor to price and production actions by another. The firms in the industry agree on unified pricing and production actions to maximize profits. However, as history shows, such arrangements are not always stable. Price leadership exists when one company establishes a price and others follow. Two types of price leadership were discussed: barometric and dominant

Keywords

Barometric price leadership: In an oligopolistic industry, a situation in which one firm, perceiving that demand and supply conditions warrant it, announces a price change, expecting that other firms will follow.

Cartel: A collusive arrangement in oligopolistic markets. Producers agree on unified pricing and Production actions to maximize profits and to eliminate the rigors of competition.

Dominant: price leadership. In an oligopolistic industry, a firm, usually the largest in the industry, sets a price at which it will maximize its profits, allowing other firms to sell as much as they want at that price.

Oligopoly: A market with few sellers selling differentiated product. Advertisement cost are very high and demand curve is not defined

Self Assessment

1. The market for automobiles is an example of

A. monopolistic competition.
B. duopoly.
C. differentiated oligopoly.
D. pure oligopoly.

2. According to the kinked demand curve model, a firm will assume that rival firms will

A. keep their rates of production constant.
B. keep their prices constant.
C. match price cuts but not price increases.
D. match price increases but not price cuts.

3. The refrigerator industry is an example of

A. monopolistic competition.
B. monopoly.
C. oligopoly.
D. perfect competition.

4. The petroleum industry is an example of

A. monopolistic competition.
B. pure oligopoly.
C. duopoly.
D. differentiated oligopoly.

5. Which of the following is a form of non price competition?

A. Advertising
B. Quality of service
C. Product quality
D. All of the above are forms of non price competition.

6. A cartel that gives each member the exclusive right to operate in a particular geographic area is a

A. market-sharing cartel.
B. centralized cartel.
C. price leadership cartel.
D. None of the above is correct.

7. A cartel that operates like a multi-plant monopolist is a

A. market-sharing cartel.
B. centralized cartel.
C. price leadership cartel.

D. None of the above is correct.

8. Under the price leadership model
A. Rivals will follow price decreases but not increases.
B. Rivals will follow both price increases and decreases.
C. The leader is the largest firm.
D. None of the above are accurate of the price leadership model.

9. Important sources of non-price competition include:
A. Advertising to affect preferences.
B. Market segmentation.
C. Limited time pricing events.
D. Both 1 and 2 are examples of non-price competition.

10. Under the dominant-firm price leadership model,
A. all firms but the dominant firm are price takers.
B. the dominant firm acts as the residual monopolistic supplier.
C. the demand curve faced by the dominant firm is flatter than the market demand curve.
D. All of the above are correct.

11. Price leadership is an example of tacit collusion.
A. True
B. False
12. The dominant-firm price leadership model describes a market structure in which a dominant firm is the price maker and all other firms are price takers.
A. True
B. False

13. Limit pricing refers to the oligopolistic practice of charging a price so low that new firms are discouraged from entering the industry.
A. True
B. False

14. The sources of oligopoly are generally the same as for monopoly, i.e., barriers to entry.
A. True
B. False

15. Which of the following statement about price leadership is false?
A. Price leadership is a form of tacit collusion
B. With dominant price leadership, the leader in an industry is the biggest firm
C. With barometric price leadership, the leader may change even if the relative size of each firm stays the same
D. Price leadership breaks down if input prices or demand conditions change

Answers for Self Assessment

1.	C	2.	C	3.	C	4.	B	5.	D
6.	A	7.	B	8.	D	9.	D	10.	D
11.	A	12.	A	13.	A	14.	A	15.	D

Review Questions

1. What are the special features of Oligopoly?
2. What is the difference between price leadership and cartelisation?
3. Explain the Kinked demand curve model of Oligopoly.
4. Explain how price leadership works.
5. Explain how cartels are formed and the reason for their formation.

Further Readings

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Unit 08: Game Theory

CONTENTS

Objectives

Understand the concept of Game Theory

Discuss the terms and strategies of Game Theory

Determine Nash Equilibrium

Discuss the Game of Prisoner's Dilemma

Apply the Game theory in real market

Introduction

Economists have extended and refined the analysis of oligopoly markets using game theory to examine strategic interaction. A game is distinguished by the number of players in the game and the number of options or strategies available to each player. A game involves players making strategic decisions from an available set of options. Players are the decision-making units that play games. Each player chooses among various strategies or options. A strategy is an option available to a player.

Game theory is a method of analysing strategic interaction. It analyses the way in which two or more interacting parties choose strategies that jointly affect each participant in some way. In the fi rst place, what is a game? Game, the name itself hints at mysteries and challenges of unknown moves and unanticipated outcomes. A game between two or more players is a formal example of a strategic situation, in which players optimise their maximum gains, depending on the response of other players. Game theory is a mathematical tool that helps to study strategic situations in which players optimise a certain variable not only based on their own preferences, but also on the other players' decisions and reactions. It is that branch of applied mathematics that formally structures a situation in the form of a game and studies the behaviour of conflict (competition) and cooperation (collaboration) between players.

Game theory is a mathematical tool that helps to study strategic situations in which players optimise a variable not only on the basis of their own preferences, but also on other players' decisions and reactions.

Games are characterised by several players or decision makers who interact, and even "threaten" each other, and at times establish coalitions and take actions under uncertain conditions. As an outcome, these players receive some benefit (or even loss) or reward (or punishment). The different types of moves taken by different players in various games are systematically and structurally used by economic theorists and mathematicians to explain economic analysis in a distinct branch of economics, known as game theory.

8.1 Assumptions

Game theory provides a mathematical process for selecting an optimum strategy in the face of opponents who have their own strategies. In game theory, one usually makes the following assumptions:

1. Each decision maker (or player) has two or more well specified choices or sequences of choices (plays).
2. Every possible combination of plays available to the players leads to a well-defined end state (win, loss, or draw) that terminates the game.
3. A specified payoff for each player is associated with each end state (zero sum, constant sum or non-zero sum).
4. Each decision maker has perfect knowledge of the game, including the rules of the game as well as the payoffs of all other players.
5. All decision makers are rational, that is, each player, given two alternatives, will select the one that yields him the greater payoff (or which minimises the losses).

8.2 Structure of a Game

In order to understand game theory, it is essential to first understand the structure of a game. For this, you need to be conversant with the various concepts associated with a game.

Players

They are the participants in the game; they may include individuals, firms, or even the government with some policy variables. The underlying assumption is that the player is rational and chooses the strategy or action which provides the most preferred outcome, conditioned on what its opponents are anticipated or expected to do.

Strategy

It is the precise course of action with clearly defined objectives, either having complete knowledge about the other player, or predicting its behaviour. A strategy fully determines the player's behaviour. Various types of strategies are discussed in subsequent sections. It is a set of strategies for each player that fully specifies all the actions in a game.

Payoff

The "payoff" of a strategy is the net utility or gain to a player for any given counter strategy of the other player. This gain is measured in terms of the objectives of the player, and is generally denoted by a number. If, for example, the objective of the firm is to maximise profit, then the payoff of the strategy will be measured in terms of the profit it earns. If the goal is optimising market share, then the payoff will be measured by the shares that the strategy will yield to the firm opting for it.

Payoff Matrix

Given the strategies of all the players in a game, the payoff matrix will represent the set of outcomes for the game. It is a table showing the payoffs accruing to player owing to each possible combination of strategies adopted by him/her and the other players. You will learn more about payoff matrix in subsequent sections.

Outcome

It is the end result accruing to different players by opting for different strategies of the game. Equilibrium A specific outcome is regarded as equilibrium if no player in the game can take any

action to make its payoff any better, and when all the other players continue to follow their optimal strategies.

Pure and Mixed Strategies

When a strategy specifies one and the same particular action at each decision point in a game, it is a pure strategy. You know that Jasprit Bumrah is a pacer with unorthodox action. His yorkers usually dip very late and his slower deliveries are hard to deal with by batsmen in aggressive mode. If Bumrah bowls all yorkers in an over, that would be an example of a pure strategy! However, it may also be possible that a player would avoid being predictable, and would prefer randomness in actions at various decision points in a game. Such a strategy would be a mixed one. Bumrah had bowled 10 yorkers in the Australia–India Twenty20 International series, giving only four runs and taking two wickets! Obviously that must have kept the opponent batsmen wondering what would be his next ball, a Yorker, or a short pitch one, or one on the leg stump! You got it right, a mixed strategy would always keep the rival player alert and wondering about the next move of a player!

The study of games is based on two principles:

1. Choices of the players are motivated by their own well defined preferences, and
2. Players take their preferences into consideration in relation to the choices of other players.

Or stated differently, players act strategically, taking decisions with well stated objectives, and also with the perception of the expected behaviour of other players. Therefore, these concepts of game theory are applied only when the actions and strategies of the players are interdependent. These concepts are used to formulate, structure and analyse distinct strategic situations of different players and consequently the possible outcomes derived from the game.

8.3 Dominant and Dominated Strategy

So far it must be clear to you that in a game the players, being rational, take those actions that result in their preferred outcome, contingent on what their opponents do. Suppose, in a game a player has two strategies A and B available to it. Suppose also that given all possible combinations of strategies of the other players, the outcome derived by a player from strategy A is better than that of strategy B. This implies that strategy A dominates strategy B; in other words, strategy A is the dominant strategy and B is the dominated strategy. A rational player will always choose the dominant strategy, no matter what the strategies of other players are.

Thus, the dominant strategy is the optimum strategy taken by a player which maximises its outcomes, whatever is the strategy of its opponents. This strategy yields the best payoff, no matter what the strategies other players choose. If one player has a dominant strategy in a game, then all other strategies are dominated strategies. A dominant strategy equilibrium is one in which all players have a dominant strategy.

8.4 Nash Equilibrium

In 1951, John Nash developed the equilibrium concept which is known by his name. Nash equilibrium proposes a strategy for each player such that no player has the incentive to change its action unilaterally, given that the other players follow the proposed action. It is the optimal collective strategy in a game involving two or more players, where no player has anything to gain by changing his/her strategy. Let us explain this with the same example given in the previous section. The only difference is in the payoff of Ring, when both Ring and Tone do not advertise.

It is assumed here that when both Ring and Tone do not advertise, Ring gets a payoff of 65 and Tone gets a payoff of 25. The new payoff matrix is given in Table 8.1. The new assumption here is that Ring uses an expensive advertising agency, and would shift the burden of increased cost to the consumer by increasing the price of the product; so the company gets a lesser market share when it advertises, as compared to when it does not advertise. Thus, if Tone does not advertise, then it is better for Ring not to advertise and get the larger share of the market.

		Tone	
		Advertise	*Do not Advertise*
Ring	Advertise	(50, 20)	(60, 10)
	Do not Advertise	(40, 30)	(65, 25)

Table 8.1 Payoff Matrix

As per Nash equilibrium, both the players would try to take the best possible action given the opponent's action; hence Ring would try to speculate Tone's action and Tone would anticipate Ring's action. Since Ring presumes that Tone will advertise, it is better for Ring to advertise (payoff 50) than not to advertise (payoff 40). Similarly, Tone knows that Ring will advertise because it is in its interest, therefore, Tone will also advertise (payoff is 20) because if Tone does not advertise given that Ring advertises the payoffs are less (10).

Therefore, the Nash equilibrium in this advertising game is that both companies advertise. Why? Because it represents a set of strategies for both Ring and Tone, in which neither the players would benefit anything by changing its strategy, while its rival kept its strategy unchanged. As you can see it is a suboptimal equilibrium, which is so due to lack of communication and cooperation between the players.

Let us again play this advertising game with a little change in the payoffs. The change is that if both Ring and Tone do not advertise, then Ring gets a payoff of 65 and Tone gets a payoff of 35. The new payoff matrix is given in Table 8.2.

		Tone	
		Advertise	*Do not Advertise*
Ring	Advertise	(50, 20)	(60, 10)
	Do not Advertise	(40, 30)	(65, 35)

Table 8.2 Payoff Matrix of Ring and Tone

In this case, if Ring advertises, Tone will advertise, because it gets a better payoff by advertising (payoff 20) than by not advertising (payoff 10). But if Ring does not advertise, Tone will not advertise, because advertising leads to a lesser preferred (payoff 30) than not advertising (payoff 35). Therefore, Tone advertises when Ring advertises, and Tone does not advertise when Ring does not advertise. We can easily conclude that the decision of Tone to advertise or not depends on whether Ring advertises or not. In other words, Tone does not have a dominant strategy in this game.

Let us now consider the other player. From Ring's point of view, as in the previous game, if Tone advertises, it is better for Ring to advertise, because it gets a greater market share by advertising (payoff 50) than by not advertising (payoff 40). However, if Tone does not advertise, it is better for Ring not to advertise, because it provides a better payoff (65) than by advertising (payoff 60). Thus, it is always better for Ring to advertise when Tone advertises, and not advertise when Tone does not advertise. You can infer quite easily that Ring does not have a dominant strategy in this example; Ring's action depends on what Tone does in this case.

Let us now summarize, both Ring and Tone do not have dominant strategies. What would happen to the equilibrium outcome in this case? This situation is a little complicated. In this case, there are two Nash equilibriums: the first Nash equilibrium occurs when both companies advertise; the second occurs when both do not advertise. Now, each firm is better off if it plays the same strategy as the other firm, and both the Nash equilibriums occur when both the firms simultaneously play the same strategy.

8.5 The Prisoners' Dilemma

In 1984, Axelrod gave a new dimension to game theory by presenting "Prisoner's Dilemma" which talks of importance of cooperation. The two players in the game can choose between two moves, either "cooperate" or "defect". The idea is that each player gains when both cooperate, but if only one of them cooperates, the other one, who defects, will gain more. If both defect, both lose (or gain very little) but not as much as the "cheated" cooperator, whose cooperation is not returned.

Suppose two individuals, White and Gray, are suspected of jointly committing a crime, and there is weak evidence to support this suspicion. For example, both have been caught trying to fence (sell) goods that were stolen in an armed robbery. The prosecutors would like to convict the suspects on the more serious charge, but the evidence linking the individuals to that charge is weak. The suspects are picked up and put in separate interrogation rooms, where prosecutors provide each suspect with the following options:

- If neither suspect confesses, both will be convicted of possession of stolen propertyand receive a 1-year sentence.

Jail Time (-Years in Jail)		Gray's Choices	
		Don't Confess	Confess
White's Choices	Don't Confess	−1 / −1	0 / −15
	Confess	−15 / 0	−10 / −10

Table 8.3 The Prisoners Dilemma Game

- If only one suspect confesses and is willing to testify at the trial of the other, the one who confesses will get probation on the stolen property charge and receive no jail time. The other will receive a 15-year sentence.
- If both suspects confess, both will be put away for 10 years.

The dilemma is that confession is a dominant strategy for both parties. Confession dominates not confessing for White regardless of what Gray does, and confession dominates not confessing for Gray regardless of what White does. Put in terms of the discussion in this chapter, the set of strategies (confess, confess) represents a dominant strategy equilibrium. Certainly, both parties would be better off if they could communicate with one another and agree not to confess. And that is the reason that prosecutors try to "sweat" each suspect separately. But even if they could communicate and reach an agreement, there is an incentive to cheat on the bargain. How can you trust the agreement you have made with your accomplice, especially when you are being told that he or she is being offered the same deal and you know how trustworthy he or she is from past experience? It is not surprising then, that such a strategy leads to confessions with sufficient regularity that it is a standard interrogation technique.

Many oligopolistic interactions have the structure of a prisoners' dilemma. The nightclub game in Table 8.4 is a prisoners' dilemma: Both nightclubs could earn $100 extra in profit by using a deejay rather than using a live band. The model discussed in the previous chapter where firms face a choice of restricting output and acting like a joint profit-maximizing cartel (JπMax) versus cheating on that bargain by expanding output and capturing higher individual profits (Cheat) is easy to model as a prisoners' dilemma. Consider the numbers in Table 8.5. Although the numbers in Table 8.5 look quite different from Table 8.3, the two tables have the same qualitative structure. Cheating is the dominant strategy for each player, but it is not the best that the firms could do. Both firms would be better served if each could agree to restrict their production in order to achieve joint profit maximum, but each has an incentive to cheat on the bargain. And, as we already noted, bargains that attempt to restrain trade are illegal according to U.S. antitrust laws, so tacit coordination techniques must be employed.

Profit Payoffs		Gray's Choices	
		DJ	Live Band
White's Choices	DJ	500 / 500	800 / 100
	Live Band	100 / 800	400 / 400

Table 8.4 Payoff Matrix of a Nightclub Game

Profit Based on Chapter 10 Cartel Model		Gray's Choices: JπMax: Q = 15	Gray's Choices: Cheat: Q = 20
White's Choices	JπMax: Q = 15	250 / 250	300 / 175
	Cheat: Q = 20	175 / 300	200 / 200

Table 8.5 Analyzing Cartel Behaviour as a Game

Some oligopolistic prisoners' dilemma games are more problematic than others. A key determining factor in being able to avoid the dominant strategy of confession is playing the game more than once. The prisoners' dilemma is a dilemma for the prisoners precisely because they are caught only once, and the prosecutors offer them the deal only once. Similarly, entry into a new market segment can be analyzed as a one-shot game. By contrast, firms that are considering the pricing game or the quantity game play that game repeatedly. When a game is repeated, the players can learn from their mistakes and they can learn from their rivals; they can engage in bargaining with their rivals, which often allows them to avoid the prisoners' dilemma.

Summary

Game theory is a mathematical tool that helps to study strategic situations in which players optimise a certain variable not only on the basis of their own preferences, but also on the other players' decisions and reactions. As per Knight's definition of risk, game theory falls in the category of analysing risk, as through this method mathematical probabilities are assigned to situations. Games are characterised by number of players or decision makers who interact, and even "threaten "each other, and at times establish coalitions and take actions under uncertain conditions. As an outcome, they receive some benefit (or even loss) or reward (or punishment).The "payoff" of a strategy is the net utility or gain to a player for any given counter strategy of the other player. A pure strategy specifies one and the same particular action at each decision point in a game; a mixed strategy would have randomness in the actions of the player at various decision points in a game.

Dominant strategy is the optimum strategy taken by a player which maximises its outcomes, whatever is the strategy of its opponents. If one player has a dominant strategy in a game, then all other strategies are dominated strategies. Nash equilibrium proposes a strategy for each player such that no player has the incentive to change its action unilaterally, given that the other players follow the proposed action. It is the optimal collective strategy in a game involving two or more players, where no player has anything to gain by changing his strategy." Prisoner's Dilemma" is a celebrated game that talks of the importance of cooperation. Each player gains when both cooperate, but if only one of them cooperates, the other one, who defects, will gain more.

Keywords

Dominant strategy: A strategy that produces the optimal outcome regardless of what the other players do.
Game: Players making strategic decisions from an available set of options.
Nash equilibrium: A type of equilibrium that occurs if every player's strategy is optimal given its Competitors' strategies.
Payoff matrix: A table that describes the outcome to each player for each set of strategic choices.
Payoffs: The outcomes associated with a set of strategies. Each player will have a payoff for each set of
alternatives.
Players: The decision-making units that play games. Each player chooses among various strategies or
options.
Zero sum game: A game where the sum of pay-outs is constant, also called a constant sum game.

Self Assessment

1. Which of the following is an example of a game theory strategy?

A. you scratch my back and I'll scratch yours

B. if the shoe fits, wear it.

C. monkey see, monkey do

D. none of the above

2. A game that involves multiple moves in a series of identical situations is called a

A. sequential game.

B. repeated game.

C. zero-sum game.

D. non-zero-sum game.

3. In game theory, a situation in which one firm can gain only what another firm loses is called a

A. non-zero-sum game.

B. prisoners' dilemma.

C. zero-sum game.

D. cartel temptation

4. An oligopolist may engage in short-run behaviour that results in lower profits if

A. it leads to a Nash equilibrium.

B. it is a dominant strategy.

C. it is not involved in a repeated game.

D. it lends credibility to the firm's threats.

5. In game theory, the outcome or consequence of a strategy is referred to as the

A. payoff.

B. penalty.

C. reward.

D. end-game strategy.

6. Which of the following describes a Nash equilibrium?

A. a firm chooses its dominant strategy, if one exists.

B. every competing firm in an industry chooses a strategy that is optimal given the choices of every other firm.

C. market price results in neither a surplus nor a shortage.

D. all firms in an industry are earning zero economic profits.

7. If each player in a game has a strictly dominant strategy, then:

A. the game cannot be played repeatedly.

B. there cannot be multiple equilibria.

C. the Nash equilibrium is Pareto efficient.

D. each player chooses a strategy which gives him the highest payoff, given the strategies chosen by the other players

8. If each player in a game has a strictly dominant strategy, then:
A. there are multiple equilibria.
B. the equilibrium is strict.
C. the game cannot be played repeatedly.
D. the equilibrium is unique.

9. If a strategy is dominated for a player, then:
A. the player would never choose it.
B. it is the player's best choice.
C. there must be more than one pure strategy Nash equilibrium.
D. there must be one pure strategy Nash equilibrium.
10. A prisoners' dilemma is a game with all of the following characteristics except one. Which one is present in a prisoners' dilemma?
A. Players cooperate in arriving at their strategies.
B. Both players have a dominant strategy.
C. Both players would be better off if neither chose their dominant strategy.
D. The payoff from a strategy depends on the choice made by the other player.

11. Which of the following legal restrictions, if enforced effectively, would be likely to solve a prisoners' dilemma type of problem for the firms involved?
A. A law that prevents a cartel from enforcing rules against cheating.
B. A law that makes it illegal for oligopolists to engage in collusion.
C. A law that prohibits firms in an industry from advertising their services.
D. All of the above would be likely to solve a prisoners' dilemma for the firms.

12. Until recently, medical doctors and lawyers have been prohibited from engaging in competitive advertising. If the prisoners' dilemma applies to this situation, then the presence of this restriction would be likely to
A. increase profits earned by individuals in these professions.
B. reduce profits earned by individuals in these professions.
C. have no effect on the profits earned by individuals in these professions.
D. increase the profits of some and reduce the profits of other individuals in these professions.

13. A firm that is threatened by the potential entry of competitors into a market builds excess production capacity. This is an example of
A. prisoners' dilemma.
B. collusion.
C. a credible threat.
D. tit-for-tat.

14. If there is a mixed strategy equilibrium, then:
A. at least one player must not be optimizing.
B. the players must be forgoing better choices in order to achieve coordination.
C. there must be more than one pure strategy Nash equilibrium.
D. the players cannot be choosing Nash strategies.

15. In a mixed strategy, each player should optimize the

A. maximum payoffs.

B. lower value of the game.

C. minimum loss.

D. maximum loss.

Answers for Self Assessment

1.	A	2.	B	3.	C	4.	D	5.	A
6.	B	7.	D	8.	A	9.	A	10.	A
11.	C	12.	A	13.	C	14.	C	15.	A

Review Questions

1. Is a prisoners' dilemma game a zero sum or variable sum game?
2. Is the prisoners' dilemma more of a problem for a one-shot or a repeated game?
3. 'The distinction between risk and uncertainty is uncalled for.' Comment.
4. Can we apply game theory to explain the behaviour of firms in perfect competition or monopoly or monopolistic competition? Give logic to support your answer.

Further Readings

1. Managerial Economics- Principles and Worldwide Applications By Salvatore, Dominick and Rastogi, Siddhartha K., Oxford University Press.
2. Managerial Economics- Economic Tools for Today's Decision Makers by Keat Paul G, Young Philip K. Y, Erfle Stephen and Banerjee Sreejata., Pearson Education, India
3. Managerial Economics by Geetika, Piyali Ghosh, and Purba Roy Choudhary, McGraw Hill Education (India) Private Limited

Unit 09: Indian Economy since Colonialism

CONTENTS

Objectives

Discuss the origins of colonialism

Discuss the calculation of National Income during colonial time

Analyse the components of National Income

Evaluate the development and change in economy

Introduction

India was a direct colony of the British and the impact of this colonial rule over the economy, society and polity of India has been quite deep. Many serious consequences of the British Colonial Rule are still persisting and this makes the study of colonial phase of India very relevant for understanding many contemporary aspects of the Indian society. It must be stated at the outset that direct colonial rule leaves a total impact on the colonized society because every aspect of social life is influenced by colonia policies of the colonizers. A direct colony (as was the case with India) is under the complete control of the colonizers and colonial policies and interests penetrate every aspect of social life of a colony. Another important fact about India is that the colonial rule lasted for a very long time and this longevity of the colonial rule over India affected the vitals of the Indian society. The long period of British rule over India provided enough time to the British to establish strong and stable institutions for the governance of India. The journey of British occupation of India was slow and steady and it passed through various stages. This evolutionary process provided the British an opportunity to evolve their policies and change their policies on the basis of experience gained through practice. But before we go into that, we should have a look at the nature of Indian economy prior to British rule.

9.1 Features of Indian Economy during Colonial Period

In the pre-colonial period India was an agrarian economy with a very strong trade base which provided stability to the economy. The trading system was well developed with well-developed ports and exchange system. We will in the next part look at agriculture and trade in detail.

Agriculture

Agricultural operations were carried on in India by subsistence farmers, organised in small village communities. Village was more or less a self-sufficient economic unit and its business contacts with the outside world were limited to payment of land revenue (generally in kind) and the purchase of a few necessary things from the town nearby. The farmer raised only those crops which he needed for his own use and shared the same with the village artisan who supplied him with simple manufacture that he needed for his domestic consumption. Means of communication were of a primitive type. Therefore, trade in agricultural produce, was somewhat limited. The farmer usually raised enough produce to feed himself and the non-agricultural members of the village community. If his crop yielded more than the consumption needs, due to favourable climatic conditions, he stored that surplus for use in the lean years. Storage of food grains was a common practice among the pre-colonial agriculturists and constituted, under these conditions, the only remedy against famines. This pattern of agriculture continued throughout the medieval times. However, towards the end of the 18th century the village communities began to break up, under pressure from new forces which imparted dynamism to the Indian rural economy. This happened mainly because of two factors, (1) The change in the property relations brought by the introduction of new forms of land tenure which you will study a little later in this unit, and (2) the development of an active export trade in agricultural produce of India. The contact with the west through the establishment of the British rule was responsible for both these developments.

Trade

Although the Indian villages were largely self-sufficient units, and the means of communication were primitive, India enjoyed extensive trade both within the country and with other countries of Asia and Europe. A balance of the imports and exports was maintained. The items imported into India were pearls, wool, dates, dried fruits and rosewater from the Persian Gulf; coffee, gold, drugs and honey from Arabia; tea, sugar and silk from China; gold, musk and woolen cloth; metals like copper, iron and lead, and paper from Europe. The main items exported from India were cotton textiles. Besides cotton textiles which were famous the world over, India also exported raw silk, indigo, opium, rice, wheat, sugar, pepper and other spices, precious stones, and drugs. The major features of Indian trade in pre-colonial times were (i) a favourable balance of trade and (ii) a foreign trade most suitable to the level of manufacturing in India. A favourable balance of trade meant an excess of exports over imports, i.e., India exported more than it needed to import. Since the economy was overall self-sufficient in handicrafts and agricultural products, India did not need imports on a large scale and continued to enjoy a healthy trade. Secondly, India's foreign trade suited its requirements very well. In other words, the commodity pattern, so important to any country's foreign trade, was in India's favour. India exported the items it specialised in; and imported the ones it needed. One major change that occurred in India's foreign trade from pre-colonial to colonial times was in its commodity pattern. Although India continued to have an export surplus, the pattern of foreign trade turned upside down. For instance, from an exporter of cotton textiles, India was converted into an importer of cotton textiles, thereby ruining India's rich traditional handicrafts.

