Syllabus
M.A. Part – I, Paper - I
Industrial Economics

1. Theory of the Firm

Undifferentiated Products - Cournot, Stackelberg, Dominant firm model, Bertrand-Heterogeneous products - Chamberlin's small and large number case-Kinked demand curve theory - Bain's limit pricing - Sales and growth maximization hypothesis - Managerial theories of the firm - Game theoretical models.

2. Investment Decisions

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3. Vertically Related Markets and Competition Policy

Successive and mutually related market power - Monopoly, variable proportions and price discrimination - Monopsony and backward integration - Uncertainty - Diversification, rationing and cost economics and asset specificity - Internal hierarchies-Hierarchies as information systems - Incentive structures and internal labour markets - Supervision in hierarchies - Competition policy: Need and requirements - Mergers and acquisitions - Coordination with other policies.

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Module 1
THEORY OF THE FIRM
MODELS OF OLIGOPOLY AND GAME THEORETICAL MODELS

Unit structure :

1.0 OBJECTIVES

- To understand oligopolistic market structure.
- To analyse Cournot's and Stackelberg's model.
- To understand the market outcomes when the choice variable is changed from quantity to price – Bertrand model.
- To understand dominant firm's strategy of price determination. To have understanding of application of game theory to oligopoly.

1.1 INTRODUCTION

The ideal most type of market is perfect competition. It is a market where neither a buyer nor a seller can influence price but market forces of demand and supply work together in determining the equilibrium price. At this price the buyers can maximize their welfare or satisfaction and the sellers maximize their profits. At the other end, monopoly is a type of market which is characterized by a single seller who is a price maker and who has a complete control

over an industry. These two types of market structures – perfect competition and monopoly – are the polar cases and most of the industries in today's market lie between these two extremes. Some of the industries may be facing monopolistic competition wherein a large number of firms may produce differentiated products or oligopoly wherein there are very few firms producing homogenous / undifferentiated or heterogenous / differentiated products. In this unit, we are going to understand some of the theoretical models of firm's price determination techniques under oligopolistic market structure.

Oligopoly is a market structure where there are a few firms, large in size, accounting for most of the production. All of these firms, generally, can enjoy substantial profit in the long-run due to entry barriers. That means, due to large size of existing firm or heavy initial investment, entry of new firms, in the oligopolistic markets, is restricted. Examples of oligopolistic industries may include automobiles, heavy machinery & equipment, power generation, Steel, petrochemicals, etc.

In any other type of market, each firm could take either price or market demand as given and largely ignored its competitions. In oligopolistic market however, it is necessary to consider the behaviour of competition while determining the output or price. Similarly, the competition will also base his decision on the behaviour of the first firm. In other words, all the firms in oligopoly are interdependent. This makes their pricing strategies to be different from other types of market structure. Following is a brief analysis of some of those models.

1.2 COURNOT MODEL

The model of pricing put forward by Augustin Cournot in 1838 is a duopoly model (existence of only two firms in the market). Cournot's model assumes that there are only two firms in the market – A and B – each one producing mineral water at zero cost (This is because each of the firms is assumed to be owning a spring of mineral water). In other words, the model is based on following assumptions.

1) There are two firms – A and B.
2) They are operating with zero cost.
3) They are producing identical product.
4) They decide their own output on the assumption that the competition will not change his output level.
5) Firm A starts producing first.

Based on these assumption, the duopoly firms will operate in the market as shown in the following diagram.

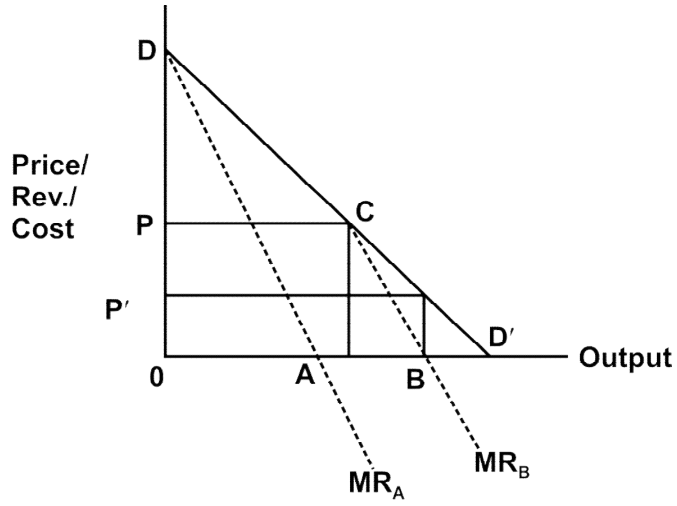


Diagram 1.1

As per the diagram 1.1,
DD_1 demand curve
MR_A market and MR_B – marginal revenue curves of firm A & B, respectively.

Since the operating cost of firm A is zero, the diagram does not have cost curve.

Firm A will produce at that point where the profits are maximized. (The students can recollect the equilibrium condition – MC = MR)

A – Level of output for firm A where MC (which is equal to zero in this model) = MR_A.
OP – equilibrium price for Firm A.
CE_1 – Firm B's demand curve (under the assumption that the competition will not change his output level. In this case firm A is assumed to keep its output fixed at OA).

B- equilibrium point where MC (which is equal to zero) = MR_B

AB – profit maximizing output for firm B

OP_1 - profit maximizing price for firm B

As can be seen from the diagram, Firm B produces half of market not supplied by Firm B – that means it produces ¼ th of the market.

In the next period, Firm A will produce ½ of the market not supplied by B (under the assumption that the competition will not change the output level). So 'A' will produce ⅜ th of total market.

$1 \rightarrow$ total market demand

$\frac{1}{2}\left(1-\frac{1}{4}\right)=\frac{3}{8}$ $\quad \frac{1}{4} \rightarrow$ Firm B's market share

$\frac{1}{2} \rightarrow$ half of the market not supplied by B

Now Firm B will react by producing ½ of the remaining market which is $\frac{5}{16}$

$\frac{1}{2}\left(1-\frac{3}{8}\right)=\frac{5}{16}$

According to Cournot, this kind of action – reaction pattern of firms will continue till they cover 2/3 rd of the total market. Equilibrium of Cournot's model is explained below.

I Firm A's output

Period 1 – ½

Period $2 \rightarrow \frac{1}{2}\left(1-\frac{1}{4}\right)=\frac{3}{8}$

Period $3 \rightarrow \frac{1}{2}\left(1-\frac{5}{16}\right)=\frac{11}{32}$

The output of firm A goes on declining and by solving this geometric series what is obtained is 1/3 of the market is supplied by firm A. In the similar way, firm B also supplies 1/3 rd of the market. Both the firms together supply 2/3 rd of the market.

[For Firm B,

Period 2 output $\rightarrow \frac{1}{2}\left(\frac{1}{2}\right)=\frac{1}{4}$

Period 3 output $\rightarrow \frac{1}{2}\left(1-\frac{3}{8}\right)=\frac{5}{16}$

Period 4 output $\rightarrow \frac{1}{2}\left(1-\frac{11}{32}\right)=\frac{21}{64}$ and so on]

Important observations from the Cournot Model.

1) Cournot solution is stable.

2) More the number of firms in the market, more will be the quantity supplied and less will be the price. (It can be shown that if 3 firms exist in the market, 3/4 the of the market demand will be supplied).

3) Since the firms do not recognize the interdependence, they can not act as monopolist.

4) Each firm maximizes its profit in each period but industry's profits are not maximized.

1.2.1 Criticism of Cournot's Model :

Cournot's duopoly model, expressing the limiting case of Oligopoly, is criticized on many grounds. Following are some of the important ones : -

a) Assumption of costless production is highly unrealistic.
b) It is a 'closed' model where there is no entry for new firms.
c) In each successive period, price is brought down by the action-reaction pattern of two firms.

1.3 STACKELBERG'S DUOPOLY MODEL

This model was developed by a German economist Stackelberg. In the Cournot's model it was assumed that both the competitions make their output and price decisions at the same time. Situation will be different if one of them moves first. Stackelberg presented a duopoly model in which one of the two firms sets its output before the other firm.

Let us first understand the concept of linear demand curve with the help of numerical example. [from Pindyck and others- Microeconomis.

Suppose duopolists face following market dd curve.

$P = 30 - Q$. Q = Total output ($Q = Q_A + Q_B$)
A & B - two duopoly firms.

Suppose both the firms have zero marginal cost.

$MC_A = MC_B = 0$

To maximize profit, firm A sets MR = MC. So its total revenue TR_A is given by

TR_A = P. Q_A = (30 - Q) Q_A (Recall that total revenue is obtained by multiplying price by Quantity).

= $30Q_A$ - (Q_A + Q_B) Q_A (because Q = Q_A + Q_B)

= $30Q_A - Q_A^2 - Q_BQ_A$

Marginal Revenue of firm a is additional revenue resulting from additional output so

$$MR_A = \frac{\Delta TR_A}{\Delta Q_A} = 30 - 2Q_A - Q_B$$

The equilibrium condition is setting MR_A = MC_A which is equal to zero. So Firm A's output is

$$Q_A = 15 - \frac{1}{2}Q_B \quad \text{..... Equation (1)}$$

Doing similar calculations for firm B would give B's output curve as

$$Q_B = 15 - \frac{1}{2}Q_A \quad \text{..... Equation (2)}$$

Equilibrium will be that levels of output Q_A & Q_D at which the two output curves intersect. (That is, that level of output which one gets by solving equations (1) and (2)).

$Q_A = Q_B = 10$

Total quantity produced in the market is 20. So equilibrium price is P = 30 - Q = 10.

Each firm's profit is P × Q

10 × 10 = 100.

Using the above-explained numerical example, we will try to understand which firm benefits more in a situation analysed by stackelberg's model and how the output levels of each firm will be determined.

Suppose Firm A sets the output first and in setting its output it has to consider the reaction of firm B.

Firm B decides its output level after firm B and it takes Firm A's output as fixed

$$Q_B = 15 - \frac{1}{2}Q_A \ldots\ldots\ldots\ldots\ldots\ldots \text{ Equation (3)}$$

Firm 1 will choose its output at that level where MR = MC (which is equal to zero).

$TR_A = PQ_A = 30Q_A - Q_A^2 - Q_BQ_A \ldots$ Equation (4)

Because the revenue earned by firm A depends upon the output level of firm B (Q_B), firm A must anticipate what firm B would produce Frim B, on the other hand, will produce by taking firm A's output as fixed. So by substituting equation (3) for Q_B in equation (4), we will get.

$$TR_A = 30Q_A - Q_A^2 - Q_A\left(15 - \frac{1}{2}Q_A\right)$$

$$= 15Q_A - \frac{1}{2}Q_A^2$$

Its marginal revenue is -

$$MR_A = \frac{\Delta TR_A}{\Delta Q_A} = 15 - Q_A \ldots\ldots\ldots\ldots \text{ Equation (5)}$$

By soling equation (5) using $MR_A = 0$; we get the output level.

Firm A = 15
Firm B = 7.5

That means firm A produces twice the level of firm B and hence enjoys the profit twice as much Firm B. stackelberg calls it as the advantage of first mover.

Important implications of Stackelberg's model.

1) The first mover will announce higher output and to maximize the profit, the other producer has to acknowledge it and produce a lower level of output. Otherwise price will come down and both the firms will suffer.

2) Stackelberg model brings about the need for collusive agreement between the duopolists as they are mutually interdependent.

1.3.1 Conclusion :

Cournot and Stackelberg models are two different approaches to oligopolistic market. for those industries where all the firms have more or less similar market share and none of then has leadership position, Cournot's model may be applicable.

Whereas, for those industries like mainframe computers (where IBM is the leading firm) Stackelberg's model may be more appropriate.

1.4 THE BERTRAND MODEL

Bertrand developed the model in 1883. The model is applicable for the firms which produce homogenous product and make their pricing & output decisions at the same time. The model differs from that by Cournot on the ground that the firms compete on the basis of price and not on the basis of quantities (as was the case in Cournot model). Another important assumption on which the mo0del is based is that there are only two firms competing in the market.

By using the same tool & demand equations introduced in the earlier section, we will show, how the two firms determine their equilibrium, by choosing prices instead of quantities. Suppose the market demand curve is P = 30 - Q.

As we are aware, $Q = Q_A + Q_B$ i.e. quantity produced by firm A and firm B.

Suppose the marginal cost of production for both the fimrs is Rs. 3 (instead of zero in the earlier models), $MC_A = MC_B = 3$.

By solving this equation for Cournot's equilibrium, (as per the earlier section) we get following results.

$Q_A = Q_B = 9$
Price = 12
Profit = 8 for each firm.

As per Bertrand, the firms will compete on the basis of price. Since they produce homogenor's products, the consumer will buy from the firm selling the product at the lowest price. So there will be 3 possibilities in the market.

1) A firm which charges higher price than its competition will have no market share.
2) A Lower-price firm will capture entire market.
3) If both the firms charge same price, the consumers will be indifferent. That means both the firms will supply half of the market each.

Now, if the P = MC_A = MC_B = 3, then Q = 27 and each firm will supply 13.5 units of the product. (Substitute P = 3 in the above equation and equally divide Q into both the firms).

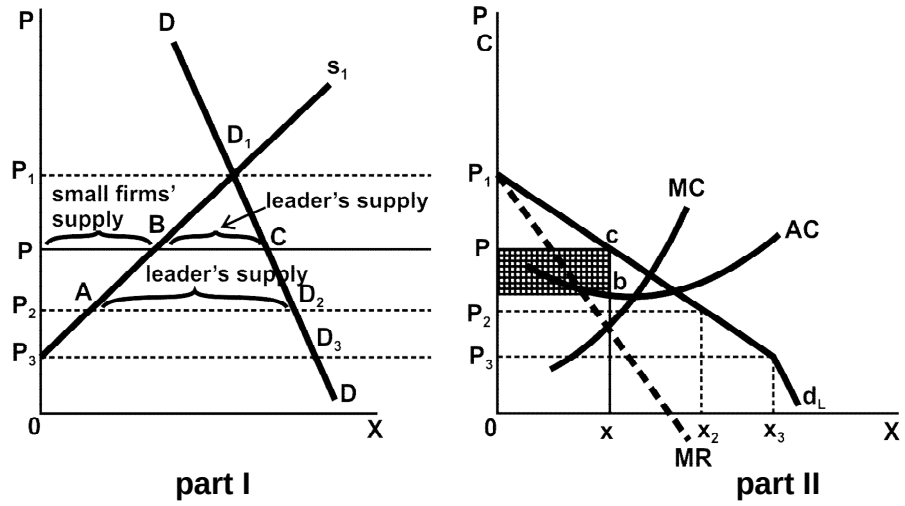
Since P = MC, each firms makes only normal profit (or zero economic profit). Even though both the firms make zero profit, they will have no tendency to increase the price. This is because, if one of the firms raises the price, it will loose entire market. On the other hand, if one of the firms reduces the price below Rs. 3/- it will capture the market, but its profits will become negative (as it is already facing zero profit situations). Suppose both the firms decide to raise the price to say Rs. 6. In this case, there may not be a stable situation. Either of the firms may use the strategy of slightly reducing the price and capturing the entire market. Each competition may under cut the price till both reach back to P = Rs. 3.

We can conclude this section by commenting that a change in strategic variable firm quantity to price, a drastic change is evident in the market outcomes.

1.5 DOMINANT FIRM MODEL

In same oligopolistic markets, one large firm has a major share of market while the remaining market is supplied by the remaining smaller sized firms. Such a large sized firm is called a dominant firm. It sets the price that maximizes its own profit and the other smaller firms accept that price as given and produce accordingly.

Following diagram explains how a dominant firm determines price and quantity.



As per the part I of fig. 1.2

DD - market demand curve.

S_1 - supply curve of the smaller firms (the dominant firm may know about smaller firms. Supply curve from the past experience.) At each price, the demand for product of dominant firm will be equal to the difference between market demand and the supply by the smaller firms.

At price $P_1 \rightarrow$ demand for dominant firm's product is zero as the entire market is supplied by smaller firms.

At price P -
PB - Smaller firms supply
BC - Dominant firm's supply

At price P_2
P_2A - Small firms' supply
AD_2 - Dominant firm's supply

At price P_3
P_3D_3 - Dominant firm's supply (entire market is supplied by dominant firm).

By using this information, one can obtain dominant firm's demand curve as shown is part 2 of the diagram.

D_L - dominant firm's demand curve at different prices.
MR - Marginal Revenue, MC - Marginal Cost, P - Equilibrium price (Where MC = MR).

At price P
Total Market demand is PC, where PB is small firm's supply and BC is dominant firm's supply. [Shown in part 1 of the diagram]
$BC = O_x$ [in part 2 of the diagram].

At this point, the dominant firm maximize profit and other smaller firms take that price as given.

1.6 GAME THEORETICAL MODELS

In the earlier part of the unit, we have discussed some of the models of price and output determination under oligopoly. These models are based on the interdependence of firms under oligopolistic market structure. But there is an inherent uncertainty in these models because the reactions of competitions can not be effectively guessed. Collusive models, limit pricing models (to be covered in next unit) or managerial models (to be covered in unit 3) can not fully analyse oligopolistic market. use of game theory has been an important development in this respect to understand the

behaviour of markets and decision making. By the managers in the conditions of oligopoly. In this part of the unit, we will understand simplest types of game theory models.

1.6.1 Explanation of some concepts related to game theory :

A Game - It is a situation in which the players (or participants) make strategic decisions. That means they take account of reactions of the others.

Pay - offs - Outcomes that generate rewards for the players. In other words, it is a strategy that will bring about gains to the players for any counter reaction by the competition.

Strategy - It is a rule for playing the game.

Pay off Matrix - It is a table showing pay-offs to the firm as a result of each possible combination of strategies adopted by the firm and its rivals.

Following is a pay-off matrix. Suppose firm A chooses out of three strategies (A_1, A_2 and A_3) and Firm B reacts by adopting any one of four strategies $(B_1, B_2, B_3 \text{ and } B_4)$, then for each strategy of Firm A, there are 4 strategies of firm B. the pay-off matrix will include 3 × 4 = 12 pay offs.

Suppose G_{ij} is a pay off, i refers to strategy by firm A and j refers to strategy by firm B, then the pay off matrix will look as follows.

Pay - off Matrix for Firm A

Firms A's Strategy	Firm B's Strategies				
		B_1	B_2	B_3	B_4
	A_1	G_{11}	G_{12}	G_{13}	G_{14}
	A_2	G_{21}	G_{22}	G_{23}	G_{24}
	A_3	G_{31}	G_{32}	G_{33}	G_{34}

When the game theory is applied to oligopoly, oligopolistic firms are the players each firm's movement is followed by many counter movements by the other players. Game theory highlights that in an oligopolistic market a firm adopts strategic decision-making which means that while taking decisions regarding price, output, advertising, etc. it takes into account how its rivals will react to its decisions and assuming them to be rational, it thinks that they

will do their best to promote their interests and take this into account while making decisions.

1.6.2 Non-Co-operative and Co-operative Games :

The economic games can be either Co-operative or non-co-operative. This distinction is based on whether or not there is a possibility of any finding agreement among the players or the firms. Co-operative games can be played when the players can negotiate a binding agreement and plan joint strategies to maximize their profits. non-co-operative games can be played when no binding contracts are possible. The games explained in this unit are mostly the non-co-operative games.

1.6.3 Dominant Strategy :

Some Strategy of the firm will be successful or yield more profits only if the competitors make certain choices or only when the competitions react in a particular way. However these strategies would fail if the competitor reacts in some other way. But there are certain strategic that are successful regardless of the reaction of competitors. Such strategies are dominant strategies.

Following example explains the dominant strategy.

Suppose there are two firms - A and B. They want to undertake advertising campaign and they will be affected by each other's decisions. The pay off matrix of possible outcomes is given below.

Matrix For Advertising Game

Firm B (Profits in Rs. crores)

		Advertising	Non advertising
	Advertising	A : 10	A : 15
		B : 05	B : 00
Firm A			
	Non Advertising	A : 06	A : 10
		B : 08	B : 02

The matrix should be read as follows :

1. If both the firms are advertising - 'A' earns profits equal to Rs. 10 crores & 'D' Rs. 5 crores.
2. If 'A' is advertising and 'B' is not advertising, then 'A' gets Rs. 15 crores and 'B' does not get any profit.
3. If 'A' does not advertise & 'B' advertises, the profits of A & B are Rs. 6 crores and 8 crores respectively.

4. If ‘A’ does not advertise & ‘B’ also does not advertise, ‘A’ gets Rs. 10 crores and ‘B’ gets Rs. 02 crores.

Given above situation, Firm ‘A’ will always be better off if it advertises its product (irrespective of whether ‘B’ is advertising or not). So for firm A ‘Advertising the product’ is a dominant strategy.

Same is true for Firm B. So assuming that both the firms are rational, outcome of advertising game is that both the firms will advertise.

1.6.4 Nash Equilibrium :

We have explained above the game with dominant strategy. But many times, the games may not have dominant strategies and still they can achieve equilibrium. Nash equilibrium describes a set of strategies or actions such that each player is doing the best it can, given the actions of the opponent. No player has any incentive or intention to deviate from the Nash strategy.

It can be explained by an example by Pindyck, Rubinfeld and Metha. It is called product choice problem.

Suppose there are tow breakfast cereal companies. They are in the market where a new variety of “crispy cereals” or “sweet cereals” can be introduced. Each firm can introduce only one variety due to resource constraints. The pay-offs of these two firms are given below :

Product Choice Problem

		Firm 2	
		Crispy	Sweet
	Crispy	Firm 1 - 5	Firm 1 - 10
Firm 1		Firm 2 - 5	Firm 2 - 10
	Sweet	Firm 1 - 10	Firm 1 - 5
		Firm 2 - 10	Firm 2 - 5

As per the matrix

1. If firm 1 introduces sweet cereal, firm 2 may introduce crispy cries and neither of the firms would deviate from this decision.
2. If they do not deviate Firm 1 will have pay off of 10 and Firm 2 also will have pay off of 10
3. If any one of them deviates, both will have pay-off - 5
4. Strategy in the left-hand corner of the matrix is stable and it constitutes Nash equilibrium.
5. Similarly upper right hand corner of pay off matrix is also Nash equilibrium because no player will have incentive to deviate from here.

1.7 PRISONER'S DILEMMA

As stated earlier, Nash equilibrium is a non-co-operative equilibrium where each firm makes decisions that give it the highest possible profit, given the actions of competitions.

A classic example of game theory that explains the problem faced by oligopoly is "Prisoner's Dilemma" Two Prisoners are accused of a joint crime and they are put in two different jails. They can not communicate with each other. They are asked to confess.

1. If both confess, both will get 5 years of imprisonment.
2. If no one confesses, both will get only 2 years of jail.
3. If one confesses and the other does not confess, the one who confesses will be jailed for one year and the other - 10 years.

Pay off Matrix for
Prisoner's Dilemma

		Prisoner B: Crispy		Prisoner B: Sweet	
Prisoner A	Confess	- 5	- 5	-1	- 10
	Don't Confess	- 10	- 1	- 2	- 2

In this situation, most likely strategy will be both the prisoners would confess and get 2 years of imprisonment, oligopolistic firms often find themselves in a prisoner's dilemma.

They have to decide :

a) Whether to compete aggressively & capture larger market share.

b) Co-operate and compete more passively.

Actually both the firms would do better by co-operating and charging high price. But the firms are in prisoners' dilemma, where neither can trust its competitors to set a higher price.

1.8 SUMMARY

1. Oligopoly is a market with a few sellers and homogenous or differentiate products.
2. There are different models of oligopoly given by Cournot, Bertrand and stackelberg, focusing on different conditions of oligopolistic markets. Some of these models explain market equilibrium with homogenous products, some models explain equilibrium with one dominant firm, etc.

3. Game theory is an important development in understanding the behaviour of oligopolistic firms in the conditions of uncertainty and indeterminateness.
4. Nash equilibrium is a non-co-operative equilibrium where each firm makes decision that give it highest possible profit given the actions of competitors.
5. Prisoner's Dilemma is the classic example of application of game theory to oligopolistic market conditions.

1.9 QUESTIONS

1. Write detailed notes on
   a) Cournot Model
   b) Stakelberg Model.
   c) Bertrand Model.
2. Explain the leadership models of oligopoly.
3. How is game theory made applicable to understand uncertainty under oligopolistic market conditions?

2

MODELS OF OLIGOPOLY

Unit Structure :

2.0 OBJECTIVES

- To understand monopolistic competition as a new type of market structure.
- To analyse different models of market equilibrium given by Chamberlin.
- To throw light on Chamberlin's oligopoly model of small group of firms.
- To understand price rigidity of oligopolistic firm with the tool of Kinked demand curve.
- To understand price determination with the threat of entry of new firms as given by Bain's Model.

2.1 INTRODUCTION

The classical theory of markets considered perfect competition and monopoly as two main models explaining price determination. These models, however, failed to explain some of the empirical observation like use of advertising by the firms, heterogeneity of products and so on. Joan Robinson and E. Chamberlin described a new market structure having features of both perfect competition and monopoly. Under this kind of market, known as monopolistic competition, in spite of free entry and exit for the firms and existence of large number of firms, each firm

enjoys some degree of monopoly power. This may be because of differentiated products. When there is a large number of firms producing differentiated products, each one has a monopoly of its own product. But at the same time, there is also a degree of competition because of competitors producing close substitutes. Under such a market, the demand curve for the product of individual firm depends upon the nature and prices of its closely competing substitutes. Thus, according to Chamberlin, "Monopolistic Competition concerns itself not only with the problem of an individual equilibrium, but also with that of a group equilibrium. A 'group' is a number of producers whose goods are fairly good substitutes.

In this part of the unit, we will focus on Chamberlin's 'Group' equilibrium model.

2.2 CHAMBERLIN'S MODEL (LARGE GROUP)

As stated earlier, 'Group' refers to the collection of firms that produce closely related but not exactly identical products. since the firms in a group produce substitutes and not ho9mogenous products, the demand for the product of one producer is dependent on the price and nature of the products of his rivals. Basic assumptions of the Chamberlin's large group model are as follows.

1. There are large number of buyers and sellers in a group.
2. The products of each firm are differentiated but still they are close substitutes of each other.
3. There is free entry and exit in a group.
4. Profit maximisation is an important objective of a firm
5. The prices of factors of production are given.
6. Demand and cost curves for all products in a group are uniform.

Chamberlin's has accepted traditional cost concepts for his analysis. So the average variable cost (AVC), Marginal cost (MC) and Average Total Cost (ATC), all are U shaped in nature. He introduced the concept of selling cost for the first time in his analysis. Because each firm produces differentiated products, advertising and selling costs play important role in these markets. Selling cost curve is also assumed to be U-shaped in nature.

Product differentiation established by advertising, packaging, differences in design, etc. give some monopoly power to each producer. So the producer is not price - taken and he enjoys some degree of power in determining price.

Due to product differentiation, it is difficult to get market demand and supply. Summation of individual demand and cost curves to form 'Group' demand and supply requires the use of some common denominator. This compels the 'Group' not to have unique equilibrium price

2.2.1 Equilibrium of the firm

The firm has negatively sloped demand curve. It implies that if the firm raises price, it will lose some of its market share. although it has downward sloping, demand curve, it is highly elastic in nature as shown in the following diagram.

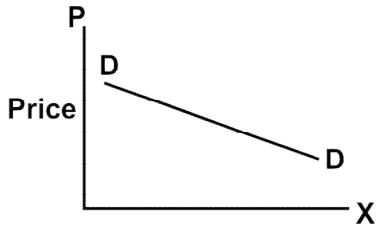


Fig. 2.1

Firm, in the short run, acts as a monopolis and given its demand and cost curves, it maximizes its profit at the point where MC = MR. But to be able to understand the equilibrium of an industry, Chamberlin has developed three models.

Model 1 - Equilibrium with new firms entering into industry.
Model 2 - Equilibrium with price competition
Model 3 - Equilibrium with price competition and free entry.

2.2.2 Model 1. Equilibrium with new firms entering the industry.

In this model, Chamberlin assumed that the firms are in equilibrium with excess profit (in the short run) and hence, there new firms can enter the market in the long run. Following diagram shows equilibrium of a firm and industry in the same diagram.