Handicrafts

As discussed above India was a land of extensive manufactures. Indian artisans were famous for their skills the world over. In fact, the reason for India's favourable foreign trade was its excellence in indigenous production. India indulged in a large-scale manufacture of cotton and silk fabrics, sugar, jute, dyestuffs, mineral and metallic products like arms, metal wares and oil. Towns like Dacca and Murshidabad in Bengal; Patna in Bihar; Surat and Ahmedabad in Gujarat; Chanderi in Madhya Pradesh; Burhanpur in Maharashtra; Jaunpur, Varanasi, Lucknow, and Agra in U.P.; Multan and Lahore in the Punjab; Masulipatnam, Aurangabad and Visakhapatnam in Andhra; Bangalore in Mysore and Coimbatore and Madurai in Madras were flourishing centres of textile industry. Kashmir specialised in woolen manufactures. Maharashtra, Andhra, and Bengal were prominent centres of ship building industry. India's ships were bought by many European companies for their use. India, towards the end of the 18th century was, undoubtedly one of the main centres of world trade and industry. This status of India was completely destroyed under colonial times. Its beginnings can be traced to the aftermath of the industrial Revolution in England. The machine-made cloth of England began to replace the indigenous manufactures. India's artisans were forced out of production. It was this pressure from the British goods which led to the decline of the traditional India's centres of economic activity listed above. The number of weavers also declined.

9.2 Evolution of Colonial Rule

The British East India Company got a legal charter for trade from the Mughal ruler in 1600, and soon this trading company started conquering India. The conquests began in 1757 with the defeat of the Nawab of Bengal by Robert Clive. The East India Company ruled India for a century, i.e., from the decisive Battle of Plassey in 1757 to 1857 when Indians fought a war of independence. The British defeated the Indians in this war and in 1858 Queen Victoria assumed the responsibility of direct rule over India. The rule of East India Company ended and the British Parliament became directly responsible for the governance of India and this continued till 1947.

9.3 Impact of British Rule

Destruction of Indian Handicrafts

The Industrial Revolution in England created a serious impact on Indian economy as it reversed the character and composition of India's foreign trade. This led to destruction of Indian handicrafts although there was no substantial growth of modern factory industry.

The factors which were responsible for the gradual decay of Indian handicrafts were—disappearance of princely courts and their patronage, aggressive trade policy of the East India Company and the British Government, increasing competition of British machine—made goods and increasing demand for Western commodities as a result of foreign influence.

The destruction of Indian handicrafts created a vacuum in Indian markets which was subsequently fed by British manufactured goods. The destruction of Indian handicrafts led to serious unemployment problem and the weavers were most seriously affected.

Moreover, this unemployed craftsmen and artisans could not find any alternative occupation open to them and thus they had to return to agricultural sector leading to 'progressive ruralisation of India'. Thus, this dependence of population on agriculture gradually increased from 55 per cent in 1901 to 72 per cent in 1931 and this led to progressive sub-division and fragmentation of agricultural holdings.

New Land System

New land system of the British ruler also created a serious impact on the Indian economy. During the East India Company rule, the company administrators imposed land revenue at exorbitant rates and thereby realised larger returns from land.

Thereafter, the British Government introduced the land settlement in 1793. Permanent settlement was introduced in Bengal and other neighbouring areas, and then gradually extended to other states. This settlement led to introduction of zamindary system where zamindars were responsible for collecting and remitting the land revenue to the British rulers.

Later on, another system known as ryotwari settlement was also introduced in Bombay and Madras and then subsequently to north-eastern and north-western India where peasant landlords were directly responsible to the state for the annual payment of land revenue.

Under both these systems, the land revenue or the rent fixed was excessively high and this led to destruction of the organic village community in India.

In this connection, Daniel and Alice Thorner wrote, "Whereas the zamindary system made the landlords masters of the village communities, the Ryotwari system cut through the heart of the village communities by making separate arrangement between each peasant cultivator and the state".

Thus, the new land system of the British created a class of absentee landlords making way for exploitation of the peasants. Thus, both the zamindary system and the Ryotwari system introduced by the British led to the concentration of economic power in the hands of few. This resulted total depression in agriculture and industry.

Commercialisation of Agriculture

Commercialisation of Indian agriculture during the British period created a serious impact on the Indian economy. Commercialisation of agriculture indicates production of various crops not for

home consumption but for sale. Industrial revolution in Britain had raised the demand for agro-raw-materials, especially raw cotton, jute, sugarcane, groundnuts etc. for British industries.

As the British industries were offering higher prices for commercial crops the peasants gradually started to shift their cropping pattern substituting commercial crops for food crops. In some areas commercialisation of agriculture reached to such an extent that the peasants even could not produce food crops for their home consumption and started to purchase foodstuff from the mandis. Moreover, the development of irrigation also intensified the commercialisation of agriculture in India.

Development of Railway Network

The development of an elaborate railway network primarily intensified the commercialisation of agriculture and on the other hand brought foreign machine made manufactures to India. This sharpened the competition of machine made goods with Indian handicrafts which resulted into total destruction of Indian handicrafts industry.

Occurrence of Famines

Indian economy was facing occurrence of famines too frequently during the British rule. Commercialisation of agriculture reduced the production of food grains by transferring land from the cultivation of food crops to non-food crops like industrial raw materials. The new land system worked as a built-in-depressor as it retarded the process of agricultural development.

Moreover, the destruction of Indian handicrafts increased the pressure of population on land. All these led to frequent occurrence of famines in India causing untold misery and suffering for the Indian cultivators and general people.

Transforming Trade Pattern

Colonial exploitation of the Indian economy by the British transformed the pattern of trade in India to become an exporter of raw materials and foodstuffs and an importer of manufactures. Moreover, colonial exploitation through the entry of British capital and finance capital and also through the payment for the costs of administration led to huge economic drain of India weakening the base of Indian economy. Thus, the British rule in India was a long history of systematic exploitation of Indian people by the imperialistic Government.

9.4 National Income of India in Pre-Colonial Era

National income is an important indicator of a country's economy. It tells about the income generated by the various sectors allocation of resources and about their utilization. The idea of national income can be traced back to the 17th century when Sir William Petty of England made the first known estimate in 1665. Gregory King followed Petty in giving a breakdown of national income, as well as aggregate figures for 1688. His estimates included the national income, the national expenditure, and the national saving as well as the distribution of these aggregates among the different social and occupational classes.

In France, Boisguilleberts introduced the concept of measurable national income and prepared the first estimate of national income of his country in the last quarter of seventeenth century. A number of estimates were published during the 18th and the 19th century by different researchers for England, France and some other European countries. England was, however, the acknowledged leader in this field. This tendency of preparing estimates of national income continued for the first two decades of the 20th century. England was, however, the acknowledged leader in this field. This tendency of preparing estimates of national income continued for the first two decades of the 20th century. In United States the initial estimates were made only in 1843 by George Tucker. Adam Smith, Karl Marx, Alfred Marshall, A.A. Walras and J.M. Keynes laid the modern theoretical groundwork for national income analysis.

In the inter-war decades of the twenties and thirties, national income estimates were stimulated by the problems of reconstruction and the Great Depression. In 1918, estimates were being prepared for 13 countries, and by 1939 for thirty three countries. Most of these were private efforts, with aids from non-governmental institutes. Among the pioneering individuals are Simon Kuznets in the U.S., Colin Clark in England and Ragnar Friesch in Norway.

National Income Estimates of India in Pre-Independence Era

The estimate of National Income in India was, for the first time, prepared by Dada Bhai Naoroji for the year 1867-68. Since then, various estimates have been prepared from time to time by different persons. Estimates for seven points of time are available for the second half of the 19th century and 35-point estimates are available for the pre-independence period of the 20th century. In addition, a few time-series estimates have been prepared for the first half of the 20th century or a part of the period. The following table gives certain broad details about the more important of the estimates prepared by different researchers

Author	Territory covered	Year when attempted	Year for which estimated	Per Capita Income (Rs.)
1. Dr. Dada Bhai Naoroji	British India	1876	1868	20
2. Baring and Barbour	"	1882	1882	27
3. Lord Curzon	"	1901	1897-98	30
4. William Digby	"	1902	1899	18
5. F.G.Atkinson	"	1902	1875	27.3
6. F. G. Atkinson	"	1902	1895	35.2
7. Sir B. N. Sarma	"	1921	1911	50
8. Findlay Shirras	"	1922	1921	107
9. Shah and Khambhata	Whole of India	1924	1921	74
10. Wadia and Joshi	British India	1925	1913-14	44.3
11. Vakil and Muranjan	Whole of India	1926	1910-14	58.5
12. V. K. R. V. Rao	British India	1938	1931-32	62

Source: Rao, V.K.R.V., (1940), The National Income of British India, 1931-32, Pub: Macmillan and Co. London, p.2

Measurement of National Income in Colonial India

Agriculture, plantations, mining and modern factory-based production has detailed production statistics. The production figure was derived by multiplying the total cropped area with estimated yield.

Estimated yield = Normal or "Standard Yield" x condition factor

Condition factor = index of the quality of the season

It has been debated that there was a downward bias in the condition/seasonality index but there is a consensus that if there was a 'bias' then it was offset by possible over-estimation of 'standard yield'. For all the other sectors, income method was followed. In Public Administration, employment was multiplied by standard earnings. Employment was taken from decennial census. Average wages of people employed in small scale industry was taken.

Table 9.1 Growth Rate of Real National Income

Time	National Income	Population	Per Capita Income
1860-85	1.76	0.53	1.23
1885-1900	1.01	0.55	0.46
1900-1914	1.45	0.45	1.00
1914-1947	1.14	1.08	0.06

Table 9.1 presents estimated growth rates of national income for different sub periods. Different authors produced these estimates using slightly different methods. But the basic conclusion is not too sensitive to the variations. Between 1865 and 1920-25 growth rates of total income and average income are positive and attained *Sources:* M Mukherjee, (1965), Heston, S Sivasubramonian (2000)

quite respectable levels by international comparison. Between 1920-25 and 1947 national income grew at approximately 1% per year, which rate, when adjusted for population growth yielded near zero per cent rate of growth of average income. The pace was unquestionably slow in relation to what was needed for a rapid improvement in living standards, in relation to growth rates of post-independence India, and by selective international comparisons. By contrast with income growth,

rates of employment did not change between these 2 regimes. Average annual growth rate of employment was 0.5% between 1875 and 1900 and 0.5% between 1919 46 however the same rate in two periods had different meanings between the growth rate of output and income decelerated. The first lesson from national income statistics therefore is that pre-war phase of expansion had come to an end shortly after World War I coinciding with a decisive upward turn in the population curve.

9.5 Sectoral Analysis of National Income

Between 1900 and 1947 the share of non-agriculture in national income was increasing (Table 9.2 and Table 9.3). The extent of increase was small in the first quarter of the century, and greater in the second quarter. the employment share of major sector shows no significant trend. What direction there was between sub periods cannot be trusted to be completely authentic, given the many difficulties of reading the occupational statistics of the senses. Still there is some sign here that the employment shares changed in the same direction as the income shares. Were good industry industrial income data available from 1875 and 1900 we might find that agriculture gained and industry loss between 1875 and 1900, since the period saw increased present expose and possibly some loss of craft employment. On the other hand, agriculture loss in industry gained between 1925 and 1946, in terms of both income and employment. But there was number precise overlap between the trends in income share and trends in employment share. In short, movements of people between agriculture and non-agriculture occurred more slowly than did changes in their relative productive power.

Table9.2 Growth of Non-Agricultural Sectors

	Industry		Other Non-Agricultural Sectors
	Large Scale	Small Scale	
NDP (in millions			
1900	298	1400	4237
1925	845	1838	6938
1946	2173	1732	8979
NDP Per Worker (in Rupees at 1938-39 price			
1900	2249	489	224
1925	1976	727	355
1946	2812	514	375

Sources: Sivasubramonian, National Income; Statistical Abstract for British India

National income can be seen as an aggregate of different types of goods and services. Conventionally four main types are distinguished consumption goods, capital goods, net export and goods and services purchased by the government sector. This breakup is shown in table 9.4. The table shows that colonial India was Annette exporter at a small government invested little and was characterised by a high proportion of consumption in national income.

National income per head captures an average. To make sense of what people really earn and how much they consumed we need to look at wage and earnings of play interest are the poor, or the wage earners for the form most earners.

Table: 9.3 Sectoral Share of National Income (in %)

	1900	1925	1946
Agriculture	51	42	40
Industry	11.5	13	17
Modern	2.5	5	11
Small-scale	9	8	6
Others	37.5	45	43
Total	100	100	100

Source: S Sivasubramonian, National Income of India

Table 9.4: Components of National Income, 1900-1946

	1901–13	1930–1939	1940–1946
National Income	100	100	100
Net exports of goods and services	3.4	1.4	–
Investment	6.9	9.3	7.3
Purchases by the government	5.4	3.5	4.3
Consumption	84.3	85.7	_

Source: Tirthankar Ray, 3rd ed. 2000

9.6 Economic change in India

In 1947, British colonial rule in South Asia ended and the regions of the creation of several independent nations principally India, Pakistan and Sri Lanka. The map of the region was redrawn in 1971 with the birth of Bangladesh. The partition of India has been a traumatic episode involving the largest forced migration the world had seen affecting possibly a million people and on the Bengal frontier generating the dislocation that continued on a milder scale for many years. When the dust settled, and the immediate economic and human crisis subsided, the new government began to design strategies of economic development. In the Indian Union these discussions had roots going back to internal debates within the Congress late in the inter war period, rethinking on Indian development in temporary circles and even further back to the formation of an economic nationalism.

Three Phases

Most analysis of economic development of post-colonial India would divide the 70 odd years that distance 2020 from 1947 into several segments. There is no agreed convention and cutting up the whole-time span into bite size pieces, though quite often the implicit intention is to suggest that post reform India is a qualitatively different entity from the pre reform one. The aim is to suggest that, after the statist-autarkic regime often mistakenly designated as ***Nehruvian*** has ended, India experienced a pattern of economic growth unprecedented in its history. On this principle, the big dividing line falls in 1992 when some of the most dramatic reforms were undertaken. However, other analysts observe that such a sharp disjuncture misreads the gradualist element in the process and overlooks a built up that had begun in the 1980s. Nevertheless, one break falling somewhere between 1985 and 1992 seems to be an order. What was the regime like before the 1980s?

Although the epithet, Nehruvian is sometimes loosely applied to the entire pre reform era, serious students of the Indian development would consider adding a dividing line in the mid-1960s when a relatively stable pattern of state planned industrialization, under the leadership of Nehru was

derailed by a series of external domestic shocks. The 1970s followed this phase with its own kind of oil shocks. During much of the 20 years that spanned the beginning of this unstable phase at the beginning of the economic reforms, the Prime Minister of India was Indira Gandhi who became the head of state soon after death of Nehru in 1964. It can be argued persuasively that her role lead to economic structure that was quite different from the one Nehru had wanted, being more rural biased and more state control. Gandhi in other words was hardly Nehruvian herself. It was only in the early years of the 1980s that a few hesitant steps to reform the system were taken but Mrs Gandhi did not live long enough to assess the effects of these reforms to consider a more decisive change of direction either forward or backward.

Falling up this line of thought this part is divided into post-colonial India into 3 segments -1950 to 64 phase I, 1965 to 85 Phase II and 1986 to 2020 phase III.

Phase I- Birth of a regime (1950 to 64)

Policy

Already before independence intellectuals close to Congress, business leadership and writings that emanating from the national stable had expressed desire for plan industrialization. There were points of disagreement between these groups but one shared ground was a need to restrain trade and implement import substitution. In 1938 document of national planning committee of Congress set out state planning as a principle means available for managing development in industrialization. The document expressed Nehru's vision of India though it was prepared by a team of Congressman, principally Subhash Chandra Bose. The Bombay plan document of 1944 was prepared by seven leading industrialists of the city saw the main form of government regulation to come in the shape of protective tariffs. It proposal broadly deregulated domestic economy but allowed scope for public investment in industries of strategic importance. There was however another stand within the Congress the one inspired by Mahatma Gandhi with in fluent in Hindi bold vocal following among the business leadership of Ahmedabad. This approach considered that rural regeneration should be the main goal of development and saw the village community as a good tradition threatened by industrialism for stop internal debates on policy leading up to the first five-year plan in 1950 so repeated conflicts comprise between these two visions. The intellectual rules of protectionism can be traced to number of sources outside India in the Congress. With the world economy in disarray after the Great Depression in World War II faith and trade and investment as instruments of development was at lowest ebb. In the newly created discipline of development export pessimism want to the argument that poorer countries that have specialised in the export of primary goods for vulnerable to price fluctuation a long time decline in the relative price of primary goods sold stop globally the 19th century European examples of protected industrialization the infant industry the ideology of the Soviet example had much appeal. The public face of nationalism held that free trade and non-interventionist state, both tenets of classical political economy to which the colonial government adhered, had de-industrialised India, impoverished its people and drained its resources. Within analytical development economics varied forms of indirect sanction to state lead industrialization strategy could be found, from theories of balanced growth economic development with unlimited supply of labour; all of these identified economic development with the policy of raising aggregate investments by discrete jump, a step that would be impossible with exclusive reliance on the capital market.

Crisis contradiction and Critique: 1965-1985

Policy

The 1960s ended the consolidation of power of Mrs. Indira Gandhi. The famine had underscored the dismal state of the rural poor who had voted her to power. It was her turn to do them a favour. The policy of ***Garibi Hatao*** was implemented which increased the supply of public goods in the rural areas. Infrastructure was taken to the remotest part of the country to have a spillover effect in other parts.

In the sphere of industry and labour, more restrictions were imposed. The role of the state was magnified, and a more socialistic approach was adhered to. In 1969, 14 banks were nationalized in the name of having more resources at the disposal of the state to improve the conditions of the masses. In 1972, the insurance sector went through the phase of nationalization. Regional Rural Banks were established which made along with the nationalisation of banks led to the fourfold increase in the number of branches between 1969 and 1981.

Monopolies and Restrictive Trade Practices Act was introduced in 1969 where an `upper cap was set to stop the big firms from growing beyond a certain a size. In the later half of 1970s, amidst

political uncertainty a lot of private enterprises were nationalized which were troubles. The tariff rates were exorbitant, and the exporters were compensated with export bonus for overvalued exchange rate.

In 1966, devaluation of rupee was done which was hailed by a segment of economists as forward looking and market friendly. However, the positivity was short lived as industrialists and trade unions were unwilling to accept a pro-market open regime. The general stance of Parliament towards foreign investment was hostile during this period.

With all these twists and turns, Phase II produced the worst performance by every benchmark. If oil is expected, India's trade was pushed together greater insularity. Since exports did not pay for foreign loans and foreign investment was negligible, the major part of the new aid contracted went into debt service. Over and above of persistent exchange shortage, there began a seemingly permanent downwards slide in average growth rates. The downward drift of GDP growth owed to industrial stagnation. Growth rates in manufacturing have been 7% per year between 1956 and 1966 and dropped to less than 5% in 1966-75. The decline being lasting one, it could not be explained by the variable usually invoked to explain short term fluctuations such as crop failure or budgetary crisis leading to sudden changes in government investment.

Transition: 1986 to 2020

Policy and Performance

There was a definite transition from a centralised policy making to decentralised policy making, from state owned businesses to privately owned businesses. Today Government of India brought about a changes in the policy making because of the debacles of the 70s which included the oil crisis. There was exchange foreign there was foreign exchange problems which led to the loan from IMF in the early 80s which included structural changes in the economy. In 1984 with the change in regime head at the centre there was more liberalization introduced, with industries being included in the open general license list relaxation in the MRTP Act, relaxation in the textile act and other areas where the state took a back step and let the private entrepreneurs take over. We look at the rate of growth of the GDP we find that there was a marked increase in the mid 80s when we moved out of the so called Hindu rate of growth. However this optimism was short lived and in the late 80s the GDP growth rate dipped and the exchange crisis reached its zenith with the Government of India pawning its gold to get money. The structural reforms introduced in the new economic policy of 1991 was the first hand and not a conscious decision of the state. However there was a growing demand for liberalising the economy as the growth rates of the South Asian countries was edging towards a more privatise liberalised economy which would help the private businesses. Only the statistic cannot show the structural break in the growth rates and from there to derive the policies responsible for it, a broader outlook of how the economy performed during the socialist era and the lessons learned have to be imbibed in the narrative.

The open economy regime saw considerable success in the export of manufacturing and notably, export of skilled services showing up in the invisible account of the balance of payments. Foreign investment flows increased more than 20 times over between 1990 and 2008 and its character changed from mainly investment in firm ownership to mainly technological collaboration. On the other hand, the liberal regime saw, for better or worse, a retreat of the state from industrial investment even infrastructural investment even though foreign concessional loans which in recent years flowed into infrastructure and public goods, partially compensated for the retreat.

The problem of state finance afflicted the regional state governments especially badly. In the first half of the 1990s, the fabric of federalism, so far held together by dominant government at the center, became strained as coalition of regional parties called the shots in the new regime. Problems owed to combination between the legacies of phase two and the reforms themselves. The major part of the state's own tax income was derived from the sales tax which were often waived in a competitive bid to attract industry. The states' power to borrow was limited and was curbed in the early 1990s. Division of assistance was based upon distributional rules that gave greater weight to poverty and levels of backwardness in effect discriminating against fiscal and economic health. Some of the industrially endowed states paid the price for the reckless nationalisation of bankrupt enterprises, and expansion in public undertakings, that they had indulged in phase two.

The intense focus in phase I on industrialization and in phase II upon rural infrastructure and subsidies had left in neglect roads, railways, ports, electricity, telecommunication, financial services, schools, and hospitals. Quantity of service providers had grown but the quality of service had become steadily poorer. Much of this infrastructure was in charge of the states who found

themselves bankrupt, at least partly owing to the fiscal burden that rural development and providing security to rural incomes imposed on them.

Connected with the fiscal and regulatory policy issue, there was also evidence of an increased regional inequality. Foreign investment was originally biased. Regions with a higher capital endorsement were more attractive destinations for both domestic and foreign capital. There was also perhaps increase in personal income inequality.

Summary

The economy of India went through many changes in the past centuries- from a trade dominated collection of states to an agrarian state under the rule of various rulers and plunderers. During the colonial period the economy became more organised and people were skilled in areas which were beneficial for the British. National Income was calculated to show the drain of wealth and the contribution made by locals and their share in the allocation. It was only after independence that formal calculation of national income was started. In terms of sectoral share in National Income, agriculture slowly came down, with the increase of the share of the secondary and tertiary sector. The transmission of the sectors has been gradual but not in terms of developing countries. The tertiary sector grew at a much faster rate than the secondary sector.

Keywords

National Income: It is the value of the goods and services produced by a country in a year along with the net income from abroad.

Liberalisation: Liberalisation is the process or means of the elimination of control of the state over economic activities. It provides a greater autonomy to the business enterprises in decision-making and eliminates government interference.

Privatisation: Privatization is the transfer of publicly owned or publicly operated means of production to private ownership or operation.

Globalisation: Globalization is the spread of products, technology, information, and jobs across national borders and cultures. In economic terms, it describes an interdependence of nations around the globe fostered through free trade.

State: State is a polity that maintains a monopoly on the legitimate use of violence

Self Assessment

1. Who among the following first cited the 'Drain of Wealth' in his book?
   A. Dadabhai Naoroji
   B. RC Dutta
   C. Jadunath Sarkar
   D. None of the above

2. The East India Company made a concerted effort to transform India's society and Institutions to reflect British tastes.
   A. True
   B. False

3. Which of the following industries was destructed by the British rule?
   A. Railways
   B. Handicrafts
   C. Agriculture
   D. Brick making

4. Did imperialism have the power to de-industralise India?
   A. True
   B. False

5. Who among the following introduced Ryotwari System in India?
   A. Lord Cornwallis
   B. Thomas Munro
   C. Warren Hasting
   D. Lord Wellesley

6. Permanent Settlement system was introduced in which year?
   A. 1791
   B. 1792
   C. 1793
   D. 1794

7. The permission for the establishment of Railways was given in which year?
   A. 1856
   B. 1845
   C. 1875
   D. 1846

8. Where was the Permanent Settlement firstly introduced?
   A. Orissa (Odisha) and Bengal
   B. Orissa (Odisha) and Andhra Pradesh
   C. Bengal and Bihar
   D. Orissa (Odisha) and Bihar

9. After the Great Depression of 1930s, the real wages in Indian agriculture remained stagnant for how long?
   A. 10 years
   B. 20 years
   C. 30 years
   D. Cannot say

10. Who was the first to estimate National Income of India?
   A. M. N Roy
   B. G D Birla
   C. Dadabhai Naoroji
   D. Ram Manohar Lohia

11. The early estimates of National Income used what as the base?
   A. Land estimates
   B. Labour employed
   C. Census data
   D. None of the above

12. Which method was common in estimating National Income in India before independence?
   A. Production Method
   B. Income Method

C. Expenditure Method
D. All the above

13. Which of the following was not an obstacle in the estimation of National Income?
    A. Deficiency of data on natives
    B. Predominance of informal activities
    C. British officers
    D. Bias towards revenue generating activities

14. Which sector contributed the most to the National Income in the pre-independence period?
    A. Industry
    B. Agriculture
    C. Trade
    D. Small Scale sector

15. During colonial India, poverty increased in the country
    A. True
    B. False

Answers for Self Assessment

1.	A	2.	A	3.	B	4.	A	5.	B
6.	C	7.	B	8.	C	9.	C	10.	C
11.	A	12.	B	13.	C	14.	B	15.	A

Review Questions

1. Did the industralisation of India suffer because of colonial rule or was it the consequence of the colonial rule? Discuss.
2. The socialist pattern of growth during the second phase was far away from the Nehruvian model. Discuss
3. Explain the various components of National Income during the colonial period.
4. Write a note on Phase I of the Indian economy.
5. In the current context, is there a need to correct the economic policy where the role of the state needs to be relooked at. Discuss.

Further Readings

B R Tomlinson, The Economy of Modern India: From 1860 to The Twenty First Century, Cambridge University Press.

Tirthankar Roy, The Economic History of India: 1857-1947, Oxford University Press

Unit 10: Human Development

CONTENTS

Objectives

- Describe the concept of Human Development
- Discuss the Human Development Index
- Analyse the features of developing countries
- Discuss the state of Human Development in India

Introduction

The World Bank classifies the countries into four categories based on purchasing power parity or PPP as it is popularly known as. This classification is based on the economic development of the country but fails to show the distribution of the income. The per capita income indicator of development is criticised because it is just an average and as per statistical rules it is affected by outliers. If someone is interested to know the well being of individuals of a country, then she has to turn to HDI as it is an index that measures human development. Prior to 1990, there was no measure for human development. It was only after 1990 that United Nations Development Program (UNDP) started measuring the human development index for all the countries and ranking them. It forced the countries to work on these indicators so as to improve their ranks. It is an approach that is focused on people and their opportunities and choices.

People: human development focuses on improving the lives people lead rather than assuming that economic growth will lead, automatically, to greater wellbeing for all. Income growth is seen as a means to development, rather than an end in itself.

Opportunities: human development is about giving people more freedom to live lives they value. In effect this means developing people's abilities and giving them a chance to use them. For example, educating a girl would build her skills, but it is of little use if she is denied access to jobs, or does not have the right skills for the local labour market. Three foundations for human development are to live a long, healthy and creative life, to be knowledgeable, and to have access to resources needed for a decent standard of living. Many other things are important too, especially in helping to create the right conditions for human development, and some of these are in the table below. Once the basics of human development are achieved, they open up opportunities for progress in other aspects of life.

Choice: human development is, fundamentally, about more choice. It is about providing people with opportunities, not insisting that they make use of them. No one can guarantee human happiness, and the choices people make are their own concern. The process of development – human development - should at least create an environment for people, individually and collectively, to develop to their full potential and to have a reasonable chance of leading productive and creative lives that they value.

As the international community moves toward implementing and monitoring the 2030 agenda, the human development approach remains useful to articulating the objectives of development and improving people's well-being by ensuring an equitable, sustainable and stable planet.

10.1 Human Development and its Approaches

Meaning of Human Development

The human development aims to enrich people's lives by widening their choices. Through investing in people, in terms of education, health, safety, and so on, this discipline attempts to build human capability. Capability is basically what people are actually able to do and to be. Equality, sustainability, productivity, and empowerment are the four pillars of human development. This approach emphasizes the belief that though economic growth is essential, its quality and distribution determine the extent to which it enriches people's lives in a sustainable manner. The attempt is to create an environment in which people can enjoy long, healthy, and creative lives. The idea of human development is also linked with the concepts of rights, liberty and justice.

Seeing humans as ends of development process was not the sole purview of human development paradigm. The UN Declaration on Human Rights (1948) put forward that all humans should be free and equal in dignity and rights, such as the right to work, the right to education, the right to health, the right to vote, the right to non-discrimination, the right to decent standard of living etc. It was written in the hope that the atrocities committed during the Second World War would never be repeated. There are significant connections between human rights approach and that of human development and capability. According to the Human Development Report (2000), "Human Rights and Human Development share a common vision and a common purpose – to secure freedom, wellbeing and dignity of all people everywhere". A human right is claimed to be a fundamental benefit that should be enjoyed universally by all people everywhere based on equality and non-discrimination.

The evolution of the concept of human development can be traced to the writings of renowned thinkers and philosophers of ancient times. Aristotle, the great philosopher reflected in his writing that "wealth is not the good that we are seeking for; it is merely for the sake of something else". Another great philosopher, Immanuel Kant argues that human beings are ends in themselves, rather than the means to other ends. Adam Smith, Robert Malthus, Karl Marx, John Stuart Mill, and many other modern economists have also come forward with the similar idea of treating human beings as the real end of all activities. However the undeniable reality is that human beings are the beneficiaries of progress, and, at the same time, they are directly or indirectly, the primary means of production.

Thus, human beings are the means through which a productive progress is brought about.

Human Development has been accepted in development economics literature as

- An expansion of human capabilities
- A widening of choices
- An enhancement of freedoms
- A fulfilment of human rights

Approaches to Human Development

The human development approach is inherently multidimensional. The central goal of human development is to enable people to become direct agents in their own lives. People are not passive objects of social welfare provisions but are active subjects with the power to determine how they choose to live. They should be empowered so that they can define their respective priorities, as well as choose the best means to achieve them. Thus, agency and expansion of freedom go hand in hand. In order to be agents of their own lives, people need the freedom to be educated, to speak in public without fear, or have freedom of expression and association.

The four main pillars of human development are

i. equity
ii. efficiency and productivity
iii. participation and empowerment
iv. sustainability

Equity: The principle of equity encompasses the ideal of equality whereby all human beings should have equal rights and entitlements to human, social, economic, and cultural development, and an equal voice in civic and political life. It also recognizes that those who have unequal opportunities due to various disadvantages may require preferential treatment, or affirmative action. For example, the utility derived from same levels of income or investment will vary for different individuals, depending upon their personal attributes, initial endowments or conversion factors, which facilitate transformation of inputs into outcomes. Since the opportunities available to different sections of society vary, ensuring that the sections deprived of basic opportunities such as health and education are provided access to these benefits, is the goal of equality. Thus, equity aims at equality, not only of economic resources, but of education, health, employment opportunities, democratic participation, etc, too. Realization of the goal of equal opportunities leads to equity outcomes.

Efficiency and Productivity: Efficiency is defined as the least costly method of reaching goals through the optimal use of human, material, and institutional resources to maximize opportunities for individuals and communities, thereby enhancing productivity. Efficient use of scarce national resources leads, for instance, to the building of infrastructure like roads and dams, which in turn lead to better outcomes for human beings. Productivity can be enhanced through efficient use of resources. It also requires investment in people and enabling macroeconomic environment for them to achieve their maximum potential. For human development, people must be enabled to increase their productivity and to participate fully in the process of maximizing opportunities so that they become effective agents of growth.

Participation and Empowerment: Participation and engagement in social and political life is an important aspect of human development. People's participation is crucial in community programmes and government interventions. Mobilization of grassroots support through decentralization in planning will increase people's participation in decision making because it brings government closer to people. Participation also enables people to seek answers from authorities and can go a long way in improving the quality of social service delivery. It pressurizes local authorities to take swift remedial action in situations where gaps or shortfalls are identified in the functioning of institutions. Empowerment can occur through enhanced participation and involvement. For instance, reservations of women in various elected bodies are made to empower them through such participation. Involvement of parents, guardians and/or communities in village education committees is another example.

Sustainability: Human development questions the long-term sustainability of economic growth and aims to ensure that resources are utilized in a manner that meets present day human needs while preserving the environment, so that the needs of future generations can also be met with. Hence, use of resources without degrading the environment is essential to ensure that the improvements made are not temporary in nature and have the potential for future growth as well. For instance, if the development process does not create institutions that are supportive of people's rights, it cannot be sustainable in the long run.

10.2 Capability Approach to Human Development

The human development approach has been profoundly inspired by Amartya Sen's pioneering works in welfare economics, social choice, poverty, and famine and development economics. While Sen's works cover an extremely wide range of topics, his 'capability approach' has led to a critical evolution in the field of economics, and in social sciences in general. The roots of the capability approach go back to Aristotle, Adam Smith, and Karl Marx. Aristotle made extensive use of his own analysis of human beings and linked it with his examination of the functions of man. Adam Smith and Karl Marx discussed the importance of functioning's' and 'capability' as determinants of well-being. If life is a set of doings and beings that are valuable, the exercise of assessing the quality of life takes the form of evaluating these functioning's and the capability to function.

But what actually are 'capability' and 'functioning'? According to ***Amartya Sen***, "***Capability is a vector of functioning's, reflecting the person's freedom to lead one type of life or another….to choose from possible livings"***. In other words, capabilities are the substantive freedoms he, or she, enjoys leading the kind of life he, or she, has reason to value. Just as a person with a pocket full of coins can buy many different things, a person with many capabilities can enjoy many different activities and pursue different life paths. Functioning's are valuable activities and states that constitute people's wellbeing such as healthy body, being safe, being educated, and so on. Functioning is, thus, an achievement of a person: what he or she manages to do, or to be. For example, when people's basic need for food is met, they enjoy the functioning of being well nourished. Apart from capability and functioning, the third core concept of the capability approach is "agency". It refers to a person's ability to pursue and realize goal she, or she, has reason to value.

However, ***Martha Nussbaum*** argues that Sen's 'Capability Approach' is incomplete. Since what people consider to be valuable and relevant can often be the product of structures of inequality and discrimination, and because not all human freedoms are equally valuable – for example, the freedom to pollute is not of equal value to the freedom to care for the environment - she argues that one needs to overcome these limitations, and to go beyond this ambiguity, so that equal freedom for all can be respected. In this context she has proposed a list of ten central human capabilities which constitute the evaluative space for public

policy.

The capability approach advocates the removal of obstacles in people's lives, increasing their freedom to achieve the functioning that they value. It recommends progressive social policies which would foster the development of human capabilities, such as improved health, knowledge, skills and also ensure equitable access to human opportunities.

10.3 Human Development Index

The HDI was created to emphasize that people and their capabilities should be the ultimate criteria for assessing the development of a country, not economic growth alone. The HDI can also be used to question national policy choices, asking how two countries with the same level of GNI per capita can end up with different human development outcomes. These contrasts can stimulate debate about government policy priorities.

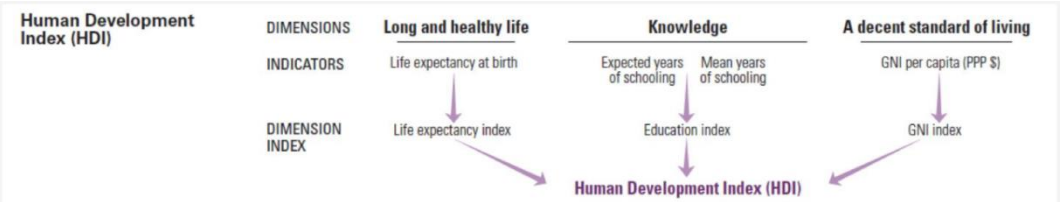
The Human Development Index (HDI) is a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and have a decent standard of living. The HDI is the geometric mean of normalized indices for each of the three dimensions.

The health dimension is assessed by life expectancy at birth, the education dimension is measured by mean of years of schooling for adults aged 25 years and more and expected years of schooling for children of school entering age. The standard of living dimension is measured by gross national income per capita. The HDI uses the logarithm of income, to reflect the diminishing importance of income with increasing GNI. The scores for the three HDI dimension indices are then aggregated into a composite index using geometric mean.

The HDI simplifies and captures only part of what human development entails. It does not reflect on inequalities, poverty, human security, empowerment, etc. The HDRO offers the other composite indices as broader proxy on some of the key issues of human development, inequality, gender disparity and poverty.

A fuller picture of a country's level of human development requires analysis of other indicators and information presented in the statistical annex of the report.

Fig. 10.1 Human Development Index



Source: UNDP

Steps to Calculate Human Development Index Values

There are two steps in calculating the HDI.

Step 1. Creating the dimension indices

Minimum and maximum values (goalposts) are set in order to transform the indicators expressed in different units into indices between 0 and 1. These goalposts act as "the natural zeros" and "aspirational targets", respectively, from which component indicators are standardized (see equation 1 below). They are set at the following values:

Dimension	Indicator	Minimum	Maximum
Health	Life expectancy (years)	20	85
Education	Expected years of schooling (years)	0	18
	Mean years of schooling (years)	0	15
Standard of living	GNI per capita (2017 PPP$)	100	75,000

The justification for placing the natural zero for life expectancy at 20 years is based on historical evidence that no country in the 20th century had a life expectancy of less than 20 years (Maddison 2010; Oeppen and Vaupel 2002; Riley 2005). Maximum life expectancy is set at 85, a realistic aspirational target for many countries over the last 30 years. Due to constantly improving living conditions and medical advances, life expectancy has already come very close to 85 years in several economies: 84.9 years in Hong Kong, China (Special Administrative Region) and 84.6 years in Japan.

Societies can subsist without formal education, justifying the education minimum of 0 years. The maximum for expected years of schooling, 18, is equivalent to achieving a master's degree in most countries. The maximum for mean years of schooling, 15, is the projected maximum of this indicator for 2025.

The low minimum value for gross national income (GNI) per capita, $100, is justified by the considerable amount of unmeasured subsistence and nonmarket production in economies close to the minimum, which is not captured in the official data. The maximum is set at $75,000 per capita. Kahneman and Deaton (2010) have shown that there is virtually no gain in human development and wellbeing from annual income above $75,000 per capita. Currently, only three countries (Liechtenstein, Qatar and Singapore) exceed the $75,000 income per capita ceiling.

Having defined the minimum and maximum values, the dimension indices are calculated as:

$$Dimension\ Index = \frac{Actual\ Value - Minimum\ Value}{Maximum\ Value - Minimum\ Value}$$

For the education dimension, equation 1 is first applied to each of the two indicators, and then the arithmetic mean of the two resulting indices is taken. Using the arithmetic mean of the two education indices allows perfect substitutability between expected years of schooling and mean years of schooling, which seems to be right given that many developing countries have low school attainment among adults but are very eager to achieve universal primary and secondary school enrolment among school-age children. Because each dimension index is a proxy for capabilities in the corresponding dimension, the transformation function from income to capabilities is likely to be concave (Anand and Sen 2000)—that is, each additional dollar of income has a smaller effect on expanding capabilities. Thus, for income the natural logarithm of the actual, minimum and maximum values is used.

Step 2. Aggregating the dimensional indices

The HDI is the geometric mean of the three-dimensional indices:

$$HDI = (I_{Health}, I_{Education}, I_{Income})^{1/3}$$

Example: India

Indicator	Value
Life Expectancy at Birth (in Years)	69.7
Expected Years of Schooling	12.2
Mean Years of Schooling	6.5
Gross National Income Per Capita (2017 PPP $)	6681

$$Health\ Index = \frac{65.3 - 20}{85 - 20} = 0.76$$

$$Expected\ Years\ of\ Schooling = \frac{12.2 - 0}{18 - 0} = 0.67$$

$$Mean\ Years\ of\ Schooling = \frac{6.5 - 0}{15 - 0} = 0.43$$

$$Education\ Index = \frac{0.67 + 0.43}{2} = 0.55$$

$$Income\ Index = \frac{ln6681 - ln100}{ln75000 - ln100} = 0.936$$

Methodology used to express income

The World Bank's 2020 World Development Indicators database contains estimates of GNI per capita in constant 2017 purchasing power parity (PPP) terms for many countries. For countries missing this indicator (entirely or partly), the Human Development Report Office (HDRO) calculates it by converting GNI per capita in local currency from current to constant

terms using two steps. First, the value of GNI per capita in current terms is converted into PPP terms for the base year (2017). Second, a time series of GNI per capita in 2017 PPP constant terms is constructed by applying the real growth rates to the GNI per capita in PPP terms for the base year. The real growth rate is implied by the ratio of the nominal growth of GNI per capita in current local currency terms to the GDP deflator.

For several countries without a value of GNI per capita in constant 2017 PPP terms for 2019 reported in the World Development Indicators database, real growth rates of GDP per capita available in the World Development Indicators database or in the International Monetary Fund's Economic Outlook database are applied to the most recent GNI values in constant PPP terms.

Official PPP conversion rates are produced by the International Comparison Program, whose surveys periodically collect thousands of prices of matched goods and services in many countries. The last round of this exercise refers to 2017 and covered 176 economies.

Human Development Index aggregates

Aggregate HDI values for country groups (by human development category, region and the like) are calculated by applying the HDI formula to the weighted group averages of component indicators. Life expectancy and GNI per capita are weighted by total population, expected years of schooling is weighted by population ages 5–24 and mean years of schooling is weighted by population ages 25 and older.

10.4 Other Human Development Indices

Over the years, the HDR sought to enrich the concept, analyse one specific aspect of human development critically, and develop more elegant measures of wellbeing. Among the many indices introduced in the HDR, some have become annual features, while others have been discarded for want of data, and the feasibility of calculating indices across countries (the Human Freedom Index is one such measure).Among the indices that have gained popularity and widespread acceptance, despite a significant share of critique and debates, are the HDI, the Gender-related Development Index (GDI), the Gender Empowerment Measure (GEM), and the Human Poverty Index (HPI-1 for developing countries, and HPI-2 for selected OECD countries).Each of these indices is based on a

set of chosen indicators. The HPI-1, designed for developing countries, considers the same three dimensions through four identified indicators. As opposed to the HDI, which measures the overall progress in a country in achieving human development, the HPI reflects the distribution of progress, and measures the backlog of deprivations that still exists. HPI-1 based on

- the probability at birth of not surviving to age 40
- the adult illiteracy rate
- deprivation in overall economic provisioning, public and private, reflected by the percentage of population without sustainable access to an improved water source
- the percentage of children under five years who are underweight.HPI-2, devised as a measure of human poverty in industrial countries, since human deprivation varies with social and economic conditions of a community, is also based on 4 indicators. They are:
- the probability at birth of not surviving to age 60
- the percentage of adults lacking literacy skills
- the percentage of people living below the poverty line
- the long-term unemployment rate.

Another two new indices were introduced in 1995. These are the Gender-related Development Index (GDI), and a Gender Empowerment Measure (GEM). The GDI measures achievements in the same dimensions and variables as the HDI but takes into account inequality in achievements between women and men. The greater the gender disparity in human development, the lower is a country's GDI compared to its HDI.

GEM exposes inequality in opportunities in selected areas – the participation of women in economic and political life, and in decision making. This index focuses on women's opportunities and agency, and captures gender inequality in three key areas

- political participation and decision-making power, as measured by women's and men's percentage share of parliamentary seats
- economic participation and decision-making power, as measured by two indicators— women's and men's percentage shares of positions as legislators, senior officials, and managers and women's and men's percentage shares of professional and technical positions
- power over economic resources, as measured by women's earned income share as a percentage of men's (PPP in US $).

In the context of the efforts being made to bring gender issues to centre stage, GDI and GEM proved important tools to establish the prevalence of gender inequality across the world. With these indices, the HDRs emphasized the importance of mitigating gender disparities as being critical for overall development (HDR, 1995). HDR 1995 argues that achieving gender equality is not a technocratic goal. It is a political process requiring struggle and radical shifts in mindsets.

The HDRs, over the years, admit that while the concept of human development is much broader the measures of HDI remain limited. Admittedly, the "HDI is not a substitute for the fuller treatment of the richness of the concerns of the human development perspective". To come up with a comprehensive measure is a daunting task and, in fact, impossible, given the fact that many vital dimensions of human development are non-quantifiable.

10.5 Human Development and India

India ranked 131 in the HDI as per the Human Development Report of 2019 This is a slip of two ranks when compared to the earlier year. If we look at the absolute value of HDI then India's score improved from 0.642 to 0.645 but in terms of ranking it has lost two positions. We have to look at the expenditure made by the government on social sector. In the next part we will be discussing the social sector expenditure by the government and human development indicators. The data shared here has been taken from Economic Survey of 2021.

Trends in Social Sector Expenditure

The expenditure on social services (education, health and other social sectors) by Centre and States combined as a proportion of GDP increased from 6.2 to 8.8 per cent during the period 2014-15 to 2020-21 (BE). This increase was witnessed across all social sectors. For education, it increased from 2.8 per cent in 2014-15 to 3.5 per cent and for health, from 1.2 per cent to 1.5 per cent during the same period. Relative importance of social services in government budget, as measured in terms of the share of expenditure on social services out of total budgetary expenditure, has also increased to 26.5 per cent in 2020-21 (BE) from 23.4 per cent in2014-15 (See Table 10.1).

A clarion call for 'Atma Nirbhar Bharat' was announced to revive the economy and to address the pandemic. A special economic and comprehensive package of ` 20 lakh crore - equivalent to 10 per cent of India's GDP was announced in May 2020. In subsequent announcements, additional support cumulating to ` 29.88 lakh crore up to November 2020 was announced. Of these, provision for ` 4.31 lakh crore made for social sector includes PMGKY and PMGKY Anna Yojana, housing and health (including R & D Grant for COVID-19 Suraksha), EPF support to worker & employers, street vendors, MGNREGS workers and ABRY etc.

Human Development

India's rank in Human Development Index (HDI)1 was 131 in 2019, compared to 129 in 2018, out of a total 189 countries according to UNDP Human Development Report, 2020. It may be mentioned that the decline in HDI ranking by two points in 2019 as compared to 2018 is relative to other countries. By looking at the sub-component wise performance of HDI indicators, India's 'GNI per capita (2017 PPP $)' has increased from US$ 6,427 in 2018 to US$6,681 in 2019, and 'life expectancy at birth' has improved from 69.4 years in 2018 to 69.7 years in 2019, respectively. However, the 'mean years of schooling' and 'expected years of schooling' remained unchanged in 2019 compared to 2018. However, considering the value of Planetary pressures adjusted HDI (PHDI), India was positioned 8 ranks better than HDI rank. If a country puts no pressure on the planet, its PHDI and HDI would be equal, but the PHDI falls below the HDI as pressure rises. PHDI values are very close to HDI values for countries with an HDI value of 0.7 or lower (See Table 10.2).

Year	1990	2000	2005	2010	2015	2017	2018	2019
Life expectancy at birth	57.9	62.5	64.5	66.7	68.6	69.2	69.4	69.7
Expected years of schooling[b]	7.6	8.3	9.7	10.8	12.0	12.3	12.2	12.2
Mean years of schooling[b]	3.0	4.4	4.8	5.4	6.2	6.5	6.5	6.5
GNI per capita[a]	1,787	2,548	3,217	4,182	5,391	6,119	6,427	6,681
HDI value	**0.429**	**0.495**	**0.536**	**0.579**	**0.624**	**0.640**	**0.642**	**0.645**

Source: Human Development Report, 2020, UNDP.

Table 10.2 Trends in HDI Value

Item	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20 RE	2020-21 BE
							(₹ in Lakh crore)
Total Budgetary Expenditure	32.85	37.61	42.66	45.16	50.41	58.76	64.70
Expenditure on Social Services	7.68	9.16	10.41	11.40	12.78	15.31	17.16
of which:							
i) Education	3.54	3.92	4.35	4.83	5.26	6.13	6.75
ii) Health	1.49	1.75	2.13	2.43	2.66	3.12	3.51
iii) Others	2.65	3.48	3.93	4.13	4.86	6.06	6.90
As percentage to GDP							
Expenditure on Social Services	6.2	6.6	6.8	6.7	6.7	7.5	8.8
of which:							
i) Education	2.8	2.8	2.8	2.8	2.8	3.0	3.5
ii) Health	1.2	1.3	1.4	1.4	1.4	1.5	1.8
iii) Others	2.1	2.5	2.6	2.4	2.6	3.0	3.5
As percentage to total expenditure							
Expenditure on Social Services	23.4	24.3	24.4	25.2	25.4	26.1	26.5
of which:							
i) Education	10.8	10.4	10.2	10.7	10.4	10.4	10.4
ii) Health	4.5	4.7	5.0	5.4	5.3	5.3	5.4
iii) Others	8.1	9.3	9.2	9.1	9.6	10.3	10.7
As percentage to social services							
i) Education	46.1	42.8	41.8	42.4	41.2	40.0	39.3
ii) Health	19.4	19.1	20.5	21.4	20.8	20.4	20.5
iii) Others	34.6	38.0	37.7	36.2	38.0	39.6	40.2

Source: Budget Documents of Union and State Governments, Reserve Bank of India

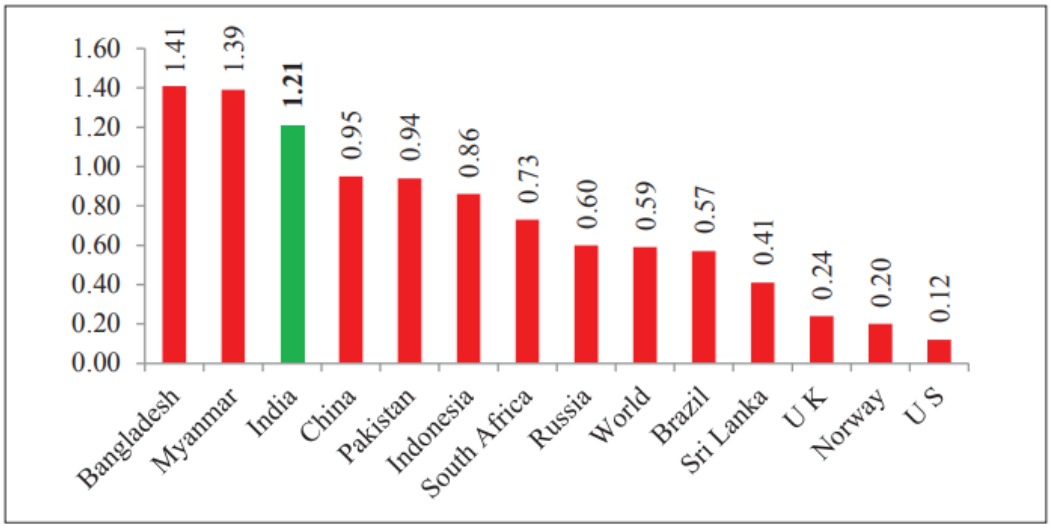
Note:

1. Social services include, education, sports, art and culture; medical and public health, family welfare; water supply and sanitation; housing; urban development; welfare of SCs, STs and OBCs, labour and labour welfare; social security and welfare, nutrition, relief on account of natural calamities etc.
2. Expenditure on 'Education' pertains to expenditure on 'Education, Sports, Arts and Culture'.
3. Expenditure on 'Health' includes expenditure on 'Medical and Public Health', 'Family Welfare' and 'Water Supply and Sanitation'.
4. The ratios to GDP at current market prices are based on 2011-12 base.
5. Data upto 2016-17 pertains to all states. From 2017-18 onwards, it pertains to all states and UTs.

Table 10.1 Trends in Social Sector Expenditure

The value of HDI for India has increased from 0.579 in 2010 to 0.645 in 2019. The average annual HDI growth during 2010-2019 was 1.21 per cent as compared to 1.58 per cent during the period 2000-2010. Cross country comparison of average annual HDI growth shows India is ahead of BRICS countries (Figure 10.1). To sustain this momentum and overcome possible fallouts of COVID-19 on human development, the thrust on access to social services such as education and health is critical.

Fig.10.1 Average Annual HDI Growth Rate (in %) 2010-2019



Source: Human Development Report, 2020, UNDP

These trends and figure shows that India has been spending on social infrastructure and in improving education, health and income of individuals so as to have an equitable distribution of income. The purpose of the government is to invite everyone to participate in the growth story of the country. However, disparities continue and huge efforts have to be made to bring millions of people above the poverty line and improve the employment situation of the country.

Summary

Economic development has remained the focus of all the governments around the world. The post-World War period witnessed the emergence of countries who were hitherto colonies and they modelled themselves after the developed countries. This saw an increase in the economic wealth of these countries, and they recorded high economic growth rate. But the problem of inequality rose manifold which called for focus on human development. Since 1990s, human development index was introduced to measure inequality and factors that contribute to human development. Over the years the countries have worked hard to improve their ranking as human development is now related to investment opportunities as well. India has improved its performance over time to reduce inequalities.

Keywords

Economic Growth: Economic growth refers to the rate of expansion in the quantity of goods and services produced in the economy

Gender Development Index: The GDI measures gender gaps in human development achievements by accounting for disparities between women and men in three basic dimensions of human development—health, knowledge and living standards using the same component indicators as in the HDI. The GDI is the ratio of the HDIs calculated separately for females and males using the same methodology as in the HDI.

Human Development Index: The Human Development Index (HDI) is a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and have a decent standard of living.

Life Expectancy: Life expectancy is a statistical measure of the average time an organism is expected to live, based on the year of its birth, its current age, and other demographic factors including sex.

Mean Years of Schooling: Mean years of schooling (MYS), the average number of completed years of education of a population, is a widely used measure of a country's stock of human capital

UNDP: The United Nations Development Programme is a United Nations organization tasked with helping countries eliminate poverty and achieve sustainable economic growth and human

development. Headquartered in New York City, it is the largest UN development aid agency, with offices in 170 countries.

Self Assessment

1. Who releases the Human Development Report?

A. World bank
B. World economic forum
C. United Nations
D. UNCTAD

2. Which of the following is not a part of HDI?

A. Real GNP per capita
B. Education
C. Health
D. Employment

3. Which one of the following helps to make real GNP per head figures more meaningful when comparing standards of living across different countries?

A. Human Development Index (HDI)
B. Human Poverty Index (HPI)
C. Endogenous Growth Theory
D. Purchasing Power Parities (PPP's)

4. The Human Development Index (HDI) pays no attention to economic variables such as real GNP per capita.

A. True
B. False

5. Who gave the concept of HDI?

A. Mehbub-ul- Haq
B. Amartya Sen
C. Both Mehbub-ul-Haq and Amartya Sen
D. Maurice Dobb

6. Which is the fastest growing economy in the North African region as per World Economic Situation and Prospects 2020?

A. Egypt
B. Algeria
C. Morocco
D. Mauritania

7. In the East African peace treaty which of the following country was not a part of it?

A. Djibouti
B. Eritrea
C. Ethiopia
D. Kenya

8. Which of the following country will have negative growth rate in the coming years?
A. Angola
B. Malawi
C. South Africa
D. Zimbabwe

9. The Gender Inequality Index ranges between
A. +1 and -1
B. 0 and 1
C. There is no limit
D. None of the above

10. What is the rank of India in the inequality index 2020?
A. 127
B. 128
C. 129
D. 130

11. What is the current rank of India in HDI (year 2020)?
A. 130
B. 131
C. 132
D. 133

12. What is the Life expectancy in India as per HDI 2020?
A. 69 years
B. 69.7 years
C. 70 years
D. 70.7 years

13. In terms of GDI value, Bangladesh is ahead of India (as per 2020 data)
A. True
B. False

14. What is the mean years of schooling for males in India as per the 2020 HDI report?
A. 8 years
B. 8.7 years
C. 9 years
D. 9.7 years

15. What is the Gender Development Index score of India as per the 2020 HDI report?
A. 0.80
B. 0.81
C. 0.82
D. 0.83

Answers for Self Assessment

1 C	2 D	3 D	4 B	5 C
6 A	7 D	8 C	9 B	10 C
11 B	12 B	13 A	14 B	15 C

Review Questions

1. Why was the Human Development Index started?
2. What are the indicators of Human Development?
3. How are the various indicators of HDI estimated?
4. Write a note on HDI ranking of India over the years.
5. Is the size of the population an impediment in human development?
6. "Education is the key to human development" Explain

Further Readings

Parr S.F. and A.K. Shiva Kumar (2003), Readings in Human Development, New York: Oxford University Press.