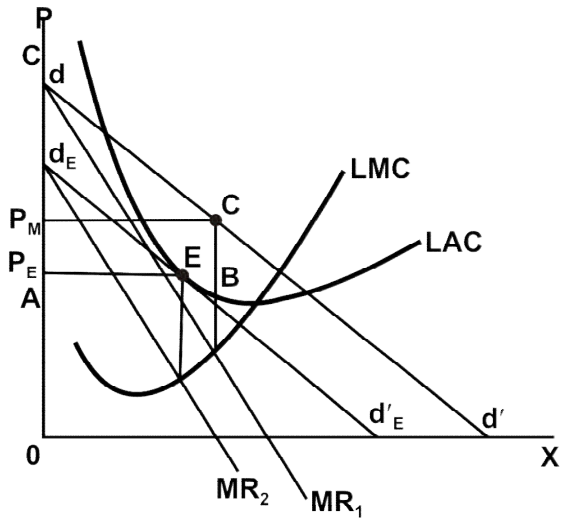


Fig. 2.2

LAC & LMC - Long run average cost and long run marginal cost curves.
dd' - demand curve of a firm.
P_M - equilibrium price (corresponding to MR = MC) - students should recollect the determination of equilibrium price and quantity with MC - MR approach).

$ABCP_M$ - Excess profit enjoyed by the firms in the short - run.

Excess profit situation leads to entry of new firms into the market. As a result the demand curve for the firm will shift downwards (since there are more sellers in the market now, the share of each firm in catering total demand will come down).

$D_Ed_E^1$ - New demand curve
MR_2 - Corresponding marginal revenue.
P_E - Equilibrium price (where MC = MR)

At this price, excess profits are wiped off and firms are in stable equilibrium with normal profit.

2.2.3 Model 2. Equilibrium with price competition :

This model is based on the assumption that the number of firms in an industry is exactly compatible with long-run equilibrium but the existing price charged by the firms is higher than the equilibrium price. The firms charge price not as a reaction to their competitors, but each firm fixes price independently with an objective of profit maximisation. If a firm aims at reducing the price to increase its sales, it can not enjoy fullest possible benefit of price reduction because; all other competition firms would reduce their price and expand their own sales simultaneously. Hence, even if

price reduction takes place, the share of all the firms remain more or less constant. In this model, the firms are shown to be suffering from myopia. They do not learn from experience and continue to lower price to increase sales. There is a discrepancy between expected sales (after price reduction) and actual sales because all firms act identically. The adjustment process will stop at point where the demand curve is tangent to the average cost curve. That means a point at which a firm enjoys normal profit.

2.2.4 Model 3 : Price Competition and free entry :

In this model, Chamberlin shows how the actual life equilibrium is achieved by both price competition and free entry. According to him price adjustment by the existing firms and entry of new firms together would work towards stable equilibrium.

Chamberlin's theory is criticized on many grounds. It is said that the firms having competitors who produce substitutes, can not act independently as assumed in this model. Firms will learn from the past experiences or mistakes and then take decisions regarding price and quantity. Further, it is difficult to define the concept of industry with product differentiation. Two different products can not form an industry. So some of the assumptions of Chamberlin seen to be unrealistic. Thirdly, some people have criticized the model on the ground that it is indeterminate. Effects of product changes and sales. Promotion activity create a situation of indeterminate equilibrium.

2.3 CHAMBERLIN'S OLIGOPOLY MODEL (SMALL GROUP)

The "Small group" model by Chamberlin indicates that if the firms in a small group realize their interdependence, they can attain stable equilibrium with profit maximisation and in fact all can enjoy monopoly profit. According to him if the firms do not recognize their interdependence, they may have either Cournot equilibrium (where a firm assumes that its competitors will keep quantity of output constant) or Bertrand Equilibrium (where firm assumes that its competitors will keep price constant).

But according to Chamberlin, firms are well aware of the fact that the competitor's price & quantity decisions are going to have direct and indirect effect on the firms' equilibrium position. With the understanding of such effects, olitopolistic firms can achieve stable equilibrium with monopoly profit for all the firms in a group.

It is explained with the help of following diagram.

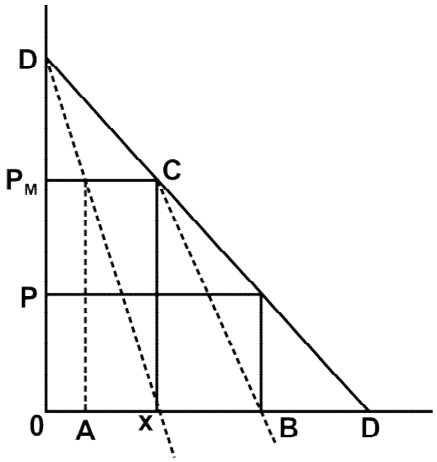


Fig. 2.3

DD – Market demand with negative slope
OX – Firm A's output
P_M - Firm A's monopoly price
Firm B, (under cournet assumption that the rival firm A will not change its quantity), will consider its demand curve to be CD and produce quantity equal to XB.

As a result, price falls to OP. Firm A decides to reduce output to OA. It should be noted that $OA = XB$. This raises the price to OP_M. Firm B realises that price OP_M is the best for both of them (as it gives monopoly profit to both the firms) and hence it keeps the quantity same (at XB).

2.4 THE KINKED-DEMAND MODEL :

The origin of kinked demand curve can be traced in Chamberlin's analysis. But he did not explicitly used this tool in his analysis. Hall and Hitch, in their article 'Price Theory and Business Behaviour' used the term kinked demand curve for explaining the price-stickiness in oligopolistic markets. It was Paul Sweezy, who for the first time, used kinked demand-curve as a tool for explaining equilibrium in the oligopolic market. In this part of the unit, we will try to focus on how oligopoly firms will attain equilibrium when the prices are sticky.

It has been observed that under oligopolistic markets, price and quantity tend to remain inflexible. Kinked demand curve hypothesis is used to explain such a rigidity of prices. Under oligopoly without product differentiation, if a firm raises the price, it

will loose all its customers. So this firm will have no tendency to change its price. Alternatively, firms without product differentiations may enter into formal or informal agreement and maintain price rigidity.

Following diagram explains kinked demand curve hypothesis.

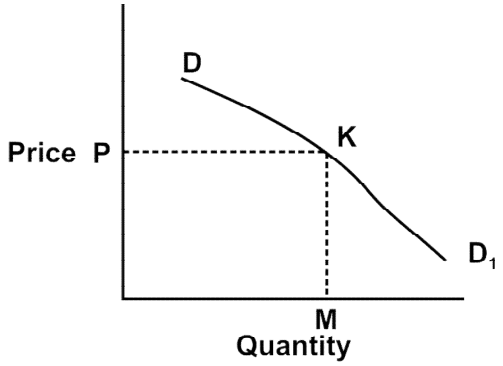


Fig. 2.4

DKD, is the demand curve showing a kink at point k which corresponds to existing price-level. DK is more elastic portion of demand curve. KD_1 is more inelastic portion of demand curve.

Demand curve is said to be having a kink of point 'K' because each oligopolistic firm believes that though its rivals will not increase the price, if this firm increases the same, but they will certainly reduce the price, if this firm decides to do so.

If a firm decides to reduce the price below prevailing price level (OP), the competitors will fear that their customers will start buying from that firm and their market share will go down, so the competitors follow price cut policy and hence the firm will not gain much in terms of market share. As per the diagram (2.4), firm will reach inelastic part KD_1 of the demand curve.

In case a firm decides to increase the price, the competitors may not follow the firm and hence the firm may loose a large part of its customers. In other words, if firm raises the price, it will reach at the DK part of demand curve which is highly elastic in nature.

It is obvious from the above discussion that whether a firm reduces the price or increases the price, it will be a loser. So this firm has no inclination of changing the price. Price remains sticky or rigid at "OP".

2.4.1 Explanation of Price Rigidity :

As explained in the earlier section, oligopolists will adhere to a certain price and will neither increase the price (as they will experience substantial fall in sales) nor decrease the price (as they will have no substantial gain in terms of market share). This situation will not change even if the cost of production or demand for product change.

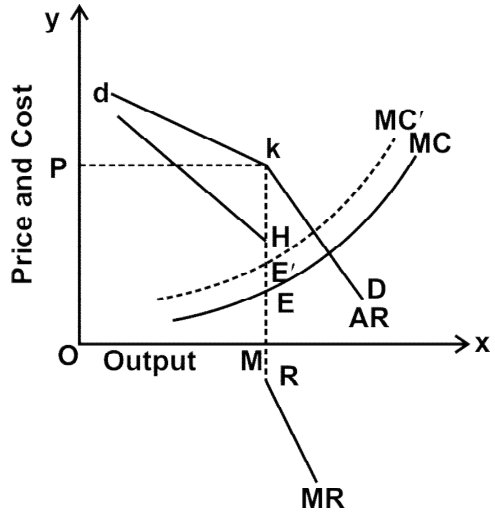


Fig. 2.5

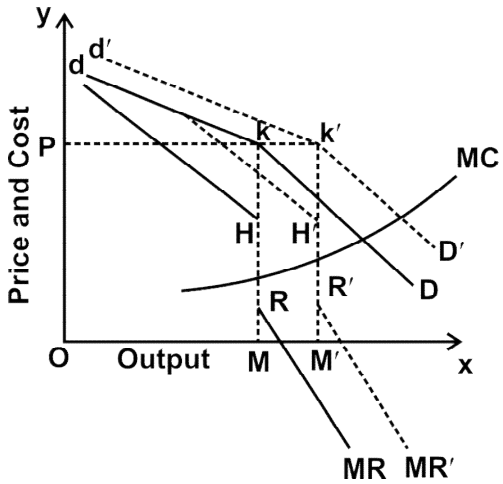


Fig. 2.6

In fig. 2.5 OP - Prevailing Price (at which there is a kink) which is rigid / sticky.

To understand profit maximising situation of an oligopolist, marginal revenue and marginal cost curves are drawn.

MR – Discontinuous marginal revenue curve with discontinuosu portion HR

E – Equilibrium point where MC = MR

Since at this level of output and price, profits are maximised, the oligopolist has no inclination to change the price.

MC' - New Marginal Cost curve with rise in cost
E' - New equilibrium point

It should be noted that at new equilibrium point, quantity and price remain the same. So even if the costs rise, equilibrium price remains the same.

In Fig. 2.6, changes in demand curve are depicted, even if the demand curve shifts upward from dKD to d'K'D', equilibrium price remains the same.

In conclusion it may be noted that under oligopoly, price will remain rigid irrespective of changes in cost of production or demand conditions.

2.5 BAIN'S LIMIT PRICING :

J.Bain, in his article 'Oligopoly and Entry Prevention' has touched upon one more aspect influencing the price and quantity decisions of oligopolistic firms_threat of entry of new firms. Bain maintained that the firms fix the price above the competitive price (where there are only normal profits) and below monopoly price (where profits are maximised). Such a price level is called by him as 'limit price' which according to him is the highest price that a firm can charge without the entry of new firms.

His models ofoligopoly pricing are based on following assumptions.

1) The long-run demand curve for industry is determinate and is unaffected by the price adjustments by the existing firms or by the entry of new firms.
2) There is a collusion (Agreement) among the oligopolists.
3) The firms can calculate limit price.

4) Below limit price, new firms will not enter the market and above limit price, entry is attracted.
5) Firms aim at maximisation of profits.

Based on these assumptions, Bain presented two version of his model.

1. Model A : With no collusion with the new entrants.
2. Model B : With collusion with the new entrants.

2.5.1 Model A : No collusion with new entrants.

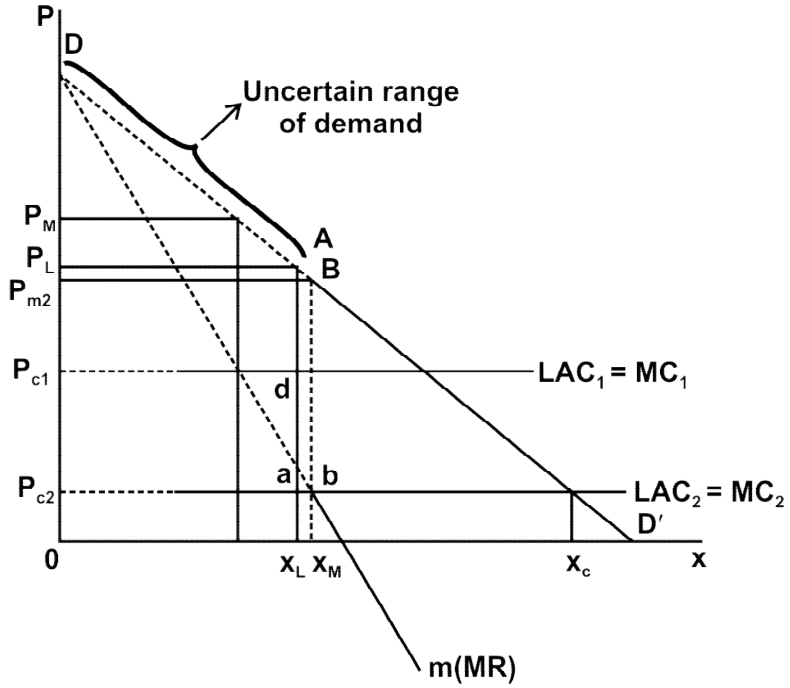


Fig. 2.7

In the diagram,

DABD' _ Market Demand Curve
Dabm _ Marginal Revenue Curve
P_L _ Limit price (which is supposed to be known to the oligopolistic firm. It will be sent depending on :

1) estimation of costs of the potential entrants
2) market elasticity of demand
3) shape and level of long-run average cost curve
4) size of market
5) number of firms in industry

AD' _ Certain part of demand curve
am _ Certain part of marginal revenue curve

DA _ uncertain part of demand curve because behaviour of new entrants is not known.

LAC_1 and LAC_2 _ long run average cost curves

MC_1 and MC_2 _ Marginal cost curves

At LAC_1

Two alternatives are possible for the firm. Either to charge price P_L _ which gives certain level of profit P_L A d PC' or charge monopoly price given by the MC = MR condition. This price will be higher than P_L, may give monopoly profits but it is on the uncertain part of the demand curve. So firm may compare certain profit level with uncertain profit level and choose between P_L and P_M.

In case of long-run average cost curve being LAC_2, profit maximising price is PM_2 (based on MC = MR condition). At this price, profits are maximised and this price is lower than P_L. So firm will prefer PM_2 over P_L.

In summary, with a threat of entry of new firms, P_L will be the limit price and existing firms can choose any one of the following options.

1. To charge the price equal to P_L and prevent entry
2. To charge the price below P_L and prevent entry
3. To charge the price above P_L and take risk associated with new entry.

2.5.2 Collusion takes place with new entrant :

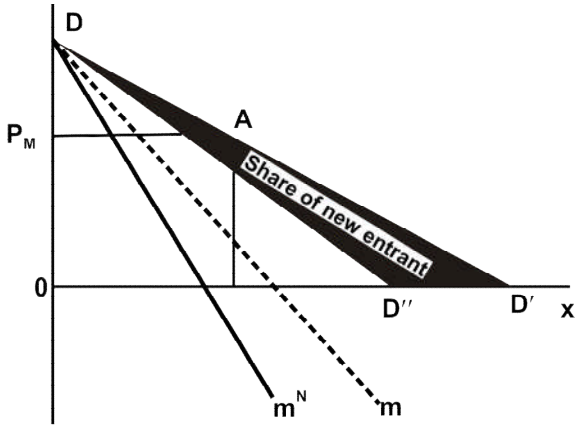


Fig. 2.8

Diagram explains a situation of collusion between established firms and new entrants.

DD' _ demand curve
DD" _ demand curve after allocating a share of profit to new entrant at each price

New demand curve is a certain demand curve as there is a collusion with the new entrants.

There are three options.

1. Charge P_L, or limit price and utilise AD' portion of the demand curve without the entry of new firms. (As explained in the earlier model)
2. Charge price above limit price and move on to DD" demand curve with collusion with the new entrants.
3. Charge monopoly price P_M if $P_M C P_L$ (As explained in the earlier model)

Thus, Bain's model of limit pricing takes into account the threat of new entrants. The existing firms may either call accept collusion with the new entrants or go for profit maximisation.

2.6 SUMMARY :

1. Monopolistic competition is a market structure having blend of features of monopoly and perfect competition.
2. Chamberlin provided for a detailed analysis of equilibrium conditions of firm and industry under this kind of a market. He introduced a concept of "Group" in which there are firms producing close substitutes or products with differentiation.
3. In the 'Large Group' model of Chamberlin, due to entry of new firms in the group, a stable equilibrium with normal profit situation can be achieved.
4. Price competition among existing firms under Chamberlin's model leads to adjustment process and the end result of this process is a stable equilibrium with normal profit.
5. In a small group model, Chamberlin has explained how both the firms enjoy supernormal profit by taking into consideration the competitor's reaction.
6. The kinked demand curve model explain price rigidity under oligopoly.
7. All the earlier models of oligopoly do not consider the threat from potential entry of new firms. Bain, through his limit pricing model, has explained the equilibrium situation of oligopolistic firms with new entrants.

2.7 QUESTIONS :

1. Explain Sweezy's kinked demand curve model of oligopoly. How does it explain price rigidity under oligopoly?
2. What are different types of price leadership models under oligopoly? Explain output determination where leadership is by the dominant firm.
3. What is meant by price rigidity? Why are prices rigid under oligopoly? Using the technique of kinked demand curves explain price rigidity.
4. Explain Chamberlin's concept of group. How does the 'group attain equilibrium.
5. What is 'Limit Price'? Explain Bain's theory of limit pricing.
6. Write short notes on.
   a) Dominant Firm Model
   b) Bain's Limit Pricing
   c) Chamberlin's Large Group' Model
   d) Kinked Demand Curve Hypothesis.

3

MANAGERIAL THEORIES OF FIRM

Unit Structure

3.0 OBJECTIVES

- To understand the origin and importance of managerial theories of firm
- To evaluate the sales Maximization Model by Baumol.
- To understand how growth rate miximisation is achieved as a long-term objective of a firm through 'Marris' Model.

3.1 INTRODUCTION

Traditionally, profit maximization has been an important objective of a firm. But over years alongwith profit maximization objective, some other objectives like maximization of sales maximisation of growth rate have also gained importance. There ahs been a bifurcation of ownership and management of a firm due to complex nature of business activity in the recent years. New theories of firm take into consideration the role of managers in determination of price and quantity. In the modern business structure, ownership lies in the hands of shareholders who are large in numbers. They have a power of appointing the board of directors who in turn select the top management. It is the top management that is involved in daily operations of the firm. Share-holders, who are the owners of a company, are the risk bearers and are interested in profit maximization by the firm. Managers, on the other hand are hired on a fixed salary and hence they may pursue the goal of maximizing their own utility or maximizing sales (because many times managers' perks are attached to sales)

Profit of course is an important determinant of all activities of a firm, Managers' and other stake holders job security is endangered if the firm is not making profit. But in the new pattern of business, where ownership and management are handled by two different groups of people, profit maximization has no more remained the only important objective.

Managerial Theories of firm consider the fact that the managers maximize their utility subject to minimum profit constraint. In this unit, we will learn three models of managerial theory of firm – Baumol and Marris.

3.2 BUMOL'S SALES MAXIMISATION MODEL OF OLIGOPOLY FIRMS

3.2.1 Why sales Maximisation ?

As we have discussed earlier, the structure of business organisation has undergone transformation in the recent times. In corporate form of organisation, Mangers dominate in the entire decision making process of business. In such a situation, according to W. J. Baumol, an American Economist, Sales maximization seems to the more realistic assumption in comparison with the profit maximization. Baumol advocates sales maximization as an objective of firm under following grounds :

1) Modern firms have separated the managerial functions away from the ownership. In other words, owners of the firm need not be managing the day to day activities of a firm.
2) Mangers generally pursue maximization of sales, than profit as their earnings are more closely linked with sales than profit.
3) Raising of funds from banks become easier for the firms with large size and growing sales.
4) Employees can be given better salaries and parts when sales are rising
5) Firm can be more competitive or can survive better in competition when its sales are rising.

Baumol, however, did not ignore profits. His theory aims at sales maximisation under the condition of minimum profit. In other words, minimum level of profit must be earned by the manager pursuing the sales maximisation goal to ensure future growth of a firm and confidence of share holders. It is worth noting Baumol's words.

"My hypothesis then is that oligopolists typically seek to maximize their sales subject to a minimum profit constraint. The

determination of the minimum just acceptable profits level is a major analytical problem and I shall only suggest here that it is determined by long-term considerations. Profits must be high enough to provide the retained earnings needed to finance current expansion plants and dividends sufficient to make future issue of stocks attractive to potential purchasers. In other words the firm will aim for the stream of profits which allows for the financing of maximum long-run sales. The business jargon for this is that management seeks to retain earnings in sufficient magnitude to take advantage of all reasonably safe opportunities for growth and two provide a fair return to share holders. (W. J. Baumol, "On Theory of Oligopoly Economical, New Series, Vol. 25, 1958)

3.2.2 Oligopoly and interdependence of firms

You are aware that one of the important characteristics of oligopoly is interdependence of firms. Under oligopoly, there are a few firms and they are interdependent on each other, they have to think about the reaction of their competitors while taking any decision about price and quantity changes of their product. According to Baumol, oligopolistic firms, in their day to day operations, need not worry about the competitor's reaction. In other words, firms daily decisions are taken on the premise that these will not bring about changes in the behaviour of competition firms. However, the reaction of competitors becomes more important when oligopolistic firm takes some radical decision like launching new product or advertising campaign etc. Thus the mangers will ignore the competitors to the extent that their actions do not encroach on the firm's market and do not interfere with the desired growth rate and market share of a firm.

Baumol's model is based on the following basic assumptions

1) It s a single period analysis
2) During this period firm aims at maximizing total sales revenue (and not physical quantity of output under minimum profit constraint)
3) Minimum profit level is determined exogenously by the demands and expectations of shareholders, banks and financial institutions.
4) Conventional cost analysis based on 'U-shaped' cost curve is assumed under this model

Based on these models we will understand three different models described by Baumol :-

1) Single product without advertising
2) Single product with advertising
3) Multiple products without advertising

3.2.3 Single product without advertising

We first explain Baumol's model for a firm which produces a single product and does not incur any advertising expenditure. It is necessary to understand following diagram to explain price – quantity determination under this model.

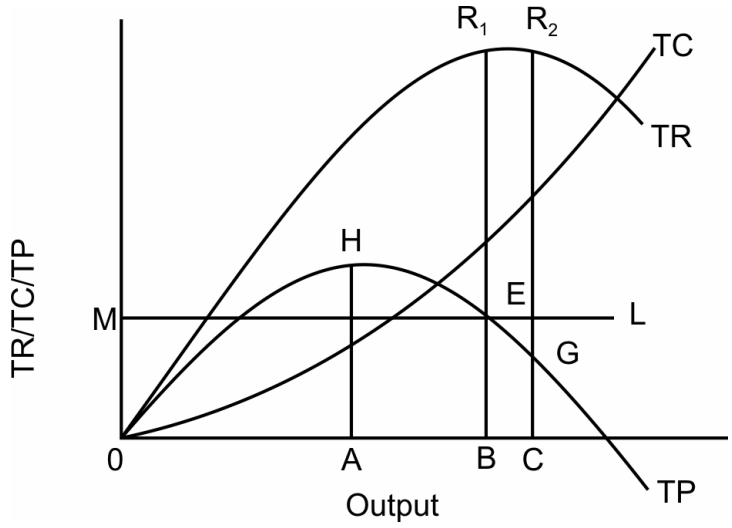


Figure 3.1

In the diagram
TR – Total Revenue curve for the firm
TP – Total Profit curve for the firm
TC – Total Cost curve
ML – Minimum level of profit which the firm must earn.

Total profit is a different between total cost and total revenue of a firm.

We will first understand how a firm determines quantity and price with the objective of profit maximization. Since profit is a difference between total cost and total revenue, maximum profit will be at that point where the vertical distance between TR and TC is maximum or where the TP curve reaches to its (highest) level. So under profit maximisation objective firm will produce "OA" level of output because that level of output corresponds to the highest point on TP curve (Point H).

Next to understand is the situation in which a firm would aim at sales maximization in the diagram; sales are maximized at the level of output OC, which corresponds to highest revenue R.

As per the assumption of Baumol's model a sales revenue maximizing firm has a minimum profit constraint. In other words, even if the firm is maximizing sales revenue, it has to do so under the conditions of minimum profit level AT "OC" level of output even

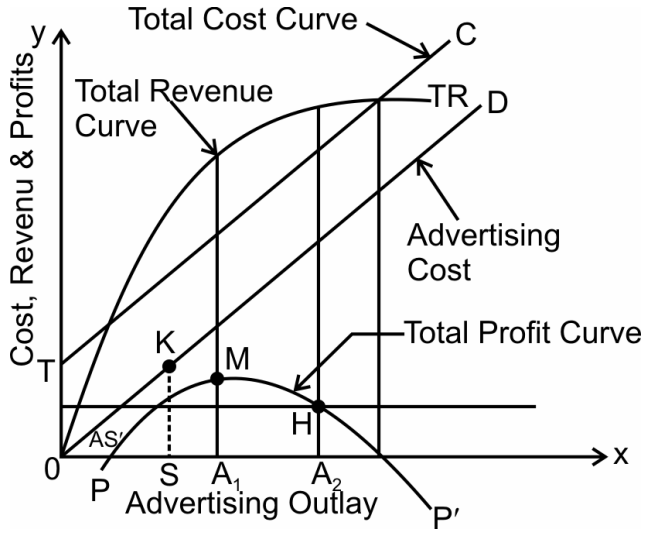
though the sales are maximized minimum profit level (ML) is not reached. At “OC” level of output profit level is less than ML. So this is not what Baumol has contented.

Equilibrium price and quantity under oligopoly with sales maximisation subject to minimum profit constraints is at the output level OB.

It should be noted that under Baumol’s model of oligopoly firm, sales revenue maximisation leads to more quantity at lower price as compared to profit maximisation situation.

3.2.4 A single product model with advertising

Under oligopoly, firms compete not only in terms of price but also in terms of advertising expenditure, product changes, after sales services etc. Baumol presented another version of sales maximisation model with advertising as one of the policy variables. An important assumption of this model is that advertising expenditure will always shift demand curve to the right indicating that the firm will be able to sell more and get larger revenue after advertising expenditure. Following diagram explains this version of Baumol’s model.



Figures 3.2

As per the diagram advertising expenditure is shown on the x-axis and total cost total revenue and total profit is shown on the y-axis. As stated earlier according to Baumol, increase in advertising outlay will lead to increase in sales of the firm (sometimes at diminishing rate) Increase in the physical volume of sales leads to increase in the total revenue of the same firm

TR – total Revenue

OD – advertising cost

Production costs (fixed and variable costs) are shown independent of advertising expenditure. So by adding fixed cost (OT) to the advertising cost curve OD we get total cost curve TC.
Difference between TR and TC is profit Therefore
PP – Total profit curve

Profit maximizing output level will be produced with advertising expenditure equal to OA_1, (because at that level the total profit is highest)

Revenue maximizing output level will be reached with advertising expenditure equal to OA_2, (Where the firm maximizes its total revenue with minimum profit constraint)
As seen in the diagram OA_2 is greater than OA

It may be, hence concluded that in order to maximize sales with minimum profit. Constraint greater level of advertising expenses are to be incurred by the firm as compared to advertising expenses of profit maximizing firm.

3.2.5 Multi product firm without advertising

This version of model explained by Baumol is based on the assumptions such as

1) Costs are given
2) Firm produces two commodities and Y

To explain the equilibrium condition of a firm aiming at sales maximisation with multiple products and without advertising expenses, Baumol has made use of two apparatus

1) Transformation curve or marginal rate of product transformation, which is a ratio of marginal costs of two commodities x and y. Product transformation curve is concave to the origin showing increasing cost of reducing one product (say y) and reallocating the resource to produce other commodity (say x)

2) The iso-revenue curve is the curve showing same revenue earned by different combinations of x and y. Higher the iso-revenue curve higher will be the total revenue earned.

Following diagram shows equilibrium of multiproduct firm without advertising.

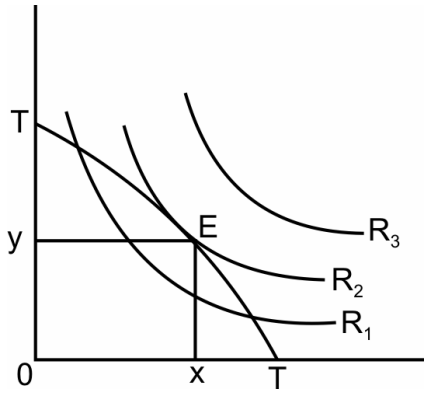


Fig 3.3

Firm is in equilibrium at point E where the product transformation curve TT is tangent to the highest possible iso-revenue curve (R_2).

It should be noted that the solution is diagram 3 is identical with the solution for profit maximizing firm. (Students should recall that the firm maximizes profit at a point where the slopes of product transformation curve and iso-revenue curve are identical). Thus in this version f Baumol's model, a firm maximizes sales at that level of output where the firm maximizes its profit. In other words, whatever output combination maximizes revenue, also maximizes profit.

3.2.6 Critical Appraisal of Baumol's sales maximisation model

The sales maximisation theory by Baumol implies of favorable effect on the welfare of people. This is because under sales maximization with minimum profit constraint, output will be greater and price will be lower than that under profit maximization.

Shepherd has criticized the model on the ground that the oligoplistic firm faces kinked demand curve and if the kink is quite large, total revenue and total profits would be maximized at the same level of output.

According to Hawkins in case of single-product firm, as compared to profit maximizing firm, output will greater, smaller or same and advertising expense also will be greater, smaller or same depending upon the responsiveness of demand to advertising expenditure and not to price cut.

Another criticism against Baumol's model is that his theory does not show haw equilibrium in an industry will be attained. He has not been able to establish relationship between a firm and industry.

3.3 MORRIS'S MANAGERIAL THEORY OF FIRM

Another new theory, stressing the role of managers and their behavioural pattern in determining output and price of firm was put forward by Marris. According to him, Managers do not aim at maximizing profits but they seek to maximize balanced growth rate of a firm Maximisation of balanced growth rate means maximizing the rate of growth of demand for the products of firm and the rate of growth of capital supply

Maximise $g = g_D = g_c$

Where

g = balanced growth rate

g_D = growth of demand for product of a firm

g_c = growth of supply of capital

While maximizing growth rate, there are two constraints faced by the manager of a firm :-

1) Managerial constraints
2) Finanacial Constraints

Managerial constraints are set by the available managerial team and its skill. Financial constraints are set by desire of managers to achieve maximum job security. It is important to note here that the managers aim of maximizing rate of growth of demand to maximize their own utility and they aim at maximisation of growth of capital to maximize the utility of owners and shareholders.

3.2.1 Manger's utility Function

Manger's utility function includes the variables like salaries, status, powers and job security. Owners' utility function includes variables like profits, size of output, size of capital, share of market and public image. Thus, due to division of management and ownership has resulted in setting goals which may not necessarily coincide.

Um = f(salaries, power, status, job security) $\rightarrow$ This is mangers utility function.

3.3.2. Utility function

Uo = f* (profits, capital, output, market share, public esteem) $\rightarrow$ This is owners' utility function

The managers aims at maximizing utility as per Um function and the owners' aim at maximizing Uo function. According to

Marris, the difference between these two functions is not wide because most of the variables are strongly correlated with each other. Marris believes that the size of a firm may be measured by the level of output, capital supply, sales revenue and market share. Achieving steady balanced growth implies the growth of most of the variable occurring in above mentioned functions such as sales, output, supply of capital etc. Marris further argues that the maximization of growth rate of firm is compatible with the interests of share holders. So growth of demand/output of a firm. (g_n) and growth of capital supply (g_c) of a firm need not be differentiated. In other words, when the rate of growth of firm is higher, manger's salaries will be higher they will have power and more job security. So mangers' utility function can be written as

$U_M = f(g_D, S)$

Where g_D - growth of demand
S – measure of job security

On the other hand, owner's utility depends upon the growth of capital supply. So his utility function can be written as

$U_O = f^* (g_c)$

Following E Penrose's "Theory of Growth of firm" Marris argued that g_D or growth of demand for product is constrained by decision making capacity of a manager Job Security S is determined by three financial indicators

1) Liquidity Ratio
2) Debt. Asset. Ratio and
3) Profit Retention Ratio

Marris's treats 's' as an exogenously determined constraint in the managerial utility function. Taking this factor into consideration manager's utility function may be rewritten as

$U_M = f(g_D)\,\bar{s}$

Where $\bar{s}$ is a security constraint.

3.3.3. Constraints in the Model

As discussed in the earlier part of the theory, thee are two constraints in the model.

The Managerial constraint and
The Job security constraint

Since the decision making and planning of firm's operation are the result of team work of managers, the efficiency of top

management acts as the managerial constraint in the model. Research and Development (R & D) department also set limit to the rate of growth of firm. Thus, both g_D and g_c have managerial constraint.

The job security constraint makes managers become risk-avoiders by choosing steady performance and not risky ventures which may be highly profitable. Managers also prefer prudent financial policies by determining optimum levels for the three financial ratios mentioned in the earlier section :- Liquidity Ratio, Debt ratio, and Retention Ratio. These three financial ratios are combined into a single parameter $\bar{a}$ which is called 'financial security constraint'. It is exogenously determined by the top management.

According to Marris, two ponts need to be stressed regarding the overall financial constraint $\bar{a}$.

a_1 = Liquidity Ratio $\quad \frac{L}{A} = \frac{\text{Liquid Assets}}{\text{Total Assets}}$

a_2 = Debt Ratio $\quad \frac{D}{A} = \frac{\text{Value of Debt}}{\text{Total Assets}}$

a_3 = Retention Ratio $\quad \frac{\pi_R}{\pi} = \frac{\text{Retained profit}}{\text{Total Profit}}$

1) Overall $\bar{a}$ is negatively related to a, and positively related to a_2 and a_3.
2) There is a negative relationship between job security (s) and financial constraints ($\bar{a}$)

3.3.4 Equilibrium of a firm

Managers aim at maximisation of their own utility

$U_M = f(g_D)$

Owners aim at maximisation of their own utility

$U_O = f^*(g_c)$

Firm is in equilibrium when

$g_D = g_c = g^*$ maximum

where g* is maximum balanced growth rate g_D will depend upon the rate of diversification or introduction of new products (d) and the proportion of successful new products (k) which in turn will depend upon price of product (p), advertising expenditure (A) and expenditure on Research and Development (R & D), Thus

$g_D = f(d, k)$

g_c (Rate of growth of capital supply) will depend upon the magnitude of profit

$g_c = f(\pi)$ $\quad \pi$ = profits

According to Marris, further, growth rate of supply of capital depends upon average rate of profits (m) which is obtained by deducting cost per unit, advertising expenditure per unit and R & D expense per unit from the price of product

$m = p – c (A) – (R \& D)$

Growth rate of capital supply also depends upon the rate of diversification (d). So

$\pi = f(m, d)$

Substituting this profit function the in the function governing supply of capital, we have

$g_c = \bar{a} (\pi)$

Where $\bar{a}$ is financial security constraints

As long as financial security constraint is constant, growth of capital and magnitude of profit are not competing goals. Higher levels of profits means the higher growth of capital supply.

Given the above function related to rate of growth of demand for product and the rate of growth of capital supply, the firm will be in equilibrium when it is achieving the highest rate of balanced growth

$g_D = g_c = g^*$ maximum

3.3.5 Evaluation of Marris's Model

The most important contribution of Marri's model of managerial theory of firm is the inclusion of financial policies of the firm into the decision-making process. The financial constraint coefficient $\bar{a}$ plays a very important role in the entire model as a policy variable. However, the model actually does not say much about the value of $\bar{a}$. It is assumed to be exogenously determined.

According to the conclusion of the model balanced growth solution will maximize the utility functions of both mangers and owners. But it may be so during the periods of steady growth and not during recessions or tight markets.

One of the implications of the model is that both the mangers and owners prefer maximization of rate of growth over the maximization of profits. Marris does not justify the preference of owners for capital growth over the maximisation of profits.

The model assumes price and cost to be constant. It fails to take into consideration the interdependence of firms under the oligopolstic structure.

Further, the model assumes a continuous growth by crating new product. But it fails to realize that new products may be imitated by the rivals and this, in the longrun will hinder the steady growth of firm.

There are many restrictive assumption on which the Marris model heavily relies. Such as each firm has its own R & D department, R & D and advertising expenses together influence the growth rate of capital supply etc.

3.4 CONCLUSION

In conclusion it may be observed that managerial theories of firm in general fail to explain the oligopolistic structure of market. These theories are excessively dependent on the assumption of unlimited power of firms to influence market through advertising and introduction of new products. These theories also fail to explain the price determination pricess in the oligoplistic market.

3.5 SUMMARY

1) In addition to traditional profit maximisation as an objective firm, many other objectives such as sales maximisation growth maximisation etc. have been put forward in the recent years.
2) Due to bifurcation of management and ownership function of a firm, sales maximisation has become important objective, according to Baumol.
3) Though Baumol stresses on the sales maximisation objective of the firm, minimum profit constaint plays important role in his analysis.
4) According to Marris, long run growth rate maximisation is an objective of a firm. Maximisation of rate of growth of demand for the products of the firm and the rate of growth of capital supply, would bring about maximisation of balanced growth rate.

3.6 QUESTIONS

1) Discuss the importance of managerial theories of firm.
2) Critically evaluate Baumol's sales maximisation model.
3) Explain Marris's Growth maximisation model.

4

Module 2

INVESTMENT DECISIONS

Unit structure :

4.0 OBJECTIVES:

- To understand risk involved project selection
- To understand various methods of project appraisal and investment decisions
- To know what is risk and uncertainty
- To understand the relevance of sensitivity analysis
- To know about financial statements and its components

4.1 INTRODUCTION:

Every industry or company wants to grow and expand its business locally and globally. Need always arises to expand the operation through branches or new set up. Most of the companies expand their business by investing in new projects. However it is not a sudden decision they make but it needs proper evaluation of projects and their viability of success. So the terms like capital budgeting and sensitivity analysis are common in this regards. In this module we are going to study about the investment decisions taken in the industry or company while selecting project for business development. Module will focus on investment related terms and finance. Company maintains accounts and financial statements to know the profits and operational efficiency. They

compare their profits with other concerns or for years for self concern progress indications. This module discusses about the risk and uncertainties prevailing in project selection and sensitivity in making investment decision accordingly.

4.2 INVESTMENT DECISION AND PROJECT APPRAISAL METHODS

There are many methods of appraising the projects. Before taking capital investment decision it is necessary to do a project planning. Project planning starts with the exploration of a business opportunity. In this detailed investigation is made of different aspects such a managerial, technical, marketing, economics, operational and financial toward the project acceptance. After evaluating the project, a report is made known as project report. It is a real blue print on which basis the project gets a concrete shape. It has importance because every firm intends to maximize its profit.

Investment decisions are based on the evaluation of such projects living scope for capital budgting. Capital investment is concerned with comparing the benefits that accrue over a period of time with amount invested. Therefore all the project proposals have to be ranked in the order of preference yielding maximum returns. It is absolutely necessary to evaluate the projects before making investments.

There are three methods of appraising projects:

4.2.1. Pay-back method:

The most simple and widely accepted of project evaluation is pay-back period or pay-out or pay-off period. By this method it is calculated that within what time the investment done is recovered in the form of annual cash flows. In simple language, it is the period or number of years required to recover the original cash outlay invested in a project. This method is also known as cash-to-cash to method. every project generates annual cash flows. Therefore it is seen which project investment amount is recovered soon and accordingly that projects is ranked first.

The formula used in this calculation is :

Pay-back period = Total Investment outlays/Annual cash flow.

Merits:

- It is simple and easy method of evaluating and ranking projects. It is more concrete and realistic.

- It problem of liquidity is easen as it considers the annual and regular recovery of cash flow.
- Risk can be minimized by selecting most beneficial project first.
- This method is widely used in industries for project evaluation.
- This methods is used for short terms as well as long term investment projects.
- It is suitable when firm is in urgency of cash realization.

Limitations:

- It stresses on only one aspect more that is of liquidity.
- Long term projects cannot be evaluated by this method properly.
- Consistent cash flow is assumed in this method so change is cash flow is not considered in this method
- Time value of money is not considered in this type of method.
- Sales promotion techniques are not considered in this methods being the most cash realizing factor those are adding to cash inflows.

4.2.2 Net present Value method :

In this method, the investors take investment dictions on the basis of net present value. It is also known as discounted present value method. Here the fact is considered that the amount of money received today is more valuable that the one received after year or years. The intention behind is that the money received today can be invested to earn certain amount of interest. The present value of an investment proposal is the difference between the total of present values of the estimated annual cash flows over the life of the project and initial investment of the project.

NPV is difference between discounted value of all the net cash flows and capital cost of the project.

Decisions with consideration of NPV is taken on the basis of following rules:

If NPV is positive, the project will be accepted
If NPV is negative, the project is rejected
If NPV is zero, there will be indifference in selecting the project in the choice.

Merits:

- It takes into consideration income derived from capital over the entire life time
- For many projects this method is useful
- Time value of money is highly considered in this method
- It is widely used and popular method of project evaluation

- If number of investment proposals are to be considered the following formula is used:
- NPV indeed = Total present valued of all cash flows

  Initial investment made

Demerits:

- If the rate of investment is to be considered over the investment, then it is absolute method.
- It is more subjective, lengthy and complex method as compared to pay back method of project evaluation.

4.2.3 Internal rate of return (IRR) method:

Under this method, time factor and opportunity cost of investment is considered. It is same like MEC method given by Keynes. MEC stands for Marginal Efficiency of Capital. This method is based on the technique of discounting cash flow. It is the discount rate which equates the discounted present value of its expected future marginal yields with the investment cost of project. IRR is the annual expected rate of profit over the life of the machine from the investment in a project. It is the rate of discount which equates the present value of the income stream over the life of the machine with the net cash investment.

The rate of return calculation that takes into account the time value of money is called discounted cash flow method.

Trial and error procedure has to be employed in finding out the internal rate of return because cash benefits consists of an uneven series. If the IRR exceeds the market rate of investment(cost of capital), such a project is accepted.

Merits:

- It recognizes time value of money
- It considers whole annual returns earned during the lifetime of the project
- Decisions are most polished.

Demerits:

- It is difficult and complex method.
- It is lengthy procedure and not easy to calculate
- Projects having different investment costs can never be ranks properly by this method.
- It is more objective because the IRR is not directly influenced by decisions regarding depreciation methods, capitalization versus expenses decisions and conservatism.

PRACTICAL SUMS SOLVED

From the information below calculate:
i)Pay Back Period
ii)Pay Back Profitability

Particular	Model A Rs.	Model B Rs.
Investment	5,00,000	7,50,000
Estimate Life (in years)	10	10
Sales	10,00,000	20,00,000
Direct materials	4,00,000	6,00,000
Direct Labour	1,20,000	2,00,000
Cash Overheads	1,60,000	2,40,000
Depreciation	50,000	75,000

Solution:

Calculation of Labour Inflow

Particular	Model A Rs.	Model B Rs.
Sales (I)	10,00,000	
Less: Variable Cost		
Material	4,00,000	6,00,000
Labour	1,20,000	2,00,000
Cash Overheads	1,60,000	2,40,000
	6,80,000	10,40,000
Contribution(I-II) (II)	3,20,000	9,60,000
Less: Depreciation	50,000	75,000
P.B. Tax	2,70,000	8,85,000
Less: Tax	--	--
P.A. Tax	2,70,000	8,85,000
Add: Depreciation	50,000	75,000
	3,20,000	9,60,000

i) Payback Period	A	B
$= \frac{\text{Investment}}{\text{Cash Inflow}}$	$= \frac{5,00,000}{3,20,000}$	$= \frac{7,50,000}{9,60,000}$
	= 1.5625 years	= 0.78125 year
ii) Payback Profitability		
=3,20,000 *10	=32,00,000	96,00,000
Less: Cost	=5,00,000	7,50,000
	=27,00,000	=88,50,000

Q 2. Base Line Ltd; has a machine which has been in operating since 6 years. The management is considering a proposal to purchase an improved model of a similar machine which will give an increased output. You are given the following information.

Particular	Old Machine Rs	New Machine Rs
Cost of Machine	8,00,000	20,00,000
Variable cost per unit	300	300
Fixed overheads excluding depreciation	2,00,000	4,00,000
Selling price per unit	600	600
Output	1,500 Units	2,500 Units

The Life of both the machine is 10 years each. Depreciation by SLM. Tax rate 50%. Calculate PB period and payback profitability.

Solution:

Calculation of cash Inflow

Particular	Old Machine Rs.	New Machine Rs.
Selling Price	600	600
Less: Variable Cost	300	300
Contribution	300	300
Output (Units)	1,500	2,500
Contribution	4,50,000	7,50,000

Less: Fixed cost	2,00,000	4,00,000
PBD & Tax	2,50,000	3,50,000
Less: Depreciation ( )	80,000	2,00,000
Profit before Tax	1,70,000	1,50,000
Less: Tax 50%	85,000	75,000
Profit after Tax	85,000	75,000
Add: Depreciation	80,000	2,00,000
CASH IN FLOW	1,65,000	2,75,000
i)Pay back period=	8,00,000	20,00,000
	4.8484 years	7.2727 years
ii)Payback Profitability = Inflow * No of Years	16,50,000	22,75,000
Less: Investment	8,00,000	20,00,000
	=8,50,000	2,75,000

Q3 Following is the relevant data for two machines A & B.

Particular	A Rs.	B Rs.
Capital Outlay	2,000	2,400
Net Cash Flow		
1st Year	1,000	800
2nd Year	1,000	800
3rd Year	Nil	2,000

Find out which of the two is a better investment, showing workings. Use Pay – Back Period.

Solution:

(A)Pay – Back Period Method

Particular	Machine	
	A	B
Pay – Back Period	2 years	2 years + i.e.,2

Machine A is a better investment, as it has a lower Pay – Back period.

(B) Post Pay – back Profitability Method:

Post – Payback Profitability = Total Savings – Capital Outlay.
Machine A = 2,000 – 2,000 = Nil
Machine B = 3,600 – 2,400 = Rs. 1,200
In this case Machine 'B' is a better investment.

Illustration 10

Shobhit ltd; is considering to purchase a machine. Two Machines A and B available at the cost of Rs. 1,20,000 each. Earnings after tax but before depreciation are likely to be under:

Year	Machine A Rs.	Machine B Rs.
1	50,000	20,000
2	40,000	30,000
3	30,000	50,000
4	20,000	40,000
5	20,000	40,000

Evaluate the two alternatives by using:
(1) Pay – Back period method

Solution:

(1)Calculation of pay – back period:

Year	Machine A		Machine B	
	C.I	Cum. C.I.	C.I.	Cum. C.I.
1	50,000	50,000	20,000	20,000
2	40,000	90,000	30,000	50,000
3	30,000	1,20,000	50,000	1,00,000
4	--	--	40,000	1,40,000

C.I. = cash Inflow.
P.B.P. Machine A = 3 years
P.B.P. Machine B = 3 years + years 6 months

Ans:
As recovery of investment done on machine A is early of 3 years it is preferable to invest in the same.

4.3 RISK AND UNCERTAINTY

Risk and uncertainty has been the inseparable part of business activities or investment decisions. Only difference in both

is that risk can be insured while uncertainties are true risk which may make suffer or prove harmful for business.

According to the Oxford dictionary definition of risk "the possibilities of meeting danger or of suffering harm or loss." There are many kinds of risks observed in investment they are

- **Business and financial risk:**

They are actually two separate type of risks but are interrelated too. Business risk is also known as operating risk and is associated with day to day operations of the business. While, financial risk is the risk created by debt and preference shares and securities. These risks are dependent or caused upon competition, new technologies, change in consumer preference, government policies and poor performance of business.

- **Interest rate risk:**

It is another risk. It occurs due to change in interest rates of securities. It happens due to speculations.

- **Market risk:**

This kind of risk arises due to the change in psychology of the investors, unexpected war conditions, political instability, speculation etc.

4.4 SENSITIVITY ANALYSIS

Risk has been the matter of profitability in the business. Without risk, profit cannot be expected. In fact, profits is the reward for risk undertaking. Every project undertaken has to be evaluated from the point of its profitability therefore the sensitivity analysis has a scope and relevancy in the industrial capital budgeting and investment decision making. Starting new project always has more uncertainties than expanding the existing one. Therefore with reference to capital budgeting, results may vary from estimated to actual terms. The greater the variability between the two, more risky is the project. Therefore the measure which expresses the risk in more precise terms is sensitivity analysis.

Sensitivity analysis is a behavioral approach that uses a number of possible values for a given variable to assess its impact on a firms returns. In the area of finance, such kind of analysis is related with capital budgeting decisions.

It focus light on the sensitivity of the project in respect its expected cash flow, the discount rate. It is very important because the future is uncertain and nothing can be estimated perfectly as errors are ought to happen all the time. Therefore this kind of

analysis leaves scope for the project evaluation in the better manner. The viability of outcome is estimated with expected cash inflow and decisions are taken accordingly. The various estimates are made regarding cash flow estimates under three assumptions the worst (most Pessimistic), the expected (the most likely) and the best (the most profitable).

Significance of sensitivity analysis:

- It ensures the benefits to be derived from the chosen project.
- It considers terms of risk and uncertainty to ensure project viability
- It ensure more than one estimate of the future return of a project.
- It gives precise idea about project viability and makes easy its selection
- It expands the study of increasing returns and wise investments.

4.5 FINANCIAL STATEMENT

Financial statements are the financial reports referring two statements reflecting assets and liabilities of the company. They are very important in accounting and corporate reporting. They support whole accounting system. They are balance sheet and profit and loss a/c. balance sheet represents capital, assets and liabilities of the company and Profit and Loss a/c indicates the results of operations of the company during a given period of time. They are summary of accounting transactions. They are needed and prepared for reviewing periodic progress of the company. Financial statements are prepared in a certain format by following certain rules. It facilitates the users to compare different companies and their financial performance.

Components of financial statements:

- **Profit and loss account :**

It is also called as 'Income statement'. It indicates the amount of net income or loss obtained by the company during a particular period. Net income in excess of revenue over its expenses. It is the best measure to assess the profitability and performance of the company.

- **Balance Sheet :**

It is also called as 'statement of Financial Position'. It represents financial position of a company on particular date. A company can obtain finance from owners and outsiders. Thus the

balance sheet three major sections viz assets, liabilities and shareholder's equity. The fundamental accounting equation of:

Assets = Liabilities +Equity

Characteristics:

- They are generally report prepared on the basis of the accounting transactions taken place already. They never deal with the future operation estimations.
- They are the summarized reports of the whole business transaction taken place during a give period of time. It also classified items accordingly.
- Most of the financial statements are prepared on accrue basis rather than on cash basis. Expenses due but not paid and income due but not received are mentioned.
- It has the blending of economic and legal aspects. Conventions are followed while preparing these statements.
- Most of the time, these statements are based on the estimates, personal opinions and judgments.
- These statements are based on the reliable facts and verification. So there are less chances of false or fake transaction.
- Financial statements are interrelated the for they are said to be 'Articulated'
- The base of preparing financial statement is monetary transactions. Without cash transactions these statements are useless.

IMPORTANCE/ SIGNIFICANCE/ ROLE/NEED FINANCIAL STATEMENTS

Communication:

The main purpose of these statements is to communicate with the interested parties. This helps in making economic decisions. Statements are prepared for letting know the stakeholders about the operations and economic activities carried by the company.

a) Bankers.

Banks before granting loans to the corporate and companies takes into consideration the progress of the company through their financial statements. The come to know the profitability, solvency, liquidity of the company.

b) Shareholders:

Being the owner of the company, shareholders always are interested to know the financial statements of the company to know the progress and value of appreciation of their shares invested in the company.

c) Lenders:

banks, financial institutions and other lenders of funds to the business entity also wish to know the profitability and liquidity position of the of the company whome they lend. It provides some kind of assurance to them of their returns.

d) Suppliers:

Suppliers of the company are interested to know the short term liquidity of the company. It decides the credit rating status of the company. These statements helps them to ascertain the capacity of the organization to pay them on time for the goods and services supplied.

e) Employees:

Most of the incentives policies of the company depends upon the profitability of the company, so employees are always curious to know the profitability of the company. This they come to know from the financial status of these statements.

f) Government:

Financial statements helps government to decide the correct tax and duties to be levied on the industries. Therefore the tax payable by the enterprise is dependent on the financial statements of the company.

g) Information:

Financial statements are prepared for the showing changes in economic resources. It helps in revealing reliable information to all, who are concerned with the progress of the company.

h) Prediction:

Financial statements are prepared in a way to provide information that is useful in predicting the future earning power of the enterprise or industry.

i) For reliability:

FS are prepared to provide reliable information about the earnings of the business enterprise and its ability to operate at a profit in future. This helps the above stakeholders to trust the management or organization.

Q Characteristics/good essentials of financial statements:

a) Understandability:

Information provided in the financial statements must be readily understandable and comprehend. It does not mean that complex information should be excluded. But it has to be presented to comprehend or understand easily.

b) Reliability :

Information provided in the statements should be reliable. Reliability means faithful information which is presented. There should not be error, bias. It must be complete within the limits of materiality of cost.

c) Relevance:

When the information of financial statement is useful for decision making, then it is said to have relevancy. Information is said to be materialistic if its omission or misstatements could influence the economic decision of users.

d) Comparability:

The statements should be comparable across companies to make resource allocation decisions. Trends of statements should be comparable over the period of time to know the progress of the company. Lack of consistency threatens the comparability of the financial statements.

Check Your Progress :

1. Bring out difference between Risk and Uncertainties
2. What do you mean by capital budgeting?
3. What are the methods project evaluation and investment decision making?
4. What do you mean by Financial statements and what are the major components of it?
5. Why sensitivity analysis is necessary? Give reasons for it.

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4.6 SUMMARY

1. Investment and capital budgeting is done by companies when they need to chose new project for expansion purpose. These decisions are very sensitive because they may result in profit or may lead to loss.
2. Risk and Uncertainty has been the integral part of business which makes it to earn profit. Risk is expected and so can be insured but Uncertainties are situational and cannot be insured and are truly called risk.
3. Many methods are used for selecting project on the basis the period within which it covers the investment made and earning capacity. Pay-back, IRR and NPV methods are most common method being used by companies for making investment decision out of many proposals available.
4. Companies keep record of their operations in the form of financial statement like Profit and Loss analysis and balance sheet focuses on total assets and liabilities held by the company and the operational profit and loss incurred.

4.7 QUESTIONS:

1. What do you mean by capital budgeting and what are the various methods of project evaluation?

2. What are the conventional and modern methods of investment decisions?

3. Explain terms Risk, Uncertainty and Risk sensitivity analysis.

4. What do you mean by financial statements? Explain its characteristics, components and significance in brief ?

5

RATIO ANALYSIS

Unit structure

5.0 OBJECTIVES

- To know uses of Ratio analysis in managerial decision making
- To know what is inflation accounting
- To know various financial sources to raise funds
- To understand what is capital structure and its principles
- To understand difference between ownership and control separation principle.

5.1 INTRODUCTION

Last part we focused on capital budgeting and investment decisions to be taken by considering many methods of it. In this module we shall try to learn about how the profit and loss status or position by companies by adopting tools like ratio analysis. Companies do calculate their operation numerically and find out progress of them. Due to change in prices day by day companies are also required to consider price fluctuations to prepare financial statements to show real position of the companies. This is learnt by knowing term like Inflation accounting. In this module we are also going to learn how companies raise finance from their internal as well as external sources. How do they keep proportion between owned and borrowed capital is known by capital structure term.

Moreover this module also explains the difference between ownership and management of the company.

5.2 RATIO ANALYSIS

A ratio is one figure expressed in terms of another figure. It has mathematical application to find out the relationship between two numbers or items of the financial statements. Ratio is expressed by dividing one figure by other related figure. It is expressed in fraction or as pure ratio. Ratio analysis is a very powerful tool used for measuring performance of the organization. It expresses the inter-relationship among the figures appearing in the financial statements. It helps firm to analyze the past performance and carry out future projections. Ratio is expression of one number against another. For ratio analysis various formulas are used to know the solvency, liquidity of the firm.

Ratio may be expressed in percent (40%) or proportionate ratio (4:1) or in times (4 times a year).

Importance:

- It helps in making inter-firm comparisons among various firms and even between the difference divisions of company.
- By using trend analysis along with ratio's helps a firm to know the performance of the company over the period of time.
- It helps in analyzing causal relationship among different items by considering past results.
- It throws light on the efficiency of the management being barometer for future.
- It simplify and summarize numerous accounting data in a systematic manner so that the simplified data can be used effectively for analytical studies.
- It helps in controlling efficiency and profitability of a business entity.
- They are yardsticks, used by all institutions in evaluating the credit-standing of their borrowers and customers.
- Departmental performances can be traced and expressed by ratio analysis.
- They assist investors in making sound investment decisions and also the shareholders in evaluating the share performance.