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Unit 11: Structure of Indian Economy

CONTENTS

Objectives

- Review the economy since independence
- Evaluate the role of agriculture, industry, and service sector in the Indian economy
- Analyse the emerging energy-economy-environment regulatory framework

Introduction

The structure of the Indian economy has transformed over the years, though there is debate over the sequence of transmission. In the modern period, industralisation and its pace is the pivot on which the extent of development depended. Countries that got industrialized in the earlier periods transmitted into the zone of developed nations the first. India was an agrarian economy and the contribution of this sector to the GDP showcases this fact. However, the pace of industralisation is slow in India and tertiary sector took off in the post liberalisation period. However, in terms of livelihood, agriculture remains in the numero-uno position followed by the tertiary sector. The unorganised sector in manufacturing that was encouraged during the 1960s and 1970s has also had an impact on industralisation.

11.1 Agriculture Sector

Agriculture occupies a key position in all economies irrespective of their level of development. It satisfies certain basic needs of human beings by fulfilling their food and non-food demands. It supplies: i) food grains such as rice, wheat, coarse cereals and pulses, ii) commercial crops such as oilseeds, cotton and sugarcane, iii) plantation crops such as tea and coffee, and iv) horticultural crops such as fruits, vegetables, flowers, spices, cashew and coconut. In addition to these, certain allied activities such as milk and dairy products, poultry products and fishery are included in the agricultural sector.

Most of the developed and industrialised countries received their initial spurt for industrial advancement from agriculture.

Importance of Agriculture

To make an assessment of the role and importance of agriculture it is necessary to examine its contribution to development of the economy. Such contribution may be measured in terms of its

share in Gross Domestic Product (GDP), employment generation, exports, etc. Another dimension of the role of agriculture is the support it renders to the industrial sector by supplying raw materials on the one hand and food for the workforce engaged in this sector on the other. Moreover, it generates demand for the industrial products. All these aspects have to be studied in order to analyse the role and importance of agriculture in an economy.

Contribution to GDP

Agriculture has been observed to contribute a very large share to GDP of most of the economies before industrial development takes place in them. As the process of industrial development accelerates, the share of non-agricultural sectors in GDP tends to increase steadily. Simultaneously, the relative share of agriculture shrinks and yields place to that of manufacturing and services sectors. This does not imply that the agricultural production does not increase. It only implies that the growth in the production of industrial and services sectors is faster than the growth in agricultural sector. This process of change is the consequence of a change in the structure of the economy which steadily becomes more industrialised. Quite often such a change in the composition of GDP is cited as an indicator of economic development.

Contribution to Employment

An equally relevant criterion for examining the role of agriculture is its share in the total workforce. Number of workers engaged in agriculture is usually very high before industrial development takes place in an economy. This share tends to decline with industrialisation of the economy as employment opportunities grow rapidly in sectors other than agriculture. Steady changes in the occupational distribution of workforce have been observed in most economies as they experience industrial growth and diversification. Generally, the trend is towards a steady decline in the share of workforce engaged in agriculture and an increase in the proportion of workforce engaged in manufacturing and services sectors.

Contribution to Exports

Another indicator of the role of agriculture in an economy is the contribution it makes to exports. As industrial growth takes place and there is a steady change in the composition of exports, in favour of manufactures and services. The share of agriculture in the exports of the economy undergoes a decline.

Contribution to Other Sectors

An equally significant criterion to gauge the role and importance of agriculture is the contribution it makes to the growth of the non-agricultural sectors. As it is the source of raw materials for a number of industries and also supplier of food for the workers who are engaged in non-agricultural sectors, agricultural sector becomes crucial for industrial growth and expansion. As a major sector of an economy, it plays an important role in generating demand for the products of the other sectors. The extent of dependence of the other sectors of the economy on agriculture is a vital criterion for assessing the role of agriculture in an economy.

Share of Agriculture in Indian economy

In the previous section we identified some criteria to assess the role and importance of agriculture in an economy. On the basis of these criteria now let us examine the trends that have emerged in the role of agriculture in India particularly since Independence.

Share in GDP

Some broad estimates of the share of agriculture in GDP of India suggest that in the first quarter of the twentieth century (1901-1925) the share of agriculture in GDP was about two-third. At the time of Independence (1947) this share declined to nearly one-half. As expected, this share has steadily declined to about 20.2 per cent in 2020-21.

Table: 11.1: Value and Percentage Share of Agriculture in GVA at 2011-12 Price

Year	Value of Output in Crores (2011-12 Price)	Per cent share of Agriculture in GVA (2011-12 Price)
1950-51	53082	61.71
1960-61	73243	56.68
1970-71	90942	49.56
1980-81	106367	42.46
1990-91	150741	35.13
2000-01	196942	26.48
2010-11	304475	18.32
2018-19	536035	14.62

Source: MOSPI

From Table 11.1 we see that there has been a steady decline in the share of agriculture in GDP. Even thought the value of agricultural production has increased from 53082 crores in 1950-51 to 536035 crores in 2018-19, the percentage share of agriculture in the GVA of the country went down which is a positive sign for any country. It means that resources are now more engaged in non-agricultural activities.

Share in Workforce

Agriculture in India absorbs a very large proportion of the labour-force. The proportion of workforce engaged in agriculture in India even in the 1990s is more than 60 percent. According to the 1991 population census 67 per cent of the workforce was engaged in agriculture. This proportion was marginally lower than the earlier census figure which was 72 per cent.

Share in Exports

Agricultural sector has been a major contributor to India's export earnings. For a long time the agro-based products namely tea, cotton textiles and jute textiles accounted for more than 50 per cent of the export earnings of the country. By adding to the list other products like spices, coffee, tobacco, cashew, sugar, etc., the share of agriculture in total exports was almost 70 per cent. This share has, however, declined over time with economic growth and diversification of the economy. For example, the share of agriculture and allied products in the total exports in 1960-61 was nearly 44 per cent. It has continued to decline and for the year 2000-01 this share was only 13.5 percent. As per WTO's Trade Statistics, India's share in agricultural export and import in the world were 2.46% and 1.46% respectively in 2014. During this year, India's total global agriculture & allied export and import were at US$ 43.47 billion and US$ 27.31 billion respectively. Agricultural exports decreased from Rs. 2,62,778 crores in 2013-14 to Rs. 2,13,555 crores in financial year 2015-16 with a decline of nearly 18%. During 2015-16 marine products, basmati & non-basmati rice, buffalo meat, spices and cotton were top commodities of India's agriculture exports. The share of agricultural exports in

total exports of the country decreased from 13.79 % in 2013-14 to 12.46% in 2015-16.

Table 2: India's Top 15 Agricultural Export Commodities

Quantity: '000 tonnes Value in Rs. Crores

Sl No.	Commodity	2013-14		2014-15		2015-16	
		Qty	Value	Qty	Value	Qty	Value
1	Marine Products	1001	30627	1073	33685	976	31183
2	Buffalo Meat	1366	26458	1476	29283	1314	26682
3	Rice -Basmoti	3754	29292	3702	27599	4045	22714
4	Spices	897	15146	923	14842	821	16374
5	Rice(Other Than Basmoti)	7148	17795	8226	20336	6374	15086
6	Cotton Raw Incld. Waste	1948	22338	1143	11643	1346	12816
7	Sugar	2478	7179	1954	5327	3826	9772
8	Coffee	254	4799	221	4973	256	5123
9	Cashew	121	5095	135	5566	103	5025
10	Fresh Vegetables	2292	5384	2019	4612	1872	4763
11	Tea	250	4873	215	4166	247	4719
12	Castor Oil	545	4364	547	4710	587	4616
13	Tobacco Unmanufactured	237	4783	220	4163	215	4371
14	Groundnut	510	3188	708	4675	537	4039
15	Fresh Fruits	525	3646	484	3148	573	3918

Source: DGCIS, Kolkata

Assessment of the Trends

A review of the direct contribution of agriculture to GDP, to employment and to exports reveals that agriculture is a very important sector of the Indian economy. Even though the share of agriculture in GDP, employment as well as export earnings has declined over time, agriculture continues to remain a crucial sector in terms of its contribution to the economy. We may note that while a steady and significant decline in the contribution of agriculture to GDP and export earnings of India has taken place, the fall in the share of workforce engaged in agriculture has not been as significant.

11.2 Industrial Sector

Growth in the industrial sector is one of the vital figures that affect the Gross Domestic Product (GDP) in India. This section provides information about the initiatives taken by the Union and state Governments to facilitate the industrial growth in the country. Details of industries like insurance, Micro, Small and Medium Enterprises, chemical, fertilizer, defence products, cottage, retail textile, pharmaceutical, manufacturing, etc. are provided for the users. The section also highlights schemes, documents, forms, acts, rules, policies, reports related to various industries and corporate governance.

Key Sector Focus Areas

- The proliferation of digital technologies will accelerate adoption and drive productivity gains in the overall business. Industrial leaders in India are embarking on digital transformation of their vertical and horizontal value chains from product development and purchasing to manufacturing, logistics and services. The need to repair, rethink, reconfigure and re-innovate existing business models have become imperative in the Covid world.
- Efforts are on forming multinational partnerships, alliances and joint ventures in order to secure FDI, benefit from advanced technologies, and improve productivity through factory automation. Companies are trying to move beyond functional cuts and focus on strategic remobilisation of the cost base allowing reinvestment to critical areas of a business in concert with new tools and levers.

- Organisations are recognising that many of the disruptions of today - technology, customer shifts, digitisation, M&A, etc - are opportunities for growth. While focus continues on penetrating the domestic market, Indian manufacturers are also looking to gain a foothold in the global market by increasing sales in existing markets and by identifying new geographies.
- With the Government of India having unveiled the Production Linked Incentive Scheme (PLI) to boost manufacturing and increase India's global competitiveness, global manufacturers are looking to scale up their India operations, build new capabilities and increase the incremental investments and sales of goods. New investors are also perceiving India as an advantageous investment destination.
- Building resiliency and agility in supply chains to respond to the ongoing disruptive forces of Covid and broader strategic decisions is a key imperative. Supply chain control towers, move from physical only to physical and digital operations, simulation models to stress test resilience, machine-learning enabled demand sensing, adoption of AI and other emerging technologies are now mainstream.
- Climate change, environmental compliance and social responsibility, green growth, responsible finance and sustainability have become key issues. Companies are trying to understand contemporary challenges, associated impacts and opportunities that arise from embracing ESG. Knowing how to measure/report ESG metrics and design net zero and de-carbonisation strategies and roadmaps to get there, whilst customers expect more on sustainability and transparency, is the conversation topic in boardrooms.
- Organisations are facing a shortage of talent and skills to keep up with digitisation and need to rethink the role of humans. Enhancing workforce capability is a priority - digital upskilling and workforce transformation rank top as the factory floor activity is most likely to increase and companies plan their "return to work" strategy.
- Cyber risks are viewed as the one of the biggest challenges for industrial product companies driven by digitisation and closely linked to cloud transformation. Aside from IT, threats to OT infrastructure and product security issues have become operational priorities for firms.

Contribution of Industry in Gross Value Added

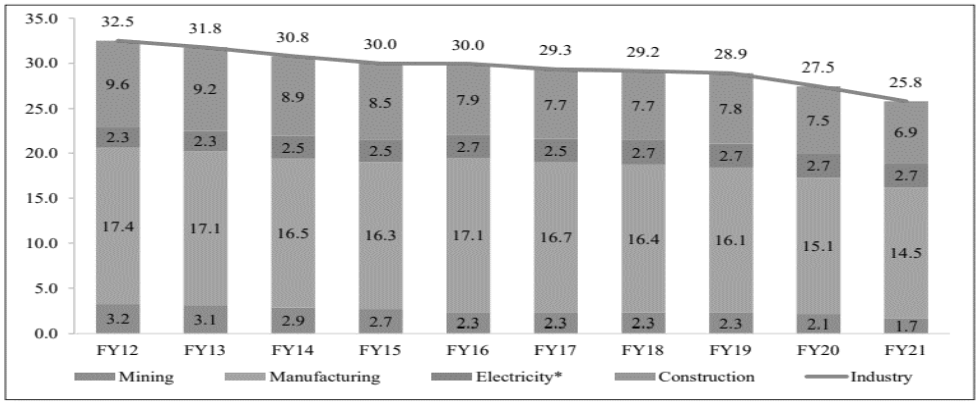
As per the latest estimates on Gross Value Added (GVA), the industrial sector is expected to record a growth of -9.6 per cent with an overall contribution in GVA of 25.8 per cent in2020-21 (FY21). The contribution of the industrial sector has been constantly declining since2011-12 (Figure 1). The fall in share is across the board except in case of 'Electricity, gas, water supply & other utility services' whose share in GVA has increased from 2.3 per cent in FY12 to2.7 per cent in FY21. The performance of the various components of the industrial sector namely, manufacturing, mining and quarrying, electricity, and construction is presented in Table 3.

Table 3: Rate of Growth of GVA in Industry and Its Components (Per cent)

	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21
Industry	3.3	3.8	7.0	9.6	7.7	6.3	4.9	0.9	-9.6
Mining	0.6	0.2	9.7	10.1	9.8	4.9	-5.8	3.1	-12.4
Manufacturing	5.5	5.0	7.9	13.1	7.9	6.6	5.7	0.0	-9.4
Electricity*	2.7	4.2	7.2	4.7	10.0	11.2	8.2	4.1	2.7
Construction	0.3	2.7	4.3	3.6	5.9	5.0	6.1	1.3	-12.6

*Electricity, gas, water supply & other utility services
Source: Survey calculations based on MoSPI Data.

Fig. 1: Share of Industry and its Components in GVA (Current Prices, Per cent)



*Electricity, gas, water supply & other utility services.
Source: Survey calculations based on MoSPI data.

Government Initiatives

11.3 Service Sector

The growth of the Services Sector in India is a unique example of leap-frogging traditional models of economic growth. Within a short span of 50 years since independence, the contribution of the service sector in India to the country's GDP is a lion's share of over 60%. However, it still employs only 25% of the labour force. Consequently, agriculture (which is stagnant) and manufacturing (which has not yet risen to its full potential) continue to sustain the majority of our employed population. This presents a unique challenge to future economic growth in India and requires out

Ease of Doing Business

The GoI is committed to facilitating a pro-business environment to enable the country to become the global hub of manufacturing and economic activities. Several measures have been taken resulting in the simplification and rationalization of many existing and age-old rules and regulations. The introduction of information technology and single window clearance to make governance more efficient and effective were some of the other concrete steps taken by the Government to improve the environment of doing business. As per the Doing Business Report (DBR), 2020, the rank of India in the Ease of Doing Business (EoDB) Index for 2019 has moved upwards to the 63rd position amongst 190 countries from a rank of 77 in 2018. India has improved its position in 7 out of 10 indicators, inching up to the international best practices. The

Atmanirbhar Bharat is the vision of the GoI of making India a self-reliant nation. The announcements under the Atmanirbhar Bharat Abhiyan were made in three tranches. The key measures pertaining to industry and infrastructure are summarized below: Atmanirbhar Bharat 1.0 I. Relief and credit support to MSMEs to fight against COVID-19.

Atmanirbhar Bharat is the vision of the GoI of making India a self-reliant nation. The announcements under the Atmanirbhar Bharat Abhiyan were made in three tranches. The key measures pertaining to industry and infrastructure are summarized below:

Atmanirbhar Bharat 1.0 I. Relief and credit support to MSMEs to fight against COVID-19.

1. ` 3 lakh crores Collateral-free Automatic Loans for Businesses, including MSMEs
2. 20,000 crores Subordinate Debt for Stressed MSMEs:
3. ` 50,000 crores equity infusion through MSME Fund of Funds
4. New definition of MSME
5. Relief of ` 1500 crores to MUDRA- Shishu loans
6. Ease of doing business for business including MSMEs

Atmanirbhar Bharat 2.0 (second tranche of measures) provided ` 25,000 crores as additional capital expenditure to the Ministry of Road Transport and Ministry of Defence

of the box solutions that will help rapidly harness the potential of the service industry in India. Invest India takes a look at the contribution of the services sector in the Indian economy, its successes and also explores potential enablers for future equitable economic growth.

Market Size of Service Industry

A quick comparison with the American and Chinese economy reveals the unique nature of India's GDP growth from the contribution of the Service sector and its linkages to employment and income distribution (Figures in bracket indicate employment). Over time, a robust manufacturing and productive agriculture sector leads to the Service industry in India becoming the mainstay of GDP and employment. In our context, the Service sector has become extremely important to grow not only our GDP, as well as make it the key vehicle for employment generation. However, the question is - how to increase value add to GDP from Service companies in India, while reducing employment dependency from agriculture, as well as boosting the manufacturing industry.

Table 4: Contribution of Service Sector to GDP

	India	USA	China
Agriculture and Allied	15.4% (53%)	8% (2%)	7% (26%)
Manufacturing and Industry	23% (22%)	12% (19%)	40% (28%)
Services*	61.5% (25%)	80% (79%)	52% (46%)

The current growth of service sector in India is based mainly on labour market arbitrage. Moving forward, India can no longer rely on 'low cost' for 'low value added' services. Therefore, we need solutions that address these:

i) Boosting the manufacturing sector with both direct and indirect spin - off benefits for the growth of the service sector in India (e.g. Make in India)

ii) Moving up the value chain, especially in the IT/ ITeS sector.

iii) Broad - basing the Indian Services offering platform into sectors beyond the traditional IT/ ITeS by identifying the global demand for such services, and meeting these demands based on our natural competencies and comparative advantages.

Services with Future Prospects

IT-BPM/ Fintech

The IT/ITeS & Fintech segments provide over $ 155 bn in gross value add and have the potential to grow between 10 -15% p.a. Exports form its largest component. So far, our key advantage has been low - cost labour arbitrage in a predominantly English - speaking country. Going forward, the IT and ITeS segments require significant upskilling to move beyond a 'low - cost low value add service provider' to a 'high value add partner'.

Indian IT companies can also leverage their skill sets to provide fintech solutions to global financial customers. Financial risk management services, insurance, natural disaster modelling and underwriting are examples of high value add services performed within India for a global audience.

Healthcare & Tourism

The current contribution of the healthcare industry is over $ 110 bn and is expected to touch $ 280 bn by 2020. Availability of world - class medical facilities, skilled doctors, technicians and pharmaceuticals are some of our advantages. With digital communication and interfaces, diagnostic medicine can also be tapped into as a service for global customers.

Similarly, for tourism, India is renowned for its places of natural beauty and historical significance. Tourism presently contributes $ 47 bn to the country's GD, compared with $ 115 bn for China. Thus, tourism has exponential possibilities to boost the Indian services sector in the next decade.

To attract significant revenues, improved customer experience (medical or tourism) is the key factor that will determine its future growth. In this context, government initiatives such as e - Visas, better infrastructure facilities, safety, connectivity etc. are enablers in the right direction.

Space

India captured the world's attention last February when it broke the record for launching the most number of satellites into space. Moreover, this was done at a fraction of the cost incurred by other space powers.

Indian services in the space domain, with proven expertise in multiple launch technologies, provide it with a significant advantage over its peers in the global space transportation industry. Our launch capabilities have a near 100% track record. Many countries are actively looking to piggyback on India's launch facilities. This demonstrates great potential. The government is actively proving its ability, but more can be done to build capacity in military and non - military space applications. In this context, public - private participation is key to ensure the flow of capital, as well as to strengthen competencies in this area.

Logistics & Transportation

India's natural coastline and vast river network give it a competitive edge in providing transportation and logistics services, both domestically and internationally. These can be classified into ports and ports services, warehousing, trans - shipment services, e - logistics, inland waterways for freight and passengers, expressways and dedicated freight corridors. India's logistics service sector itself is expected to grow from $ 115 bn to $ 360 bn by 2032.

India should closely look into the development of the service industry, given the potential and need for sustained large scale investment. Investments typically have a long gestation period. However, once the infrastructure is created, linkages to the rest of the economy provide significant multiplier effects. For example, the Mumbai - Pune expressway and the development of service industries in Pune.

Other services

Media & Entertainment (animation, gaming, dubbing), Education (online platforms such as MOOC), and Sports (IPL, IFL, Sports Management), Legal/ Paralegal services, Risk management and advisory functions, etc. are areas that can lead to an immense contribution of service industry in the Indian economy.

Prospects of the Service Sector in India

The service sector in India has the highest employment elasticity among all sectors. Thus, it has the potential for huge growth as well as the capability to deliver highly productive jobs - leading to revenue generation. To address the challenge of job creation, the Skill India program aims to achieve its target of skilling/ up - skilling 400 million people by 2022. It aims to do this mainly by fostering private sector initiatives in skill development programs, and by providing them with the necessary funding.

Similarly, the Make in India program - while attempting to bolster the manufacturing sector - will cause a multiplier effect in adding to the portfolio of the Service Sector. In this context, the Start-up India initiative is a key enabler for both the manufacturing as well as service industry in India - by offering to support innovative start-ups.

11.4 Emerging Energy-Economy-Environment Regulatory Framework

With a population of 1.4 billion and one of the world's fastest-growing major economies, India will be vital for the future of the global energy markets. The Government of India has made impressive progress in recent years in increasing citizens' access to electricity and clean cooking. It has also successfully implemented a range of energy market reforms and carried out a huge amount of renewable electricity deployment, notably in solar energy. Looking ahead, the government has laid out an ambitious vision to bring secure, affordable and sustainable energy to all its citizens. This in-depth review aims to assist the government in meeting its energy policy objectives by setting out arrange of recommendations in each area, with a focus on energy system transformation, energy

security and energy affordability. The review also highlights a number of important lessons from the rapid development of India's energy sector that could help inform the plans of other countries around the world.

India is making great strides towards affordable, secure and cleaner energy

Ensuring Indian citizens have access to electricity and clean cooking has been at the top of the country's political agenda. Around 750 million people in India gained access to electricity between 2000 and 2019, reflecting strong and effective policy implementation. The IEA highly commends the Government of India for this outstanding result and supports its efforts to shift the focus towards reaching isolated areas and ensuring round-the-clock reliability of electricity supply.

The government of India has also made significant progress in reducing the use of traditional biomass in cooking, the chief cause of indoor air pollution that particularly affects women and children. The government has encouraged clean cooking with liquefied petroleum gas. India continues to promote cleaner cooking and off-grid electrification solutions, including a shift toward using solar photovoltaics (PV) for cooking and charging batteries.

Major energy reforms lead to greater efficiency

The IEA commends India for its continuous pursuit of market opening and greater use of market-based solutions through ambitious energy sector reforms. Increased access to affordable energy has raised the living standards of all segments of the population. India now has the institutional framework it needs to attract more investment for its growing energy needs. The IEA welcomes the government's decisions to allow private-sector investment in coal mining, and to open up the country's oil and gas retail markets. The creation of functioning energy markets will ensure economic efficiency in the management of the coal, gas and power sectors, which is critical to achieving energy security and supporting the country's economic growth. This will be increasingly important in the future, as energy demand and investment needs increase in line with India's economic expansion.

Reform of India's electricity sector will need to be comprehensive to achieve these goals. The IEA welcomes the reforms proposed by the Central Energy Regulatory Commission (CERC) and progress made towards improved real-time markets. A country-wide wholesale market is very much needed as a backbone for the national grid. Key to this success will be building a joint vision and a common reform roadmap among a broad range of central government agencies, state authorities, system operators and utilities. India also faces the challenge of ensuring the financial health of its power sector which is dealing with surplus capacity, lower utilisation of coal and natural gas plants, and increasing shares of variable renewable energy. The government is working to improve the financial viability of the power sector. Faced with the challenge of some "stressed assets" in coal and gas-fired generation, it has been implementing a package of measures to enhance the economic efficiency of coal and gas supply for power generation and the availability of finance. The creation of a competitive wholesale power market will be vital for improving the utilisation of India's generation capacity. India is making energy security a priority

India's electricity security has improved markedly through the creation of a single national power system and major investments in thermal and renewable capacity. India's power system is currently experiencing a major shift to higher shares of variable renewable energy, which is making system integration and flexibility priority issues. The Government of India has supported greater interconnections across the country and now requires the existing coal fleet to operate more flexibly. It is also promoting affordable battery storage. International experience suggests that a diverse mix of flexibility investments is needed for the successful system integration of wind and solar PV. This flexibility is available not only from the coal fleet – it can also come from natural gas capacity, variable renewables themselves, energy storage, demand-side response and power grids. Many of these solutions are not yet fully utilised in India. To fully activate a diverse set of flexibility options, it is critical for the government to put in place electricity market reforms that enable the appropriate price signals and create a robust regulatory framework.

India's coal supply has increased rapidly since the early 2000s, and coal continues to be the largest domestic source of energy supply and electricity generation. Amid more stringent air pollution regulations, new coal power plants that are more efficient, flexible and relatively lower in emissions will be better positioned for their economic viability. By contrast, old and inefficient plants, which require expensive retrofits to comply with environmental standards, are in a difficult position. The government is identifying those plants that can and will need to run more flexibly in the system. It is also examining changes to market design to improve the remuneration of the system services

they can provide. An efficient coal sector is critically important not only for electricity generation, but also for industrial development in areas such as steel, cement and fertilisers.

India is the world's third-largest consumer of oil, the fourth-largest oil refiner and a net exporter of refined products. The rate of growth of India's oil consumption is expected to surpass that of the People's Republic of China in the mid-2020s, making India a very attractive market for refinery investment. To maintain India's position as refining hub, the government is pursuing a very ambitious long-term roadmap to expand its refining capacity in line with the country's projected demand growth through 2040. As proven oil reserves are limited compared with domestic needs, India's import dependency (above 80% in 2018) is going to increase significantly in the coming decades.

To improve oil security, the government has prioritised reducing oil imports, increasing domestic upstream activities, diversifying its sources of supply and increasing Indian investments in overseas oil fields in the Middle East and Africa. Commendably, India is

promoting domestic production with a major upstream reform, the Hydrocarbon Exploration and Licencing Policy (HELP), and is progressively building up dedicated emergency oil stocks. India's strategic petroleum reserve supplements the commercial storage available at refineries. India's current strategic reserve capacity of 40 million barrels can cover just over 10 days of current net imports. However, given the expected growth in oil consumption, the same volume may cover only four days of net imports in 2040. Therefore, it is important that the government pursue the second phase of its strategic stockholding policy, which would add an additional 50 million barrels, and also prepares subsequent phases. The IEA welcomes the government's efforts to intensify discussions with potential investors and supports India's collaboration with countries that have varied and comprehensive experience in stockholding and response capabilities.

The government aims to increase the share of natural gas in the country's energy mix to 15% by 2030, from 6% today. The IEA welcomes this ambition, which would allow India to improve the environmental sustainability and flexibility of its energy system. Increasing domestic gas production has been a key government priority, as output has unexpectedly come in below forecast levels over the past few years. India has five operating terminals for liquefied natural gas. Projects under construction could result in up to 11 additional terminals over the next seven years.

The role of gas has grown in India's residential and transport sectors but fallen in power generation, where imported natural gas remains squeezed by cheap renewables and coal. The government is committed to further liberalising the country's natural gas market. Strengthening regulatory supervision of upstream, midstream and downstream activities should be part of the market reforms, as it is likely to bring greater efficiency and drive up demand for gas and investment in gas transport infrastructure. A liquid and well-functioning domestic gas market would be a strong pillar for India's security of gas supply.

Summary

Indian economy is primarily an agrarian economy though the government initiated a number of programs and policies to industrialise the economy. The lack of skilled labour and huge investments did not lead to the take-off of industralisation in the required pace. The opening up of the economy in 1991 did not do much for the manufacturing sector but the service sector got a huge boost. The contribution of the service sector is maximum in the GVA of the country followed by industries and then the primary sector. Employment is still generated from the primary sector as it does not require specific skills. Climate change and environment has become the prime focus at the international level. The Paris Accord of 2015 and COP26 of 2021 have univocally demanded the countries to integrate environment in all their policies. India has been a frontrunner in using alternative energy and has also committed to bring down the consumption of coal. India has opted for open market solutions to energy issues which have been commended by IEA.

Keywords

Agriculture: the science, art, or practice of cultivating the soil, producing crops, and raising livestock and in varying degrees the preparation and marketing of the resulting products

Industry: An industry is a group of companies that are related based on their primary business activities. In modern economies, there are dozens of industry classifications. Industry classifications are typically grouped into larger categories called sectors.