Ratio statements:

Balance sheet ratios	Revenue statements ratio	Composite ratios
Liquid ratio	Operating ratio	Return on capital employed
Current ratio	Gross profit ratio	Return on owners fund
Properitory ratio	Expenses ratio	Return on equity
Capital-gearing ratio	Net profit ratio	Earning per share
Stock-working ratio	Stock-turnover ratio	Debtors turnover ratio

Classification of the ratios:

1. Liquidity Ratio:

Short term and immediate financial position of a business organization is analysed by these ratios. They indicate the ability of the organization to meet its short term obligation, so called liabilities. They are also known as solvency ratios. They see the asset adequate to meet its liabilities .

2. Activity ratios:

It indicates how effectively firm is using its funds. They are so called as performance or efficiency ratios as they indicate the degree of efficiency of the organization. It reveals operational behavior of the organization.

3. Leverage ratios:

If measure the relationship between proprietor's funds and borrowed funds. They indicate companies debt and financing.

4. Profitability ratio:

They reflect the over-all efficiency of the organization its focuses light on the investment policies.

Exhibits 2.3 RATIOS – COMPUTATION AND COMMENTS

Objectives of analysis	**Ratio to be Computed**	**formula**
Immediate Liquidity	**Quick Ratio**	]
Short – term Liquidity	**(A) Current Ratio**	]

Liquidity of Stock	(B) Stock Working Capital	$\frac{\text{Stock}}{\text{Working Capital}} * 100$]
	(C)Stock Velocity	$\frac{}{2}$
Liquidity of debtors	(D) Debtors' Velocity	$\frac{\text{Debtors} + \text{B.R}}{\text{Daily Credits Sales}}$ $\frac{DR + B.R}{CRS}$
Liquidity of creditors	(E) Creditors Velocity	$\frac{\text{Creditors} + \text{B.P}}{\text{Daily Credits Purchases}}$ $\frac{CR + B.P}{CRP}$
Long – Term Solvency & stability	(A) Proprietory Ratio	$\frac{\text{Proprietory Funds}}{\text{Total Assets}} * 100$ $\frac{PF}{TA} * 100$
	(B)Debt – Equity Ratio	$\frac{\text{Borrowed Funds}}{\text{Proprietory Funds}}$ $\frac{BF}{PF}$
Operating or trading efficiency	(A)Gross Profit Ratio	* 100 $\frac{G.P}{S} * 100$
	(B)Operating Ratio	$\frac{\text{COGS} + \text{Operating Exp.}}{\text{Net Sales}} * 100$ $\frac{COGS + OE}{S} * 100$
	(c)Operating Net Profit ratio	$\frac{\text{Operating Net Profit}}{\text{Net sales}} * 100$ $\frac{OP}{S} * 100$

	(D)Expenses Ratio	$\frac{\text{Expences}}{\text{Net Sales}} * 100$ $\frac{\text{AE Or SE Or FE}}{\text{S}} * 100$
	(E) Net Profit Ratio	$\frac{\text{Net Profit}}{\text{Net SAles}} * 100$ $\frac{\text{NPBT}}{\text{S}} * 100$
Overall Profitability	(A)Return on Capital Employed	$\frac{\text{N. P. (Before int. \& } tax)}{\text{Capital Employed}} * 100$ $\frac{\text{PBIT}}{\text{CE}} * 100$
	(B)Return on Proprietor's Fund	$\frac{\text{N. P. (aftre tax)}}{\text{Proprietor's Fund}} * 100$ $\frac{\text{NPAT}}{\text{PF}} * 100$
	(C)Return on Equity Capital	$\frac{\text{N. P. (aftre tax \& } Pref.\ Div.)}{\text{Equity Capital} + \text{Reserve}}$ $\frac{\text{PAES}}{\text{EF}} * 100$
Capital Structure	(A)Capital Gearing	$\frac{\text{Pref. Capital} + \text{Debn.} + \text{Loan}}{\text{Equity Cap.} + \text{Reserve}}$ $\frac{\text{PC} + \text{BF}}{\text{EF}}$
	(B) Debt. Equity	$\frac{\text{Debt}}{\text{Equity}}$
	(c)Proprietory Ratio	$\frac{\text{Proprietors' Fund}}{\text{Total Assets}} * 100$
Overtrading or Under trading	(A)Proprietory Ratio	$\frac{\text{Proprietors' Fund}}{\text{Total Assets}} * 100$
	(B)Stock Turnover	$\frac{\text{Cost of Goods Sold}}{\text{Average Stock}} * 100$
	(c) Current Ratio	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$

Coverage	**(A)Dividend Payout**	$\frac{\text{Equity Dividend}}{\text{Profit for Equity Shareholde}}$ $\frac{ED}{PAES} * 100$
	(b)Interest Coverage	$\frac{PBIT}{Interest} * 100$

Q Limitations of ratio analysis:

- It is basically historical in nature unless projected studies are to be made.
- Difference in accounting policies and accounting period make the accounting data of two firms non-comparable.
- In case of firms having diversified product lines, of different industries, the ratio calculated aggregately cannot be used for inter-firm comparison.
- Seasonal factors may also influence financial data. As the stock may be high or low according to festivals and seasons.
- Ratios are only symptoms and not solutions.
- In many situations, accountant has to make choice out of various alternatives available. So subjectivity is high in this case.
- It is quantitative in nature and not qualitative in nature.
- Realities behind the prepared may be different than what is presented in the ratios because most of the firms go for window dressing to show their balance sheet strong.
- Price level changes make ratio analysis meaningless.

5.3 INFLATION ACCOUNTING

Inflation refers to a rise in price level and fall in money value after full employment level has been achieved. Under such conditions only prices will rise and output will remain the same. Inflation is a state where aggregate demand for goods and services exceeds aggregate supply. When aggregate demand is higher more than aggregate supply, the prices level generally increases. If such a situation persist for a long period of time, it leads to inflation. Due to change in factor prices and goods prices need is to study inflation accounting. It is exactly opposite to historical cost accounting where changes (inflation) on income and assets are completely ignored.

Inflation accounting is also known as **accounting for changing prices.** It can be defined as a system of accounting which regularly records all items in financial statements ate their current values or changed values. It is new accounting development which studies impact of changing prices over historical costs. It shows inflation adjustments to the historical figures appearing in the books of accounts of a company. This accounting do consider that due to rise in prices, purchasing power of the consumers is decreasing day by day. Financial statements are prepared on the basis of current prices prevailing in the economy.

Objectives:

- To show real financial position in present day terms and to show the real capital employed.
- To make sure that sufficient funds will be available to replace the assets when their replacement is due.
- To know the real profits and loss for the year based on current change prices
- To know profit in constant rupee keeping in view the general changes in prices.
- To enable stakeholders and management real position of operations with references to price fluctuations.

Approaches of inflation accounting

Current Purchasing Power Accounting (CPPA):

Under this method the historical accounting data are adjusted on the basis of any established and approval general price index at a given date. It considers the changes in the value of items as a result of the general price level. It ignores changes in the value of individual items. This method was recommended by English Institute of Chartered Accountants. According to them company should continue to prepare financial statements on historical cost basis. Under this method price level adjustments are made for all the items of income statement and balance sheet.

Current cost accounting (CCA):

It is also known specific price level approach because change in the general level of prices which occur as a result of change in the value of the monetary unit are measured by index numbers. Specific price changes occur if prices of a particular assets held change irrespective of any changes in general price

level. This method has also been named as replacement cost accounting. In this method, historic values of items are not taken into account; rather currency values of individual items are taken as the basis for preparing profit and loss account and balance sheet. This method seeks to state the assets and liabilities in the balance sheets their current values.

5.4 SOURCES OF FINANCE

Industrial Finance may be required for short period or for long period. It may be raised by investment of proprietors as ownership funds or by borrowings. Finance is the blood of the firm, so it has to be managed from the own pocket or borrowed from institutions. The various sources of finance may be broadly classified as under: industrial finance is needed for long term, medium term and short term requirements:

A) LONG TERM FINANCE:

Owned funds:

It includes owner's investment as sole proprietor or partners of a firm. In companies it is raised by issue of shares, ploughing back of profits, depreciation policy, dividend policy. Companies raise long term finance by issuing equity shares and preference shares in the market. The main motive behind is that it can use the money collected by such issues as owned capital. Equity share carry no fixed obligation against the returns or dividend .

1.PloughingBackofProfits

Like all individuals, companies also save a portion of their profits to be used to meet future needs. When the profits earned by a company, instead of being fully distributed to shareholders in the form of dividends, a portion is retained in the business as additional capital. Every company keeps some reserves with it to meet future requirement of cash or money. Whole of its profits is not distributed by the way of dividend or interest but kept aside to use as owned fund for growth or expansion of business.

2. Borrowed Fund:

There are external sources of business. It includes borrowings from relatives and other sources by sole owners and partners of business. Owned capital is never sufficient for the company. So it has to raise money from the financial institutions on the fixed interest obligations . In companies borrowed funds include debentures public deposits, banks, insurance companies and special financial institutions.

3. Depreciation Policy.

Depreciation is permanent decrease in the value of an asset through wear and tear in use or passage of time. It represents permanent fall in the market value of the asset. Therefore it is necessary to make a provision for the replacement of an depreciated assets. So companies make provision for the deprecation, by which every year some amount compared with total life of the asset is shown as depreciation. The same amount is used to buy or purchase new asset after that period of time. A good management policy, provides for adequate depreciation on its assets. Adequate depreciation charge is made with a view to recover through current earnings the original investment in the assets

4. DividendPolicy:

A good company always provides for all its liabilities before paying dividend to its shareholders. It is a part of a sound financial policy that company must try to establish a stable dividend rate. It affects the raising capital name of the company a lot. Dividend is the return on money invested in shares. So it is absolutely necessary to make polices to handle the matter of dividend distribution.. For maintaining a stable dividend rate, the management is justified if does not pay dividends during the first few years in the case of new company which requires funds for development and financial stability.

The dividend may be paid in cash or by issue of bonus shares according to the availability of liquid assets and the extent of under capitalization existing in the company.

5.Reorganization

Reorganization of a company is done when it is in financial difficulties or when it is desired to like advantage of certain favorable conditions in the market. It is necessary to make profitable and efficient again. Reorganization may be internal or external.

Internal Reorganization: In internal reorganization the share capital is reorganized. A portion of capital is also cancelled to wipe out the capital losses.

External Reorganization: It takes place when a company goes into liquidation and a new company is formed with the value of assets and liabilities suitable adjusted. Money is realized by this process.

B) MEDIUM TERM FINANCE:

Public deposits:

Company also accept public deposits to make available working capital for smooth operations. It is accepted for 6 month to 3 years period. Companies offer good rate of interest on such a deposits because it satisfies the liquidity need of the company for the medium term tenure.

Term loans:

Loans having maturity period of one year are term loans. They are repaid over a period of stimulated time.

Lease financing:

Some financial sound companies buy or purchase plant or equipments and give them on lease (rental basis). It is also the source of finance for them. The giving company is called as lessor and the firm who are given such machineries to use on rental basis are called lessee.

C) SHORT TERM FINANCE:

Trade credit:

It is credit granted by the suppliers. It has duration of 15 to 90 days. It is common practice followed in business operations. It is very flexible.

Bank credit:

Banks do lend money by different methods such a cash credit, bills discounting and overdraft facility to the current account holders(businessmen). Bank is pioneer in granting such loans to the firms to meet their financial needs.

5.5 CAPITAL STRUCTURE

Term capital is taken as wealth or total assets employed in the business. Capital structure planning is done with an objective of maximization profit and minimizing cost of capital. Capital used by the firm is mixed of owned and borrowed capital. So structure of capital has to be considered to determine which type of capital company is intended to use. It answers how much should be the debt and equity capital ratio. Capital structure deals with mixing the debt and equity capital. One represent owned capital and other represents borrowed capital. Company knows that depending upon borrowed capital more is always obligatory as it makes it to pay regular interest and payments on it. While using the equity capital comprising investments done by shareholders is less obligatory as risk is born by the shareholders' themselves. The essence of

capital structure decision is to determine the relative proportion of equity and debt.

Characteristics capital structure :

Profitability:

The capital structure of the company should be most advantageous. Within the limitation, maximum use of the leverage at minimum cost should be made so as to obtain maximum advantage of trading on equity at minimum cost.

Flexibility:

It should be flexible to meet the changing conditions. It should make company possible to provide funds whenever needed to finance its profitable activities.

Control:

The capital structure should involve minimum risk of loss. It should be used for controlling risks.

Broadly speaking, there are three fundamental patterns of capital structure in new concern

Financing of capital requirement exclusively by equity.
Financing of capital requirement by equity and preferred stocks
Financing of capital needs by equity and preferred stocks and bonds.

Principles to be considered by finance manager while choosing pattern of capital structure:

Cost principle:

According to this principle, ideal pattern of capital structure is one that minimizes cost of financing and maximizes earnings. Cost of capital is subjected to the payment of interest and tax. So decisions is to be taken which kind of capital is to be used, equity based or loan based and in what proportion. Debt capital is obligatory but its better because the debenture holders or bond holders do not claim on the profit of the company but are only concerned with rate of interest agreed upon payable to them.

Risk principle:

According to his principle, capital structure should be devised so that the company does not run the risk of brining the receivership with all its difficulties and losses. Bonds are long term obligations so they are risky. The may be fatal if raised beyond limits. Equity stocks are less risky according to his principle because it is the non-obligatory capital and in case of loss of company, claim does not stand of its payment.

Control principle:

According to his principle , the finance manager should keep eye on the controlling position of residual owner remains undisturbed. Care has to be taken that not all the profit is distributed among the creditors but maximum benefits must also go to the owner (shareholders). Indebtedness and bankruptcy should not be the result of borrowing excessive fund from out.

Flexibility principle:

According to his principle, the management should strive toward achieving such combination of securities that the management finds easy to source. Not only various alternatives should be considered for raising funds but bargaining position of the industry should also be considered.

Timing principle:

According to his principle, capital structure should be based on the time and business cycle, opportunities available, and demand of different kind of securities.

5.6 OWNERSHIP AND CONTROLS SEPARATION

There is difference between ownership and management of company. Ownership of the company lies with shareholders because they invest in equity and preference capital of the company. They are part of owned capital of the company. Equity shareholders do take risk by investing big amount in the company to gain more dividends or return. So they have ownership status of the company. They are spread all over the nation or today foreign investors are also investing, so they are globally spread also. It is not possible for them to come and run the business. They are only interested in earning dividend. So they appoint their representatives to run the company affair. They are the Board of Directors. So Board Of Directors are the management of the company. They do carry business accordingly and prove their efficiency by showing financial statements properly audited and presenting financial report in the Annual General Meeting. They are responsible for running business of the company and looking its affairs. It is the big controversy and matter of transparency in this regards. In order to better control between these two terms, Corporate Governance is needed which makes BOD obligatory toward fair business and enables owners to control business well.

Check your progress :

1. What do you mean by Ratio Analysis?
2. What is Inflation accounting and how it is different form historical accounting?
3. What are the sources of raising finance?
4. What is capital structure and what are its principles?
5. Explain the difference between term Ownership and Management.

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5.7 SUMMARY

- In ratio analysis one number is expressed with another in the form of percentage or times or proportion. It is necessary to bring out the relationships and compare the changes taken place so far in the concern. It is an important tool which focuses light on the progress of the company and also the enables managers to compare their progress with other companies. It not only expresses past performance but also helps in projections for future.

- Inflation accounting is the accounting where the price fluctuations are considered. Due to increase in the prices of goods and services, financial statements are prepared accordingly. This kind of accounting has two approaches namely; CPPA and CPA.

- Industrial finance is the finance needed for running companies efficiently. It is needed for short term, medium term or long term purposes. There are many sources of raising finance. Internally or externally finance is raised from time to time.

- Capital structure term deals with industrial finance. Companies finance is categorized in two sources i.e. Owned fund and Borrowed fund. It shows the proportion in which required finance is to be raised. It should be sound and should consider principles of minimizing cost of raising funds, flexibility, control, timing etc.

- Company is owned by shareholders who are spread nationwide or worldwide by investing into shares. While the company is run by Board Of Directors who are the managers of funds and operations. So ownership lies with shareholders and management lies with BOD of the company.

5.8 QUESTIONS

1. Critically explain Ratio Analysis as a tool of decisions making and performance evaluation?
2. What is Inflation accounting? Explain various approaches it.
3. What is industrial finance and what are the sources of industrial finance?
4. What are the principles of sound capital structure?
5. Write a note on: Separation of ownership and management control.

6

Module 3

VERTICALLY RELATED MARKETS AND COMPETITION POLICY

Unit Structure :

6.0 OBJECTIVES

- Market power may exist in both the buyer's and seller's market. Major objective of this unit is to understand the concept of market power.
- We will also analyse the benefits and social cost of monopoly power in the seller's market.
- Monopsony or the market power in the buyer's market will also be analysed in this unit.

6.1 INTRODUCTION

The neo-classical economics criticized monopoly market and monopoly power on the ground that misutilises the resources and leads to inefficiencies in the market. As a result, optimization of social welfare is not possible. The neo-classical ideology regarding monopoly power is reflected in many anti-monopolistic legislations passed by the governments of the countries, like UK, USA etc. The

major objective of such anti-monopoly laws is to identify the presence of monopoly power, and then regulate or eliminate any such monopoly power. The problem in this respect, is that the monopoly power is not easily identifiable. There is an absence of unanimity on the factors that lead to monopoly power and hence it is difficult to quantify monopoly power so that an appropriate action can be taken to regulate it.

In this unit, we will try to understand the factors that lead to monopoly power. We will also understand welfare impact of monopoly power. We will also discuss how the monopoly power can be measured to enable the government authorities to take appropriate policy measures.

6.2 MARKET POWER AND MONOPOLY MARKET

6.2.1 Meaning of Monoploy Power :

According to neo-classical economic thoughts, monopoly power of a seller is determined by two factors.

1. The degree of freedom the seller has in deciding his price.
2. The extent to which price exceeds marginal cost or the seller enjoys long-run abnormal profit.

Since the seller under perfect competition does not have freedom either to determine price or to charge price higher than marginal cost, there is no monopoly power present under such market. Greater or lower degrees of monopoly power may be present with monopoly or oligopoly markets. Under the monopoly market, even if there is a single seller, (who does not have any competitor at the moment) the monopolist may not be able to enjoy excess profit out of the fear of potential new competitors. Hence, existence of monopoly with single seller or oligopoly with a few sellers does not necessarily imply an existence of monopoly power.

6.2.1 Benefits of Monopoly Power

It is important, at this stage, to understand whether the cost conditions are likely to remain the same when a number of firms are combined to become a monopoly. In other words, it is necessary to analyse whether a monopoly firm (which produces on a large scale) faces similar cost conditions as compared to a number of competitive firms producing the same product (on a smaller scale). Two views need to be considered in this case:-

1. The monopolist can enjoy various economies of scale such as grater specialization, larger markets, cheaper finance, buying raw materials in bulk, spending more money on research and

development, applying modern techniques of production and management, etc. All these will result in the fall in cost of production. If these economics of scale (leading to fall in cost production) are large enough leading to substantial fall in cost, the monopoly price may be smaller than that under perfect competition.

2. The monopolists can charge different price, different buyers, as he is the sole producer in the market. In other words, there is a possibility of price discrimination under monopoly and not so under perfect competition. The monopolist can maximize his profit by charging higher price from the market where his product faces inelastic demand and less price from the market where the demand for his product is highly elastic. The possibility of charging different price also may promote social welfare as explained in the unit “Price Discrimination”.

6.3 SOCIAL COST OF MONOPOLY POWER (WELFARE EFFECTS OF MONOPOLY POWER)

6.3.1 MONOPOLIES WITH THE COSTS HIGHER THAN COMPETITIVE MARKET.

As you are aware, under monopoly, the consumers will have to pay the price which is higher than the marginal cost and the monopolist enjoys supernormal profit at the expense of consumers. This result in two things.

a. Consumers face welfare loss as their consumer surplus declines. (because they have to pay higher price)

b. Producer gains (as he enjoys super normal profit)

In order to understand the welfare loss or gain under monopoly, the concept of consumer surplus can be sued. (It may be recalled that the consumer surplus is the difference between price the consumer is willing to pay and the price which he actually pays). Following diagram explains welfare gains or losses arising out of existence of monopoly power (When the costs under monopoly are higher than the costs under perfect competition).

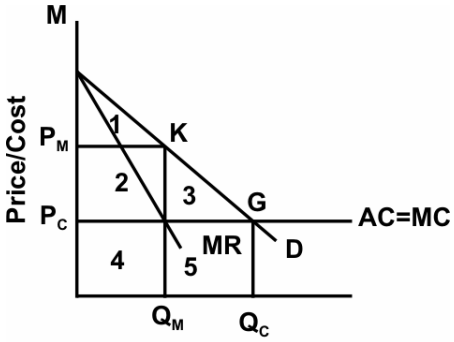

Figure 1.1

Welfare gains/losses from monopoly power

Figure 6.1

In the diagram 6.1

MD – demand curve for the product.

MR – Marginal Revenue Curve

AC – Average Cost

MC – Marginal Cost

Pc – Price under perfect competition. (The students may recall that the price under perfect competition is equal to marginal cost.

QCc - Output under perfect competition

MGPc - Consumer surplus (which is equal to the area under demand curve a006Ed above the price) under perfect competition.

The consumer surplus perfect competition. The consumer surplus arises because the consumers are willing to pay higher price (maximum OM in the case) but they are actually paying less (OPc)

P_M - Price under monopoly.

OP_M – Output produced by the monopolist (The monopolist equates marginal revenue and marginal cost to determine equilibrium price & quantity.)

It may be noted that for the monopoly market, the equilibrium price is higher and the equilibrium quantity is lower than that under perfect competition.

MKP_M – Consumer surplus under monopoly (which is less than that under perfect competition)

P_M K E P_C (Area 2) – excess profit earned by the monopolist.

At this point it may be noted that there is a fall in consumer surplus and a redistribution of income from consumers to producers (in the form of excess profit which was not so under the perfect competition).

P_M K E P_C – Gains to the producer (Area 2)

An important point to be noted here is that the loss to the consumer in the form of reduction in consumer surplus is more than the gains to the producers in the form of excess profit. Only a part of the loss to the consumers, is redistributed to the producer. Out of total loss to the consumer (Area 2 + 3), only a part (area 2) is the gain to the monopolist. The rest, shown by triangle KGEC (area 3) is called as the dead –weight loss. It arises due to inefficiency of resource allocation under monopoly. It is considered as the social cost of monopoly. In short, monopoly leads to misallocation of resources and hence there is a social cost of monopoly in the form of dead weight loss. The extent of welfare reduction depends upon the price- elasticity of demand for the product and the difference between monopoly and competitive prices.

Table 6.1 summaries the welfare implications of monopoly power.

Area in fig 1.1	Competitive market	monopoly
1	Consumer surplus	Consumer surplus
2	Consumer surplus	Excess profit
3	Consumer surplus	Dead-weight loss
4	Input costs	Input cost resources used some where else in the economy
5	Input costs	

The analysis in this section deals with the situation where the costs under monopoly are higher than those under the prefect competition. But this may not always be the case. Next section deals with the situation where the monopolist produces at the cost lower than that under perfect competition.

6.3.2 MONOPOLIES WITH COST LOWER THAN THE COMPETITIVE MARKETS

Sometimes, the monopoly firms may be able to produce at the cost lower than that under competitive market. This may be so because of the economic of scale that may be enjoyed by the big size monopoly firm or due to an easier access to superior technology as compared to the competitive firm, etc. Under such a situation, it is possible that the welfare gains associated with more efficiency (Production at a lower cost) may compensate for the dead-weight loss as shown in the following figure.

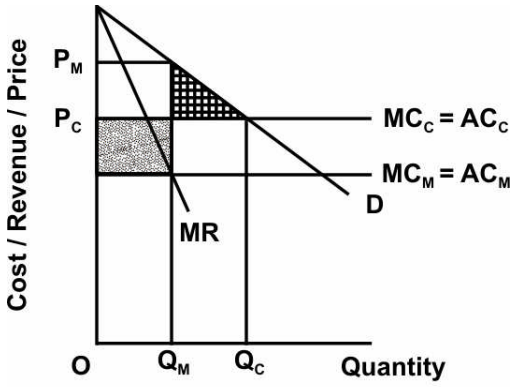

Figure 1.2
Gains and losses for a monopoly firm with lower costs.

Figure 6.2

Figure 6.2 depicts a situation where costs are lower (MC_M) under monopoly as compared to the costs under perfect competition (MC_{PC}). Price under perfect competition (OPc) is lower than that under monopoly (OP_M). it implies that the monopoly firms enjoy super-normal profits. As explained in the earlier diagram (6.1), monopoly market faces a deadweight loss equal to the shaded triangle in the figure. The monopolist makes abnormal profits, but in this case, the profits are due to lower costs than the higher price. The cost reduction arised out of various factors mentioned earlier, economies on the use of resources which can be allocated to some other lines of production. These production gains shown by the shaded area, more than compensate the dead-weight loss and hence lead to overall improvement in welfare. Thus, in spite of existence of monopoly power, in spite of existence of monopoly power, in spite of market concentration, the welfare improvement will take place. To conclude, the monopolies may or may not reduce welfare. It would depend on whether and to the extent to which their costs are higher or lower than that in the competitive industry.

Check Your Progress :

1. Define following terms

a) Monopoly power
b) Economies of scale
c) Price discrimination
d) Social cost of monopoly power
e) Consumer surplus
f) Dead-weight loss

6.4 MEASUREMENT OF MONOPOLY POWER

The degree of monopoly power is measured by taking perfect competition as a base, professor A. P. Learner has regarded perfect competition as the market providing socially optimum (maximum) welfare. Any deviation from perfect competition implies an existence of monopoly power, according to him.

Under perfect competition, price is equal to marginal cost at the equilibrium level. The level of output associated with equilibrium price implies optimum allocation of resources. When the degree of competition is less than perfect, i.e. under the imperfect market, the demand curve is downward sloping and price is not equal to marginal cost. The divergence between price and marginal cost is an indicator of the existence of monopoly power, according to Prof. Lerner. Greater. The divergence between the price and marginal cost, higher is the monopoly power enjoyed by the seller, symbolically.

$$\text{Degree of monopoly} = \frac{P - MC}{P}$$

Where P – is equilibrium price.

MC - Marginal cost at the equilibrium level of output.

Under perfect competition, difference between marginal cost and price is zero so

$$\text{Degree of monopoly} = \frac{P - MC}{P} = \frac{O}{P} = O$$

There is an absence of monopoly power under perfect competition. Greater the value of the index $\left[\frac{P - MC}{P}\right]$, the greater is the degree of monopoly power possessed by the seller.

Lerner's Measure of monopoly power is criticized on the following grounds-

1. This measure is not useful in the market where there is non-price competition or product differentiation. Such as under the monopolistic competition. In other words, when the products compete with each other, not in terms of price, but in terms of product variation, advertising, or any other sales promotion practices, the above-mentioned formula can not be used to measure the degree of monopoly power.
2. Another important point of criticism against Lerner's measure of monopoly power is that, this measure is based on only one aspect of monopoly and that is the control over prices. The degree of control over prices depends on the availability of existing substitutes. But the monopoly power may also be threatened by potential substitute which is not considered by this measure.

6.5 MONOPSONY AND BACKWARD INTEGRATION.

The term monopsony is opposite of the term monopoly. Whereas, monopoly refers to a condition or activity in the seller's market, monopsony is a seller's market, monopsony is a condition or activity in the buyer's market. In the recent times, the issues arising out of monopsony are gaining prominence in the developed markets the buying power of the supermarkets and other retail chains has been increasing. Hence it is necessary to examine consequences of growing monopsony power through consolidation mergers and the buyer's groups. The monopsony may also bring about wholesale price changer.

According to K. Lancater, monopsony is the economic term, used to describe a market involving a buyer with sufficient market power to exclude competitors and affect the price paid for its products. Monopsony in the buyer's market is the counter part of monopoly in the seller's market. Monopsony will generally exist when there is a corresponsing monopoly in the seller's market since. All the firms in the market generally need to purchase similar products. Thus, if monopoly is held in the output market, the monopolist will generally hold maonopsony power in the input

market. Vertical integration normally involves a producer's integration into next level of production. That means, a producer may himself, take over distribution of his product. This is forward integration. Backward integration on the other hand, occurs when the producer seeks to integrate into his supply market that means, the producer may himself, take over supply of inputs for his firm. A firm generally uses monopoly power to have forward linkages and monopsony power to have the backward linkages.

6.6 QUESTIONS

1. Explain in detail the social cost incurred due to existence of monopoly power.
2. What are the benefits of monopoly power?
3. Explain the concept of dead-weight loss under monopoly with the help of a diagram.
4. How is the market power measured?
5. What is monopsony? Why does it come into existence?
6. Explain the concept of backward and forward linkages and existence of market power.

7

PRICE DISCRIMINATION

Unit Structure

7.0 OBJECTIVES:

- To understand the concept of price discrimination
- To differentiate between different types of price discrimination.
- To discuss the welfare effects of price discrimination.

7.1 INTRODUCTION:

The manufacturers often find it profitable to group the consumers according to the intensity or elasticity of demand for a produce and charge price differently from different groups. This act is in contrast with the pricing policy followed by the monopolist which assumed uniformity of price for each buyers are charged the same price irrespective of differences in geographical distances among the markets or income differentials of the buyers or purchase quality differences. Such a uniform pricing policy leaves some consumer surplus with every buyer.

7.1.1 Concept of Consumer Surplus:

We have studied the concept of consumer surplus elsewhere. Here it is explained once again. The consumer surplus is a difference between the price consumer is willing to pay for a unit of a product and the price he actually pays while buying that product. In other words, people generally get more utility from the consumption of products than the price they actually pay for them. The extra satisfaction the consumer gets from buying the product has been called consumer surplus. The consumer surplus is

represented by the area under demand curve as shown in the following figure.

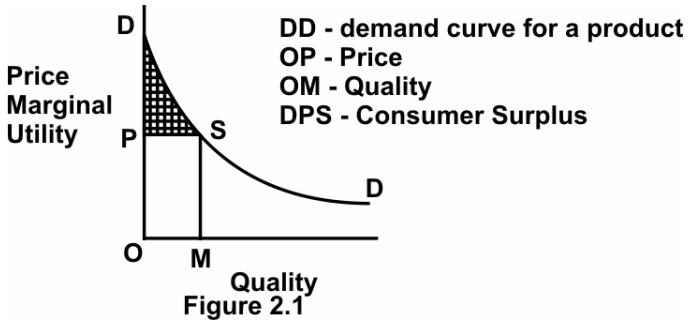

Figure 7.1

Marshall's Measure of Consumer Surplus

As per the diagram, Consumer is willing to pay ODSM to buy OM units of a product But given the market price of OP, he has to pay only PSMO (which is lesser than ODSM). So the difference between what consumer is willing to pay (ODSM) and what he is actually paying (PSMP) is consumer surplus (DPS).

The concept of consumer Surplus is important in our analysis of price discrimination for the following reasons:

1) Under perfect competition, consumers are charged uniform price. Hence the consumer surplus is higher.
2) Under monopoly, manufacturers discriminate among the buyers and charge different prices for different buyers and change different buyers. So the amount of consumer surplus is smaller.

7.1.2 Meaning of Price Discrimination:

From the discussion in the earlier section. It is clear that the producers charge different prices for the same product, from different units of the same product at different prices is called price discrimination. By doing this, the producer tries to capture more & more consumer surplus, from the buyer to maximize his profit. Price discriminating is followed by grouping the consumers. In some cases, forming groups of consumers is easier as the heterogeneity (differences) of consumers is directly observable. In some cases, however the differences among consumers are not visible. In such cases, the producers have to offer different menus or packages of products at different prices and allow consumers to choose from among alternative choice. Thus, price discrimination refers to the act of manufacturer of selling the same product at different prices to different buyers.

7.1.3 Examples of Price Discrimination:

Monopolist firm many times charges different prices from different consumers, for the same product and without much cost differentials. Following examples would clarify the point.

1) A doctor or a lawyer may charge different fees from different patients / clients for the similar services.
2) A producer may charge different price for the same product at different parts of a country.
3) Same product / services may be sold to the same buyer at different price for varying quantity. For example price for 10 kg of rice may be higher than the price for 100 kg of rice of the same quality.
4) Consumers may be classified into different categories and by changing the quality of services, different rates may be charged. For example first class and second class fares in the train, ordinary or business class in the plane.

All these examples make it clear that price discrimination is quite common while aiming at maximization of profit. Prof. Stigler's definition of price discrimination brings about one more aspect of the concept. According to Prof. Stigler "Price discrimination is defined as the sale of technically similar products at prices which are not proportional to marginal costs."

The concept of price discrimination as indicated in Prof. Stigler's definition may be well understood with the help of following example.

Suppose a hard-bound and color edition of Microeconomics book by Mankiv costs Rs.500 and a soft-bound block and white edition of the same book costs Rs.400 for the publisher. Also suppose that he sells the colored edition for Rs.750 and the black and white edition for Rs.500. in this example, the manufacturer is said to be practicing price discrimination as the price differences between two types of books (750-500) are more than the cost differences (500-400).

Check Your Progress:

1. What do you understand by Consumer Surplus?
2. Define the concept price discrimination.

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7.2 POSSIBILITY OF PRICE DISCRIMINATION:

A monopolist can follow price discrimination only under two fundamental conditions.

1) There should be no possibility of transforming any unit of product from one market to the other transferability of commodities.
2) There should be no possibility of buyers transferring themselves from the expensive market to the cheaper market transferability of demand.

It is understand from the above points that the monopolist can practice price discrimination only if the units of goods or the units of demand (i.e. the buyers) cannot be transferred from one market to another. It is possible to discriminate among the buyers only if two types of arbitrage or transaction costs are present. These are as follows.

1) Arbitrage associated with the transferability of a commodity.

If it is possible to transfer a commodity from one person to another with very less transaction cost, price discrimination is not possible. In other words, price discrimination becomes possible only when it is costlier to resell a product to another consumer may buy goods to resell them to the high price consumer. A low price consumer is the one who gets a commodity at a lower price due to quantity discounts. A high price consumer the one who does such discounts, in case the transaction cost is low, the former (low-price) consumer will buy in bulk and sell it to the latter (high-price) consumer. This does not allow the discriminating monopolist to charge different prices from different consumers.

Thus, it is possible to undertake price discrimination in case of services which have a very low or no transferability. For example, doctor can charge discriminating prices to one patient to another. Otherwise, in case of most of the retail products, price discrimination may be difficult. Wherever it is difficult, the monopolist may practice partial discrimination. He may sell his products to retailer at lower price and ensure that his product is sold to the final consumer.

2) Arbitrage associated with the transferability of demand.

In case of such arbitrage, the products physically may not be transferable between the consumers, but the demand for product is transferred between different packages. For example, the consumer may be charged different prices based on price-quantity package or price-quality package makes.

The price-quantity package makes consumer choose between say buying two units of a product at certain price or buying one unit of a product at some price. A shirt may cost Rs.250 but if consumer buys two shirts he may be charged Rs.450 (instead of Rs.500).

The price-quality package discriminates between the consumers on the basis of quality of a product / service. First class and second class on the train, ordinary or deluxe room accommodation in a hotel are some of the examples of price discrimination which help the monopolist to maximize his profit by charging different price from different consumer.

The two types of arbitrage discussed above are different in terms of their impact on price discrimination. As stated earlier, if there is a possibility of transferring products from one consumer to another, without much arbitrage or transaction cost, one consumer may buy more goods and resell them to the others. Monopolist will not be able to gain from price discrimination in such a case. The transferability of demand, on the other hand, includes the monopolist to discriminate among the consumer by charging different prices from them. In the sections to follow we will try to analyze the welfare effects of price discrimination.

7.2.1 Concluding Remarks:

From the discussion about the possibility and practicality of price discrimination, it is clear that there should not be any seepage or communication between two markets. Thus, price discrimination depends upon the ability of the monopolist to keep two markets quite separate. To conclude, price discrimination is possible under following circumstances:-

1) The nature of product sold is such that there is no possibility of transferring product / service from one market to another.
2) The geographical distance between two markets is very large or the markets are separated by the tariff barriers.
3) Legal section is given to charge different prices from different consumers like electricity for domestic use and for industrial use.
4) Consumer snobbish attitude that higher priced goals are superior to lower priced ones.
5) Monopolistic or oligopolistic market structure.

Check Your Progress:

1) State the conditions to be followed by a monopoly for price discrimination.
2) Explain the concept of arbitrage and state how it is important factor determining price discrimination.
3) Find out more examples of price quantity and price quality packages offered by the monopolist to discriminate against different consumers.
4) What is the difference between arbitrage associated with commodity transfer and the arbitrage associated with demand transfer?

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7.3 TYPES OF PRICE DISCRIMINATION:

According to Prof. A. C. Pigou, there are three types of price discrimination.

A) First Degree Price Discrimination
B) Second Degree Price Discrimination
C) Third Degree Price Discrimination

7.3.1 First Degree of Price Discrimination:

In case of first degree price discrimination the monopolist separates the whole market into each individual consumer and charges the price each on is willing and able to pay. This helps the monopolist to extract entire consumer surplus from each of the consumer. Suppose each consumer has “W” as his reservation price or his willingness to pay for a unit of a product. The monopolist is said to be successful in extracting entire consumer surplus if his price P=W. This is also called as perfect price discrimination. This is based on the assumption that the monopolist knows each individual demand curves of the consumers. There are some problems with the application of first degree price discrimination. A consumer may not reveal his willingness to pay higher price for the product and hence the

monopolist will not be able to charge price according to consumer's reservation price.

Suppose pricing schedule or tariff for a product is the total amount of money to be paid by the consumer is T, quantity consumed is q and price of the product is P, then

T(q) = pq under uniform pricing Policy (where there is no price discrimination)

P = W when monopolist practices first degree price discrimination under the assumptions that (i) w is the willingness to pay for the product revealed by a consumer and (ii) Consumers have different demand functions (they are not identical), the monopolist must know each consumer's demand curve in order to extract their entire consumer surplus.

7.3.2 Second Degree Price Discrimination:

When the monopolist does not have complete knowledge about consumer's willingness to pay, he may have to extract consumer's surplus by using self-selecting devices. There may not be any exogenous signals to discriminate consumers on the basis of some criteria like say age, income differentials, occupation, etc Price discrimination, followed by the monopolist in such a case of imperfect information is called second degree price discrimination. Here, the monopolist may offer several bundles of options to choose from as seen earlier, these may be price-quantity bundles (charging different prices for different quantities of a product) or price-quality bundles (changing different prices for the similar product or service based on quantity)

The second degree price discrimination may be explained with the help of the concept of two-part tariffs. Under this, the monopolist charges initial fee for the right to buy the product or service and also the wage fee or specified charges which may vary. For example, a telephone company requires a user to pay monthly rental and then some charge per call. The concept of two-part tariffs may be further explained below:

Two-part tariffs:- T(q) = A + P(q)

Where A-Initial fixed amount
T-Tariff (total amount to be paid by the consumer)
q- quality purchased

1) For Services like telephone, gas, electricity

T_1 (q) = A + Pq

Where A- rental for the usage of these services
P- price which may vary according to the number of unites bought

2) Polaroid Camera
T_2 (q) = A + Pq
A- Camera (Fixed premium)
P- Price which may vary according to the amount of films.

3) Amusement Park
T_3 (q) = A + Pq
Where A = Entrance Fee which is fixed.
P = price may vary according to the number of rides.

4) Taxi or Rickshaw
T4 (q) = A + Pq
Where A = lnitical meter reading (minimum fare)
P = may vary according to distance.

By following two-part tariffs, the producer aims at extracting as much consumer surplus as possible from the buyers and maximizes the profit. In order to pursue with this kind of price discrimination the monopolist must have a large market power. He should be able to fix price and he should also be aware of how the demands differ over consumers. Under such a situati on, the monopolist can charge the price per unit equal to the marginal cost and the initial fee equal to the entire potential consumer surplus as shown in the following diagram.

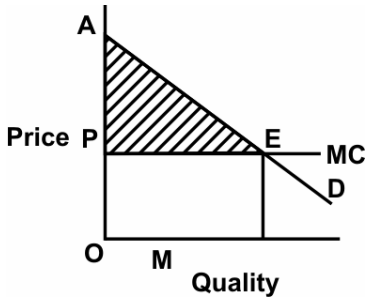

Figure 7.2

As per the diagram price will be OP which is equal to marginal cost. Initial fee / premium (A in the above equations) will be equal to AEP the entire consumer surplus.

7.3.3 Third Degree Price Discrimination:

When the monopolists do not have perfect knowledge about consumer's demand function but discrimination among the consumer on the basis of certain signals like age, income differentials, gender, it is called as Third Degree Price Discrimination. An important difference between second degree and third degree price discrimination is that the monopolist under third degree price discrimination uses direct signals about the demand, whereas the second degree price discrimination selects indirectly among the consumers through their choices between

different packages. In other words, in case of third degree price discrimination, the monopolist is able to divide total demand into different markets or groups (m) on the basis of any one of the following:-

1) Age - Citizens / Senior Citizens
2) Gender – Male / Female
3) Location – Urban / Rural
4) Occupation – Service / Business
5) Type of Buyer – First Time / Second Time Buyer

Each of these markets (m) have a separate downward-sloping demand curve which is known to the monopolist. Under such a situation the monopolist can charge a separate linear tariff for each group. Generally, the monopolist would charge higher price from the markets having lower elasticity of demand. In such a market, the consumers response to price rise will be less than proportionate.

7.4 PRICE DISCRIMINATION AND SOCIAL WELFARE:

Whether price discrimination promotes social welfare or not is difficult to say. In other words, there is ambiguity as far as the welfare effect of price discrimination is concerned. It is important to consider whether social welfare is defined in terms of total output or distribution of given output. This is because, the total output effects of price discrimination may have positive welfare effects, whereas distribution may be adversely affected after practicing price discrimination.

As per the Pareto optimality, one of the maximum condition for maximization of social welfare is that the marginal rate of substitution between two goods for different consumers, should be the same. But when a monopolist follows price discrimination, the above-mentioned marginal condition is violated.

But another aspect of welfare effects of price-discrimination may be understood by acknowledging the total output effects of price discrimination. According to Joan Robinson, price discrimination sometimes may lead to increase in output. That means, the total output may be more when the monopolist practices discriminating prices rather than a uniform price. Thus, from the point of view of total output, when a society prefers more output to less output, price discrimination may promote social welfare.

To conclude the discussion on welfare effects of price-discrimination, following points need to be considered.

1) The losses incurred by the consumers in low electricity market in the form of reduction in the consumer surplus as the monopolist charges higher price for them.
2) The gains enjoyed by the consumers in high elasticity market in the form of increased consumer surplus, as the monopolist charges lower price from them.
3) If price discrimination is not exercised by the monopolist and uniform price policy is followed, there is a possibility that some markets may be closed for the monopolist (particularly the high elasticity markets as they have to accept monopoly price).
4) Price discrimination leads to redistribution of income from the consumers in low elasticity markets to the consumers in high elasticity markets and the monopolist. Since the consumers in low elasticity market are generally richer, redistribution may increase social welfare.

7.5 QUESTION

Explain by giving examples

a) Price Discrimination
b) First Degree Price Discrimination
c) Second Degree Price Discrimination
d) Third Degree Price Discrimination

1) Define and explain the concept of consumer surplus. Find out at least five commodities where we are actually paying less than what we would have paid, instead of going without the consumption of those commodities.
2) Do you really think price discrimination is common? Enumerate your own example of price discrimination.
3) Do you think price discrimination should be allowed? Substantial your answer.

8

COMPETITION POLICY

Unit Structure :

8.0 OBJECTIVES

- To internalize the externalities in case of market failures, government policies are formulated, even under market economy. The present unit aims at understanding the need for the industrial policy and its basic requirements.
- Industrial policy is an integration of competition policy, mergers, trade policy, innovation policy, etc. This unit also aims at explaining the role of other policies in effective implementation of industrial policy.
- The unit also introduces, in brief, the features and functioning of competition policy in select countries.

8.1 INTRODUCTION

Operation of individual firms, industry and hence economic welfare will be highly influenced by the nature of policies towards industrial organisation. Different polices having impact on the working of industrial sector of a country are - competition policy, regional policy, innovation policy, trade policy, policy towards mergers and acquisition and so on. A success of any policy depends not only on its design but also its effective implementation. There are many examples of a well defined policy, not being effective due to improper implementation. In this unit, we will try to understand the ingredients of some of the important policies towards industrial sector.

8.2 GENERAL FEATURES OF INDUSTRIAL POLICY

In order to improve the efficiency of industrial sector government of any country has to intervene in the functioning of industries, in the form of various policies. An intervention by government in industrial operations is justified on the ground that it helps in reinforcing the market mechanism by minimizing market failures. In order to be effective in promoting economic welfare of a country, industrial policy should possess following features :-

1. There should be co-ordination among different types of policies towards industries. As seen earlier there are many kinds of polices announced by the government for smooth operations of industrial sector such as competition policy, policy towards mergers and acquisitions, trade policy, location policy, etc. There is every possibility that the objectives of these polices may be in conflict with each other or an implementation of one policy may adversely affect the other policy. For example trade liberalization policy may conflict with the policy of government support to priority sectors in the country. Hence it is important that various policies towards industrial operation work towards similar final goal.

2. Policies towards industrial organisation should be designed in such a way that there is an administrative ease. The clauses of policy should be clear and should not have internal contradiction. This helps in effective implementation of industrial policy is facilitated. In order to minimize human interpretation, and intervention, a computerized system may prove to be more effective, less costly in terms of money and will minimize the delays. For example, payment of taxes, application for approved etc.

3. The impact of a particular policy may be different for the industries of different size certain policies may favour the large-sized industries more than the smaller firms. For examples environment related rules enforcing the use of greener techniques of production. Use of such a technology may be cost effective for the bigger firms. In such cases, a separate consideration should be made for the smaller firms by announcing a separate policy for small scale industries.

The political considerations may come in the way of effective implementation of policies. In order to retain or gain the support of voters, the government may compromise on stricter implementation of certain provisions in the policy. This may be done by announcing soft loan (loans with lower interest rates) schemes for certain industrial activities to be important even in the periods of industrial decline. Such considerations, many times, force policy - makers to

adopt" second best" option by which two objectives :- welfare maximization and vote maximization- would be achieved.

Check your Progress:

a. What do you mean by market failures?

b. Why is the government intervention necessary in case of market failures?

c. What should be the features of a well designed industrial policy?

d. How do the political considerations force to adopt" second best" option for maximization of economic welfare? Explain by giving examples.

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8.3 COMPETITION POLICY

8.3.1 Meaning

Competition policy includes measures aiming at

I) Promotion of competitive environment in the industrial sector

II) Prevention of forces that reduce the competitiveness in industrial sector

The competition policy aims at breaking up or regulating monopolies. It aims at preventing all those activities of a firm which put barriers to entry of new firms in the market. The dominant firm in the market may practice many anti competitive practices such as resale price maintenance or price agreements by the group of firms etc. Competition policy is expected to remove all barriers to competition and encourage the development of new products and the entry of new firms in the market. According to some economists, the competition policy not only should focus on the elimination of barriers imposed by the dominant firms, but also on the removal of government actions that restrict competition. These actions may include import restrictions, or any other kind of licensing requirements that limit the entry of new firms in the market.

8.3.2 Competition policy in Different countries.

The structure conduct performance approach (SCP) implies that the competition policy must aim at restructuring the market structure In favour of competition. Under this approach, monopoly is considered to be a departure from the maximization of social welfare and hence the prevention of such a monopoly is supposed to be an important objective of competition policy of a country. In the recent years, there has been a change in the attitude towards monopoly forces. The industrial policy measures have undergone substantial changes and the presence of uncontrolled monopoly is considered to be a matter of investigation.

Competition policy in the USA

It is enforced by the Federal Trade Commission and the Department of Justice. The important legislations related to competition policy in the USA are :-

A) Sherman's ACT 1890

B) Clayton's ACT 1914

C) Federal Trade Commission ACT 1914

D) Robinson - Patman ACT 1936

Economic regulation of American industry goes back more than a century. First of such legislations was applied to transportation in 1887 by the Inter state Commerce Commission (ICC). The ICC was supposed to control the price wars and ensure transport services to the smaller town. In the later years, such regulation spread to many other sectors like banking, electric power, security markets, communication, etc.

Anti-trust legislation is another way of promoting competition in industry. The Sherman ACT (1890), prohibits contracts, combinations or conspiracies restraining trade. Section 2 of the Act prohibits 'monopolizing' and conspiracies to monopolize any explicit agreement among the producers to restrict output or fix prices above the competitive level is prohibited under this Act.

Clayton ACT (1914) was passed to clarify & strengthen the provisions under Sherman Act any practice to drive the competitor out of market and to discourage a new firm to enter the market was considered to be anti- competitive of illegal. The Act ruled out typing contracts in which the customer is forced to buy a particular product even if he is not interested, it ruled out price discrimination and it also banned the interlocking directorates in which some people would be directors of more than one firm in the same industry. The Clayton Act also prohibits mergers and acquisitions, if they tend to create monopoly.

In 1914, Federal Trade Commission (FTC) was established to disallow anti- competitive mergers and to prohibit unfair methods of competition. The FTC was also empowered to ban false and deceptive advertising.

Robinson patman Act (1936) protect against price discrimination. It basically protect the buyers against price differences charges by the sellers which are likely to injure competition.

To conclude, anti-trust legislation in the USA is much more stringent than any other country Anti-trust laws have been important in maintaining competition and fostering economic growth.

Competition Policy in Europe.

With the emergence of European Union, anti- trust legislation also has emerged in the European countries. The responsibility of enforcing such a legislation on industries is vested in competition Directorate located in Brussels. But a separate anti-trust authority within the member country of the EU is responsible for the issues related to member countries. The treaty of European Community focuses on the abuse of power by the dominant firms. Article 81 is concerned with the restraints of trade mergers and acquisitions are also dealt with in the same article.

Competition Policy in India

Since 1969, the Monopolies and Restrictive Trade Practices (MRTP) Act is an important legislation towards improving the competitiveness of industrial sector. The preamble of the Act states that it is “an act to provide that the operation of economic system does not result in the concentration of economic power to the common detriment and is for the control of monopolies, prohibition of monopolistic and restrictive trade practices and for the matters connected with such practices.”

The functions of MRTP Act may be summarized as follows:-

A) Prevention of concentration of economic power which may be detrimental to public interest.

B) Control of restrictive trade practices.

C) Control of unfair practices.

D) Control of monopolistic trade practices.

An implementation of MRTP Act came under severe criticism. It was always commented that the MRTP Act was anti-size and not anti monopoly. It was also commented that despite all

regulations and restrictions imposed on large business- houses, there was still concentration and monopoly in some industries.

A new competition policy was adopted in the post- reform period in India. Under the new Competition Act of 2002, Competition Commission of India (CCI) was established. The CCI is a body formulated with the members including experts and eminent persons from different fields. All the complaints related to infringement of Indian Competition Act would be received by CCI. The commission will work towards elimination of practices having adverse effect on competition, promote and sustain competition, protect the interests of the consumers and ensure freedom of trade to all the new entrants in the market.

Check Your Progress:

1. What is competition policy? What are its important features?

2. Discuss important anti-trust provisions in
A) USA B) European countries and C) India.

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8.4 CO-ORDINATION OF INDUSTRIAL POLICY WITH OTHER POLICIES

Effectiveness of industrial policy is also dependent upon its co-ordination with other policies like regional or location policy, policy towards innovation, trade policy, merger and acquisition policy, etc. A coherent approach to industrial policy to integrate variety of policy measures is essential to maximize social welfare. Hence, it is necessary that the industrial policy is not only consistent with its own measures but must also be consistent with other related policy measures.

The Memorandum on the community's industrial policy identified five broad objectives on industrial policy, which are as follows:-

1. To pursue establishment of single market by removal of barriers such as national preference by state bodies.
2. To move towards the harmonization of legal, financial, fiscal environment in which the firm operates.
3. To promote mergers between the firms of different member states of European Community.
4. To facilitate adoption by firms to changed market circumstances, particularly with regard to new industries plus a science and technology policy to facilitate the emergence of new industries.
5. To adopt a common policy with respect to economic outside the community to ensure fair competition in foreign market.

An understanding of these objectives emphasizes the needs for industrial policy to co-ordinate with different policies. Every country may need to consider such an integrated approach.

Regional or location policy, for example, aims to direct the location of industrial units in such a way to avoid uneven distribution of firms among different regions. In the process of economic development, it may be experienced that some areas become prosperous and develop more rapidly, leaving some other areas in the country, under developed. This phenomenon may have an impact on wage rate. Regions with less industrial development may experience fall in wages and vice versa Young, more qualified and skilled workers will migrate towards the prosperous regions. Hence, the best way to improve economic welfare of a country as a whole is to design regional policy in such a way as to attract more and more firms towards the under developed regions.

Policy towards innovations aims at ensuring adequate or desired level of innovation activity by the firms. Innovations enhance economic welfare. But sometimes, deliberate policy measure may be required to encourage firms to undertake research and development. This may be done by the government by improving R & D infrastructure of reducing the costs to the firms of information gathering (by setting up a government agency for that purpose.) In order to ensure increasing profits to the innovator, the government may adopt patent system or provide financial support to innovating activity or may sponsor academic research programs. Tax policy also may be used in favour of innovative firms.

Trade policy also may be used to achieve industrial objectives. Many provisions of trade policy directly improve the industrial environment within the country. By restricting foreign competition, by imposing import tariffs or quotas, the trade policy may protect the domestic industry. The protective trade policy may encourage industrial development, at least in the initial years of

industrial development. Once the domestic industry obtains optimum size, protection may be removed.

In conclusion, it may be noted that there are conflicts among the objectives of different types of policies towards industrial development. But a co-ordinated approach, an integrated approach will help in enhancing the overall national economic welfare. In implementing the industrial policy, if a combination of competition, location or regional, innovation and trade policies is practiced, important social, political and economic objectives can be achieved.

8.5 QUESTIONS

1. Discuss why is there a need for co-ordination of different policies for effective implementation of industrial policy.

2. Write a note on “competition policy.”

3. What are the objectives of competition policy?

9

Module - 4
PRODUCT MARKET DIFFERENTIATION AND IMPERFECT INFORMATION

Unit Structure :

9.0 OBJECTIVES

- To understand the meaning of Product Differentiation
- To study the Lancastran Approach of product market differentiation
- To study the Hotelling approach of product market differentiation

9.1 INTRODUCTION OF PRODUCT DIFFERENTIATION

Understanding product differentiation is crucial to understanding how modern market economies operate. A trip to supermarket shows that many similar products are offered for sale to appeal to the tastes and requirements of different consumers. Supermarkets themselves are differentiated by the range of products they offer, their geographical location, the quality of their meat or fruits departments etc.

In the words of Chamberlin, a general class of product is differentiated. If any significant basis exists for distinguishing the goods (or services) of one seller from those of another. Such a basis may be real or fancied, so long as it is of any importance whatever to buyers, and leads to a preference for one variety of the product over another. Where such differentiation exists, even

through it be, slight, buyers via be paired with sellers, not by chance and at random (as under pure competition), but according to their preferences.

Differentiation may be based upon certain characteristics of the product itself, such as exclusive patented features, trade marks, trade names, quality, design, colour, style. It may also exist with respect to the conditions surrounding its sale. In retail trade, these conditions include such factors as the convenience of the sellers location, the general tone, or character of his establishment, his way of doing business, his reputation for fair dealing, courtesy, efficiency and all the personal links which attach his customers either to himself or to those employed by him. In so far as these and other intangible factors vary from seller to seller, the “product” in each case in different, for buyers take them into account, more or less, and may be regarded as purchasing them along with the commodity itself. When these two aspects of differentiation are held in mind, it is evident that virtually all products are differentiated, at least slightly, and that over a differentiation is of considerable importance.

The wide array of products in the market place is a response to the wide diversity of consumer tastes. There are two levels of taste diversity. Individuals may want to consume different products may want to consume different products on different occasion, expressing a preference for variety over time (e.g. not eating the same dish at the same restaurant every night). Individuals may also have idiosyncratic tastes about their most preferred variants (e.g. beer drinker and cigarette smoker often stick to brands they like least). Thus we view the population as a whole as heterogeneous, and this intra-and inter-individual heterogeneity generates a demand for product diversity in the aggregate.

Once it is recognized that consumers have idiosyncratic preference, it follows that they are prepared to pay more for variants that are better suited to their own tastes. It is these Premia that are the source of market power for firms. Despite the wide diversity in tastes, the market is unlikely to support a large number of products because of increasing returns to scale in research and development, production, marketing and distribution. Such increasing returns are necessary for firms to exist.

In a competitive market, products are standardized. A firm will be able to sell all it wishes at the market price. It will not be able to sell anything above that price, no matter how much it advertises or promotes its product. In contrast, if products are differentiated, each variety will have its own demand curve. By engaging in sales efforts, a firm can change the location of the demand curve for its variety. It will generally be profitable to invest in shifting the location of the demand curve. But the sales efforts will occur only in markets

where there is some product differentiation, so that competition is to that extent already imperfect.