Service sector: The service sector, also known as the tertiary sector, is the third tier in the three sector economy. Instead of the product production, this sector produces services maintenance and repairs, training, or consulting. Examples of service sector jobs include banking, insurance, nursing, and teaching.

Climate change: Climate change refers to long-term shifts in temperatures and weather patterns. These shifts may be natural, but since the 1800s, human activities have been the main driver of climate change, primarily due to the burning of fossil fuels (like coal, oil, and gas), which produces heat-trapping gases.

IEA: The International Energy Agency is a Paris-based autonomous intergovernmental organisation established in the framework of the Organisation for Economic Co-operation and Development in 1974 in the wake of the 1973 oil crisis.

Aatmanirbhar Bharat: Atmanirbhar Bharat which translates to 'self-reliant India', is a phrase used and popularized by the Prime Minister of India and the Government of India in relation to the economic vision and economic development in the country.

Make in India: Make in India is an initiative by the Government of India to make and encourage companies to develop, manufacture and assemble products made in India and incentivize dedicated investments into manufacturing.

Self Assessment

1. Which of the following is the commercial crop in India?

A. Mustard
B. Tobacco
C. Jute
D. All of the above

2. Which Indian state produces the largest quantity of pulses?

A. Maharashtra
B. Uttar Pradesh
C. Madhya Pradesh
D. Rajasthan

3. Which of the following is not matched correctly?

A. Rabi Crop……Mustard, Cucumber
B. Rabi Crop……Mustard, Barley
C. Zaid Crop……Moong, vegetables
D. Kharif Crop…..Cotton

4. Which agency is responsible for procurement, distribution and storage of food grain production in India?

A. Ministry of Agriculture
B. Food Corporation of India
C. NAFED
D. TRIFED

5. Which one of the following cities has emerged as the ‘electronic capital’ of India?

A. Delhi

B. Kolkata
C. Bengaluru
D. Hyderabad

6. Which of the following industries is not a heavy industry?
A. Cotton textile
B. Cement
C. Iron and Steel
D. Ship building

7. Which industry is termed as the sunshine industry by the government of India?
A. Food Processing Industry
B. Mobile Industry
C. Real Estate sector
D. Automobile Industry

8. What was the contribution of the service sector to the GVA in the financial year 2019-20?
A. 52%
B. 53%
C. 54%
D. 55%

9. Which of the following is not considered as a social indicator of poverty?
A. Less no. of means of transport
B. Illiteracy level
C. Lack of access to health care
D. Lack of job opportunities.

10. Which of the following is not a major reason for the lack of effectiveness of targeted anti-poverty programmes?
A. Lack of proper implementation
B. Lack of right targeting
C. Overlapping of schemes
D. All the above.

11. Calorie requirement in rural areas is more than in the urban areas because:
A. rural people eat more
B. rural people have high bodies
C. rural people do more hard physical work
D. rural people have to take more rest.

12. Agenda 21 was given in which earth summit?
A. Stockholm summit
B. Rio De Janeiro summit
C. Kyoto summit
D. Paris summit

13. The Nationally Determined Contributions had to be submitted by which year?

A. 2015

B. 2018

C. 2020

D. 2025

14. Afforestation and clean energy is _____goal under the SDG?

A. Fifth

B. Sixth

C. Seventh

D. Eighth

15. By 2030 the Indian government wants to increase the share of natural gas in the energy mix to what level?

A. 27%

B. 29%

C. 30%

D. 31%

Answers for Self Assessment

1.	D	2.	C	3.	A	4.	B	5.	C
6.	A	7.	A	8.	D	9.	A	10.	D
11.	C	12.	B	13.	C	14.	C	15.	C

Review Questions

1. In spite of the low share of agriculture in the GVA of the country, agriculture is still considered the most important sector of the economy. Why?
2. Industralisation is required to create employment and to increase the consumption of manufactured goods by the masses. Comment
3. In the light of changes in environmental laws, international pressure to reduce carbon emission, how is the Indian industry compete at the international level.
4. How is the tertiary sector of an economy different than the other sectors in the economy? What role does the tertiary sector perform in the development process of an economy?
5. "The sequence of the growth process in India is different than what most of the other countries experienced during the transition from a developing to a developed nation". Examine this statement and account for the causes of rapid growth of the tertiary sector in India.

Further Readings

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Unit 12: Economic Reforms

CONTENTS

Objectives

- Understand the chronology and process of economic reforms
- Analyse the reforms in agriculture, industry, service sector and financial sector
- Evaluate the reforms and its impact on the Indian economy

Introduction

After attainment of independence, India adopted the regime of economic planning with a glorious vision of a resurgent India. It aimed to marching firmly on the path of progress while ensuring an equitable distribution of the nation's wealth. Policies relating to licensing focussed on public sector, putting infant industry argument for imposing trade barriers, import-substitution policies, etc. This gamut of policies led to over-protection, inefficient resource utilisation, high revenue deficits, mismanagement of firms and economy, poor technological development and shortage of foreign exchange.

The resultant stress and pressures compelled the government to revisit the policy framework. The outcome came to be a set of changes in economic policies, which in a broad sense came to be identified as economic reforms. The principal aim of economic reforms was to enter an era of globalisation which meant a) free flow of goods and services, b) free flow of technology, c) free flow of capital, and) free movement of human beings, especially labour from one country to another. Economic reforms, therefore, required integrating the Indian economy with world economy and the emphasis in economic reforms shifted to export-led growth strategy from import substitution strategy.

12.1 Historical background of the Reforms

The popular opinion is that reforms in India started in 1991 with the announcement of the New Economic Policy but the truth is that the base for these reforms were laid down in the eighties. The oil crisis of the seventies had brought about a change in the economic structuring of the country.

The second oil crisis of the seventies was not handled properly in terms of policy making which led to the country approaching the International Monetary Fund for the first time for structural loans. The then government of India understood the fact that it was difficult to continue with the socialistic pattern of the economy. There was a need to introduce the private sector in areas hitherto reserved for the public sector. Another significant development of the seventies that prompted the liberalisation of the economy in the eighties was industrialists themselves were beginning to find the strict regime counterproductive and started pressing the government for the relaxation of controls. A domestic lobby in favor of liberalization of imports of raw materials and machinery had come to exist. At the same time, in the case of raw materials and machinery imports that had no import substitutes, there was no counter lobby. The improved export performance and remittances from overseas workers in the Middle East had led to the accumulation of a comfortable level of foreign-exchange reserves. These reserves lent confidence to policymakers and bureaucrats who had lived in the perpetual fear of a balance of payments crisis.

Broadly, the reforms of the 1980s, which were largely in place by early 1988, can be divided into five categories. First, the OGL list was steadily expanded. Having disappeared earlier, this list was reintroduced in 1976 with 79 capital goods items on it. The number of capital goods items included in the OGL list expanded steadily reaching 1,007 in April 1987, 1,170 in April 1988, and 1,329 in April 1990. In parallel, intermediate inputs were also placed on the OGL list and their number expanded steadily over the years. Based on the best available information, this number had reached 620 by April 1987 and increased to 949 in April 1988. According to Pursell (1992, p. 441)), 'imports that were neither canalized not subject to licensing (presumably mainly OGL imports) increased from about 5 percent in 1980–81 to about 30 percent in 1987–88.' The inclusion of an item into the OGL list was usually accompanied by an "exemption," which amounted to a tariff reduction on that item. In almost all cases, the items on the list were machinery or raw materials for which no substitutes were produced at home. As such their contribution to increased productivity was likely to be significant.

The second source of liberalization was the decline in the share of canalized imports. Canalization refers to monopoly rights of the government for the import of certain items. Between 1980–81 and 1986–87, the share of these imports in total imports declined from 67 to 27 percent. Over the same period, canalized non-POL (petroleum, oil and lubricants) imports declined from 44 to 11 percent of the total non-POL imports. This change significantly expanded the room for imports of machinery and raw materials by entrepreneurs.

Third, several export incentives were introduced or expanded, especially after 1985, which helped expand imports directly when imports were tied to exports and indirectly by relaxing the foreign exchange constraint. Replenishment (REP) licenses, which were given to exporters and could be freely traded on the market, directly helped relax the constraints on some imports. Exporters were given REP licenses in amounts that were approximately twice their import needs and thus provided a source of input imports for goods sold in the domestic market. The key distinguishing feature of the REP licenses was that they allowed the holder to import items on the restricted (and therefore those outside of the OGL or canalized) list and had domestic import-competing counterparts. Even though there were limits to the import competition provided through these licenses, as exports expanded the volume of these imports expanded as well. This factor became particularly important during 1985–90 when exports expanded rapidly.

The fourth source of liberalization was a significant relaxation of industrial controls and related reforms. Several steps are worthy of mention:

- Delicensing received a major boost in 1985 with 25 industries delicensed.14 By 1990, this number reached 31. The investment limit below which no industrial license would be required was raised to Rs 500 million in backward areas and Rs. 150 million elsewhere, provided the investments were located in both cases at stipulated minimum distances from urban areas of stipulated sizes. Traditionally, the industrial licensing system had applied to all firms with fixed capital in excess of Rs 3.5 million. There remained 27 major industries subject to licensing regardless of the size and location of investment. These included a number of major industries like coal, large textile units using power, motor vehicles, sugar, steel, and a large number of chemicals. Products subject to Small Scale Industries (SSI) reservation were also off limits though the asset ceiling of firms designated as SSI units was raised from Rs. 2 million to Rs. 3.5 million.
- Broad banding, which allowed firms to switch production between similar production lines such as trucks and cars, was introduced in January 1986 in 28 industry groups. This

provision was significantly expanded in the subsequent years and led to increased flexibility in many industries. In some industries, the impact was marginal, however, since a large number of separate product categories remained due to continued industrial licensing in those products.

- In 1986, firms that reached 80 percent capacity utilization in any of the five years preceding 1985 were assured authorization to expand capacity up to 133 percent of the maximum capacity utilization reached in those years.
- Firms that came under the purview of the Monopolies and Restrictive Trade Practices (MRTP) Act were subject to different rules and could not take advantage of the above liberalizing policy changes. To relax the hold of the licensing and capacity constraints on these larger firms, in 1985–86 the asset limit above which firms were subject to MRTP regulations was raised from Rs. 200 million to Rs. 1,000 million. As a result, as many as 90 out of 180 large business houses registered under the MRTP Act were freed from restrictions on growth in established product lines. Requirement of MRTP clearances for 27 industries was waived altogether. MRTP firms in a number of industries were exempt from industrial licensing provided they were located 100 kilometers away from large cities. MRTP firms were allowed to avail themselves of the general delicensing measures in sectors in which they were not considered dominant undertakings. These measures significantly enhanced the freedom of large firms (with assets exceeding Rs. 1,000 million) to enter new products.
- Price and distribution controls on cement and aluminum were entirely abolished. Decontrol in cement eliminated the black market and through expanded production brought the free-market price down to the controlled levels within a short time. New entrants intensified competition, which led to improvements in quality along with the decline in the price.
- There was a major reform of the tax system. The multi-point excise duties were converted into a modified value-added (MODVAT) tax, which enabled manufacturers to deduct excise paid on domestically produced inputs and countervailing duties paid on imported inputs from their excise obligations on output. By 1990, MODVAT came to cover all subsectors of manufacturing except petroleum products, textiles, and tobacco. This change significantly reduced the taxation of inputs and the associated distortion. In parallel, a more smoothly graduated schedule of excise tax concessions for small-scale-industries (SSI) firms was introduced, which reduced incentives for them to stay small.

The relaxation of industrial controls reinforced the ongoing import liberalization. In the presence of these controls, firms had to have an investment license before they could approach the import-licensing authority for machinery and raw-material imports. For products freed of industrial licensing, this layer of restrictions was removed. More importantly, under industrial licensing, even for products on the OGL list, machinery imports were limited by the approved investment capacity and raw material imports by the requirements implied by the production capacity. With the removal of licensing, this constraint was removed.

The final and perhaps the most important source of external liberalization was a realistic exchange rate. At least during the years of rapid growth, there is strong evidence of nominal depreciation of the rupee correcting the overvaluation of the real exchange rate. According to the charts provided in Pursell (1992), both the import-weighted and export weighted real exchange rates depreciated steadily from 1974–75 to 1978–79 with the approximate decline of the former being 30 percent and of the latter 27 percent. It bears reminding that this was also a period of rapid export expansion (see below) and foreign exchange reserves accumulation that paved the way for import liberalization subsequently. The years 1977–79 also registered the hefty average annual GDP growth of 6.5 percent. The real exchange rate appreciated marginally in the following two years, stayed more or less unchanged until 1984–85, and once again depreciated steadily thereafter.

12.2 Rationale of Economic Reforms of the Nineties

Indian economy was highly regulated during the first four decades of economic planning (1950-1990). The five-year plan objectives were focussed on development of public sector for setting up heavy and basic industries, self-reliance, import substitution strategies, nationalisation and state-

interventionist regime. While on one hand it helped in setting up some key industries like SAIL, ONGC, IOC, BHEL, etc., on the other hand it restricted the growth of private sector, private business plans and brought about bureaucracy-led corruption, sick public sector enterprises, deteriorating trade balance, economic and financial crisis in early 1990s.

India had to borrow foreign exchange from IMF and comply with the conditionality imposed by it such as stabilisation and structural stability programme, reduction of trade barriers, revision of fiscal and monetary policies, active role of market and integration of the Indian economy with the world economy. In a nutshell, the three basic elements of economic reforms were liberalisation, privatisation and globalisation (also known as LPG strategy) of the Indian economy.

12.3 Characteristics of Economic Reforms

The New Economic Policy (NEP) during the economic reforms process reflected neo-liberalism. The rationale of economic reforms was provided by the IndustrialPolicy announced by the Government in 1991. Its basic philosophy was summedup as 'continuity with change'. The key objectives can be summarised as:

i. to set free the Indian industrial economy from the hassles of unnecessary bureaucratic controls;
ii. to introduce liberalisation with a view to integrate the Indian economy with the world economy;
iii. to remove restrictions on foreign direct investment (FDI) and also to lessen the restrictions of Monopolies and Restrictive Trade Practices (MRTP) Act for the domestic entrepreneur;
iv. to dilute the monopoly of public sector enterprises and encourage competition from new private enterprises.

Liberalisation

A liberal policy adopted on both domestic and external fronts aimed to counter the financial crisis during early 1990's included the following measures

i. All industrial licensing was abolished except for 18 industries relating to security and strategic concerns, social sectors, hazardous chemicals, environmental reasons and items of elitist consumption industries. (Presently, only five industries are subject to licensing)
ii. To promote domestic and global competition, reservation of Small-scale industry (SSI) items is being reduced gradually since 1990s. Currently, the number of items facing reservation stands only 21, a marked decline from836 in 1996.
iii. MRTP Act was amended to account for removal of pre-entry restrictions, concentration of economic power, threshold limits of assets in respect of dominant undertakings and MRTP companies. (Subsequently, the MRTP Acthas been withdrawn and the MRTP commission stands disbanded)

Privatisation

Privatisation refers to any process that reduces the involvement of the state/public sector in economic activities of a nation. Contrary to the post-independence thruston enlargement of public sector, the economic reforms of 1991 recognised private sector as the engine of growth. Policies were framed to increase the role of private sector in the process of development. Privatisation in a mixed economy like India can take several forms such as:

1. ***Total denationalisation***, implying complete transfer of state ownership of productive assets into private hands. Some prominent examples in India were of Allwyn Nissan, Mangalore Chemical and Fertilisers, Maharashtra Scooters– transferred to private hands.

2. ***Joint venture***, implying partial induction of private ownership from 25 to 50per cent or even more in a public sector enterprise, depending upon the nature of the enterprise and state policy in this regard. The basic aim is to improve efficiency, productivity and profitability of the firms. Three kinds of proposals are put forward in it:

- 26 per cent ownership by the private sector (banks, mutual funds, corporations, individuals). Workers also to be included and equity to the extent of 5 per cent to be transferred to them.
- 51 per cent equity to be retained by the Government and 49 per cent to be sold to private sector.
- 74 per cent of the equity transferred to the private sector and Government retains 26 per cent.

3. ***Worker's co-operative*** is another form of privatisation where a loss-making public sector firm is transferred to the workers. A classic example of the Indian case is the Indian Coffee Houses run by a chain of worker cooperative societies, retained from the British rule post-independence. However, it did not assume a significant role in economic reforms due to requirement of investments for expansion of businesses.
4. ***Token Privatisation***, also known as deficit privatisation or disinvestment, implying sale of 5-10 per cent shares of a profit-making public sector enterprise in the market with the objective of obtaining revenue to reduce budget deficits. During the period 1991-92 to 2011-12, the government could raise a sum of Rs. 60,000 crore by way of disinvestment. On an average, disinvestment receipts have managed to cover 7 per cent of the revenue deficit and 4 percent of the fiscal deficit over the period 1992-2012.

Government announced a new policy on November 5, 2009 which has two components: One dealing with listed profit-making units and another extending to all other government-owned companies. While the former will have to off load minimum 10 per cent equity stake, unlisted ones (meeting 3 criteria – a positive net worth, no accumulated reserves and a net profit for three consecutive years) will have to opt for listing on the stock exchanges by divesting similar amounts.

Globalisation

Globalisation is the process of integrating the various economies of the world without creating any barriers in the flow of goods and services, technology, capital and labour/human capital. It involves four components:

1. Reduction of trade barriers in the form of custom duties/quotas/quantitative restrictions so as to permit free flow of goods and services in different economies.
2. Creation of an environment in which free flow of capital (or investment) can take place between nation states.
3. Creation of an enabling environment for the free flow of technology; and
4. From the viewpoint of developing countries, creation of an environment in which free flow of labour or human resources can take place among different countries of the world.

Essentially, globalisation is an extension of the process of liberalisation in the international domain. It therefore signifies internationalisation plus liberalisation.

In India, the process of globalisation began with the adoption of LPG model during economic reforms since 1990s. Some of the key features in this context are:

i. Its key impact was seen in India's service sector particularly in fast-paced growth of industries like information technology (IT), information technology enabled services (ITES), outsourcing, telecommunications, tourism, real estate, transport, banking, insurance, entertainment, etc.

ii. Inducement to foreign investment flows (FDIs and FIIs) has brought about efficiency, competition, profitability and global standards in productivity and quality of economic goods. Mergers, joint-ventures, PPPs, and contracting to foreign players have accelerated the development process in the Indian economy.

iii. The two decades of economic-reforms have seen an increase in the rate of exports, migration (domestic and international), etc.

Public Private Partnership (PPP)

India is setting out a successful example of PPP projects and encouraging private participation in key development projects. The main advantages of public-private partnerships are efficient and speedy delivery of projects, alleviation of capacity constraints and bottlenecks in the economy, innovation and diversity in provision of world-class facilities, value for money of the tax-payer through optimal risk transfer and risk management, etc. There are various models of PPP and the ones primarily followed in India are:

- build-operate transfer (BOT), example – Mumbai Metro rail undertaken by Anil Ambani group
- build-own-operate-transfer
- build-own-operate (BOOT), example – Rajiv Gandhi International airport, Hyderabad.
- concession
- design-build-finance operate
- management contract
- asset sale

These models are being developed as per the needs of the projects for highways (expressways, flyovers, sub-ways and foot-over-bridges), railways (IRCTC), metro rail as well as airports. As of now 450 PPP projects are under implementation

12.4 Banking Sector Reforms

In continuation to NEP and to bring structural reforms in the working of the economy, a series of measures were introduced in the financial sector especially in the banking sector. In the following section, you will study about these reforms. In 1991, the Government of India set up the Narasimham Committee to examine all aspects relating to the structure, functioning, organization and procedure of the financial system to remodel these institutions for raising the overall efficiency.

Narasimham Committee, 1991

Narasimham Committee was set up in 1991 to analyse the falling efficiency of the India banking sector and then recommended certain reforms to revive the banking sector.

Major recommendations of the Narasimham Committee, 1991 are:

1. The committee felt that the present structure was too rigid and inflexible so it proposed the deregulation of the interest rate structure and said that the interest rate should be determined by market forces.
2. Re-examination of direct credit programme and to include small and marginal farmers, tiny industrial sector and weaker sections. The aggregate credit to the redefined priority sector to be fixed at 10%.
3. Reduction of Statutory liquidity ratio (SLR) to 25% over a period of 5 years from 38.5% in 1991. Further, the cash reserve ratio (CRR) to be reduced in a phased manner from the existing rate of 15%.
4. Establishment of 4 tier hierarchy for the banking structure which should be as follows:
   i. 3-4 banks (including SBI) at the top of the banking structure and they could become international in character.

ii. 8-10 banks engaged in general or universal banking and they would have a network of branches throughout the country.
iii. Local banks whose operation would be confined to a specific region.
iv. Regional banks including Reginal Rural Banks (RRBs) would be confined to rural areas and they would be engaged in financing agriculture and allied activities.

5. Introduction of prudential norms and regulation:
   i. Definition of Non-Performing Assets: An asset would be considered nonperforming if the interest on such assets remains past due for a period exceeding 180 days at the balance sheet date. Banks and financial institutions to be given a period of 3 years to move towards these norms.
   ii. For the purpose of provisioning, the committee recommended classifying assets into 4 categories, namely, standard, sub-standard, doubtful and loss assets. Regarding the substandard, a general provision should be created equal to 10 percent of the total outstanding under this category. In case of doubtful assets provision should be created to the extent of 100 percent of security shortfall. In respect of the secured portion of some doubtful debts, further provision should be created ranging from 20 percent, 50 percent depending on the period for which such assets remain in the doubtful category. With respect to loss assets, it is suggested that either fully they be written off or provision be created to the extent of 100 percent. The committee also suggested that a period of 4 years should be given to the banks and financial institutions to conform to those provision requirements.
   iii. Banks and financial institutions should achieve a minimum of 4 % capital adequacy ratio by March 1993 of which Tier-1 capital should not be less than 2%.
6. An Asset Reconstruction Fund (ARF) to be established for the recovery of loans. This fund would take a portion of the bad and doubtful debts of the banks at a discount.
7. End to the duality of control and RBI should be the primary agency for the regulation of the banking system.
8. To provide autonomy to the banks the chief executive of the bank should be appointed based on professionalism and integrity and not on political consideration.
9. Banks can access the capital market and issue of fresh capital to the public through the capital market.The Banking Companies (Acquisition and Transfer of Undertaking) Act was amended so that banks can raise capital through public issues but to the condition that the holding of Central Government would not fall below 51% of paid-up capital.
10. Setting up of new private sector banks if they conform to the requirement of minimum start-up capital and other requirements. Further, there should not be any differential treatment between public and private sector banks.
11. Opening of foreign banks to open offices in India either as branches or as subsidiaries.

Narasimham Committee II -1998

This committee was given the mandate to review the progress of banking sector reforms and design a programme to further strengthen the financial structure, technological upgradation, human resource development, capital adequacy norms and bank mergers. The major recommendations include:

1. A stronger banking system in the context of Current Account Convertibility (CAC). Indian banks must be made capable of handling problems pertaining to domestic liquidity and exchange rate management. So strong banks need to be merged which will have a multiplier effect on the industry.
2. Revival of Narrow Banking Concept whereby weak banks should place their funds only in short term and risk-free assets like government securities.
3. Setting up of small, local banks which would cater to needs of states or cluster of the district to serve local trade, small industry and agriculture.
4. Banks should aim to reduce gross NPAs to 3 % by 2002.

5. To improve the strength of the Indian banking system the government should raise capital adequacy norms of 9 % by 2000, 10 % by 2002.
6. Banks to give more autonomy and freedom in the recruitment of skilled, specialized manpower from the market.
7. Rapid introduction of computerization and technology.
8. Amendments in the Banking Regulation Act, Nationalisation Act and State Bank of India Act, RBI Act, Bank Nationalisation Act, etc. to allow greater autonomy, higher private-sector shareholdings, and so on.

Financial Sector Reforms

The Government of India from time to time have been making certain reforms to strengthen and stabilize the financial sector.

I. Financial Stability and Development Council (FSDC)

The government of India, in 2010 created an apex body (non-statutory) to promote financial sector development and strengthen the mechanism for maintaining financial stability. The regulator is entrusted with the responsibility to maintain macro-prudential supervision in the country, inter-regulatory coordination and financial development issues. The Union Finance Minister is the chairperson of the FSDC and other members include the governor of RBI, chairman of SEBI, IRDA and others.

II. Merger of Forward Markets Commission (FMC) with the Securities and Exchange Board of India (SEBI)

As you must be familiar with forward trading in the context of shares in which buyers and sellers agree to trade a financial asset at a future date at a specified price. Similarly, forward contracts are agreements in the commodity market concerning the future delivery of a commodity at the pre-negotiated prices. The Forward Market Commission (FMC) established in 1953 acted as the regulatory body for the commodity futures market in India.

However, as part of Financial Sectors Reforms, FMC was merged with the Securities and

Exchange Board of India (SEBI) in 2015. The merger aimed at realising the benefits of

economies of scope and scale for exchange and to harmonize the regulation of commodity

derivatives and the securities market.

III. Insolvency and Bankruptcy Code, 2016

Before the Insolvency and Bankruptcy Code, 2016, there were several laws and procedures mostly overlapping and adjudicating forums that dealt with insolvency and financial failure of individuals and companies in India. The institutional and legal framework imposed a heavy strain on the Indian credit system as there was no time limit on the effective and time recovery or restructuring of defaulted assets. Reforms in the bankruptcy and insolvency regime were critical not only for credit markets which were under a lot of stress but for the ease of doing business in the country. The new code aims at consolidating and amending laws relating to reorganization and resolution of corporate persons, individuals and partnership firms in a time-bound manner i.e. 180 days in case of companies. However, a subsequent amendment in this code in 2019 (The Insolvency and Bankruptcy Code (Amendment) Act, 2019) has enhanced the mandatory upper time limit to 330 days which includes time spent in the various legal processes to complete the resolution process.

To promote entrepreneurship and availability of credit and balance the interests of all the stakeholders, under the new Code, the National Company Law Tribunal (NCLT) will now adjudicate insolvency resolution for companies and the Debt Recovery Tribunal (DRT) will adjudicate insolvency resolution for individuals. Establishment of the Insolvency and Bankruptcy Board of India will oversee the insolvency proceedings in the country and regulation of all entities registered under it. To speed up the implementation of this Code, Government of India established the Tribunals, National Company Law Tribunal (NCLT) and National Company Appellate Tribunal (NCLAT) and Insolvency and Bankruptcy Board of India (IBBI) in 2016.

Banking Regulation (Amendment) Ordinance, 2017

One of the biggest problems in the Indian banking system pertains to Non-Performing Assets (NPA). Over the years they have accumulated and have reached trillion of crore rupees. To deal with the problem of stressed assets, Banking Regulation (Amendment) Ordinance, 2017 was promulgated in 2017. The bill has amended the Banking Regulation Act, 1949 and has inserted two new sections namely 35AA and 35AB after Section 35A. Accordingly, RBI is now authorized to direct banking companies to resolve specific stressed assets by initiating an insolvency resolution process wherever required. The RBI is also empowered to issue other directions for the resolution of the stressed assets. RBI can also form committees to advise banks on the resolution of stressed assets and the members of such committees will be appointed by the RBI. The Ordinance enabled RBI to deal with NPAs quickly. Accordingly, now the Oversight Committee can bypass three major factors/hurdles which slowed the resolution process. These are: 1) stop 'free riding' by lenders who did not participate in the resolution process. 2) compliance after an agreement has been sealed. 3) certify the process to alleviate fears of future investigations.

V. The Banking Regulation (Amendment) Act, 2020

To find a solution to the deteriorating condition of cooperative banks in the country, the government amended the Banking Regulation Act, 1949 and promulgated Banking Regulation Amendment Bill, 2020. The major objective is to bring cooperative banks under the supervision of the RBI.

RBI, after placing the bank under a moratorium can prepare a scheme for reconstruction or amalgamation of the bank. This is done once the RBI is satisfied that such an order is necessary to protect the interest of the depositors, public of the banking system. However, the act also allows RBI to initiate such a scheme without imposing a moratorium.

The Cooperative bank can now issue equity shares, preference shares or special shares to its members or to any other person residing within its area of operation, They can also issue unsecured debentures or bonds with a maturity of 10 years or more to such person with the prior approval of RBI. No person can demand payment towards the surrender of shares that are issued by a cooperative bank.