Since sales efforts arise in markets where products are differentiated we take note of bases of product differentiation.

9.2 LANCASTRIAN APPROACH

Lancaster proposed a framework starting from the premise that what consumers desire (and what gives them utility) are not goods themselves, but the characteristics or qualities embodied in those goods. A good then should be analysed as a bundle of characteristics. The characteristics themselves are the arguments of the utility function. The usual assumption apply- that more characteristics are preferred to fewer, that consumer can express consistent preferences over different bundles of characteristics, and that the marginal rate of substitution is diminishing along an indifference curve in characteristics space.

The analysis which follows from these assumptions is explained in the following diagram.

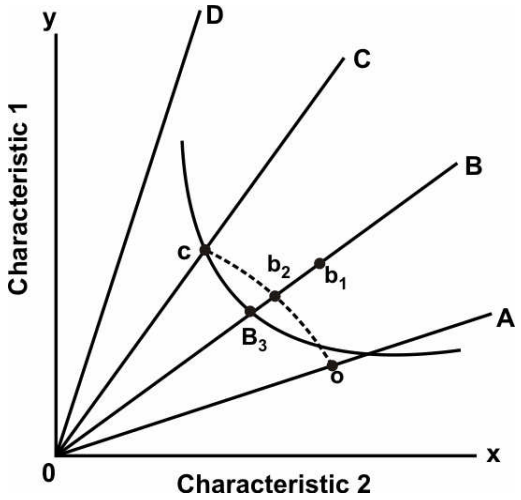


Figure 9.1

Each ray, in the above diagram, OA< OB, OC< and OD represents the proportion of characteristics 1 and 2 supplied in a particular good. The points a, b, c, and d represent the amount of characteristics that can be obtained initially for a unit expenditure. Indifference curve for one individual is shown by IC. Clearly, he will maximize his satisfaction, given his preferences, by purchasing good B at B_i. Now we vary the price of B. as it rises, the amounts of characteristics purchased for one unit of expenditure will fall to b_2 and then to b_3. If the characteristics are separable, the demand for B will fall to zero when the price rises beyond the point represented by b_2. At that point, it becomes cheaper for consumers to obtain the

desired combination of characteristics in the form of a mixture of A and C, along the broken line ac. (if the characteristics are not separable from the good, then the point b_3 becomes the critical point for the consumer whose indifference curve is shown in the diagram. He will then prefer to purchase C).

We should note that a fall in price of B, say to b_1, will have adverse effects on the demand for C, since a combination of b_1 and d gives the characteristics mix of good C for a lower price than at price C. The demand curve for good B will therefore exhibit some sharp discontinuities. This is shown in the following figure.

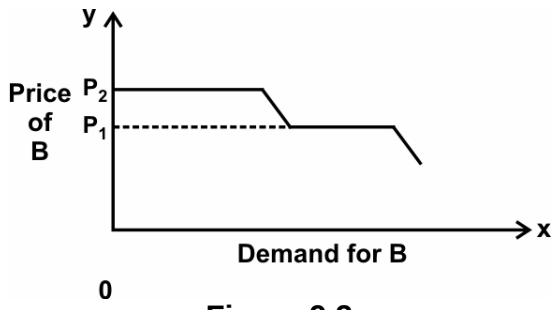


Figure 9.2

In this P_2 is the price at which good B is eliminated from the market by goods A and C, and P_1 is the price at which good B 'captures' the market of good C.

The key feature of this analysis for further discussion is that a variation in the price of B has a direct effect of the demands for A and C, which are the 'near neighbour' goods. This sharp interdependence between 'near neighbours' will certainly affect pricing strategy.

However, Archibald Rosenblush show that, when the number of characteristics is four or more, the number of 'near neighbours' is on average n/2, where n is the number of firms. The interdependence of 'near neighbours' is thus weakened when n is large, and each product may have its own differentiated demand curve.

Within this framework, there is also a natural definition of an industry. Suppose that 2 is a m vector of characteristics, and that q is a n vector of goods. Then we can define a consumption technology by a m x n matrix, B, of coefficients, which defines the relationship of characteristics to goods.

$$2 = Bq$$

If on inspection we find the B matrix to be block-triangular, e.g. of the form.

$$\begin{bmatrix} B_1 & 0 & 0 \\ 0 & B_2 & 0 \\ 0 & 0 & B_3 \end{bmatrix}$$

then it seems natural to desire an industry by the m_1 x n_1 block of coefficients which make of B_1, and so on, these are products that have certain characteristics in common, shared by no other products. Of course, this does not exclude the possibility of substitution in consumption n between one group of products to another. That could be alone only on the assumption of weakly separable utility function i.e., that the marginal rate of substitution between the characteristics of one group is independent of the quantity consumed of any characteristic outside the group. Whether the consumption matrix is block diagonal is a matter of empirical analysis.

The main disadvantage of this theory is the unrealistic assumption that goods are actually divisible into their characteristics. Thus, in the example analysed above it was assumed that the characteristics of good B could be obtained from a 'mixture' of goods A and C. In practice, it is hard to think of plausible examples where the characteristics can be unscrambled and recombined in the desired proportions. It is this assumption that leads to the discontinuities in the demand.

In response to this criticism, Lancaster reformulated his analysis. He dropped the assumption that goods are divisible into their component characteristics. The basic framework is illustrated in the following diagram.

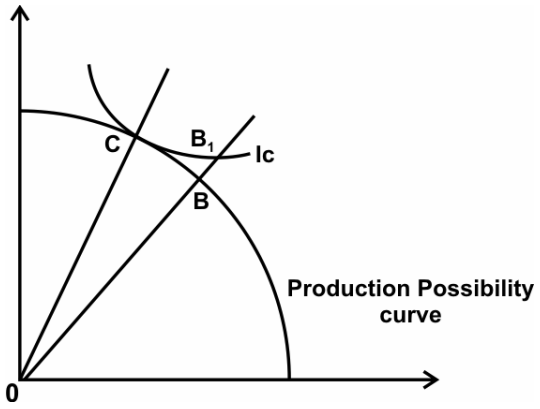


Figure 9.3

The Product Differentiation Curve (PDC) shows the various maximum combinations of characteristics that can be produced with one unit of resources. Each combination along the curve represents a potential differentiated good.

a) The curve is convex to the origin.
b) We consider a consumer whose most preferred good would be C given the constraint of the PDC.

However, suppose that only good B is available. Then the consumer needs the quantity of good B represented by point B_1 to give equal satisfaction to the good C. but B_1 requires more resources and the distance BB_1 is the measure of requirement. Lancaster calls this as compensation function. The of compensation depends on

1) The curvature of the PDC and the indifference curve and
2) How 'far' good B is from the most preferred good C for that consumer.

Lancaster makes the concept of compensation function more manageable by a transformation. The PDC is mapped into a line, the limits of which represent the two extreme goods and with points on the line representing different combinations of goods. The compensation function (distances like BB_1) is then drawn in relation to that line. The result is shown in the following diagram.

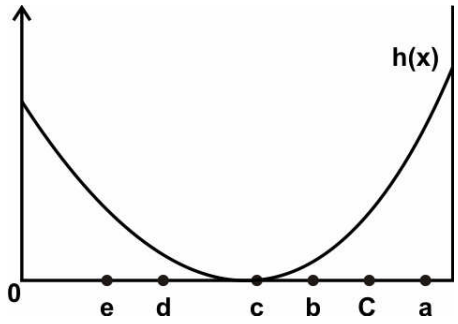


Figure 9.4

In the above diagram, c indicates the consumers most preferred specification of the good and h(x) is the compensation function where x is the distance (along the PDC) from C. for further analysis, Lancaster then assumes that,

1) The shape of the compensation function h(x) is identical, no matter what the consumer's preferred goods and

2) Consumers are spread evenly along the line in respect of their most preferred specification.

The function h(x) is used to define the demand curve for one of the group of differentiated products, and for the group as a whole, following the Chamberlain analysis.

Here, there are two elements involved
1) The substitution between the group of differentiated products and outside goods.

2) The choice of consumers over the good itself.

The list raises no new issues. For 2nd, let us suppose that we are examining the choice of the consumer whose most preferred specialisation is C, between goods on offer at a, b, c and d in the above diagram (D). From the properties of the compensating function, we know that one unit of each of these goods is equivalent to $1/[h(a-c)], 1/[h(b-c)]$, and $1/[h(c-d)]$ of good C. (the products are located on the line by assuming that the left hand end of the line is the origin, products and consumers are located by their 'distance' from this origin). If the prices of these goods are P_d, P_b and P_a, then by one unit of expenditure the consumer will obtain the equivalent of $1/[P_d h(c-d)], 1/[P_b h(b-c)]$, and $1/[P_a h(a-c)]$ of the most desired goods. Maximisation of satisfaction will be there by choosing whichever gives the largest equivalent in terms of the most desired goods. Let us assume that this gives a choice between goods d and b, and that the consumer is indifferent between these i.e.

$$\frac{1}{P_d h(c-d)} = \frac{1}{P_b h(b-c)}$$

OR

$$P_d h(c-d) = P_b h(b-c)$$

From the definition of the compensating function, it is clear that the consumer at C marks the boundary between those who prefer good d (their most preferred good lies between d and c) and those who prefer good b (most preferred good between c and b)

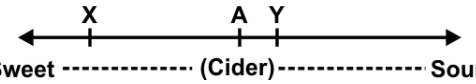
9.3 HOTTELING MODEL

Diversity is very important as well as long debated issue in economics. Many different applications of this concept are studied from bio to technological or institutional diversity. Here we take a special interest in the economic analysis of product diversity, whose growth is an important feature of economic development.

Product diversity was 1st studied by theorists of monopolistic and imperfect competition (Hotelling, Chamberlin, Robinson, Lerner, and Singer). Two kinds of models may be distinguished in product diversity. On the one hand we get the numerous variants of the spatial one (Hotelling, Lancaster and one the other hand those that assume convex preferences for consumers. (Dixit and Stiglitz).

Hotelling's model is one of the most popular instruments of modern economic analysis.

The spatial model was at the beginning a linear model



A line represents the main street of a small town. Customers are located all along this line. Here only one consumer named 'A' was represented. The sellers are named as 'X' and 'Y'. Every one of them sells the same product to consumers. Thus, they are competing through their selling price and their localisation on the street. Here, the product diversity is represented by the way vendors are localised on the line. Supposing that this line represents a characteristic of a good. The line represents all the people that want to buy Cider. On the extremity, we find the people that prefer it sweet and on the other the people that prefer is sour. In the above figure 'X' produces a sweeter cider that 'Y' but since they are not on the extremities it could be possible to produce a sweeter cider or a sourer cider.

We study some of the implications of product differentiation for oligopoly competition. It is done by considering a model of horizontal product differentiation. It is explained with another example.

Let us consider a mile-long beach with two ice-cream vendors, one at each extreme of the beach. Even if we assume both sellers offer the same product, very few consumers are indifferent to buying from one seller or the other. If both vendors sell at the same price, a consumer who is located close to one end of the beach naturally prefers the seller who is located nearby. In fact, if the costs of travelling to visit such a seller are lower than the costs of travelling to visit the other one, and other than travel costs, the two products are identical, even in prices. The reverse is true for a consumer located near the other end of the beach. Generally, consumers do not see both vendors as the same, even though they sell products that are physically identical; different consumers value sellers differently, specially, each consumer values sellers according to his or her location.

The above example is more general. First, it generalises to any situation wherein sellers and buyers are physically located at different places and a transportation cost must be paid by buyers to purchase from a specific seller (gas stations, restaurants, steel mills, etc.). Second, by analogy, it also applies to situation wherein sellers offer products that differ according to some characteristic, and buyers differ among themselves as to how they value such a characteristic.

For example, consider the market for corn flakes and suppose there are two brands that differ only according to sweetness: Brand 1 has no sugar added, whereas Brand 2 has large quantities of sugar added. This is analogous to two sellers at the end of a "beach", whereby one end corresponds to minimum sweetness and the other end to maximum sweetness. A consumer's location would indicate his or her preference for sweetness. If the consumer is closely located to Brand 1's end of the "beach", then the consumer has a strong preference for no-sugar added corn flakes. Conversely, a consumer located close to the other end of the "beach" has a sweet tooth. And a consumer located in the middle has a strong preference for corn-flakes with some, but not a lot, of sugar added. Finally, the "travelling" or "transportation" cost measures the consumer's aversion to buying something different from his or her optimal degree of sweetness. Thus, even though we refer to location and transportation costs, the idea developed in the context of spatial product differentiation can also be applied to differentiation according to some other product characteristic.

How do firms compete in prices when their products are differentiated in this way. We can explain this by above examples through Hotteling model. E.g. suppose there is a large number of buyers (e.g. one million) who are distributed along a segment of length one (e.g. one mile). There are two sellers, each located at the end of set prices, and buyers choose from which seller to buy.

A buyer located at point X must travel a distance X to buy from firm 1. travel costs t per unit of distance. Therefore, the total cost for buying at store 1 is given by P_1, the price, plus t_x, the transportation cost. The total cost for buying from firm 1, $p_1 + t_x$, is a particular value of P_1. At x=0 (left axis), total cost is simply price, P^l_1. As the consumer is located farther away from Firm 1, total cost increases at the rate t per unit of distance. A consumer located at Firm 2's location (x=1) would heed to pay a total cost $P'_1 + t$ to purchase from Firm 1.

By analogy, a buyer located at point X must travel a distance 1-x to buy from Firm 2. The total cost of buying from Firm 2 is therefore given by $P_1 + t(1-x)$. A consumer located where Firm 2 is located (x=1) would have to pay a total cost P_2. At the other extreme, a consumer located at Firm 1's location (x=0) must pay a total cost $P_2 + t$ to buy from Firm 2. Contrary to Firm 1, the total cost of buying from Firm 2, $P_2 + t\ (1-x)$, is a downward sloping curve, that is, it is lower the farther to the right the consumer is located.

Suppose that all consumers purchase one unit. This amounts to assuming that the utility of buying one is high, so that the consumers' decision is not whether to buy but simply which seller to buy from. Because the products sold by firms 1 and 2 differ only according to the firm's location, all that consumers have to do is choose the firm that minimizes their total cost, prices plus transportation cost.

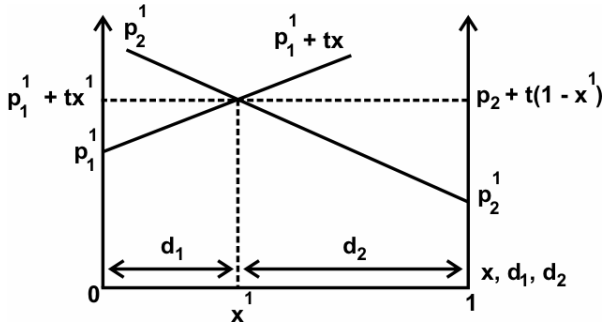


Figure 9.5(A)

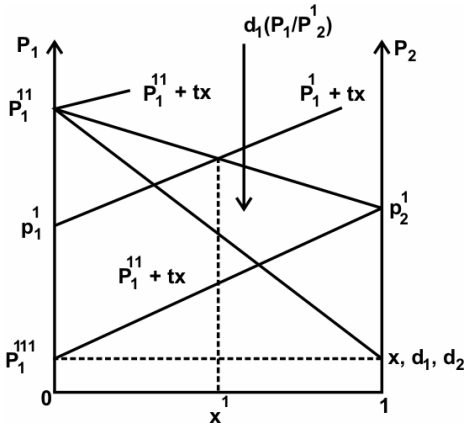


Figure 9.5 (B)

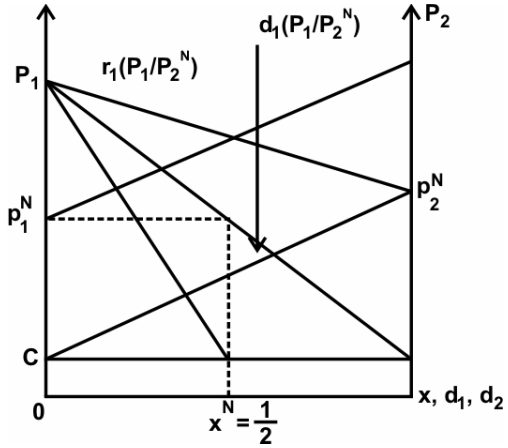


Figure 9.5 (C)

From figure A we see that for $P_1=P_2$, a consumer located at x^1 is indifferent between purchasing from Firm 1 and purchasing from Firm 2. A consumer located to the left of X^1, i.e. located at $x<x^l$, strictly prefers to buy from Firm 1. Finally, a consumer located to the right of X_1^1, i.e., located at $X>X^1$ strictly prefers to buy from Firm 2. this implies that Firm 1's demand is given by all consumer located to the left of X_1^1, where as Firm 2's demand is given by all consumers located to the right of x^1. If we assume that consumers are uniformly distributed along the segment, then Firm 1's demand is given by X^1, whereas Firm 2's demand is given by $1-X^1$.

From Figure A we see that, although Firm 1 prices higher than its rival $\left(P_1^l > P_2^l\right)$, it still receives positive demand. The products sold by each firm are no longer identical in the eyes of consumers. This is because of transportation costs. If the transportation costs are negligible (low), then the slope of the total cost curves would be very low, and the firm with the lowest price would effectively take all of the market demand.

Under Hotelling model, each firm faces a downward-sloping demand curve. This is given in figure B. the figure reproduces the calculations from figure A. If firm 1 sets P_1^{II} and firm 2 sets P_2^{II}, the Firm 1 receives demand $d_1=X^1$. Suppose that Firm1 sets P_1^{II} instead. At this price the indifferent consumer is located at X=1. That is, P_1 is so low that all consumers prefer buying from Firm 1. Generally, for P_1 between the extremes P_1^{II} and P_1^{III} we obtain the demand curve d_1 (P_1/P_1^l). The demand curve is a function of Firm 2's price. If P_2 were different from P_1^l, then we would obtain a different demand curve.

Having derived Firm 1's demand function, we can now identify the Nash Equilibrium of the Hotteling mode. Now we look for a pair of prices (P_1, P_2) such that no firm has an incentive to change prices. Suppose that marginal cost is constant and equal to C for both firms, and suppose that Firm 2 sets $P_2=P_2^N$. What is Firm 1's optimal price?

The solution is in figure C. From Firm 1's demand curve, $d_1(P_1/P_2^N)$, we derive Firm 1's marginal revenue curve, $r_1(P_1/P_2^N)$. Firm 1's optimum results from equating marginal revenue to marginal cost, r_1 $(P_1/P_2^N)=C$ which corresponds to $P^N{}_1$. Because, both firms have the same marginal cost and $P_1^N=P_2^N$, we conclude that these prices constitute a Nash equilibrium.

Figure C suggests a number of interesting facts about the equilibrium of the Hotteling model. In contrast with the Bertrand model, equilibrium price is strictly greater than marginal cost. This results from the fact that each firm faces a continuous, downward sloping demand curve, which in turn results from the fact that consumers must incur transportation costs to make a purchase. In fact, if transportation costs are small i.e., if the value of t is small, then each firm's demand curve is flat (Dia.B) and equilibrium price is close to marginal cost (Dia.C). A greater value of t, corresponds to a greater degree of product differentiation. We thus conclude that the greater the degree of product differentiation, the greater the degree of market power.

9.4 QUESTIONS

1. Critically examine the Lancastrian approach of product market differentiation.
2. Explain in detail the Hotelling model of product differentiation.

10

THE ADDRESS APPROACH

Unit Structure

10.0 OBJECTIVES

- To study the Address Approach
- To understand the meaning of Price Dispersion
- To study the Dorfman-Steiner condition of advertising behaviour
- To study the meaning of Lemons and Information Asymmetric

10.1 THE ADDRESS APPROACH

The address (or characteristics) approach of modelling product differentiation can be traced back to the pioneering work of Hotelling (1929). This approach is based on an explicit description of individual behaviour. An address model is defined as one in which both commodities and consumers can addresses, in a characteristics space.

On the commodity side, (Lancaster), it has become common to view a good as composite of the characteristics (or attributes that it embodies. For e.g. the characteristics of a car that interest consumers include gas consumption, comfort, power, reliability, and design. The motivation for this approach stems from the observation that commodities are not desired themselves but rather it is attributes they possess that form the basis for consumer preferences. A commodity then represented as a vector whose components indicate how much of each attribute is embodied in

one unit of it. This vector is the address of the commodity in the characteristics space.

On the consumer side, preferences are assumed to be defined over all potential addresses of commodities. An individual's address is defined by his or her ideal bundle of characteristics. This address is analogous to a consumer's location in geographical space, and transportation costs in the geographical framework are analogous to the disutility attributable to not consuming at one's address in the characteristics setting. Just as transportation costs increase with distance from one's residence to the shopping area, the disutility rises with distance between the consumer's address (or ideal point) and the commodity's address in the characteristics space.

There are many similarities between address and discrete choice models. Both describe the demands of a population of consumers with heterogeneous tastes for variants of a differentiated produce. Each individual typically consumes only one variant and in many models it is further assumed that each consumer purchases only one unit of the selected variant.

The address model used to compare this approach to discrete choice model is designed as follow:

There are m characteristics so that each potential variant and each consumer ideal point is describe by a vector of m numbers. Hence both potential variants and ideal points belong to R^m, called the characteristics space. Then $n(n \geq 2)$ variants of the differentiated products are located at n distinct points of R^m; $\underline{Z}_1 = (Z\frac{1}{1} - - - - Z_1^m) - - - \underline{Z}n = (Z^1n - - - Zn^m)$. There is a continum of consumers distributed over R^m according to a nonnegative continuous density function $g(\underline{Z})$, $\underline{Z}$ being the vector $(Z^1 - - - - Z^m)$ and $\int \mu = g(z)dz = N$ the total population. Each consumer buys one unit of the variant that offers the greatest conditional indirect utility given by $v_i(z) = y - p_i + a_i - r\sum_{k=1}^{m}(z^k - z_1^k)^2$, i=1….n, …….(a)

Where $\underline{z}$ is the consumer's address (also called ideal or location) in the characteristics space and r is positive scalar measuring consumer sensitivity to distance in this space. The first three terms of the above equation i.e. y, p_i and a_i are common to all consumers. The last term $\sum_{k=1}^{m}(z^k - z_i^k)^2$ is individual specific in the sense that this disutility, which has the same functional from across consumers, is evaluated at individual locations $\underline{z}$. This particular specification of the disutility function has been chosen to determine

in a simple way an address framework consistent with discrete choice models. The above equation implies that the consumers indifferent between variants $\underline{z}_i$ and $\underline{z}_j$ $(i \neq j)$ are located on a hyper plane perpendicular straight line passing through $\underline{z}_I$ and $\underline{z}_j$. this property considerably simplifies the analysis.

The market space of variant is defined as
$M_i = \{\underline{z} \in R^m, v_i(\underline{z}) \geq v_j(\underline{z}), j = 1...n\}$, that is, the set of consumer points for which variant 1 is (weakly) preferred to all others. Using equation 'a', the market space is also given by

$$M = \{\underline{z} \in R^m{}_j\ (a_j - p_j) - (a_i - p_i) \geq \tau \sum_{h=1}^{m} (z_j^k - zi^k)(z_j^k + z_i^k - 2z^k), j = 1.....n\}$$

…….(b)

Hence m_i is the intersection of n-1 closed half spaces, the boundaries of which are hyper planes orthogonal to the straight line passing through $\underline{z}_i$ and $\underline{z}_j$, j=1…n and j=1. Since each consumer buys one unit of a single variant, the address demand for variant i is

$x_i = \int_{m_i} g(\underline{z}) d_{\underline{z}}$, i=1 ….n, …….(c)

which is the mass of consumer's in is market space.

Finally the sum of variant demands equals total population

$$\sum_{(m)}^{n} X_i = N$$

The above models 'a' 'b' 'c' are called as quadratic address model (QAM).

We can explain the address approach in another way.

The products that firms produce are differentiated, they are not identical but similar. There are two approaches to modelling product differentiation.

1) Address Models:- Consumers have preferences over the characteristics of products.

- Vertical differentiation: the characteristic concerns for example quality, which the consumes agree on the ranking of.

- Horizontal differentiation: the consumers have heterogeneous preferences regarding the characteristics. E.g. departure times for a particular airline route, cars of different brands but priced at a similar level.

2) Non-address(or goods) Models:- Consumers have preferences over goods and they have a taste of variety – monopolistic competition.

Address Model:

Each brand of a good is defined by its location. If one or two diminutions: this could be a firm's location in physical or geographic space and also could be some other attributes of the goods. For e.g. breakfast cereals.

Breakfast Cereals:

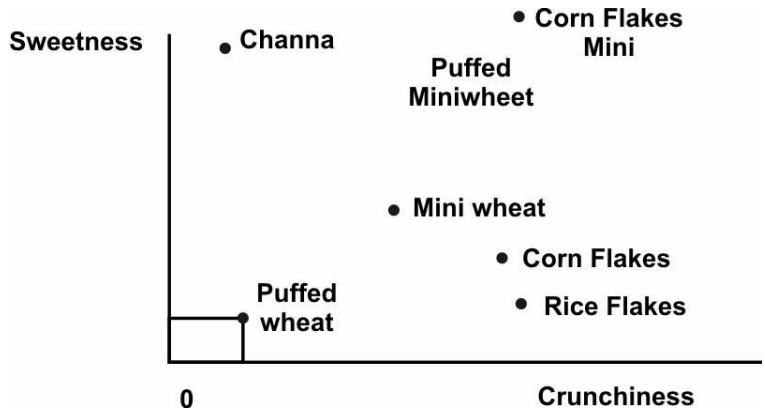


Figure 10.1

Consumer preference distributed in the same product space. A consumer is utility of purchasing one unit of brand i:

$\cup(\theta^*, \theta_i) = v_i - T(1\theta^* - \theta_i 1) - P_i$,

Where

- θ_i is the brand the consumer consumes
- θ^* is the consumer's ideal brand, or her location
- T ( ) is an increasing function (measuring transportation costs or 'mismatch cost'
- P_i price the consumer must pay to get one unit of the bread V_i – utility that the consumer would get from consuming (one unit of) brand I for free and without having to travel

10.2 PRICE DISPERSION

Price dispersion means the observed range of prices for each class of customers. Because limited consumer information can lead to higher prices, it may be in a firm's best interests to create noise in the market by charging different prices for nearly identical products or for the same Product at different stores. That is, by creating price dispersion, they may be able to reduce consumers' information.

For e.g. Some durable goods manufacturers sell nearly identical products under two or more brand names. A product may be available under the manufacturer's own brand name at a

relatively high price and be available under another brand name at a lower Price.

Firm has conflicting objectives. On one hand, because search by consumers is costly and may lead them to drop out of the market by raising the total cost of a Product, the firm wants to reduce Price dispersion to eliminate unnecessary search costs. That is, because search cost raise the price to customers but do not directly benefit the firm, they should be eliminated, all else the same.

On other hand, when consumers have different costs of collecting information, Price dispersion may benefit the firm by allowing it to price discrimination. That is, informed consumers (People who search a lot) are able to find the low-price items, but many of the uniformed consumers (People who do little searching) pay the higher Price.

Thus price dispersion is a costly device for sorting consumers into groups for the purpose of price discrimination. If search does not cost enough to drive consumers from the market and if demand elasticities vary in a certain direction, then creating dispersion is more profitable than charging a single price.

For e.g. Suppose a monopoly owns all n restaurants in town. Each restaurant serves the same type of food. For simplicity, meals are produced at zero marginal cost.

There are L consumers of these $\propto$ L are natives who have no search costs and by 1 unit of the monopoly's product if the price is no higher than p^n. The (l - $\propto$) L tourists have high search costs and by 1 unit of the product if the price is no higher than p^t, where $p^t > p^n$. That is, natives are willing to pay less per meal at local restaurants than do tourists, and natives have Perfect information about prices. Tourists typically choose restaurants. randomly because they do not know where the low-price (or high quality) restaurants are located.

It may pay for the monopoly to vary its prices across locations, No restaurant can charge more than p^t, because at a higher price, the restaurant draws no customers. Similarly, no restaurant should charge less than p^n because by assumption, natives have an inelastic demand for a meal upto a price p^n. Lowering the price from p^n does not increase the number of meals the monopoly can sell, so its profit maximising price is at least p^n. If it pays for the monopoly to charge different prices at various locations, it sets a low price, p^n, at only one restaurant, because natives always search for the minimum prices, and tourists never

go to more than one outlet. All the other restaurants discover restaurants by chance.