The RBI may exempt a cooperative bank or a class of cooperative banks from a certain provision of the Act through notification. The cooperative banks cannot employ someone who is insolvent or has been convicted of a crime. The RBI has the power to remove the chairman if he/she is not fit for the position and can appoint another person as chairman. Cooperative banks cannot make loans or advances on the security of their own shares. They cannot grant unsecured loans or advances to their directors or to private companies where the bank's director or chairman is an interested party. The Act has specified certain conditions under which unsecured loans or advances may be granted and it specifies how these loans may be reported to RBI.

The cooperative banks without prior approval of RBI, cannot open a new place of business or change their location outside the city, town or village in which it is currently located. This Act does not apply to Primary Agricultural Credit Societies (PACS) and cooperative land mortgage banks.

12.5 Economic reforms and Agriculture

Economic reforms include a number of issues. They try to correct the basic shortcomings of the economy that hinder its growth and welfare of its people. Purpose of economic reforms is to generate output and employment and maximize economic growth. In an agriculture dependent economy, no effort in this direction can be successful without making agriculture conducive for growth. Therefore, economic reforms have relevance for agriculture as well.

The principal thrusts of reforms in agricultural sector are the following:

a) Encourage private investments: This can be achieved by providing credit facilities, irrigation, transportation, marketing, warehousing facilities, information and export opportunities to the farmers. Land Reforms: In India about 75% of the cultivators own 25% of the total land under cultivation. If these poor farmers could be provided with more land by redistributing the land it will boost agricultural production and investments. This is because land owned by the existing big landlords are often leased out to poor tenants. These tenants do not possess enough money to invest. There is also a large section of landless labourers and tenant farmers who need to be allocated land. Such redistribution of land would ensure a regular source of income to agricultural labourers and tenants besides increasing production. For this measure to be successful

supplementary supports in the form of cheap seeds, fertilizers, irrigation and credits have to be provided.

c) Taxing the Agricultural Rich: On the ground that majority of the Indian farmers are poor, the government does not impose taxes on agricultural income. But the benefits of such a policy accrue to the rich landlords and farmers who only get richer by this exemption. Moreover, this concession has become a means of tax evasion. People often show their non-agricultural income as agricultural income and claim tax exemptions. To generate sufficient resources for development purposes, the possibility of taxing rich landlords and farmers needs to be explored.

d) Managing the Terms of Trade: The price relation between the agricultural and industrial sectors is a matter of great importance. It determines the level of real income for the entire population. In a poor country like India, high food prices (which means a high terms of trade for agriculture) mean a low living standard for a large segment of the population. It means high poverty level and low demand for industrial goods. As a result, industrial output and employment may suffer. High procurement prices offered by the government mainly benefit rich farmers with marketable surplus.

e) Promoting Exports of Agricultural Goods: India has the potential of growing a variety of crops because of its differing climatic conditions. Thus this potential should be properly utilized in order to capture the foreign market for these goods. At the same time, however, it should be remembered that in many cases higher global prices often leads to outflow of foodgrains and food products which could lead to shortages in the country.

f) Rationalizing Subsidies: Subsidies have been the subject of much debate in India. In the post-independence period Indian farmers have been given huge amount of subsidies under a number of heads. Be it building of public infrastructure such as dams and irrigation projects, or provision of cheap power, HYV seeds and fertilizer, or even regular procurement of crops at remunerative prices. However, critics question whether the subsidies are reaching the target groups. Many are of the view that only the rich farmers in select northern states get most of these subsidies. Thus a proper scheme for the provision of subsidies, which benefits majority of farmers, needs to be designed.

g) Free Trade in Agri-Products: As we have seen in the previous unit India is facing a problem of over-supply in food grains and many other agricultural commodities. However, for many years there was restriction on movement Ofari-products across states. These restrictions were imposed in the form of licensing of dealers, placing limits on stocks, and control on movement of commodities under the Essential Commodities Act, 1955. The government has now withdrawn licensing requirement of dealers and restrictions on storage and movement of food grains (wheat, paddy, rice, coarse grains), sugar, oilseeds and edible oils. Free movement of agricultural products has another benefit – we don't need self-sufficiency in all agricultural commodities at the regional level. Once self-sufficiency is attained at the national level, free trade will help in movement of food grains from surplus to deficit regions. Moreover, free trade will create an integrated national market in agricultural produce.

Areas of Reforms in Indian Agriculture

Based on the discussion in the previous section we attempt to identity areas in which reforms need to be carried out. We enlist them below.

Prices

The prices which the cultivators get for their crops and the prices at which consumers buy from the market need to be rationalized. We saw in Unit 19 that high remunerative price induces agricultural investments and growth. But it may lead to impoverishment of lower income groups and decelerate industrial growth. The price charged at the public distribution system (PDS) shops also needs to be reformulated. The hike in issue prices in recent years has resulted in low off-take from the PDS outlets. This is because the price levels for the 'Above Poverty Line' (APL) target group exceeded the market price whereas the products on offer were of sub-standard quality. For the 'Below Poverty Line' (BPL) group the prices were somewhat lower but the rich and the influential got themselves registered as BPL and reaped the benefits. The result has been fall in cereal consumption by the poor and rising inequality. There is a need for a well thought out policy in this area which protects the interests of both producers and consumers.

Subsidies

Subsidies are related to the issue of prices. Lower price that the consumers pay at PDS fair price shops is due to the subsidies granted by the government. However, as mentioned above, in many cases subsidies do not reach the target groups. In the case of 'production subsidies' provision of subsidised fertilizers, seeds, pump sets and other equipment's have helped the rich farmers, particularly in agriculturally developed states. On the whole, we can say that agricultural subsidies need to be streamlined or reformed. It does not mean that they have to be done away with; rather they have to be properly focussed.

Exports

Exports by a farmer result in higher income for the farmer. It also earns foreign exchange for the country which makes its economic position stronger. Therefore, the government should look at the issue of export promotion of agricultural products and provide necessary support. It should minimize the legal and bureaucratic hassles in the way of setting up of a production unit and exporting abroad. But the considerations which we have talked about earlier, such as not fuelling the domestic food price or not contributing to poverty, should also be kept in mind. Not contributing to poverty, should also be kept in mind have some commodity which it can produce at the minimum relative cost. And it will be beneficial for all the countries if they specialize in production and export of commodities where they have comparative advantage. The aggregate welfare and output will be maximized in this way.

It follows from the above theory that measures which restrict trade or encourage production of commodities in which a country does not have comparative advantage lead to a fall in domestic and global welfare. It then follows that all tariffs and quota son imports should be scrapped. Subsidies that are given to production of exports goods should be withdrawn because they distort the free market price. Free market price ensures that resources are efficiently allocated between alternative uses. Extending this logic to agricultural goods, it is recommended that all quantitative restrictions (QRs) on the imports of agricultural products should be abolished. The restrictions India had earlier on import of agricultural goods were based on a different understanding.

The import quotas sought to guarantee that Indian farmers were protected against foreign competition and dumping. It was argued that dependence of food imports might mean poverty and famine in years when global food shortage occurs.

Another set of measures suggested by the WTO is related to patent laws and their implementation. WTO believes that a company inventing a particular product should have the exclusive rights to benefit from it. This will ensure that people do get necessary incentive and money to invent and research on a new product. Result of this policy is that anybody using a patented product or producing it has to pay a royalty to the original inventor. This is called TRIPS (trade related intellectual property rights). It has the implication that in order to use high yielding patented varieties of seeds, fertilizers and pesticides, the users have to pay a fee to the respective patentholders. Anyone who wants to do research on a patented seed is being forbidden to do so without permission and payment of royalty to the patent holder. The impact of such patents is an increase in the cost of production for the farmers.

Other broad WTO recommendations which also affect Indian agriculture are as

follows:

i) Reduction in subsidies to farmers: The WTO believes that subsidies have two adverse effects. First, it distorts free market prices leading to misallocation of resources. Second, it raises government fiscal deficit. High fiscal deficit may lead to balance of payment difficulties and inflation.

ii) Reduction in government spending: The international organizations such as IMF have been suggesting that the government should cut down on expenditure so as to reduce fiscal deficit. An outcome of such efforts by many governments including India has been a reduction in the outlay on public infrastructure such as roads, electricity, transportation and rural banking. Investments on public irrigation facilities have also declined.

iii) Privatization of the public sector units: The WTO believes that government should have no economic interventions in production and resource allocation. It should play the role of a facilitator in realization of higher growth and maintain economic stability. An implication of such a prescription has been the selling off of public sector undertakings.

iv) Dismantling the PDS: The PDS implies two kinds of subsidies to be paid by the government. First to the farmers in terms of procurement price higher than market price. Second to the consumers by selling food grains at lower than market price. Such operations raise fiscal deficit and promotes inefficiency.

12.6 Economic Reforms and Industry

By the late 1970s and early 1980s, it was obvious to many that the pervasive regulation and controls over private economic activity by the Government had inhibited economic efficiency and growth. The industrial sector in India fared quite impressively in the 1980s in terms of growth of output/value added compared to the earlier period 1966-79. Overall, the Government of India maintained a reasonably good growth rate during the late 1980s but it was achieved only by increasing fiscal deficits. Indeed, when Rajiv Gandhi became the Prime Minister in 1984, he declared that his primary objective was to "rationalise" controls. The intent was clearly to reduce the number of overlapping and sometimes even inconsistent regulations. In fact, the process of industrial policy reform started in 1970s. Automatic capacity expansions were permitted during the 1970s and 1980s and a few industries were delicensed in 1975 but this liberalisation was trivial.

Systematic deregulation began in earnest in the mid-1980s. Taxation reform – mainly the conversion of multi-point excise duties into a modified value added tax (MODVAT) in all sectors except petroleum products, textiles and tobacco by 1990 – also impacted industrial performance by reducing the taxation of inputs and the associated distortion. The New Industrial Policy (NIP) statement of 1991 introduced reforms in regulations governing licensing, monopoly, foreign investment and small-scale sector industries and in the role of public sector enterprises. It may be mentioned that the series of economic reforms that India initiated in July 1991 were unprecedented in their scope and magnitude.

In 1985 a system of "broad-banding" was introduced that allowed existing license-holders to diversify into a number of related industries without obtaining prior permission. By 1988, the number of broad product groups that required capacity licensing by the Government had been reduced to 27 from 77 previously. Further, deregulation in 1993 brought this down to 18 items that were important for strategic, environmental or social reasons or were producers of luxury items and finally to only six in 1999. All other industries were permitted to expand according to their market needs, without obtaining prior expansion or capacity clearance from the Indian Government. In particular, industries included in the negative list for producing 'elitist' products such as motor cars and consumer durables were delicensed in 1993, the entertainment electronics industry in 1996 and sugar, petroleum products and coal and lignite industries in 1998.

Liberalisation of industrial licensing and opening industry to foreign investment was an important part of the NIP statement of 1991. This element has progressed well as far as Central Government controls are concerned. Investors still face many problems in implementing projects, but these are largely at the State level, which is a second-generation area. However, there are some areas of industrial deregulation where further action is needed. The sugar industry is one such area. Sugar is an extremely important agro-based industry and the second largest industrial employer in the country after cotton textiles. If liberalisation is beneficial to industry, it should be beneficial to sugar also. Yet this industry remains subject to extensive control associated with the existing dual price system. In the sugar industry, State advised prices to be paid to farmers are often unconnected with market conditions and a portion of the production must be surrendered as levy sugar at an unremunerative price. Even the so-called fee market sugar is also subject to release control. The industry complains of a non-level playing field against imports, which do not suffer from the levy. There is a strong case for decontrolling sugar and opening this industry to market competition.

Another important aspect of the reform process of the 1990s was the amendment to the Monopolies and Restrictive Trade Practices (MRTP) Act which eliminated the need for prior Government approval for new investment, capacity expansion and mergers by large firms. The amended MRTP Act gave more emphasis to prevention and control of monopolistic, restrictive, and unfair trade practices, to provide adequate protection to consumers.

There had been little change in the list of state-dominated industries between 1956 and 1991. As we have learned in unit 7, the reforms of 1991 reduced the role of the public sector by abolishing Schedule B (It included 12 industries, sea transport, drugs, dyestuffs and plastics, fertiliser, synthetic rubber, chemical pulp, aluminium, etc., in which private sector firms would be accepted, although the public sector would play an increasing role in the future expansion of these industries.) and reducing the number of items reserved for the public sector alone (i.e. the Schedule

A industries) from 17 in 1983 to six in 1993 and finally to four in 1999 – arms and ammunition, atomic energy, minerals used in atomic energy production and rail transport. The scope of Public Sector Units (PSUs) was restricted to the provision of infrastructure services. PSU reform was essential, as the inefficiencies in this sector would multiply into downstream inefficiencies due to its dominant presence in infrastructure and the provision of critical inputs (Srinivasan and Bhagwati, 1993). Under the amended Sick Industrial Companies Act, poorly performing PSUs could be referred to the Board for Industrial and Financial

Reconstruction (BIFR) for rehabilitation and were given prioritised allocation from the National Renewal Fund for displaced workers. In the early 1990s, greater autonomy was given to more efficient PSUs and some divestment of Government equity was carried out. Complete privatisation, finally introduced in the late 1990s, made slow progress with the first major successful privatisation taking place in 2001. Reforms were also undertaken to encourage foreign investment and technology. The Government had established a more liberalised foreign investment policy.

Consequent to the above changes, a separate set of policy measures were introduced for the promotion and strengthening of Small-Scale Industries (SSIs) in August 1991. This new policy statement was a clear re-affirmation of the commitment of the Government towards the importance of this sector in economic growth objectives. The policy proposed to impart more vitality and growth impetus to the sector to enable it to contribute its mite fully to the economy, particularly in terms of growth of output, employment and exports.

In due course, the sector was substantially delicensed and investment limits in plant and machinery were increased. Further, efforts were made to deregulate and de-bureaucratise the sector and the Government proposed to review and modify, wherever necessary, all statutes, regulations and procedures to ensure that their operations did not militate against the interests of the small and village enterprises.

To summarise, firms operating in the Indian market in the pre-reform period (i.e., before 1991) faced barriers to entry due to Government control over private investment through the licensing regulations, reservation of production for the public sector and lengthy and opaque procedures for approving foreign direct investment (FDI) that were further subject to a maximum limit of 40 per cent equity share. These restrictions on entry were gradually eased during the 1990s. With the industrial policy reforms of 1990s, India has moved into an era of a more competitive industrial environment in which entrepreneurs respond to market signals rather than try to skirt around bureaucratic controls.

Industrial Growth and its Structural Transformation in the 1990s

The industry sector in India has undergone a significant transformation in the 1990s. The process of organisational restructuring and the concomitant supportive changes in industrial policy aimed at creating a more competitive and challenging industrial environment are under way. The need for industrial restructuring has raised several issues associated with mergers and acquisitions in the private corporate sector, reforms in the public sector enterprises and so on and so forth. The structural changes have influenced the industrial performance. In the 1990s, the overall industrial growth based on the Index of Industrial Production (IIP) recorded a much wider variation (ranging between 0.6 per cent to 12.7 per cent) as compared to the relatively low order of variation (ranging between 3.2 per cent to 9.3 per cent) observed in the 1980s. Over the past three decades, the industrial sector has not shown any definitive trend either in its growth rate or in its contribution to Gross Domestic Production (GDP). The share of industry in GDP rose from 18.6 per cent in 1970 to 27 per cent in 1995-96. However, it fell to 22 per cent in 1996-97 where it remained in the subsequent two years.

Generally, industrial growth is portrayed through growth in IIP. The IIP is a standard measure of the trends of industrial production and is being published as a monthly series since 1950 by the Ministry of Industry, Government of India. Revisions of IIP are carried out from time to time by shifting the comparison base to a more recent period and by reviewing coverage of items/industries for reflecting changes in the structure of the Indian industry sector. The Department of Statistics set up a Technical Advisory Committee (TAC) in June 1995 to examine all technical issues relating to comparable state level IIPs and make recommendations thereon.

12.7 Economic Reforms and Service Sector

To appreciate the nature of service-sector reforms initiated during the last two decades, we prepare two catalogues: (1) Pre-reforms strategies, and (2) Post reforms strategies as follows in Table 12.1. It may be observed that all these reform measures are comprehensive in their range and sweep as they cover all the sectors of the economy. But they have specific implications for the service sector, as the service sector conditions and is conditioned by production processes both in the primary and secondary sectors of the economy.

Table 12.1 Service Sector Strategies

Pre-Reform Strategies	Reform Strategies
Closed economy	Open economy
Self-reliance	Integrate with world markets
State-led economic growth	Market-determined economic growth
Import substitution strategies	Export oriented strategies
Licence-dominated regime	Delicensing, deregulations, debureaucratisation
Frequent State interventions	Selective and effective State interventions
Politically administered prices	Market-determined prices at large
Not much concern for deficits	Contain all kinds of deficits
Development by inflationary process	Deflationary monetary and fiscal policies
PSUs as engines of growth	Private investment as growth engine
Dominance of PSUs	Withdrawal from the areas of private interest
Philosophy of natural monopoly	Minimise gap between public and private sectors
Restrictions on FDI and MNCs	Inducement to FDI and MNCs
Restrictions on currency movement	Liberalisation of restrictions
State-controlled interest rates	Deregulation of interest rates
State-controlled credit	Credit policy reforms
Underdeveloped capital market	Reforms in capital market
Huge public sector budgetary resources (PSBR liability on government)	Minimise PSBR
High tax rates	Tax reforms

Within the contours of this model of service sector reforms, we can enumerate the various reform-measures as follows:

Exchange Rate Policy

After a steep devaluation of about 22 per cent vis-à-vis dollar in July 1991, the rupee was floated in phased manner. In March 1992, rupee was partially floated. This was followed by shift to market-determined rate of rupee in March 1993.

Fiscal Policy

Tax reforms aim at reducing the dependence on indirect taxes for revenue, reduction in tax rates (excise, customs, corporation tax and personal income tax), and rationalisation (slabs for tax rates have been reduced to few levels from several levels), widening of tax base, reduction in the fiscal deficits, and curtailing monetisation of budget deficits. Falling interest rates have ensured that the cost of servicing huge public debt is more manageable than before. Debt management is more sophisticated — the government raises more long-term debt today, while its dependence on short-term debt has fallen. Buoyant capital flows have helped fund the fiscal deficit with some ease. While the government has been on a huge internal borrowing, external debt is well under control.

Monetary and Financial Sector Policy

Objective has been to control inflation and stabilise the value of rupee in market system. Broad money growth brought down to reasonable levels from previously high levels. Reserve ratios for banks progressively reduced. Banks selectively allowed to access the capital market. New banks allowed to function parallel with the public sector banks. Interest rates have been progressively deregulated.

Trade Policy and FDI Policy

Tariffs progressively brought down (currently the average tariff rate is close to 10per cent and maximum rate at 30 per cent). All quantitative restrictions on imports have been removed. Automatic approval is granted for foreign investment up to certain equity in selected sectors, 100 per cent equity is also allowed in these and all other sectors but requires case-by-case approval by the Foreign Investment Promotion Board.

Short-term Foreign Investment Policy

Some restrictions exist on both inward and outward flows of short-term capital for loans, purchase of bonds and shares. Since September 1992, foreign institutional investors are allowed to invest in Indian capital market, but there are restrictions on acquisition of shares of companies by these investors. Selected companies allowed to raise equity in the international markets. Domestic residents and firms permitted to buy stocks and bonds, subject to ceilings from international markets. Most of these steps were undertaken in the initial phase of the reforms programme. But we could not complete the whole menu. A large part of the programme remained unaccomplished.

With the onset of the new millennium, a fresh phase of reforms has begun. This has come to be known as the phase of second-generation reforms.

Features of Reforms

Some of the important features of the reforms process have been as follows:

i. The approach towards reforms has been cautious, with an appropriate sequencing of measures, complementary reforms across sectors (for example, the monetary, fiscal and external sectors) and the development of financial institutions and markets.
ii. The pace and sequencing of liberalisation has been responsive to domestic developments, especially in the monetary and financial sectors, and the evolving international financial architecture.
iii. The approach to reform was 'gradual but steady', rather than a 'big bang 'approach.
iv. The major thrust driving the reform process was the quest for higher growth and efficiency, along with macro-economic stability. At the same time, the reforms had to be 'inclusive', in the sense that the benefits of reforms were to be shared by all sections, in particular the vulnerable ones.

Second Generation Service Sector Policy Reforms

As we are in the second decade of the twenty-first century, it is necessary now to launch the new wave of reforms or what may also be called Operation 2-G.

One set of reforms becomes outdated after its implementation and with passage of time. Second generation reforms is about getting into the details. By definition, it is tedious and more difficult. The first phase of reforms was relatively easy as the required changes in trade, finance and fiscal areas were known. In the second phase, issues of equity, regional and sectoral allocation, good governance, institutional changes, etc. will become more prominent. Hard decisions on competition policy, labour policy, disinvestment and privatisation will have to be taken.

The nature of the needed measures are well known but efforts to implement them are stalled by fierce opposition from the well-to-do and the middle classes (which benefit most from huge implicit subsidies on public services as well as the opportunities arising from globalisation), middle and large peasants (who benefit from subsidised inputs and artificially high support prices), from employees of the public sector (who are loath to give up their sinecures) and from State and Central level politicians (whose control over public resources gives them immense scope for political and personal patronage).

Table 12.2 Stages of Service Sector Reforms

	Stage 1	Stage 2
Priorities	• Reduce inflation • Restore growth • Dismantle institutions of protectionism and statism	• Improve social conditions • Increase international competitiveness • Maintain macro-economic stability
Reform Strategy	• Change macroeconomic rules • Reduce size and scope of the State	• Boost competitiveness of the private sector • Reform production, financing and delivery of health care, education, and other public services
Typical Instruments	• Drastic budget cuts and tax reform • Price liberalisation • Trade and foreign investment liberalisation • Private sector deregulation • 'Easier' privatisations	• Reform of labour markets • Restructuring of government • Upgrading regulatory capacities • Sectoral conversion and restructuring 'Complex' privatisations • Restructuring relations between States and Central government
Public Impact of Reforms	• Immediate • High visibility	• Medium and long-term • Low public visibility
Administrative Complexity of Reforms	• Moderate to low	• Very High
Nature of Political Costs	• Temporary corrections widely distributed among population	• Permanent elimination of special advantages for specific groups

The first-generation reforms were essentially crisis-driven. This time round we can have consensus-driven reforms so that we can act in anticipation of a crisis which would definitely visit upon us if present trends were allowed to continue.

We will need to improve the quality of reforms, per se. This requires good analysis to identify the critical bottlenecks to higher growth and poverty reduction, innovative design of policy, taking account of socio-political constraints and supportive institutional changes. These steps improve the efficiency and sustainability of reforms.

Evaluation of the Policy Reforms

Of the three sectors of the economy the biggest benefactor of the reform measures has been the services sector. As already discussed in Unit 10, the service sector has recorded phenomenal growth during the last two decades, much higher than what has been recorded in the primary and the secondary sectors. As a result, the share of the service sector in India's GDP has been continuously rising. The service sector has become the dominant sector of the economy. The growth of service sector, however, has not been smooth. It has, from time to time, come against strong barriers and boulevards; these have involved legislative amendments, bureaucratic interventions and judicial reviews. These have involved policy changes and reforms. We will have a brief review of the major policy issues facing the service sector

Summary

The economic reforms undertaken in the country in the nineties of the last century brought about an absolute turn in the Indian economy. From a socialist, pro public sector, welfare-oriented

economy it became a market oriented, profit earning economy. The formation of WTO in 1994 led to further changes in the economy in its light. The reforms were triggered by the balance of payment crisis that emerged in the late eighties and 1990-1991 but there were economic churnings at the international level which saw a shift in the economic power. As a result, the world over the economies became more market oriented. Indian financial sector is dominated by the banking sector which went changes as result of the Narsimhan Committee Report I and II. Similarly, agriculture and industrial sector also underwent reforms which made them more competitive and open. The base of the industrial sector reforms was laid down in the eighties when liberalisation of policies was undertaken.

Keywords

Fiscal Year: It is one year period that is used for financial reporting and budgeting by companies and governments.

Non-Performing Assets (NPAs): It is a loan or advance that are in default or arrears. The principal or interest payment is due for 90 days.

Subsidies: can be considered as grants given by the government to people. Agricultural subsidies, for example, are given to farmers in the form of cheap fertilizer, equipment, seeds and higher procurement price.

World Trade Organization: (WTO) was founded in 1995 replacing General Agreement on Tariffs and Trade (GATT). Its purpose is to promote multilateral global trade and welfare.

Structural Reforms: Microeconomic reforms are termed as structural reforms.

Stabilisation Programme: During an economic crisis, the undertaking of a series of measures by the Government to address short-term issues is referred to as stabilisation programme.

Self Assessment

1. The immediate cause for the New Economic Policy of 1991 was

A. Shortage of foreign exchange

B. Change in government

C. Oil crisis

D. Gulf war

2. The first oil crisis was a result of

A. Embargo by OPEC countries on America

B. USA removing dollar from the gold standard

C. Both the above

D. None of the above

3. What was the amount of loan taken by India in 1981?

A. 4.8 billion SDR

B. 5.8 billion SDR

C. 5.8 million SDR

D. 58 billion SDR

4. The level of indebtedness of India because of the IMF loan of 1981 was

A. 11%

B. 15%

C. 26%

D. 4%

5. Which is the bank not nationalized in 1969?
A. Allahabad Bank
B. Bank of India
C. Bank of Baroda
D. Vijaya Bank

6. Which bank not nationalized in 1980?
A. Punjab and Sind Bank
B. Oriental Bank of India
C. Corporation Bank
D. Canara Bank

7. In which year were the banks allowed to privatize?
A. 1991
B. 1992
C. 1994
D. 1996

8. Has India adopted the Basel 3 norms?
A. Yes
B. No

9. Which of the following was included as part of the land reforms initiated in India?
A. Abolition of intermediaries
B. Tenancy reforms
C. Reorganization of agriculture
D. All the above

10. How much public investment is required to enable the doubling of farmer's real income in India by 2022-23?
A. INR 78424 cr
B. INR 46298 cr
C. INR 100000cr
D. None of the above

11. Is inter-state and inter-district exchange of agricultural commodities allowed?
A. Yes
B. No

12. How many food processing projects been approved by the state government in 2020?
A. 132
B. 134
C. 142
D. 144

13. When was FIPB abolished?
A. 1993

B. 1997
C. 2017
D. 2020

14. If processed food is produced in India, is it allowed to get 100% FDI under the automatic route.
A. True
B. False

15. Is FDI allowed in retail sector?
A. True
B. False

Answers for Self Assessment

1.	A	2.	C	3	B	4.	B	5.	D
6.	D	7.	C	8.	B	9.	D	10.	A
11.	A	12.	B	13.	C	14.	A	15.	A

Review Questions

1. What is the relevance of Economic Reforms in India?
2. "The economic reforms in India were prompted by external events". Evaluate
3. "The industrial reforms in the nineties had their genesis in the liberalisation policy of the eighties." Comment
4. Explain the service sector reforms and their impact on the Indian economy.
5. Explain the reforms in the agriculture sector and its impact on Indian Agriculture.

Further Readings

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Unit13: Monetary Policy

CONTENTS

Objectives

Discuss the concept of Monetary Policy

- evaluate the development of monetary policy as an important economic policy
- list and analyse the objectives of monetary policy
- discuss the tools of monetary policy
- evaluate the tools in light of current pandemic
- analyse monetary policy during reforms
- discuss the monetary policy for inflation

Introduction

Demand for and supply of money are regulated by certain monetary authority, usually the Central Bank of the country. The Central Bank of a country, as you know by now, has several functions to perform. Traditional functions of a central bank such as the 'bankers' bank' (i.e., the apex bank of a country) and 'lender of last resort' still applies. However, many more functions pertaining to stabilization of the economy and overall development of the country have come up. In India, the Reserve Bank of India (RBI) is the apex bank of the country to monitor and regulate the supply of money and demand for credit. In doing so, the RBI like other central banks takes into account factors such as economic growth, price stability, easy access to credit, and smooth functioning of the economy.