If the monopoly charges more than p^n, no native dines at local restaurants. In that case, profit on meals sold to tourists is maximized by setting price at p^t. The profit on the tourists' meals is $(1-\propto)\ L\ p^t$. Where $(1-\propto)\ L$ is the number of meals sold at price p^t.

If the monopoly charges p^n at one location and pt at all other locations, it sells meals to all L potential consumers. All the natives eat at the low-price restaurant, so the profit on meals sold to natives is $\propto)\ L\ p^n$. A large fraction of the tourists, [n-1]/n, eat at the high price restaurants, but 1/n of the tourists are lucky and find the low price restaurants. Thus, the monopoly is expected profit, π, from both groups is.

$$\pi = \propto L\, p^n + (1/n)(l - \propto) L p^n + ((n-1)/n)(1 - \propto) L p^t, ----(1)$$

Where the first term is the profit from the $\propto$ L natives, the second term is the expected profit from the [l-$\propto$] L/n luck tourists who find the low price restaurant, and the last term is the expected profit from the [1-$\propto$] L[n-l]/n unlucky tourists who pay the high price pt.

If the profit when it charges two prices (π in 1st equation) is greater than the profit if it charges a single price of p^t, (1-$\propto$)Lpt, it pays for the monopoly to be "noisy" and price discriminate. The difference in profit, Δ, between discriminating and setting a single price is

$$\Delta = \propto L\, p^n - ((1 - \propto)/n) L (p^t - p^n) ----2$$

It pays for the monopoly to Price discriminate if Δ is positive. Because the first term on the right hand side of equation 2 is positive, and the second term is negative, Price discrimination is more likely as the second term becomes small in absolute value relative to the first term. By inspection, as the share of tourists, 1-$\propto$, falls or as the number of firms, n, increases, the second term falls in absolute value relative to the first term, and price discrimination becomes relatively more attractive.

As the share of tourists become small, it pays the monopoly to sell to natives as well as tourists. Thus, it becomes more likely that the monopoly gains by price discrimination as (1-$\propto$) shrinks. (The derivative of Δ with respect to $\propto$ is d Δ/d $\propto$ = L $[p^n + (p^t - p^n)/n]$ >o]

Similarly, as the number of restaurants, n, rises, Price discrimination is more likely to pay. [The derivative of Δ/dn=(1-$\propto$) L $(p^t - p^n) / n^2 > 0]$. If the monopoly can operate extra restaurants at little or no additional cost, it can set n large enough that the second

term in equation 2 is essentially zero so that it pays to be noisy. That is, if the monopoly can make it extremely difficult for tourist to find the low-price restaurant, it pays to price discriminate.

Thus, where there are both informed and uninformed consumers in a market, it often pays for a monopoly to create noise, i.e. it has an incentive to charge different prices for a homogeneous good at various locations to make it more difficult for uninformed consumers to find the low-price store. The monopoly is able to price discriminate because search costs prevent consumers from buying at the low-price restaurants.

10.3 DORFMAN-STEINER MODEL

This is the most Popular model of advertising behaviour. The model is specified as follows:

Let profit equation for the firm is written as

Profit = R – C – A ---------- (1)

where R = Revenue, C = TC and A = Advertising expenditure. This equation is expanded as :

Profit = P[Q(P,A)] – C (Q) - A---------- (2)

where Q(P,A) = Quantity Demanded or Sales in physical term.

The firm chooses P and A in such a way as to maximise profit. The first order conditions for profit maximisation are

$$\frac{d\pi}{dA} = \left[P \times \frac{dQ}{dA}\right] - \left[\frac{dC}{dQ}\frac{dQ}{dA}\right] - 1 = 0$$

$$\frac{d\pi}{dP} = \left[P \times \frac{dQ}{dP} + Q \times \frac{dP}{dP}\right] - \left[\frac{dC}{dQ}\frac{dQ}{dP}\right] - 1 = 0 \text{ ---------- -------- (3)}$$

Multiplying the second equation of (3) by P/Q we get

$$\left[P \times \left(\frac{dQ}{dP}\frac{P}{Q}\right) + Q\frac{P}{Q}\right] - \frac{dC}{dQ}\left(\frac{dQ}{dP}\frac{P}{Q}\right) = 0 \text{ - - - - - - - - - - - - - -(4)}$$

Now $\frac{dQ}{dP}\frac{P}{Q} = eQP =$ Price Elasticity of demand so, equation 4 can be written as,

$P(-e_{QP}) + P - Mc(-e_{QP}) = 0$----------(5)

By simplifying this we get

$$\frac{P - Mc}{P} = \frac{1}{e_{QP}} \text{ ----------(6)}$$

Similarly, first equation of (3) can be rewritten as

$$\frac{dQ}{dA}(P - MC) = 1$$

Multiplying both the sides by A/PQ and simplifying the expression, we get

$$\frac{A}{R} = e_{QA}\left(\frac{P - MC}{P}\right)$$ ---------- (7)

Where, e_{QA} is the advertising elasticity of demand and $R = P.Q$

From equation (7), we find that advertising expenditure of the firm depends on

a) Revenue of the firm (R)

b) Advertising elasticity of demand $\left(e_{QA}\right)$ and

c) Monopoly power of the firm measured through the Lerner's index $\left(P - MC\right)/P$

Substituting (6) in (7) we get the expression.

$$\frac{A}{R} = \frac{e_{QA}}{e_{QP}}$$ ---------- (8)

That is, the advertising intensity (A/R) is the rate of the two elasticities as defined above. This may be further simplified as

$$A/R = e_{PA}$$ ---------- (9)

That is advertising intensity defined as A/R is nothing but the price-elasticity of Advertising. It simply shows that greater the sensitivity of product price to advertising expenditure, the greater will be the advertising sales ratio of the profit maximising firm.

The above derivation is relevant for a firm having some monopoly power. For industry as a whole, the expression (6) is modified as –

$$\frac{P - MC^*}{P} = \frac{H}{e_{QP}}$$ ---------- (10)

Where MC^* is average MC for the firm in the industry and H is the Herfindahl index of market concentration.

Substituting (10) in (7) we get

$$\frac{A}{R} = H\frac{e_{QA}}{e_{QP}}$$ ---------- (11)

That is, apart from other things as mentioned above, advertising intensity of a firm in an oligopolistic industry depends on the degree of market concentration.

The Dorfman-Steiner model expressed in terms of the equation (7) to (9) takes current advertising expenditure into account via the demand function. It failed to cover up the accumulated goodwill generated by the past advertising. This fact has been taken into account by Nerlove and Arrow in modifying the model as

$$\frac{A}{R} = \frac{e_{QA}}{e_{QP}\left(r + \delta\right)}$$

Where r = discount rate which decays overtime at the rate of δ.

Further, in the Dorfman-Steiner mode/no provision has been made to take into account the reactions of the other firms. This provision has been made by Schmalene in his advertising model.

A change in the intensity of one element in the marketing mix of a firm, such as a product cycle or sales promotion change, will normally cause a change in both its demand (MR and AR) and cost (MC and / or AC) functions. This in turn may lead to an adjustment in the price and output level of the firm and in the levels of other marketing elements. There are interdependencies between the quantities of the different marketing elements.

If a firm wishes to maximise its profits and possesses perfect knowledge and unbounded rationality, it should simultaneously equate the MC and MR associated with each of its price and non-price decision variables. The simultaneity condition is important because, for e.g., equating the MC and MR of product style changes without at the same time equating the MC and MR for the determination of price, advertising etc., would result in a style expenditure level that was inconsistent with the objective of maximum profits.

It is explained in the following diagram.

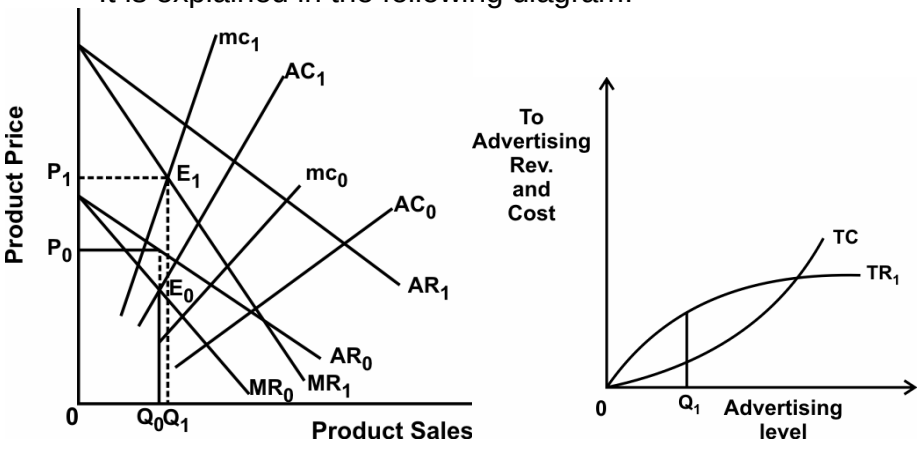


Figure 10.2

E_0 is the original point of equilibrium, the price is OP_0 and the original output is OQ_0. With the original revenue and cost structure $AR_0, MR_0, AC_0\, MC_0$. The new revenue and cost functions are AR_1, MR_1, AC_1, MC_1, are based on the profit maximising quantity of the non-price variable of OQ_1 units and the TR function of non-price variable. COP_1 is new profit maximising price.

If firms behave in the way assumed above, using a form of analysis originally developed by Dorfman and Steiner, the

determinants of the marketing mix and each of its elements can be simplified assuming that advertising is the only non-price variable, it can be deduced that

$$\frac{A}{PQ} = \frac{P - MC}{P} . E_a$$

Which indicates that the profit maximising ratio of advertising (A) to sales (PQ) depends upon the excess of price (P) over the marginal cost of the firm's product (MC) as a promotion of price and upon the advertising elasticity of demand for the firm's product (E_a). Thus, the advertising – sales ratio will be higher, other being equal, if :

1) the firm's price cost margin is increased,
2) its advertising elasticity of demand rises;
3) its price elasticity of demand falls; or,
4) the reactions of competing firms to an increase in its advertising level are reduced.

However, the usefulness of this type of model in relation to price behaviour in oligopolistic markets has already been questioned above because of the indeterminate nature of rivalrous behaviour, the pursuit of objectives that differ from profit maximisation and the prevalence of uncertainty and bounded rationality in decision making (see the equation). These same consideration in relation to non-price behaviour.

The behaviour of markets rivals in oligopolistic conditions will affect both a firm's price-cost margin and its advertising elasticity of demand and through these its advertising sales ratio.

10.4 INFORMATION ASYMMETRIC AND LEMONS

In the modes of perfect competition we assume that the market participants such as consumers, firms or the govt. had perfect information. They had full information about the goods being bought and sold.

In studying the behaviours of consumers, producers and the market now there we address the problem of Uncertainty regarding the choice of optimum bundle of consumption, production and deciding the market prices and sales quantities. The economic agents were certain to execute their behaviour in the process of market transactions. The factor that was working behind the scene was the informational symmetry regarding the entire market variables.

But it is not always true that all the economic agents know all about the market. In reality, individuals and firms are not perfectly well informed. Thus, information or its absence plays an important role in determining the shape of markets and the ability of private markets to ensure that the economy's scare resources are used efficiently.

The Problem that arises is the asymmetry of information among different economic agents that makes the ground for explaining uncertainties in outcomes of economic transactions.

Asymmetric information is a market situation in which one party in a transaction has more information than the other party. The problem of asymmetric information can affect a firm's strategies. It can lead to market failures and such market failures are often used by governments to regulate industries.

Asymmetric information can lead to poorly functioning markets ie too much or too little of a good may be produced contracting can be difficult. Fraud is possible. Consumers may fear purchasing goods when they know that the sellers know more about the quality of a good than they do.

Many institutions and practices have arisen to tackle the Problem of asymmetric information.

The asymmetry in information can arise from two types of information firstly, about the characteristic, where in one side knows some characteristic which the other side world like to know, but does not know; and the second, about an action that one side can take and the other side cannot directly observe. The former is referred to as a situation of hidden action.

The market for lemons' is a market for a detective product such as bad used cars. This is an important example of asymmetric information. (George Akerlof – Noble prize winner)

The market for lemons is explained with respect to market for used cars. Let us assume that in the market for used cars there are two kinds of used cars ie high quality and low quality (lemon: a colloquialism for a defective old car). If there is perfect information ie both the buyer and the seller could know whether a car is a good used car or a lemon there would be two separate markets. There would be a demand for and supply of good used cars and an equilibrium price. Similarly, there would be a separate market for lemons and an equilibrium price for it. We would expect the price for good used cars to be higher than the price for lemons.

In the case of imperfect information, the sellers of used cars would have a lot of information about the quality of used car, while the prospective buyers will not have all these information. As a consequence, the market price for used cars will depend on the quality of the average used cars available for sale. For eg. Suppose the price of high quality car in ₹ 4000/- and that of low quality cars (lemons) is ₹ 1000/-. In the case of imperfect information the buyer has a 50% chance of a purchased car being high quality and 50% chance of the purchased car being low quality. Thus, the market price of used cars will be average price ie ₹ 2500/- (ie 50% x ₹ 4000/- + 50% x ₹ 1000/-) = ₹ 2500). Thus the owners of lemons would tend to receive a higher price that their cars are worth, while the owners of high quality used cars would tend to get a lower price than their cars are worth. Thus, the owner of good quality used cars would withdraw their cars from the market. This will lower the average quality and the price of remaining used cars available for sale. This process may continue till only the low quality cars are sold in the market at a very low price. This is inefficient, because no buyer is able to buy a high quality car and no owner of a high-quality car is able to obtain its true value. The market fails due to lack of information.

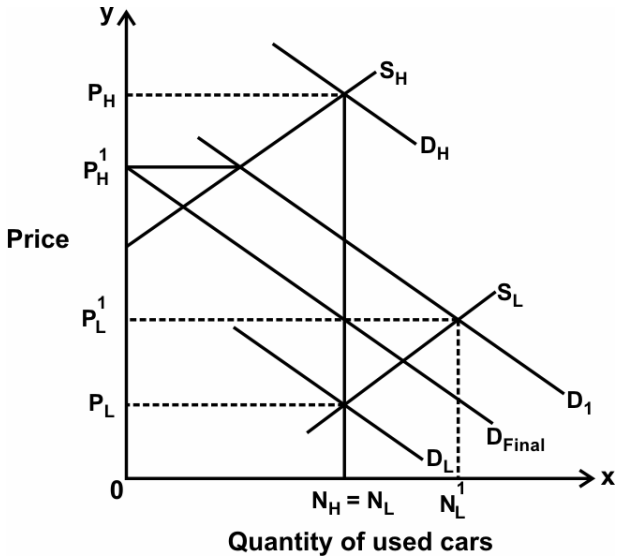


Figure 10.3

The above diagram explains the market for “lemons” with respect to a market for used cars.

In the market for used cars consisting of low quantity and high quality cars, if there is perfect information, there would be a market for low quality cars, and separate market for high quality cars.

The supply and demand curve for high quality used cars are shown by S_H and D_H carves respectively. Similarly, the supply and demand curves for low quality used cars are shown by S_L and D_L carves respectively. The S_H and D_H are above S_L and $D_{L.}$ The equilibrium price of high quality cars is P_H and amount of such cars sold is N_H and the quantity is N_L. The number of high and low quality cars sold is same ie. $N_H + N_L$, but $P_H > P_L$.

Suppose there is insufficieut information and therefore, the buyers cannot distinguish between high quality and low quality cars. In this case, if there are N cars in the market, buyers would consider a given car to be as likely to be a low quality as a high quality car. So the buyers would be prepared to pay a price $P = 0.5 P_H + 0.5 P_L$. (ie the price will be equal to half of the price of low quality car) for a car. Thus, the new demand curve D_1 lies half-way between demand curve. D_H and D_L. In this case the price of high quality car will fall to P_H^I and the number of high quality cars sold falls to N_H^I and the price of low quality car rises to P_L^I and the number of low quality cars sold rises to N_L^I.

This causes the buyers to revise downwards the Chances of being offered a low quality car. This will cause a further leftward shift in the demand curve. This process continues and the demand curve continue to shift left and finally to D_{Final}. At this point there is no supply of good quality cars in the market (this is because the demand curve D_{Final} start from point at which supply curve SH stats) and only low quality cars are sold. The price falls to close to the price of low quality cars.

Thus, the end result is that low quality cars drive high quality cars out of the market. This is known as adverse selection.

The problem of adverse selection arising from asymmetric information can be overcomed or reduced by providing more information to the party lacking it. For e.g., in the used car market, a prospective buyer may be allowed to evaluate the car by an dependent automotive service centre or the dealer in the used car market can provide guarantees for the cars they sell. With more information on the quality of used cars, buyers would be willing to pay a higher price for high quality car. The problem of asymmetric information or adverse selection can be reduced

10.5 QUESTIONS

1. Explain in detail the Address Approach of modelling product differentiation.
2. Explain how monopolist use price dispersion to maximize his profits.
3. Examine the Dorfman-Stenier model of Advertising behaviour.
4. Write a note on Asymmetric Information by giving suitable example.

11

Module 5
TECHNICAL CHANGE AND MARKET STRUCTURE

Unit Structure :

11.0 OBJECTIVES:

To study :

- The process of innovation
- The measurement of innovation activity
- The theory of technological innovation
- The Kaien and Schwartsz Model
- The Mansfield's Model, the Nodhou's Model
- The Diffusion of the technology.

11.1 INTRODUCTION

This chapter is concerned with the analysis of innovation or 'research and development' activities which are quite prevalent in manufacturing and other business circles. Innovation is one of the several strategies through which a firm could change its situation in the market in pursuit of its objectives. It is an instrument which the firm uses to enhance its competitive power in the market. It provides a basis for greater degree of diversification and hence

growth of the firm. New products, new methods of production, new markets and new forms of industrial organization etc. which are elements of innovation or technological change, make the firms and industries to run efficiently over time.

11.2 THE PROCESS OF INNOVATION: CONCEPTS AND RELATIONSHIP

To understand the process of innovation in a clear perspective, we have to define first its terminology. The terminology consists of a set of interrelated terms. The first and perhaps the most important one is the concept of 'invention'. An invention is the creation of a new technology. By 'technology we mean "any tool or technique, and product or process, any physical equipment or method of doing or making, by which human ability is extended". It is an intellectual act which involves a perception of a new image, of a new connection between old conditions, or of a new area for action. All inventions, big or little, are made for some practical uses. The process of adopting an invention in a practical uses is called 'innovation'. It is the second important concept which is the focus of the study in this chapter.

The three terms – invention, innovation and imitation are the successive stages of the process of innovation or technological change. Imitation is not possible without innovation which in turn is not possible without invention. The first stage i.e. the invention will be usually a lonely activity of an individual or team of individuals requiring intensive mental exploration. The entire process of innovation i.e. from invention to imitation comes under 'research and development' activity of the firm. Each stage of this process is a process itself.

The process of technological change constituting the above three stages – invention, innovation and imitation may be different in different industries. Some industries provide better opportunities for innovation or change as compared to others. Why is this so? What determines innovation? These are important questions which we would like to discuss in this chapter. But, before taking them, we deal with the problems of measuring innovation activity in the following section.

11.3 MEASURMENT OF INNOVATION ACTIVITIES AND PATENTS:

Like any other economic activity we need precise measurement of innovation in order to estimate its extent in reality at firm and industry levels, and to establish its bahavioural relations quantitatively with its determinants. There is no unique method for

this. Researchers in the field tackled the problem by measuring either the inputs put in the process of R & D or the output of this activity. The most simple and widely used method is to take the statistics of R & D expenditure, absolute or a proportion of total annual budget of the firm, as a measure of innovation activity. The assumption for this method is that larger the volume of R & D expenditure more will be the activities in innovation, particularly at the stage of basic research leading to some invention. The investment made by the firm for adopting the invention whether related to the processing technology or product variation at the second and third stages of innovation should be included in R & D expenditure, otherwise it will be a partial index of measurement for innovation. This method is useful if all R & D activities are in organized form. There may be significant contribution by the individuals or departments of the firm which do not come under R & D unit. How to measure their contribution is a problem. At present it is generally ignored and available statistics on R & D is used simply to measure the innovational activities.

There is another method in which the number of scientists and engineers in the R & D department is taken as a measurement of innovational activities. The assumption in this case is that greater the number of such personal more will be the R & D activities of the firm of research organization. This measure has limitations similar to the R & D expenditure contributions made by non-scientists or non-engineers are not captured by this index.

Similarly, individuals doing research work independently, that is, who do not belong to either a firm or research organization, are likely to be left out by the index. However, this may be a minor omission. By the large, when we are interested in analyzing the R & D activities of a firm the index is appropriate for measuring that.

From the output side one may use either the number of patents issued or sale of new products as appropriate measurements of innovation or R & D activities. Taking number of patents as a measure of innovation has some drawbacks. Patenting generally refers to invention stage. It does not reflect innovation and diffusion stages properly. An invention if patented need not be put immediately in use. That is, the innovation sequence of the invention may be deferred for some time. Further, all inventions are not patentable equally. Inventions made by R & D departments of government and universities are meant for all, so a firm can use them for its innovation plans. Patent registration varies between firms and industries and normally there will not be any common pattern in this regard large firms doing research may avoid patenting of their inventions in order to escape fro monopoly regulation practices. They may keep their invention secret for long time, as we observe in drug industry by registering the patents,

since a patent can be brought or copied by rivals. Further patenting is more appropriate for product innovation. In the case of process innovation it does not fit properly. Patent system does not reflect the quality of innovation also on the whole, taking number of patents as a measure of R & D activities is a partial index. In spite of its drawbacks the index is popular for empirical studies. All patents may not be significant indicators of R & D output. An alternative method of measuring this, is therefore, to take the number of major or significant invention and/or innovations in a particular industry or within a given time period. This is an ideal approach in principle but the major problem with this approach is to find the basis of determining a major or minor invention and/or innovation. An invention and/or innovation may be treated as a major one if it has potentially many uses, makes important qualitative changes in the output. But, again an element of judgment is involved in such assessment of an invention and/or innovation.

The index of sales of new product is another measurement of R & D output. But this is again a partial index reflecting the side of product innovation. It does not take into account changes in the process of manufacturing and saving of costs arising as a result of innovation have also been suggested such as the frequency of publication in scientific or trade journals and estimating savings of inputs per unit output of an industry or sector. These are however, subject to more shortcomings and have been less frequently used than the measures discussed earlier.

The final choice of the method to be used for measuring innovation is left to the convenience and judgment of the researchers. There is nothing much on the basis of which we can discriminate the methods. Normally as found empirically by Mueller, Carter and Williams and Mansfield whatever goes into inventive process (i.e. inputs) will be closely correlated with the output (i.e. patents) of the process. So, if we choose 'inputs to R & D or 'number of patents' as an index for measuring innovation or technological change is not a matter for serious debate on the subject. Both are equally appropriate seeing their inter correlation. However, since data on R & D expenditure is easily available so it is normally preferred over the number of patents or other indices for measuring technological innovations.

11.4 THE THEORY OF TECHNOLOGICAL INNOVATION: KAMIEN AND SCHWARTZ

The theory dealing with the process of technological innovation has not yet taken proper shape. There is however intensive search going on for such a theory at present in the realm

of industrial economics. Attempts are being made by economists to identify the conditions which encourage initiation and adaptation of a new technology. To begin with the identification of such conditions, we may pose a simple but basic question related to the technological innovation, why do scientists or engineers or anybody else make invention? In a different may, we may ask this questions as: why is a huge amount of money being spent on R & D activities all over the world? The answer to this question is straight forward, that is, inventions are made because there is a need for them. Fast moving modes of transportation came into existence because there was a need for them. Radio, television and hundreds of other inventions were made with some purpose. Through inventions and their commercial exploitation for personal or social uses cannot be viable. Given this basic proposition of need which backs up inventions, that is, makes them goal oriented, we have to identify the conditions which are conducive or which accelerate the pace of invention and innovation or broadly the technological change in the economy. Since we are concerned with the study of the economic behavior of firms and industries in this book, we will therefore examine the determinants of R & D intensity in this context.

The first and most intensively debated determinant of R & D is the market structure of the industry. Particularly, the elements of market structure. Such as the degree of market power and absolute size of firms were used in theory and empirical work on R & D behavior of the firms and industries. Perfect competition and monopoly were taken as the two extreme contrasting situation to analyze the link between innovational motivation and market power. To test this link, the major hypothesis was put forward by Schumpeter who argued that a monopoly firm has a greater demand for innovation because it's market power increases its opportunity to gain from them. This assertion has not been accepted by the economists unanimously. At present they are divided into two opposite school – one is the 'competitive pressure school'. The competitive pressure school argues that in an automistically competitive situation, with its strong profit there will be great pressure and hence inducement for making cost-saving innovations. Such pressure diminishes as market power of the firm increases and so the rate of innovation will be inversely related to the degree of market power. In fact, Arrow, a leading supporter of the competitive school, has shown maximum gain from cost-reducing innovation in a socially managed market followed by a competitive one and then monopoly. In his own words, "the incentive to invent is less under monopolistic than under competitive conditions, but even in the latter case it will be less than is socially desirable. The monopoly profit school does not agree with such contention. It argues that since innovation is risky, it will not be undertaken in automistically competitive markets where the gains from innovation will be momentary. According to this school,

the conditions for sustained R & D activities are best provided by the monopoly or concentrated markets. The basis for such contention is simple to understand. Through R & D activities a firm gains and acquires monopoly power over its rivals. The firm would like to perpetuate its monopoly power by undertaking new innovational activities. There is thus a positive relationship between the rate of innovation and the degree of monopoly power as conceived by the monopoly profit school. Normally, large firms in industries will be having considerable monopoly power. They will be capable of providing adequate resources for R & D and taking the associated risks. The monopoly power and large absolute size are thus complementary attributes which are relevant determinants for R & D activities. Taking this view in mind we may summarize the stand of the monopoly profit school as "…the greater the profit and the degree of market power or firm size the greater should be the efforts to innovate."

Monopoly and perfect competition are the extreme forms of market structure. Both of them, because of different reasons may not provided significant incentive for innovation. Most of the authors now take an intermediate form of market structure, having both, competition and monopoly power, as a realistic market setting for effective innovational activities. The reference here is to the oligopoly market structure, which provides both monopoly power and competitive environment for innovation. In oligopoly only few firms will be having effective control over the market. Such firm will be large enough and competing among themselves for greater market power. Being small in number they will be unable to keep their plans or strategies unnoticed by the rivals and so eventually they will be in a situation of interdependency. They will be unable to compete with themselves through manipulation in prices. So R & D expenditure together with advertisement provide on alternative mode of competition. Each firm will try to have either product or process innovation. Through process innovation the cost of production can be reduced and hence a firm can maintain higher price cost margin. It can keep its innovations secret or protect them through patent right. Because of lower cost of production such firm will be in a position to reduce it's product price. In this situation the competitors of the firm will also reduce their prices in order to keep their market shares intact. However, in the absence of innovation, their price-cost margins will be lower than of the innovating firm. To keep the margin high, they will be forced to apply their energies to cost reduction. In other words, they will be induced to have 'defensive innovation' as a result of 'offensive R & D strategy of any one or more optimistic firms. The innovation activities should not be confined to cost reduction only in such a situation. The firms may also adopt product innovation strategies to complete among them selves as we find under monopolistic competition. In this way, there will be all kinds of innovational activities in oligopolistic market

situations, competition among few leading firms induces them to innovate while the monopoly power and large absolute size of such firms provide the threshold conditions for undertaking R & D activities, both with respect to resource availability and risk-bearing ability. Smaller firms, even under oligopoly are unlikely to under take R & D activities because of their inability to take the risks associated with R & D and lack of adequate finances.

The threshold or what we may call alternatively, minimum level of investment for R&D activities, varies between industries and between different type of products in the same industry. Freeman, For example estimated on amount of £ 175,000 per annum as the threshold level of R and D expenditure for radio, receivers and between £ 2 million to £ 8 million as the level for communication satellites. Greater the requirement of money for the threshold level of R&D larger will be the incentive for innovation by the firm. The scientific and technological bases of the industries to a great extent determine the threshold levels of R&D expenditure for them. Differences in the scientific and technological nature of the industries are likely to influence the rate of innovation independently. Science-based industries such as aircrafts, chemicals and petroleum, electrical goods and electronics, machinery and vehicles etc. are likely to have a higher rate of technological innovation than the industries based on conservative technology such as textiles, sugar, garment manufacturing, furniture, etc. share used the term ‘technological opportunity to show such differences across the industries. Greater the technological opportunity of the industry, i.e. more scope for advancement of scientific and technical knowledge, higher we expect the rate of innovation irrespective of market structure or firm size.