Along with structural changes of the economy over time, monetary management of the economy has become very important. The RBI designs and implements the regulatory policy framework for banking and non-banking financial institutions with the aim of providing people access to the banking system, protecting depositors' interest, and maintaining the overall health of the financial system. Along with these, management of public debt, management of foreign exchange rate and foreign exchange reserve, determination of interest rate, maintenance of inflation rate, and facilitation of high economic growth have become quite complex.

13.1 Evolution of Monetary Policy

India

1935 to 1949: Initial Phase

The Reserve Bank came into being in the backdrop of the great depression facing the world economy. Given the unsettled international monetary systems, the Preamble to the RBI Act, 1934 provided the edifice for the evolution of monetary policy framework. Until independence, the focus was on maintaining the sterling parity by regulating liquidity through open market operations (OMOs), with additional monetary tools of bank rate and cash reserve ratio (CRR). In other words, exchange rate was the nominal anchor for monetary policy. In view of the agrarian nature of the economy, inflation often emerged as a concern due to frequent supply side shocks. While the price control measures and rationing of essential commodities was undertaken by the Government, the Reserve Bank also used selective credit control and moral suasion to restrain banks from extending credit for speculative purposes.

1949 to 1969: Monetary Policy in sync with the Five-Year Plans

India's independence in 1947 was a turning point in the economic history of the country. What followed was a policy of planned economic development. These two decades were characterised not only by a predominant role of the state but also by a marked shift in the conduct of monetary policy. The broad objective was to ensure a socialistic pattern of society through economic growth with a focus on self-reliance. This was intended to be achieved by building up of indigenous capacity, encouraging small as well as large-scale industries, reducing income inequalities, ensuring balanced regional development, and preventing concentration of economic power. Accordingly, the government also assumed entrepreneurial role to develop the industrial sector by establishing public sector undertakings.

As planned expenditure was accorded pivotal role in the process of development, there was emphasis on credit allocation to productive sectors. The role of monetary policy, therefore, during this phase of planned economic development revolved around the requirements of five-year plans. Even if there was no formal framework, monetary policy was relied upon for administering the supply of and demand for credit in the economy. The policy instruments used in regulating the credit availability were bank rate, reserve requirements and open market operations (OMOs). With the enactment of the Banking Regulation Act in 1949, statutory liquidity ratio (SLR) requirement prescribed for banks emerged as a secured source for government borrowings and also served as an additional instrument of monetary and liquidity management. Inflation remained moderate in the post-independence period but emerged as a concern during 1964-68.

1969 to 1985: Credit Planning

Nationalisation of major banks in 1969 marked another phase in the evolution of monetary policy. The main objective of nationalisation of banks was to ensure credit availability to a wider range of people and activities. As banks got power to expand credit, the Reserve Bank faced the challenge of maintaining a balance between financing economic growth and ensuring price stability in the wake of the sharp rise in money supply emanating from credit expansion. Besides, Indo-Pak war in 1971, drought in 1973, global oil price shocks in 1973 and 1979, and collapse of the Bretton-woods system in 1973 also had inflationary consequences. Therefore, concerns of high inflation caused by deficit financing during 1960s gathered momentum during the 1970s. Incidentally, the high inflation in the domestic economy coincided with stagflation – high inflation and slow growth – in advanced economies. In such a milieu, traditional monetary policy instruments, viz., the Bank Rate and OMOs were found inadequate to address the implications of money supply for price stability. As banks were flushed with deposits under the impact of deficit financing, they did not need to approach RBI for funds. This undermined the efficacy of Bank Rate as a monetary policy instrument. Similarly, due to underdeveloped government securities market, OMOs had limited scope to be used as monetary policy instrument. During this phase, the average growth rate hovered around 4.0 per cent, while wholesale price index (WPI) based inflation was around 8.8 per cent.

13.2 Objectives of Monetary Policy

Monetary policy is a mechanism through which the supply of and demand for money in an economy are regulated. Such regulations on supply of and demand for money are expected to ful

fill the objectives of monetary policy. We will discuss about the objectives or goals of monetary policy in this Unit.

You should note that there is a difference between objectives and targets of monetary policy. Objectives of monetary policy indicate the direction in which the policy variables should be aimed at, viz., reducing inflation, achieving full employment, realizing higher economic growth. On the other hand, targets of monetary policy are the variables targeted such as money supply, bank credit, and short term interest rates through the instruments of monetary policy. A central bank could have a single objective or multiple objectives to follow. The primary objective of most central banks today is price stability. Price stability does not mean that there should not be any price rise in an economy. Rather the objective is to have moderate inflation. Very often, many countries, have come up with monetary policy that targets inflation rate Inflation targeting was introduced for the first time in 1990 in New Zealand. Subsequently many countries such as Canada, United Kingdom, Sweden, Australia, Chile, Poland, etc. adopted inflation targeting as the objective of monetary policy during the 1990s. India formally changed the RBI Act and adopted inflation targeting in 2016. Accordingly, the target variable for monetary policy in India is an inflation rate of 4 per cent. The RBI formulates monetary policy in such a manner that inflation rate remains in the range of 2 per cent to 4 per cent per annum.

Prior to 2016, since 1998, India pursued multiple indicators as objectives of monetary policy. Under this approach the RBI considered a number of target variables such as money, credit, output, trade, capital flows, fiscal deficit, inflation rate and exchange rate. We elaborate on some of the major goals of monetary policy in an economy, so that you get an idea of their importance.

1. Higher Economic Growth

An important objective of the monetary policy is to realize high economic growth. Economic growth leads to higher per capita income and higher standard of living for people. As pointed out earlier, higher investment is crucial for accelerating economic growth. An expansionary monetary policy decreases the rate of interest and increases investment and output, thus increasing the rate of growth of the economy.

2. Full Employment Level

Another important objective of an economy is provision of employment to people. We observe that unemployment of resources, including human resources exists in an economy. Further, during recessionary periods, the level of Monetary Policy unemployment increases. Thus, there is a need to formulate policies that generates employment and takes the country towards full employment. At full employment level of output or potential output, all the factors of production (including labor) are fully employed. However, this does not imply that there is no unemployment. Essentially, full employment is associated with a positive rate of unemployment due to people switching jobs. Such an output is also called full-capacity output. Monetary policy can help in realization of full-capacity output by influencing aggregate demand.

3. Price Stability

Price stability, as mentioned earlier, does not mean that prices should remain constant; it means that the price increase should be moderate. The objective of price stability may be in conflict with other objectives such as economic growth and full employment. Any increase in aggregate demand via an expansionary monetary policy is typically inflationary. If there is shortfall in aggregate demand, there could be a tendency towards deflation in the economy. Monetary policy should aim to avoid both inflationary and deflationary situations.

4. Exchange Rate Stability

Monetary policy could affect the balance of payments of an economy via the interest rate channel. Interest rate plays an important role in foreign investment in the economy. If there is a decline in the rate of interest, it may result in capital outflows. Consequently, the demand for foreign currency increases and this results in the depreciation of domestic currency. Depreciation of currency may have several consequences – value of domestic currency declines in terms of foreign currency; foreign goods become more expensive; and import of essential commodities such as raw materials and inputs may decline which results in decrease in GDP. As domestic goods and services become cheaper in terms of foreign currency (due to depreciation), exports of the country may increase which improves the balance of payments position. The final outcome however depends on several factors such as elasticity of imports and exports, and global economic environment (recession, wars, global price levels, etc.).

13.3 Instruments of Monetary Policy

The instruments of monetary policy to control credit are divided into two categories, viz., Quantitative and Qualitative. Quantitative measures are non-discriminatory in nature, say for example, when a certain interest rate is set by the central bank of a country, that rate applies to the banking system of the country as a whole. In contrast, Qualitative / Selective measures vary from one section of society to the other.

Quantitative Instruments

The important quantitative credit control instruments of the monetary policy are

as follows:

1. Repo Rate
2. Reverse Repo Rate
3. Bank Rate
4. Liquidity Adjustment Facility
5. Marginal Standing Facility
6. Open Market Operations
7. Cash Reserve Ratio
8. Change in Liquidity Ratio

Repo Rate

The most noticed and significant instrument of monetary policy is the repo rate. It is the rate at which commercial banks borrow money from the RBI on submission of collateral such as securities.

> The (fixed) interest rate at which the Reserve Bank provides overnight liquidity to banks against the collateral of government and other approved securities under the liquidity adjustment facility (LAF).

Similarly, commercial banks can deposit their excess reserves in the central bank for which the 'reverse repo rate' is applicable. The repo rate is periodically decided by the RBI. Other rates, such as reverse repo rate, bank rate, and marginal standing facility (MSF) rate get automatically adjusted as a fixed percentage above repo rate. The RBI uses repo rate to manage inflation, economic growth and balance of payments. When inflation rate is high, the RBI can increase repo rate so that interest rates increase, leading to decline in aggregate demand. On the other hand, the RBI can decrease repo rate when economic growth is sluggish.

The banks are allowed to borrow from RBI at repo rate under the Liquidity Monetary Policy Adjustment Facility (LAF). Deposit of excess liquidity with RBI is also made under the LAF. This arrangement helps the bank to manage liquidity pressure and resolve short term cash shortages. In addition to the LAF, the RBI has 'Marginal Standing Facility' (MSF), which facilitates provision of overnight loans to commercial banks. The objective is to meet unanticipated shocks such as largescale withdrawal of cash by customers. The MSF thus receives a penal interest rate above the repo rate.

Reverse Repo Rate

The (fixed) interest rate at which the Reserve Bank absorbs liquidity, on an overnight basis, from banks against the collateral of eligible government securities under the LAF.

Bank Rate

Bank rate is the rate of interest at which the central bank provides loans to commercial banks and other financial institutions. Increase in bank rate has the effect of increasing the rate of interest in the economy. Similarly, decrease in bank rate lowers the rate of interest in the economy. Higher bank rate lowers the extent of credit creation in the economy which leads to

> It is the rate at which the Reserve Bank is ready to buy or rediscount bills of exchange or other commercial papers.

a decline in aggregate demand and hence lower prices. On the other hand, in a recessionary phase a lower bank rate is proposed. It is difficult to predict the impact on change in bank rate on bank borrowings. This is because bank rate itself is not the key lending rate, though is does form the basis for the multiplicity of RBI's lending rates charged for different types of advances. The impact of change in bank rate on bank's borrowings depends on various factors such as (a) the degree of bank's dependence on borrowed reserves, (b) the sensitivity of the banks' demand for borrowed reserves to the differential between their lending rates and borrowing rates (c) the extent to which other rates of interest have already changed or change subsequently (d) the state of the demand for loans and the supply of funds from other sources, etc.

Banks are not discouraged from borrowing in the face of higher bank rates if the market interest rates are high such that banks expect higher returns from borrowed funds. There is a subtle difference between repo rate and bank rate. Financial institutions can borrow from the RBI at the bank rate without submission of any collateral. On the other hand, repo rate is charged for re-purchase of securities issued by the RBI. Further, bank rate is higher than repo rate.

Liquidity Adjustment Facility (LAF)

The LAF consists of overnight as well as term repo auctions. Progressively, the Reserve Bank has increased the proportion of liquidity injected under fine-tuning variable rate repo auctions of range of tenors. The aim of term repo is to help develop the inter-bank term money market, which in turn can set market-based benchmarks for pricing of loans and deposits, and hence improve transmission of monetary policy. The Reserve Bank also conducts variable interest rate reverse repo auctions, as necessitated under the market conditions.

Marginal Standing Facility (MSF)

A facility under which scheduled commercial banks can borrow additional amount of overnight money from the Reserve Bank by dipping into their Statutory Liquidity Ratio (SLR) portfolio up to a limit at a penal rate of interest. This provides a safety valve against unanticipated liquidity shocks to the banking system.

Open Market Operations

The central bank exercises control over the money supply through sale and purchase of government securities. The term 'open market operations' (OMO) refers to the sale/purchase of government securities by the central bank to/from the public and banks. While purchase of government securities in open market increases the high-powered money (H), an open market sale of government securities decreases H by an equal amount.

These include both, outright purchase and sale of government securities, for injection and absorption of durable liquidity, respectively.

Following the change in 'H', the usual money multiplier (mm) process leads to change in money supply (M). In order to follow a contractionary monetary policy to check inflation, the central bank decreases money supply by selling securities. In a situation of falling prices, the central bank buys securities for increasing the money supply in the economy. Such an expansionary monetary policy helps in boosting aggregate demand and reviving the economy from recession.

Open market operations are flexible and reversible in time. Hence, it is considered to be an efficient instrument of monetary control. Moreover, unlike bank rate and reserve requirements, it is free from 'announcement effects' as no prior public announcement has to be made to conduct these operations. The direct effect on 'H' is immediate and the amount of H created or destroyed is precisely determinable. There are indirect effects also such as interest rate changes. Purchase and sale of securities in the open market by the central bank or the monetary authority is popularly known as open market operations. In order to contract the credit in the economy, the central bank sells securities in the open market. This leads to fall in aggregate demand and reduction in price level. Whereas, when credit is to be expanded, there is purchase of securities by the central bank in the open market. This leads to increase in aggregate demand and production levels in the economy.

The average daily balance that a bank is required to maintain with the Reserve Bank as a share of such per cent of its Net demand and time liabilities (NDTL) that the Reserve Bank may notify from time to time in the Gazette of India.

Cash Reserve Ratio

A certain fraction of total assets is always kept by banks as cash partially to comply with the statutory reserve requirements and partially for meeting day-today cash payments. Cash is held as 'cash on hand' and as cash balances with the central bank. These are known as cash reserves of banks which are classified as 'required reserves' and 'excess reserves'. Banks are statutorily required to hold cash balances with the central bank. In India, the RBI has the power to impose statutorily 'cash reserve ratio' (CRR) on banks anywhere between 3-15 per cent of the net demand and time liabilities. A higher CRR implies lower liquidity in the system. Thus, when the central bank plans to increase liquidity in the economy, it decreases the CRR and vice versa.

Cash Reserve Ratio varies across countries. For example, in 2019, it is as high as45 per cent in Brazil and as low as 1 per cent in the European Union. In India, as on April 2019, the CRR was 4 per cent. Further, CRR varies over time for the same country, depending upon the economic environment. Banks also hold excess reserves, apart from required reserves. These are held more than required reserves. These excess reserves are used to meet the currency drains, i.e., the net withdrawal of currency by depositors, and clearing drains which is the net loss of cash due to cross clearing of cheques among banks. Large part of excess reserves is held as cash on hand, remaining small part is held as Monetary Policy excess balances with the RBI.

By varying the reserve requirements, the RBI uses the CRR as a tool of controlling money supply. When CRR is raised, banks hold larger cash balances with the RBI. Since reserves are a part of 'H' or high-powered money, this essentially means that a part of H is withdrawn from the public equalling the amount of additional reserves impounded. On the other hand, lowering of CRR amounts to a virtual increase in H, which results in an increase in money supply's'. In this manner, the CRR serves as an instrument of monetary control. In case of inflation, CRR is increased, thus decreasing the lending ability of banks. Alternately, by lowering the CRR, credit expansion by banks increases.

Statutory Liquidity Ratio

Besides CRR, banks are also required to meet the statutory liquidity ratio (SLR) requirements. The RBI Act stipulates that banks are required to hold a certain fraction of their demand and time liabilities in the form of "liquid assets in their own vault".

The share of NDTL that a bank is required to maintain in safe and liquid assets, such as, unencumbered government securities, cash and gold.

This is called the "Statutory Liquidity Ratio". Liquid assets include cash, gold and approved securities, mainly the government securities. Banks prefer government securities as they earn interest income. The central bank uses SLR to check the money supply in the economy. Increasing SLR decreases liquidity in the economy and vice-versa. As on July2019, the SLR rate in India is 18.75 percent. However, CRR is more actively used by the RBI to manage liquidity in the economy.

Qualitative Instruments

Qualitative instruments may not lead to changes in volume of money in the economy. These policy instruments are used for discriminating between different uses of credit. Thus these instruments are used for regulating credit for specific purposes. Some of the instruments are as follows:

Selective Credit Control

Selective Credit Control relates to qualitative method of credit control by the central banks. The central bank can take steps to channelize credit to priority sectors. Similarly, it can impose restrictive measures on credit to certain sectors. In India, such controls have been used to check speculative hoarding of essential commodities such as food grains to check their price rise. When credit flow for purchasing and holding such stocks is restricted, traders increase the market supply of these commodities and their prices do not increase as much. Hence, selective credit controls help in moderation of inflation. You will find several examples of selective credit control in the Indian case. Credit extended to agricultural sector and small scale industries are instances of selective credit control.

Margin Requirements

The margin refers to that part of the loan amount which the bank does not finance. For example, if you approach a bank for financing a loan towards purchase of a house, the bank will not provide loan for the full amount – it may provide loan for about 80 to 85 per cent of the purchase value. An implication of the above is that 15 to 20 per cent of the purchase value should be financed from own funds. A higher margin on loan discourages borrowing. By changing the margin requirements, the central bank can encourage credit flow to certain sectors while restricting it to others. For instance, in order to encourage priority lending to certain sectors, the government may reduce margin requirements.

Credit Rationing

In order to restrict credit to certain sectors, the central bank may ration credit by putting certain limit on the amount the bank can lend to particular sector or section of society. Through rationing of credit, the central bank can perform the following tasks:

- It can decline loan to a particular commercial bank
- It can ask commercial banks to extend certain percentage of credit to priority areas such as agriculture or small-scale enterprises.

Moral Suasion

Central bank persuades other banks to comply with its policy stance through discussions, letters and speeches. This is known as moral suasion. Moral suasion can be employed for both qualitative and quantitative credit control. RBI can urge banks to keep a large fraction of their assets in the form of government securities. It can also discourage banks from borrowing excessively during inflationary periods. These measures help control money supply. Moral suasion is also used for controlling the distribution of bank credit.

Direct Action

Sometimes, the RBI can directly take action against a bank which is not following its directives and conforming to the broad monetary policy goals. For example, the RBI may refuse rediscount facilities to such banks or it may charge a penal rate over and above the bank rate. Central banks use a mix of different tools for monetary control. Bank rate, reserve requirements, open market operations and selective credit controls measures should be adopted simultaneously.

13.4 Monetary Policy after Reforms

1985 to 1998: Monetary Targeting

In the 1980s, fiscal dominance accentuated as reflected in automatic monetisation of budget deficit through ad hoc treasury bills and progressive increase in SLR by 1985. Concomitantly, inflationary impact of deficit financing warranted tightening of monetary policy – both the CRR and Bank Rate were raised significantly. The experience of monetary policy in dealing with the objectives of containing inflation and promoting growth eventually led to adoption of monetary targeting as a formal monetary policy framework in 1985 on the recommendations of the Chakravarty Committee. In this framework, with the objective of controlling inflation through limiting monetary expansion, reserve money was used as operating target and broad money as intermediate target. The targeted growth in money supply was based on expected real GDP growth and a tolerable level of inflation. This approach was flexible as it allowed for feedback effects. CRR was used as the primary instrument for monetary control. Nonetheless, due to continued fiscal dominance, both SLR and CRR reached their peak levels by 1990.

The worsening of fiscal situation in late 1980s was manifested in deterioration of external balance position and collapse in domestic growth in 1991-92, in the backdrop of adverse global shocks – the gulf war and disintegration of the Soviet Union. The resultant balance of payments crisis triggered large scale structural reforms, financial sector liberalization and opening up of the economy to achieve sustainable growth with price stability. Concurrently, there was a shift from fixed exchange rate regime to a market determined exchange rate system in 1993. In the wake of trade and financial sector reforms and the consequent rise in foreign capital flows and financial innovations, the assumption of stability in money demand function as well as efficacy of broad money as

intermediate target came under question. At the same time, there was a notable shift towards market-based financing for both the government and the private sector. In fact, automatic monetisation through ad hoc treasury bills was abolished in 1997 and replaced with a system of ways and means advances (WMAs). During this period, average domestic growth rate was 5.6 per cent and average WPI-based inflation was 8.1 per cent.

1998 to 2015: Multiple Indicators Approach

As liberalisation of the economy since the early 1990s and financial innovations began to undermine the efficacy of the prevalent monetary targeting framework, a need was felt to review the monetary policy framework and recast its operating procedures. As a result, the Reserve Bank of India adopted multiple indicators approach in April 1998. Under this approach, besides monetary aggregates, a host of forward looking indicators such as credit, output, inflation, trade, capital flows, exchange rate, returns in different markets and fiscal performance constituted the basis of information set used for monetary policy formulation. The enactment of the Fiscal Responsibility and Budget Management (FRBM) Act in 2003, by introducing fiscal discipline, provided flexibility to monetary policy. Increased market orientation of the domestic economy and deregulation of interest rates introduced since the early 1990s also enabled a shift from direct to indirect instruments of monetary policy. There was, therefore, greater emphasis on rate channels relative to quantity instruments for monetary policy formulation. Accordingly, short-term interest rates became instruments to signal monetary policy stance of RBI.

In order to stabilise short-term interest rates, the Reserve Bank placed greater emphasis on the integration of money market with other market segments. It modulated market liquidity to steer monetary conditions to the desired trajectory by using a mix of policy instruments. Some of these instruments including changes in reserve requirements, standing facilities and OMOs were meant to affect the quantum of marginal liquidity, while changes in policy rates, such as the Bank Rate and reverse repo/repo rates were the instruments for changing the price of liquidity.

An assessment of macroeconomic outcomes suggests that the multiple indicator approach served fairly well from 1998-99 to 2008-09. During this period, average domestic growth rate improved to 6.4 per cent and WPI based inflation moderated to 5.4 per cent.

2013-2016: Preconditions Set for Inflation Targeting

In the post-global financial crisis period (i.e., post-2008), however, the credibility of this framework came into question as persistently high inflation and weakening growth began to co-exist. In the face of double-digit inflation of 2012-13, the US Fed's taper talk in May/June 2013 posed significant challenges to domestic monetary policy for maintaining the delicate balance between sustaining growth, containing inflation and securing financial stability. The extant multiple indicators approach was criticised on the ground that a large set of indicators do not provide a clearly defined nominal anchor for monetary policy. An Expert Committee was set up by RBI to revise and strengthen the monetary policy framework and suggest ways to make it more transparent and predictable. In its Report of 2014, the Committee reviewed the multiple indicators approach and recommended that inflation should be the nominal anchor for the monetary policy framework in India. Against this backdrop, the Reserve Bank imposed on itself a glide path for bringing down inflation in a sequential manner – from its peak of 11.5 per cent in November 2013 to 8 per cent by January 2015; 6 per cent by January 2016 and 5 per cent by Q4 of 2016-17.

2016 onwards: Flexible Inflation Targeting

Amid this, a Monetary Policy Framework Agreement (MPFA) was signed between the Government of India and the Reserve Bank on February 20, 2015. Subsequently, flexible inflation targeting (FIT) was formally adopted with the amendment of the RBI Act in May 2016. The role of the Reserve Bank in the area of monetary policy has been restated in the amended Act as follows: "the primary objective of monetary policy is to maintain price stability while keeping in mind the objective of growth".

Empowered by this mandate, the RBI adopted a flexible inflation targeting (FIT) framework under which primacy is accorded to the objective of price stability, defined numerically by a target of 4 per cent for consumer price headline inflation with a tolerance band of +/- 2 per cent around it, while simultaneously focusing on growth when inflation is under control. The relative emphasis on inflation and growth depends on the macroeconomic scenario, inflation and growth outlook, and signals emerging from incoming data. Since then, RBI has been conducting monetary policy in a forward-looking manner and effectively communicating its decisions to maintain inflation around its target and thereby to support growth. At the same time, RBI is also fine-tuning its operating

procedures of monetary policy for effective policy transmission across the financial markets and thereby onto the real economy. As an outcome, inflation has fallen successively and has averaged below 4 per cent since 2017-18, notwithstanding recent up-tick in inflation driven by food prices, especially the sharp increase in vegetable prices reflecting the adverse impact of unseasonal rains and cyclone.

13.5 Monetary Policy and Inflation

Inflation is pre-dominantly considered to be a monetary problem which can be targeted with the use of monetary policy. There are various tools of monetary policy which have been discussed earlier are used to target inflation. In recent years, many central banks, the makers of monetary policy, have adopted a technique called inflation targeting to control the general rise in the price level. In this framework, a central bank estimates and makes public a projected, or "target," inflation rate and then attempts to steer actual inflation toward that target, using such tools as interest rate changes. Because interest rates and inflation rates tend to move in opposite directions, the likely actions a central bank will take to raise or lower interest rates become more transparent under an inflation targeting policy. Advocates of inflation targeting think this leads to increased economic stability.

Why inflation targeting?

In general, a monetary policy framework provides a nominal anchor to the economy. A nominal anchor is a variable policymakers can use to tie down the price level. One nominal anchor central banks used in the past was a currency peg—which linked the value of the domestic currency to the value of the currency of a low-inflation country. But this approach meant that the country's monetary policy was essentially that of the country to which it pegged, and it constrained the central bank's ability to respond to such shocks as changes in the terms of trade (the value of a country's exports relative to that of its imports) or changes in the real interest rate. As a result, many countries began to adopt flexible exchange rates, which forced them to find a new anchor.

Many central banks then began targeting the growth of money supply to control inflation. This approach works if the central bank can control the money supply reasonably well and if money growth is stably related to inflation over time. Ultimately, monetary targeting had limited success because the demand for money became unstable—often because of innovations in the financial markets. As a result, many countries with flexible exchange rates began to target inflation more directly, based on their understanding of the links or "transmission mechanism" from the central bank's policy instruments (such as interest rates) to inflation.

How does inflation targeting work?

Inflation targeting is straightforward, at least in theory. The central bank forecasts the future path of inflation and compares it with the target inflation rate (the rate the government believes is appropriate for the economy). The difference between the forecast and the target determines how much monetary policy has to be adjusted. Some countries have chosen inflation targets with symmetrical ranges around a midpoint, while others have identified only a target rate or an upper limit to inflation. Most countries have set their inflation targets in the low single digits. A major advantage of inflation targeting is that it combines elements of both "rules" and "discretion" in monetary policy. This "constrained discretion" framework combines two distinct elements: a precise numerical target for inflation in the medium term and a response to economic shocks in the short term.

Rather than focusing on achieving the target at all times, the approach has emphasized achieving the target over the medium term—typically over a two- to three-year horizon. This allows policy to address other objectives—such as smoothing output—over the short term. Thus, inflation targeting provides a rule-like framework within which the central bank has the discretion to react to shocks. Because of inflation targeting's medium-term focus, policymakers need not feel compelled to do whatever it takes to meet targets on a period-by-period basis.

What is required?

Inflation targeting requires two things. The first is a central bank able to conduct monetary policy with some degree of independence. No central bank can be entirely independent of government influence, but it must be free in choosing the instruments to achieve the rate of inflation that the government deems appropriate. Fiscal policy considerations cannot dictate monetary policy. The

second requirement is the willingness and ability of the monetary authorities not to target other indicators, such as wages, the level of employment, or the exchange rate.

Having satisfied these two basic requirements, a country can, in theory, conduct a monetary policy centred on inflation targeting. In practice, the authorities may also take certain preliminary steps:

i. Establish explicit quantitative targets for inflation for a specific number of periods ahead.
ii. Indicate clearly and unambiguously to the public that hitting the inflation target takes precedence over all other objectives of monetary policy.
iii. Set up a model or methodology for inflation forecasting that uses a number of indicators containing information about future inflation.
iv. Devise a forward-looking operating procedure through which monetary policy instruments are adjusted (in line with the assessment of future inflation) to hit the chosen target.

Target practitioners?

Central banks from advanced, emerging market, and developing economies and from every continent have adopted inflation targeting (see table). Full-fledged inflation targets are countries that make an explicit commitment to meet a specified inflation rate or range within a specified time frame, regularly announce their targets to the public, and have institutional arrangements to ensure that the central bank is accountable for meeting the target.

The first country to adopt inflation targeting was New Zealand. The only central banks to have stopped inflation targeting once they started it are Finland, Spain, and the Slovak Republic—in each case after they adopted the euro as their domestic currency. Armenia, the Czech Republic, Hungary, and Poland adopted inflation targeting while they were making the transition from centrally planned to market economies. Several emerging market economies adopted inflation targeting after the 1997 crisis, which forced a number of countries to abandon fixed exchange rate pegs.

On target?

It is difficult to distinguish between the specific impact of inflation targeting and the general impact of more far-reaching concurrent economic reforms. Nonetheless empirical evidence on the performance of inflation targeting is broadly, though not totally, supportive of the effectiveness of the framework in delivering low inflation, anchoring inflation expectations, and lowering inflation volatility. Moreover, these gains in inflation performance were achieved with no adverse effects on output and interest volatility.

Inflation targeters also seem to have been more resilient in turbulent environments. Recent studies have found that in emerging market economies, inflation targeting seems to have been more effective than alternative monetary policy frameworks in anchoring public inflation expectations. In some countries, notably in Latin America, the adoption of inflation targeting was accompanied by better fiscal policies. Often, it has also been accompanied by the enhancement of technical capacity in the central bank and improvement of macroeconomic data. Because inflation targeting also depends to a large extent on the interest rate channel to transmit monetary policy, some emerging market economies also took steps to strengthen and develop the financial sector. Thus, the monetary policy outcomes after the adoption of inflation targeting may reflect improved broader economic, not just monetary, policymaking.

Indian Monetary Policy and Inflation Targeting

In India, like other developing and emerging countries, the central bank of the country that is Reserve Bank of India has made inflation targeting as the main objective of monetary policy. The Monetary Policy Committee formed in 2016 adopted the flexible inflation targeting. Prior to the amendment in the RBI Act in May 2016, the flexible inflation targeting framework was governed by an Agreement on Monetary Policy Framework between the Government and the Reserve Bank of India of February 20, 2015.The MPC determines the policy interest rate required to achieve the inflation target. The first meeting of the MPC was held on October 3 and 4, 2016 in the run up to the Fourth Bi-monthly Monetary Policy Statement, 2016-17.

The Reserve Bank's Monetary Policy Department (MPD) assists the MPC in formulating the monetary policy. Views of key stakeholders in the economy, and analytical work of the Reserve Bank contribute to the process for arriving at the decision on the policy repo rate.

The Financial Markets Operations Department (FMOD) operationalises the monetary policy, mainly through day-to-day liquidity management operations. The Financial Markets Committee (FMC) meets daily to review the liquidity conditions so as to ensure that the operating target of the weighted average call money rate (WACR) is aligned with the repo rate.

Before the constitution of the MPC, a Technical Advisory Committee (TAC) on monetary policy with experts from monetary economics, central banking, financial markets and public finance advised the Reserve Bank on the stance of monetary policy. However, its role was only advisory in nature. With the formation of MPC, the TAC on Monetary Policy ceased to exist.

Summary

Monetary policy pertains to management of the supply of money and demand for credits. The objective of such controls is to achieve certain goals set for the economy. The objectives of monetary policy are attained through certain policy instruments. The policy instruments could be quantitative or qualitative in nature. The quantitative tools are repo rate, bank rate, open market operations, reserve requirements, etc. The qualitative tools are selective credit controls, moral suasion, etc. In a liquidity trap like situation, however, the usual instruments do not work. Hence, central banks can adopt quantitative easing which injects liquidity in the banking system and lowers the lending rates of banks.

Keywords

Central Bank: A central bank is a financial institution given privileged control over the production and distribution of money and credit for a nation or a group of nations

Inflation: The rate of increase in the general price level over a period of time. It is measured usually in terms of the growth in a price index such as the Consumer Price Index.

Inflation Targeting: The objective of the monetary policy in many countries is inflation targeting, where the central bank targets to achieve certain inflation rate.

Monetary Policy: Monetary policy refers to the policy of the central bank with regard to the use of monetary instruments under its control to achieve the goals specified by the central bank.

Monetary Policy Committee: The Monetary Policy Committee is a statutory and institutionalized framework under the Central bank of a country, for maintaining price stability, while keeping in mind the objective of growth.

Repo Rate: Rate at which the central bank lends funds to the commercial banks against submission of collateral such as securities by the banks

Self Assessment

1. Which is the first country to delink itself from the fixed exchange rate system of Bretton Woods?

A. United Kingdom
B. Germany
C. United States of America
D. France

2. In which year did Bretton Woods dismantle the gold standard system?

A. 1971
B. 1972
C. 1973
D. 1974

3. If there is an expansionary monetary policy, then the rate of interest will…
A. Increase
B. Decrease
C. Remain constant
D. May increase or decrease

4. At the potential level of output, all the factors of production are
A. Fully employed
B. Unemployed
C. Depends on the situation
D. None of the above

5. Which of them is not a quantitative tool?
A. Moral suasion
B. REPO rate
C. CRR
D. SLR

6. Which of the following reserve is to be maintained with the RBI?
A. SLR
B. CRR
C. Bank rate
D. None of the above

7. Which of the following reserve is to be maintained with the bank itself?
A. SLR
B. CRR
C. Bank rate
D. None of the above

8. Which is the facility under which a bank can borrow additional capital by dipping into its statutory liquidity reserve?
A. Liquidity adjustment facility
B. Marginal standing facility
C. Corridor
D. None of the above

9. When was SLR introduced in the Indian banking sector?
A. Before 1947
B. 1947
C. 1949
D. 1969

10. When did India move to market determined exchange rate system?

A. 1969
B. 1973
C. 1979
D. 1993

11. Ways and Means advances was introduced in …….
A. 1985
B. 1997
C. 2000
D. 2014

12. When did RBI adopt multiple indicators approach?
A. 1985
B. 1997
C. 1998
D. 2014

13. How many types of inflation are there?
A. One
B. Two
C. Three
D. Depends on the situation of the country

14. If there is inflation in the economy, the RBI will
A. Increase the CRR
B. Decrease the CRR
C. Decrease SLR
D. Increase both CRR and SLR

15. What is the inflation target set by the Central government?
A. 2%
B. 4%
C. 6%
D. 8%

Answers for Self Assessment

1.	B	2.	C	3	B	4.	A	5.	A
6.	B	7.	A	8.	B	9.	C	10.	D
11.	B	12.	C	13.	B	14.	D	15.	B

Review Questions

1. How did Monetary Policy evolve in economic theory?
2. How did Monetary Policy evolve in India?

3. Is monetary policy the right instrument to target inflation in developing countries?
4. What are the best measures/tools to control money flow during a crisis like COVID?
5. What are the major functions of monetary policy in India?

Further Readings

Ashima Goyal 2014 "History of Monetary Policy in India SinceIndependence", Springer Briefs in Economics

Reserve Bank of India Act, 1934 (As amended by the Finance (No. 2) Act,2019

Unit14: Fiscal Policy

CONTENTS

Objectives

- Understand the concept of fiscal policy
- Discuss the objectives of fiscal policy
- Analyse the tools of fiscal policy
- Evaluate the use of fiscal policy as a measure of inflation control

Introduction

The actual working of the economy needs Regulation and policies which clearly outline the track which an economy will take. in the modern world, the government uses its tools to achieve higher growth rate as it is argued that with higher GDP growth rate, the per capita income of the common masses would go up intern would improve the standard of living. Here, let us be clear that there is an ongoing debate about the obsession with growth rates and how does not always lead to equitable development. I will not get into this debate, rather, we will discuss fiscal policy which is used by the government to promote stability and growth. concept of fiscal policy, evolution and objectives in the first part of the chapter. we will then take up the tools of fiscal policy and how they are used to regulate the economy. inflation is an issue which is controlled by the use of various fiscal policy tools and this will become the point of discussion in the next part. we will then take the case of India and see how fiscal policy has evolved over time and especially after the reforms, how has developed and impacted the economy.

14.1 Concept of fiscal policy

In layman's words, a fiscal Policy which deals with government revenue expenditure which has some component of welfare embedded in it. Basically, it is the income and expenditure of the government which is used to regulate the economy and to focus on economic growth. the fiscal policy is used to target poverty and it is seen as an effective tool for inclusive growth. In developing countries, the fiscal policy is treated as an effective policy measure than the monetary policy for egalitarian growth. this policy is also looked upon as a crisis management tool. In the post World War 1 scenario, the role of the state government magnified, and public spending was seen as an

initiative which was bound to give positive results. since then, most emerging economies have used this policy effectively for combating the crisis of capitalism.

The major tools of fiscal policy are taxes, expenditure, and borrowings of the government. these tools are used for the allocation of resources to have balanced distribution of these resources and also to promote growth. the impact of fiscal policy is widespread but its impact on employment, economic stability, price stability, economic growth, saving and investment, balance of payments etc. is considered as they are quantifiable and therefore, can be measured and evaluated.

14.2 Objectives of fiscal policy

classical economics started off with the premise of full employment and there was the assumption of laissez-faire economic system where the market forces adjusted to fully employ all the resources. during the Great Depression of 1930 it was felt that the state intervention was required to restructure and regroup the economies. Here, we need to understand the entire Keynesian economics is based on the role of the state and how it is used for stabilizing the economy. the objectives of the fiscal policy developing economies are:

1. ***Full employment***: This is one of the primary objectives of fiscal policy, especially for developing countries where there is lack of optimal utilization of resources. it does not that there is no voluntary unemployment. Keynesian economics pointed out that full employment is generally not attainable but the I am the state is to minimise unemployment. the government therefore spends social and economic overheads like roads, power, telecommunications, education, health etc. these are not help in development but also generates employment and pushes liquidity in the economy. Thus, public expenditure and investment gives a specific direction to the economy.

   Is Full Employment a Reality?

2. ***Price Stability***: There is a general agreement that economic growth and stability are joint objectives for underdeveloped countries. In a developing country, economic instability is manifested in the form of inflation. Prof. Nurkse believed that "inflationary pressures are inherent in the process of investment but the way to stop them is not to stop investment. They can be controlled by various other ways of which the chief is the powerful method of fiscal policy. Therefore, in developing economies, inflation is a permanent phenomenon where there is a tendency to the rise in prices due to expanding trend of public expenditure. As a result of rise in income, aggregate demand exceeds aggregate supply. Capital goods and consumer goods fail to keep pace with rising income.

   Thus, these result in inflationary gap. The price rise generated by demand pull reinforced by cost push inflation leads to further widening the gap. The rise in prices raises demand for more wages. This further gives rise to repeated wage-price spirals. If this situation is not effectively controlled, it may turn into hyperinflation.

   In short, fiscal policy should try to remove the bottlenecks and structural rigidities which cause imbalance in various sectors of the economy. Moreover, it should strengthen physical controls of essential commodities, granting of concessions, subsidies, and protection in the economy. In short, fiscal measures as well as monetary measures go side by side to achieve the objectives of economic growth and stability.

3. ***Increase rate of Economic Growth***: Primarily, fiscal policy in a developing economy, should aim at achieving an accelerated rate of economic growth. But a high rate of economic growth cannot be achieved and maintained without stability in the economy. Therefore, fiscal measures such as taxation, public borrowing and deficit financing etc. should be used properly so that production, consumption, and distribution may not adversely affect. It should promote the economy which in turn helps to raise national income and per capita income.

   In this connection it is significant to quote the views of Mrs. Hicks, who observed, "now that fiscal policy has been developed as an established economic function of a government, every country is anxious to gear its public finance in pursuit of the twin aims of stability and growth, but their relative importance is very differently regarded from one country to another… A steady rate of expansion will tend to reduce the violence of such fluctuations as may occur; a successful full employment policy will provide an atmosphere which is congenial for growth."

4. ***Optimum Allocation of Resources***: Fiscal measures like taxation and public expenditure programmes, can greatly affect the allocation of resources in various occupations and sectors. As it is true, the national income and per capita income of underdeveloped countries is very low. In order to gear the economy, the government can push the growth of social infrastructure through fiscal measures. Public expenditure, subsidies and incentives can favorably influence the allocation of resources in the desired channels.

   Tax exemptions and tax concessions may help a lot in attracting resources towards the favored industries. On the contrary, high taxation may draw away resources in a specific sector. Above all, direct curtailment of consumption and socially unproductive investment may be helpful in mobilization of resources and the further check of the inflationary trends in the economy. Sometimes, the policy of protection is a useful tool for the growth of some socially desired industries in an under-developed country.

5. ***Allocation of Resources***: It is needless to emphasize the significance of equitable distribution of income and wealth in a growing economy. Generally, inequality in wealth persists in such countries as in the early stages of growth, it concentrates in few hands. It is also because private ownership dominates the entire structure of the economy. Besides, extreme inequalities create political and social discontentment which further generate economic instability. For this, suitable fiscal policy of the government can be devised to bridge the gap between the incomes of the different sections of the society.

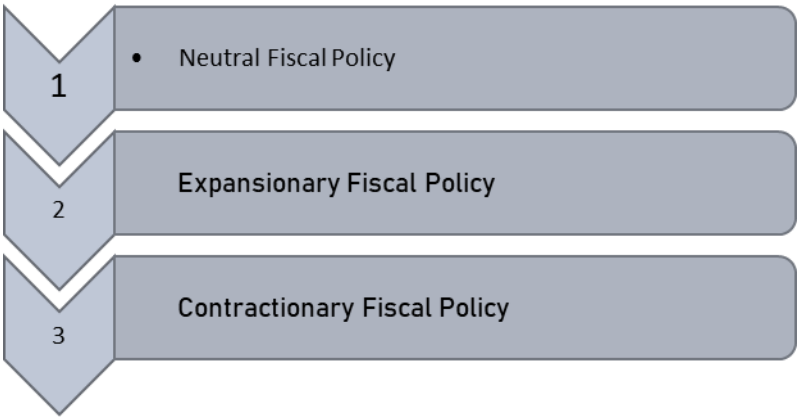
6. Reduce inequalities: To do distributive justice, the government should invest in those productive channels which incur benefit to low-income groups and are helpful in raising their productivity and technology. Therefore, redistributive expenditure should help economic development and economic development should help redistribution.

   Thus, well-planned fiscal programme, public expenditure can help development of human capital which in turn possesses positive effects on income distribution. Regional disparities can also be removed by providing incentives to backward regions. A redistributive tax policy should be highly progressive and aim at imposing heavy taxation on the richer and exempting poorer sections of the community. Similarly, luxurious items, which are consumed by the higher section, may be subject to heavy taxation.

7. ***Economic Stability***: Fiscal measures, to a larger extent, promote economic stability in the face of short-run international cyclical fluctuations. These fluctuations cause variations in terms of trade, making the most favorable to the developed and unfavorable to the developing economies. So, for the purpose of bringing economic stability, fiscal methods should incorporate built-in-flexibility in the budgetary system so that income and expenditure of the government may automatically provide compensatory effect on the rise or fall of the nation's income. Therefore, fiscal policy plays a leading role in maintaining economic stability in the face of internal and external forces. The instability caused by external forces is corrected by a policy, popularly known as 'tariff policy' rather than aggregative fiscal policy. In the period of boom, export and import duties should be imposed to minimize the impact of international cyclical fluctuations. To curb the use of additional purchasing power, heavy import duty on consumer goods and luxury import

restrictions are essential. During the period of recession, government should undertake public works programmes through deficit financing. In nutshell, fiscal policy should be viewed from a larger perspective keeping in view the balanced growth of various sectors of the economy.

14.3 Types of Fiscal Policy



1. ***Neutral Fiscal Policy:*** This type of policy is usually undertaken when an economy is in equilibrium. The consumers are not affected by taxation by the government or the welfare spending of the state.
2. ***Expansionary Fiscal Policy***: This policy is designed to boost the economy. It is mostly used in times of high unemployment and recession. It leads to the government lowering taxes and spending more, or one of the two. The aim is to stimulate the economy and ensure consumers' purchasing power does not weaken. In developing countries, this is the type which is followed extensively. This gives rise to deficit financing or revenue deficits for the government. In India, till 1991 this was the main form of fiscal policy.

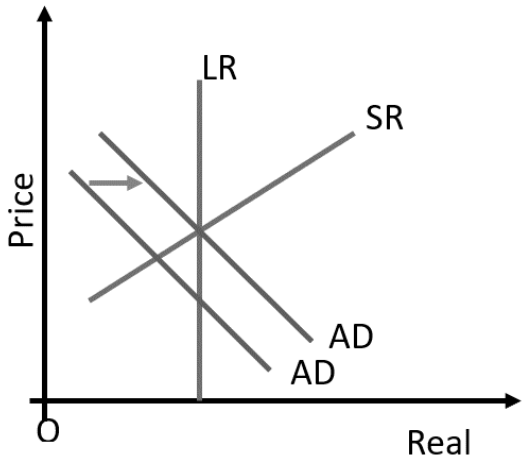


Fig. 14.1 Expansionary Fiscal Policy

3. ***Contractionary Fiscal Policy:*** As the term suggests, this policy is designed to slow economic growth in case of high inflation. The contractionary fiscal policy raises taxes and cuts spending.

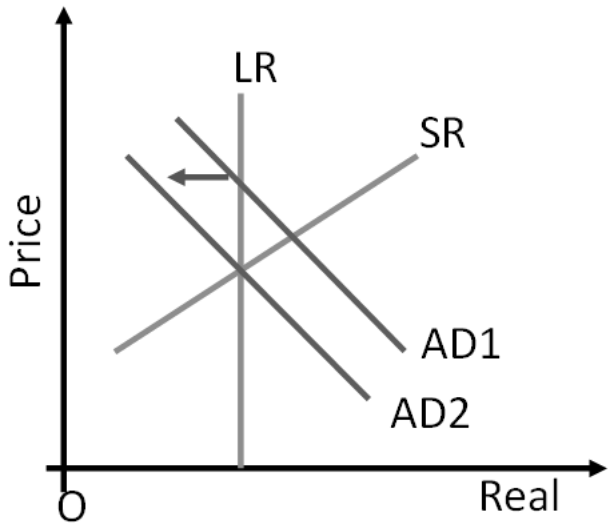


Fig. 14.2 Contractionary Fiscal Policy

14.4 Instruments of Fiscal Policy

To fulfil the twin objectives of low unemployment and price stability, the fiscal policy authority adopts the following instruments:

Public Expenditure: This is used to stimulate or regulate an economy when it faces situations like recession or boom. Any variation in public expenditure will have an important bearing on the level of consumption, investment total income. Public expenditure constitutes an important share in total expenditure of an economy and is mainly composed of expenditure on public works, relief expenditures, subsidies, transfer payments, salaries, and social security benefits. Usually, an expansionary fiscal policy action is used in case of recessionary situation. On the contrary, fiscal constraints are employed during boom to avoid the consequences of hyper-inflationary tendencies.

Taxation Policy: The tax structure of an economy occupies an important place as a fiscal policy tool. Taxes determine the size of disposable income in the hands of economic agents and thereby the corresponding inflationary and deflationary gaps. Tax policy must be easy during depression while during inflation or boom periods, it must curtail the spending ability of consumers and investors.

Public Debt: A properly managed public borrowing programme and debt repayment serves as a powerful instrument in combating the macroeconomic instabilities like inflation or deflation. Government borrowing takes place through: (i) commercial banks, (ii) non-bank financial intermediaries, (iii) the central bank or by the printing of new money. Borrowing from public against the sale of bonds and securities help to reduce the consumption and private investment spending and control inflation. If banks have excess reserves, borrowing from the banking system enables the government to undertake investment projects stimulating the economy out of depression. Withdrawals from the treasury add to easing depression, but account for a negligible fraction of government borrowings. Debt monetization (in the form of printing money) adds liquidity in the system but is inflationary in its effect. A proper mix of public debt alternatives is therefore necessary to ensure desirable economic outcomes.

Budget: Budget document (financial plan of the government – usually for a year) serves as an important policy tool to handle the economic fluctuations. Discretionary changes in expenditures and/or tax rates through managed/balanced budget are used to stimulate the economy when in a recession and to achieve price stability during the boom periods. A counter cyclical budgetary policy may also be adopted by unbalanced budgeting. During the depression an unbalanced budget implies deficit financing whereas during economic overheating episodes, it would be surplus budget implying lower government expenditures and higher taxes.

14.5 Fiscal Reforms in India: Policy Measures and Developments

While the move towards fiscal adjustment was discernible in the pronouncements made as a part of long–term fiscal policy announced in the mid-1980s a comprehensive fiscal reform programme at the Central Government level was initiated only at the beginning of the 1990s as part of the economic adjustment programme initiated in 1991-92. On the other hand, in the case of States, efforts towards fiscal adjustment began only in the late 1990s. Fiscal reforms in the States were, inter alia, necessitated by:

1. Growing fiscal imbalances
2. Sluggishness in Central transfers resulting from falling tax to GDP ratio.
3. Introduction of reform –linked assistance as a part of Medium-Term Fiscal Reform Progamme on the basis of the recommendation of the Eleventh Finance Commission and
4. Adjustment programme undertaken in some of the States, which was linked to borrowings from multilateral agencies

Fiscal reforms at the Centre covered tax reforms, expenditure pruning, restructuring of PSUs and better coordination between monetary and fiscal policies.

Tax Reforms

Restructuring of the tax system constituted a major component of fiscal reforms with the aim of augmenting revenues and removing anomalies in the tax structure. The main focus of the reforms was on simplification and rationalization of both direct and indirect taxes drawing mainly from the recommendations of the Tax Reforms Committee, 1991 (Chairman: Raja J. Chelliah). Since the rates were very high and the structure of indirect taxes highly complex, it was considered undesirable to augment revenues merely by raising tax rates. The Committee had recommended adoption of a small number of simple broad-based taxes with moderate and limited number of rates, and with very few exemptions and deductions.

Accordingly, the tax rates were significantly rationalized and progressively brought down to the levels comparable to some of the developed economies.

The key tax reforms have been:

1. Lowering of the maximum marginal personal income tax rate from 60 percent in 1980-81 to the present level of 33 per cent (inclusive of 10 per cent surcharge on annual income of above Rs.8.5 lakhs, announced in the Union Budget (2003-04).
2. Reducing the corporate tax rate on both domestic and foreign companies to the current level of 35 per cent and 40 per cent, respectively, from a level of 65 per cent and 70 per cent in 1980-81.
3. Unification of tax rates on closely held as well as widely held domestic companies.
4. Rationalisation of capital gains tax and dividend tax: duty on non-agricultural products from a level of more than 300 per cent during the period just prior to reforms to the level of 25 per cent as announced in the Union Budget 2003-04 ;
5. Reduction of 11 major ad-valorem excise duties to three viz. central rate of 16 per cent, merit rate of 8 per cent and demerit rate of 24 per cent in year 1999-2000, introduction of a uniform 16 per cent CENVAT effective from 2000-01, while retaining special excise duties on specified goods and in the Union Budget 2003–04 rationalization of excise rate structure by proposing a 3 tier structure of 8 per cent, 16 per cent and 24 per cent which are, however, not applicable to goods attracting specific duty rates

Fiscal policy and inflation

Generally, inflation is related to monetary policy as most of the economists and policy makers look at the problem of inflation as a purely monetary problem and therefore the quantity of money supplied is regulated. However, the fiscal policy is also used to counter the problem of inflation. But before we look at the fiscal measures to combat inflation, let us understand what inflation is.

Inflation: Inflation indicates the increase in the price of most of the goods and services. It is a condition when the purchasing power of money decreases. It is measured in percentage and there are indices to measure this increase in price. The currency devalues which reduces the purchasing power of money. This is in turn induces people to spend, as money is already losing value. The standard of living of the people goes down. Rate of unemployment goes down (this relationship is explained by Philips Curve).

Fiscal policy adopts an indirect way to control inflation. Taxation and expenditure of the government is used to regulate the money supply in the economy. Inflation refers to an increased money supply in the economy and to curb this excess, the tax rate is increased by the government and money is taken away from the hands of the spenders. It is much easier to increase the indirect tax rather than the direct tax because it is done annually during the budget session in the country. Indirect taxes are paid by all the consumers in the country and therefore the impact is on a wider population. In developing countries like India where the rate of direct tax is still very high, the government is not in favour of raising it. Similarly, government expenditure adds to this money supply so at the time of inflation the government reduces its public spending so that the total supply of money in the economy comes down both these measures have a long-term impact and generally there is a lag of 9 to 12 months for it to it reflected in the economy. Therefore, most of the analysts and policy makers rely on monetary policy for curbing inflation as it has a more direct and immediate impact on regulating money supply.

Summary

Fiscal policy is a very important tool in the hands of the government specially in the developing countries where the economy is not fully monetised or where the public is yet dependent on the state for the necessities. The fiscal policy may be used to tax the private sector to fund the public sector. In case of India, in the initial years after independence the government followed this policy to fund the various welfare programs it undertook and to build the infrastructure of the country. The objectives of the fiscal policy are meant for full employment, economic stability, improve the rate of growth of the economy, optimum allocation, and utilisation of the resources and to provide a strong base to the economy. Depending on the stage of development of the country and the international economic environment, the fiscal policy can be neutral, expansionary, or contractionary. The basic two instruments of fiscal policy are taxation and expenditure which are used prudently by the state to provide stability to the economy.

In India, fiscal policy has been given more prominence as compared to the monetary policy by the politicians and policy makers. Initially the rate of taxation was very high and taxes on the private sector financed the public sector. The result of this was very high marginal rate of taxation and high tax evasion. The new economic policy of 1991 brought about a massive change in policy making and the role of the state in the economy was curbed which got reflected in the fiscal policy as well. Inflation is targeted through fiscal policy though at times it appears to be too slow and insufficient.

Keywords

Contractionary Fiscal Policy: The contractionary fiscal policy raises taxes and cuts spending.

Expansionary Fiscal Policy: This policy is designed to boost the economy

Fiscal Policy—the changes in the level of taxation and spending—is designed to achieve macroeconomic goals relating to output (gross domestic product) and employment.

Fiscal stabilization policy is the use of government spending and tax policies to affect the level of economic activity.

Inflation is an increase in the general level of prices as measured by a price index.

Neutral Fiscal Policy: This type of policy is usually undertaken when an economy is in equilibrium.

Self Assessment

1.Fiscal policy in India is formulated by

A. Reserve Bank of India
B. Planning Commission
C. Finance Ministry
D. Securities and Exchange Board of India

2.Which economist gave the concept of fiscal policy?

A. J M Keynes
B. Adam Smith
C. A C Pigou
D. A Lewis

3.What are the tools of fiscal policy?

A. Taxation
B. Public expenditure
C. Private Expenditure
D. Both taxation and public expenditure

4.Can inflation be controlled by fiscal policy?

A. Yes
B. No

5.Which of them is not a type of Fiscal policy?

A. Neutral fiscal policy
B. Expansionary fiscal policy
C. Contractionary fiscal policy
D. Constant fiscal policy

6.Is there a quid-pro-quo clause in taxation?

A. True
B. False

7.Does fiscal policy redirect revenue from private sector to the public sector?

A. True
B. False

8.Income tax is a type of

A. Direct tax
B. Indirect tax
C. Depends on who levies the tax
D. None of the above

9.Which of the following is not a major economic problem of India?

A. Unemployment
B. Poverty

C. Inequality
D. Maternal Health

10. Are the urban local bodies allowed to tax people in their jurisdiction?
A. True
B. False

11. When was the final report given by Chelliah committee?
A. 1991
B. 1992
C. 1993
D. 1994

12. When was the Vijay Kelkar committee formed?
A. 2002
B. 2004
C. 2006
D. 2008

13. If the rate of inflation is high, then the purchasing power will
A. Increase
B. Decrease
C. Remain constant
D. Depends on the product whose price is increasing

14. If there is inflation, then the rate of unemployment will
A. Increase
B. Decrease
C. Remain constant
D. Depends on the product whose price is increasing

15. The relationship between inflation and rate of unemployment is shown by
A. Philips curve
B. Laffer curve
C. Lorenze curve
D. None of the above

Answers for Self Assessment

1.	C	2.	A	3	D	4.	A	5.	D
6.	B	7.	A	8.	A	9.	D	10.	A
11.	C	12.	A	13.	B	14.	B	15.	A

Review Questions

1. Write a note on fiscal policy.
2. Explain the evolution of Fiscal Policy in context of India.
3. If there is inflation in the country, especially food inflation, then what type of taxation policy should be adopted and why?
4. What are the objectives of fiscal policy for a developing country?
5. Are the objectives of fiscal policy different for developed and developing countries?
6. Explain the various types of fiscal policy by citing examples from the economy.

Further readings

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