Another important factor that affects the rate of innovation is the nature of the elasticity of demand for a product or products of an industry. Rapid technological changes are seen in the industries having elastic demand. Most of the luxury goods industries fall in this category. We know the link. MR = P [1-1/led] where MR is the marginal revenue, P is product price and ed is price elasticity of demand. This equation shows positive marginal revenue when elasticity of demand is greater than unity and negative marginal revenue when ed is less than unity. MR will be zero when ed = 1. Suppose there is a process innovation such that cost of production reduces by a reduction in cost of production the firm will be in a position to reduce product price in order to get more revenue Ci. E positive MR if elasticity of demand is more than one, the firm will do so. It is beneficial to the firm as well as to the customers of the firm since they pay less price for the product now and the firm gets more revenue. Thus, There will be more inducement for innovation when price elasticity of demand for products of the firm or industry

is elastic, Kamien and Schwartz have, in fact, clearly shown such possibility, but Needham has given an opposite view on the role of elasticity of demand as a determinant of R & D behaviour of the firm.

R&D intensity also depend on diversification. It has been postulated that a firms degree of diversification will positively influence is profit expectations from R & D. The basis for this relationship is that a more diversified firm will be in a better position to exploit research outputs than the one having a narrow base of operations. There is another aspect of this relationship. If a firm contemplates diversification of its operations because of some reasons then it may also contemplate simultaneously to have an R&D unit for being technologically independent. In this case both, diversification and R&D may be treated as endogenous effects of some exogenous conditions. The positive relationship between them may be spurious if this is so. Take for example, a firm under monopolistic competition. In order to increase or maintain its market share, the firm adopts non-price competition. Product variation or diversification is one of the strategies, for this. The make such diversification, the firm may need R&D activites. It is therefore a chain of reactions; market conditions determine scope for diversification which in turn opens scope for R&D. The basic factor in this example is the market structure, i.e. monopolistic competition that generates conditions for diversification and R&D activities. A firm, further, may adopt these two strategies simultaneously as barriers to entry for potential rivals. The cause and effect sequence between them is concerned, it is positive on a priori grounds.

R&D activities also show strong positive association with growth of output of a number of industries Schmookler examined such relationship in four U.S. industries railways, horseshoes, petroleum, refinery and construction. He found it valid in every case. The conclusion we can draw from his study is that R&D activites are comitted intensively where the growth prospects are good and profits are likely to be high. However, their may be an upper limit for such positive relationship. A stage will come when a product reaches ‘maturity’ stages of its life cycle with no more growth prospects. At this stage, the firm has to go through intensive R&D activities, in search of a new product or products to replace the old one. The relationship therefore may not hold true or it may be negative after such stage is reached.

Yet another factor that we may mention here as a determinant of R & D behaviour of the firm, is the return on R&D investment itself. Greater the expected return from such investment more will be the current volume of investment, committed to R&D activities such relationship defines R&D investment at par with other types of investment made by firm. It is undertaken either for increased profits and / or to stabilize the position of the firm in the

market. The material presented above gives us a fairly good description of the theoretical determinants of R&D activities of the firms. Let us now review some analytical models suggested by the economists for this.

11.5 MANSFIELD'S MODEL

Mansfield, one of the leading economists working in the area of R&D economics, suggested a simple and operational theoretical model to find the rate of return from industrial research and development. He assumed a neo-classical production function for output rate of a firm with labour, capital and R&D expenditure as relevant inputs. All inputs were further assumed growing exponentially over time. With a set of simplifying propositions such as constant returns to scale from labour and capital inputs, depreciation of R&D capital, past R&D investment determining current output of the firm etc. the expression developed by Mansfield for marginal rate of return from R&D expenditure can be shown as.

$$r = \propto_2 (P - \sigma + \lambda)Q / R_o + \propto_1 - \lambda +$$
$$(\propto_2 - 1)(P - \sigma) + \propto_1 + (1 - \propto)k$$

where r = marginal rate of return on extra expenditure on R&D Q = output value in 1960 at constant prices, R_o = R&D expenditure in 1960, $\propto_1$ = rate of technical change without R&D expenditure $\propto_2$ = elasticity of output with respect to cumulative past net R&D expenditure, P = rate of increase of R&D expenditure over time, λ= annual depreciation of R&D capital, σ = rate of increase of price of. R&D capital and $\propto$ = output elasticity with respect to labour which means (1 - $\propto$) as output elasticity with respect to capital and 1 and k are the growth rates for labour and capital inputs respectively.

This model and its variants have been used by Mansfield for empirical work in his later works. He emphasized mainly on productivity aspect of innovative activities by taking into consideration changes in input characteristics, volume of R&D expenditure etc. Not much attention was paid in his models to explain the R&D behaviour of the firms under different market situations.

11.6 NORDHAUS' MODEL

Nordhaus has given a fairly exhaustive theory of technological change. In chapter of his book he presented the basic model of invention for a firm. The firm is assumed to maximize profit and produce a single homogeneous product under

certainty. Further, competitive conditions are such that the output of the firm is almost negligible as compared to the output of the whole industry. The production function of the firm includes R&D as one of the inputs, which affects the productivity of conventional factors like labour and capital. The specific form of the production function used by the author was

$$Q = a(R)F(K,L)$$

Where $a(R)$ is the level of productivity or denotes the level of technology as a function of R&D. It is called 'the invention possibility function. F is the conventional production function some simplifying assumptions were made about the shape of this function. It is assumed that capital and labour are used in fixed proportions. With this assumption, the production function for the firm can be reduced to

$$Q = a(R)L$$

The firm is profit maximizer. The profit equation can be expressed as

$$\pi(t) = p(t)a(R)L - W(t)L - sR$$

Where $P(t)$ is price of product, $w(t)$ is the price of a bundle of conventional inputs expressed in labour units, s is the average cost of research at time $t = 0$. Let us assume that the innovation gives return to the firm up to T periods. The present value of total profit up to T periods can be expressed as

$$V = \sum_{0}^{T} \pi(v)e^{-rv}\,dv = \left(p.a(R)\right)L = WL\left[\frac{1-e^{-rT}}{r}\right] - sR$$

Where P and W are assumed to be constant over time, as a consequence of competition.

Setting $dv/dR = 0$, we get the equilibrium condition for the firm regarding its R&D behaviour as

$$a'(R)L\psi = \frac{S}{P}$$

Where

$$\psi = \frac{\ell - e^{-rT}}{r}$$

This expression indicates that marginal value of product attributed to R&D input is equal to its marginal cost taken in terms

of price (P) as numerative. $a'(R)$ is the first derivative of the innovation possibility function with respect to R, it is assumed to be declining showing the diminishing returns to R&D. The marginal value of product of R is the product of three terms $a'(R)$, L and ψ. L indicates the level of output through the production function. greater the output of the firm greater will be use of labour. This implies that marginal value of R&D increases with size of the firm. This aspect we have already covered above while discussing the determinants of R&D. schmookler has given great deal of attention to it in his book. The other multiplicative factor ψ in the marginal value of product of R, is the present value of a stream of income of one unit of money from time 0 to time t = T. Greater the value of ψ more will be the inducement to innovate. This factor further indicates that the amount of research varies positively with life of invention (T) and inversely with the interest rate *r)*. The equilibrium situation for the firm with respect to its R&D behaviour is shown at R where marginal value of product of R&D equals its marginal cost.

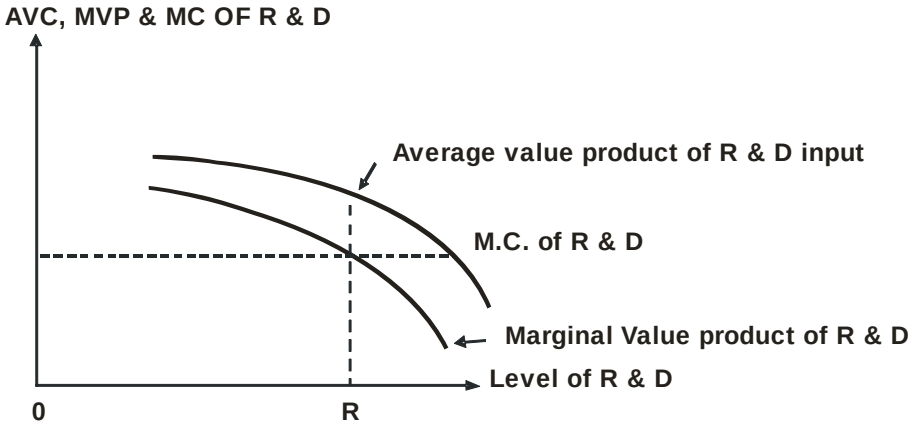


Fig. R & D Equilibrium

Figure 11.1

Nordhaus extends his basic theory of innovation further by relaxing the assumptions, and introducing new elements such as imperfections in the production of knowledge, barriers to entry, optimal life of patent and welfare implications of R&D etc. but we will not go through these aspects at this stage.

11.7 DIFFUSION OF NEW TECHNOLOGY

This is an important aspect of the innovation process. A new technology invented by a firm is likely to be less diffusible as its adaptation by the rival firms will be restricted through patent right. However, when such technology is developed by a Government

research institute for common use, the rate of its diffusion or adaptability may be slow or fast depending on certain economic factors such as reduction in cost of production, improvement in the quality of output of the technology, requirement of capital amount for new technology, the skills needed to make it operational, malleability or the ease of disposal for the existing obsolete capital stock, the nature of demand elasticity for the products of the new technology, the rate of growth of the market, size of individual firms, and the structure of industry, etc. It is presumed that the new technology is available free of cost. When it is not so, i.e. some cost is involved in getting the right to use the technology, such as royalty or license fee, the amount of such cost will be an additional factor for determining the rate of diffusion of the technology.

There are some interesting studies on technological diffusion. In his pioneering study salter examined the diffusion process in U.S. blast furnaces where the average productivity of plants was only half of the best practice technology i.e. that of new plants and it took 15 years for average productivity to reach the best practice level. In this study, salter developed a simple theory of technological diffusion for a competitive industry with static demand and free information about the new technology. The efficiency of the new technology is judged through savings in labour cost of production.

Mansfield used a model of the learning process to study the diffusion of new innovations in coal mining, iron and steel, brewing and rail roads industries. The model is based on the hypothesis that the number of firms that will adopt a new process in the subsequent time period, expressed as a proportion of all firms not using the process is a linear function of the proportion of the firms in the whole industry i.e.

$$\frac{m_{t+1} - m_t}{n - m_t} = \psi \frac{m_t}{n}$$

Where m_{t+1} is number of firms having the new process in $t+1$ period, m_1 is the number of the firm having the new process in t period, n is total number of firms in the industry and ψ is a constant. This expression, on simplification yields

$$\frac{m_t}{n} = \frac{1}{1 + e^{-(k+\psi t)}}$$

This shows on S-shaped learning curve where ψ is defined as the rate of learning which is also the rate of diffusion of a technology. Empirical estimate were made for ψ by Mansfield who found it varying significantly across the industries.

Other important studies on technological diffusion were conducted by Ray, Romeo, Metcalfe, and Globerman, Davies,

Jensen Quirmbach, focusing attention on different aspects of technological diffusion.

11.8 SUMMARY :

We are now in a position to conclude our discussion on R&D economics various aspects of R&D such as its conceptual definitions, measurements, theoretical basis at firm or industry level, analytical models and empirical evidences were examined in this chapter. The material was kept at the expository level rather than a critical appraisal of the various issues discussed. We examined R&D just like any other business activity of a firm directed for profit, stability of earnings and growth, etc. It is on instrument through which the firm enhances its market power and so competes with it's rivals effectively. There are conditions under which the firm will be able to do so which we tried to elaborate in this chapter along with other aspects of R&D.

11.9 QUESTIONS

1. Explain the process of innovation.
2. Explain and discuss the measurement of innovation activity.
3. Describe the theory of technological innovation.
4. Examine the Mansfield's model.
5. Discuss the Nordhaus model.
6. What is the diffusion of technology?

12

MARKET CONCENTRATION

Unit structure

12.0 OBJECTIVES:

- Measure the market concentration
- Know the concentration and the market performance
- Understand the concentration ratio
- Understand the Hirschman - Herfindahl Index
- Understand the Entropy Index
- Explain the concept of concentration and profits
- Explain the concept of contestable markets

12.1 INTRODUCTION:

Market concentration or, more specially, the degree of sellers' concentration in the market, is an important element of the market structure which plays a dominant role in determining the behaviour of a firm in the market. By market concentration we mean the situation when an industry or market is controlled by a small number of leading producers who are exclusively or at least

very largely engaged in that industry. Two variables that are of relevance in determining such situation are (i) the number of the firms in industry, and (ii) their relative size distribution. In the context of industrial economics the implication of market concentration are far wider than whatever we find in the theory of the firm. It will be our attempt in this chapter to focus on such implication in the framework of 'market-structure-conduct-performance' link.

12.2 MEASUREMENT OF MARKET CONCENTRATION AND MONOPOLY POWER :

In order to test empirically the behavioural hypotheses about the firm and industries, we need a measurement of market concentration. Various quantitative indexes have been suggested for this purpose which we are going to summaries in this section. Some of them are used to measure the monopoly power of the firms and some for market concentration. These two terms, i.e. monopoly power and market concentration, are closely interrelated and can not be separated from each other in the measurement process. The degree of market concentration would vary with the monopoly power in a particular industry, or we may also say that existing firms acquire monopoly power if market is concentrated. The indexes that we are going to discuss here would therefore be indicating to us almost similar things with minor differences. The measures for monopoly power would be more appropriate at firm level. They indicate the actual monopoly power exercised by the firms. The measure of concentration on the other hand would give us the potential monopoly power in the market or industry as a whole obviously some firms would be having monopoly power in the situation of market concentration. If the market of firms and their relative sizes in the market are changing, we expect a change in the monopoly power of the firms. The concentration is, therefore, a necessary condition for the monopoly power although it is difficult to say that there is one to one proportionality between them.

Before discussing the indexes it will be useful here to mention some general conditions or requirements which should be satisfied by each one of them. this helps us in screening the indexes while making the final choice for empirical work. The conditions are :

a) The measure must yield an unambiguous ranking of industries by concentration. Consider Fig.___ in which concentration curves, i.e. the graphs between cumulative number of firms from largest to smallest and cumulative percentage of market supply are shown by I_1, I_2, I_3 for their industries separately. I_1 is above I_2 and I_3 every where. It means the industry which is

represented by it is more concentrated than the other two. However, there is ambiguity in the ranking of the second and third industries represented by I_2 and I_3 respectively.

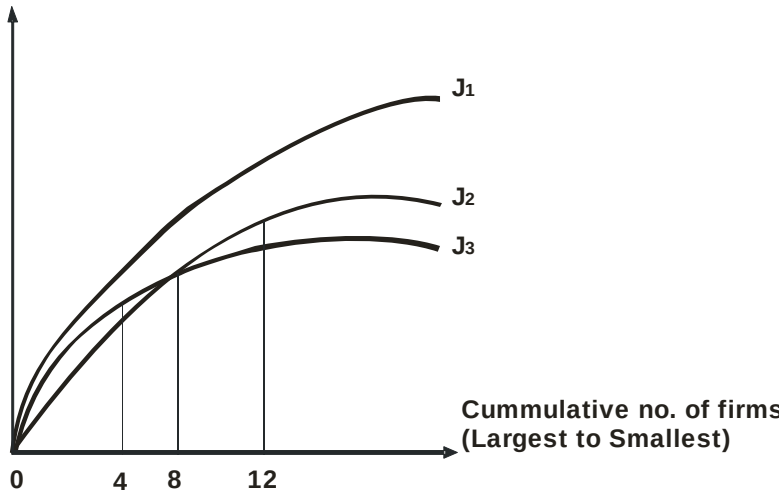


Figure 12.1 : Hypothetical Cumulative Number of Firms

b) The concentration measure should be a function of the combined market share of the firms rather than of the absolute size of the market or industry.

c) If the number of firms increases then concentration should decrease. However, if the new entrant is large enough, then concentration may go up.

d) If there is transfer of sales from a small firm to a large one in the market, then concentration increases.

e) Proportionate decrease in the market share of all firms reduces the concentration by the same proportion.

f) Merger activities increase the degree of concentration.

12.2.1 The Concentration Ratio :

The most popular and perhaps simplest index for measurement of market concentration or monopoly power of the few firms is the use of the concentration ratio, that is, the share of the market or industry held by some of the largest firms. The market share of such firms may be taken either in production or sales or employment or any magnitude of the market. In symbolic form the concentration ratio is written as

$$C = \sum_{i=1}^{m} P_i \quad m = 4, 8, 10, 12, \ldots, 20, \ldots$$

where P_i = market share of i^{th} firm in descending order. The normal practice is to take the four-firm (m = 4) concentration ratio but if the total number of firms operating in the market is large enough then one 20-firm concentration ratio to assess the situation. The higher the concentration ratio the greater the monopoly power or market concentration existing in the industry.

There are some limitations of this index. It does not take the entire concentration curve into account; it rather indicates market concentration at a point of the curve. The ranking of industries depends on the point chosen. If the point is changed there may be changes in the ranking of the industries also. This is the situation shown in Fig.___ for I_2 and I_3 curves on the basis of the 4-firm concentration ratio, industry 3 is more concentrated than industry 2, but on the basis of the 12-firm concentration ratio the ranking is reserved. For the 8-firm concentration point both are equally concentrated. There is thus some ambiguity as to which point is to be chosen. Further the concentration ratios depend to a great extent on how the market is defined. A broad market would tend to reduce the computed concentration ratio whereas a narrow one would usually have the opposite effect. This means, in the standard industrial classification, the concentration ratios will be lower for the two-digit major industry group than the ratios for the three-digit industries in the same group. The data for the finer classification of the industries may not be available, hence it may be difficult to have precise idea of market concentration using the aggregate data more over, it may not be comparable with other industries or countries' data. There are other limitations also. The ratio do not reflect the presence of or absence of potential entry of firms, they being based upon national figures, do not say anything about the regional market power; they do not describe the entire number and size distribution of firms, only a part of that is considered by them; they do not say anything about monopoly power of the individual firms in the market and ignore the role of imports in the domestic market. The ratios may give conflicting picture of the concentration with the use of different variables for size of the firms.

In spite of the limitations, the ratios are widely used in industrial economics. They are simple to compute, readily available for the manufacturing sectors, and capable of measuring market concentration with a finer classification of the industries. They are consistent with the economic theory, as we know that, other things being equal, monopolistic practices are likely to be in operation to a greater extent where a small number of the leading firms account for the bulk of any industry's output than where the industry's output is evenly distributed among the firms.

12.2.2 The Hirschman - Herfindahl Index :

It is the sum of the squares of the relative sizes (i.e. market shares) of the firms in the market, where the relative sizes are expressed as proportions of the total size of the market symbolically,

$$\text{Herfindahl Index (H)} = \sum_{i=1}^{n} (P_i)^2$$

where, $P_i = q_i/Q$, q_i is output of i^{th} firm and Q is total output of all the firms in the market, and n is the total number of firms. This index takes account of all firms in the market (i.e. industry). Their market shares are weighted by the market share itself. The larger the firm, more will be its weight in the index. The maximum value for the index is one where only one firm occupies the whole market. This is the case of a monopoly. The index will have minimum value when the n firms in the market hold an identical share. This will be equal to 1/n, that is

$$H = \sum_{i=1}^{n} \left[\frac{1}{n}\right]^2 = \frac{1}{n}$$

H decreases as n increases. Inverse of H gives us number equivalent measure of the market concentration. The index is simple to calculate. It takes account of all the firms and their relative sizes, it is therefore popular in use and consistent with the theory of oligopoly because of its similarity to measures of monopoly power. Adelman has explored its properties extensively and related it directly to the concentration curve.

12.2.3 The Entropy Index :

This index has been suggested by Hart to measure the degree of market concentration. It uses the formula

$$E = \sum_{i=1}^{n} P_i 1_n \frac{1}{P_i}; \quad 0 \le E \le 1_n n$$

where E is defined as 'Entropy Coefficient; P_i is the market share of i^{th} firm and n the number of firm. This coefficient in fact measures the degree of market uncertainty faced by a firm in relation to given customer. This will be the situation when number of firms is large enough. i.e. market is not concentrated. For a monopoly firm (n =) the entropy coefficient takes the value of zero which means no uncertainty and maximum concentration. Thus we find opposite (inverse) relationship between the entropy coefficient

E and the degree of market concentration. If there are n firms, all equal in size, then

$$E = \sum_{i=1}^{n} \frac{1}{n} \times 1_n \, n = l_n \, n$$

Both, increased equality of market shares and an increase in the number of firms increase the entropy coefficient but the latter factor plays a diminishing role because of the use of logarithms which implies that addition of an extra firm, when number is already large enough, it becomes less significant from the point of view of market concentration. In terms of number equivalent the number can be measured as exp (E).

To take into account the number of firms as a determinant of the entropy coefficient one may use the relative measure of the entropy, i.e. the entropy coefficient E divided by the maximum value of the coefficient (log n)

$$Er = \frac{E}{\ln n}; O \le Er \le 1$$

This expression indicates the actual degree of dispersion of market share to the maximum dispersion possible for a given number of firms.

The entropy coefficient is a useful measure of market concentration in the sense that the population of the firms for which the entropy coefficient is to be computed can be decomposed or disaggregated into several groups, say on the basis of sizes, regions, products and the classification of industry, etc. to compute separate entropy coefficients for them, a weighted sum of such coefficients would then give the overall entropy coefficient. Such a decomposition is not possible in the case of other indexes of market concentration.

12.3 CONCENTRATION AND THE MARKET PERFORMANCE OF A FIRM

There are many behavioural hypotheses about concentration and market performance which we would like to discuss in brief in this section. As we read in microeconomics, a firm with substantial monopoly power will tend to charge high price, produce and sell less output, make high rates of profit, grow faster than others, capable of doing anything it wants in connection with its business such as R & D, advertisement and so on. Let us presume that concentration is an appropriate measure of such power, we are then in a position to verify the various propositions of the economic

theory which reflect the relationship between concentration and market performance of the firm. This will naturally be based on the empirical evidence available so far but no attempt will be made to make an exhaustive survey of this here. Only few selected studies will be referred in connection with the individual hypotheses.

12.3.1 Concentration and Profits :

A firm derives market power or monopoly power in the situation of concentration. Such market power, via market conduct activities or directly leads to an increase in the profitability of the firm. It is frequently assumed that persistency of high rates of profits over a long period is the consequence of high degree of intra-industry concentration. J. S. Bain was the first to make an empirical study of this proposition, who found it valid for the U.S. industries. The relationship was found so strong than Bain was to argue for the profit rate as an index to measure the concentration. Since then there has been a flood of studies on the relationship which by and large supported this but some of them were, of course, very critical also.

There are some difficulties in establishing the correct relationship between the two variables (concentration & profitability) as both of them are subject to ambiguities of measurement which index of measurement is to be used for concentration? There are so many of them. If one measure is taken, it may have strong correlation with profitability, but if another is taken, it may have a weak relationship. Further, measurement of profit rates is also not free from bias. This is generally based on accounting data which ignores certain opportunity cost elements related to own funds or own labour of the entrepreneur in the business some arbitrary valuation are placed for such elements which may induct bias in the relationship. What denominator is to be used to compute profit rate is also not clear sales or assets or production or something like that. Researchers make their own choices for such rates, without giving the proper rationale for that. In spite of such difficulties we should not discard the relationship between concentration and profitability. It is a positive one which is consistent with the theoretical logic, through very precise estimation of which is yet to come.

12.3.2 Concentration and Price-cost Margins :

Price-cost margin is another way to define profitability. This is a short-term view of profitability based on current sales and cost figures. Say the average price-cost margin is just a ratio of these two magnitudes. Empirical studies particularly those conducted by Collins and Preston supported the positive relationship between concentration and the price-cost margin for the American four digit

industries. Shephered also confirmed the positive relationship between them for most of the U.S. industries Koch and Fenili however, looked at the concentration acting as a surrogate for other determinants of price cost margins because of its being causally linked with them. they found it as an insignificant predictor of price cost margins when other relevant indicators of market structure like product differentiation, rate of technological change, etc. were also considered side by side. We may not agree with their findings simply because when all such determinants were taken together along with concentration, multicollinearity might have distorted their relationship making concentration insignificant. For its significance, there is a strong theoretical base which cannot be demolished because of statistical inadequacies of measurement.

In a recent book, Hay and Morris have presented a summary table of 67 studies on market structure and profitability for the period 1971 to 1988. According to this, market concentration was found to be a significant determinant of profitability with expected sign in 28 studies, insignificant in an other 28 studies; and doubtful in the remaining studies. All this reveals that no specific generalization could be made about the relevance of the market concentration as a determinant of profitability although major support is coming for its being a positive factor as per the theory.

12.3.3 Concentration and Growth of the Firm :

The growth of the firm is a topic which requires a full chapter for discussion. Here we will just mention how concentration is relevant for this. There are two different streams of thoughts to explain the causal relationship between the two variables. According to one view, a firm with market power, as a consequence of concentration, may prefer to maintain its high rate of profit by restricting the output and charging high price. If it grows, it has to sacrifice some profit margin, and lower price which may not be in its interest. Moreover, there will be all kinds of restrictions imposed by the Government to stop further growth of such firm. Furthermore, static diseconomies of scale and numerous dynamic factors and bottlenecks all adversely affect the ability of such firm to grow. Thus, we except that higher the monopoly power of the firm lesser may be its growth. The few firms in the concentrated industry may be dominant enough to restrict the growth of the other firms and to stop the entry of new ones because of the various barriers to entry at their disposal. There is, thus very little prospective for the growth of the firms in a concentrated industry and so for the overall growth of the industry itself. There are some empirical studies where the inverse relationship between initial market concentration and subsequent market growth has been verified.

The second view about the concentration and growth of the firm and hence of the market, is a positive one. In order to maximize the long-term profit, firms may like to grow over time even under market concentration. They may prefer to create excess capacity to meet the future growing demand and to discourage new entry in the market. They may have some short-term sacrifice of profit in order to stimulate long-term benefits. So we find a case for the positive relationship between initial market concentration and growth of the firms. The firms with market power may be finding themselves at ease regarding finances and other requirements of growth. They would, therefore, like to avail the opportunities for that other things remaining the same. There are empirical evidences for such proposition also.

There are all kinds of problems in establishing which view is valid. The empirical studies differ in scope, coverage of period, data base and even measurement of concentration and growth. No definite verdict is, therefore, available from them. For the present, the relationship between concentration and growth of the firm and market, is an open issue for further verification.

Concentration and Technological change :

The issues related to technological change and market structure will be examined later on in a full chapter of this book. At this stage, let us look into one aspect of this, that is, whether concentrated industries are the most research oriented and technically progressive. It is true that the few firms who enjoy monopoly power in a concentrated industry will be large enough. They will be having stability, financial resources and ability to initiate the processes of R&D and gain the benefits from them. Dasgupta and Stigliz, in their papers clearly showed the situation when market concentration and innovative activities are positively correlated. There is no conclusive empirical evidence to prove such proposition. In fact, studies conducted by Williamson have shown quite opposite results. Doubts about this have also been expressed by Bliar. It may not be the concentration but the other attributes of market structure like size of firm, product differentiation possibilities, etc, which may be having collinearity with concentration and thus causing a spurious positive correlation between concentration and thus causing a spurious positive correlation between concentration and technological change. Nothing can be said in either way about the relationship. It is open for further empirical verification.

Concentration and other aspects of Market Performance :

We may briefly mention some other aspects of market performance which may be having some association with market

concentration stability in the business, which may be judged either by persistency of profit rates or sales volume or market share, is one of them. Greater the market power of a firm the more we expect its stability. The uncertainties faced by the firm may be smaller. Further, if there is high concentration in the market the existing few large firms may maintain their size ranking in order to keep the leadership with them. If the size ranking of the firms, which is defined as 'turnover' is changing, this implies that the competitive forces are in action in the market. Lack of such a change, that is, of 'turnover' means a lack of competition and a possible tacit or alright collusion.

12.4 CONTESTABLE MARKETS :

A new type of market structure has been suggested by Baumol Panzar and Willing in 1982 which they named as contestable market. The theory of the market as propounded by them may be taken as an extension of the competitive markets but it has its own relevance in the context of industrial economics as we will see in the following overview of the theory.

Like any other type of market, the theory of contestable markets is based on certain fundamental assumptions.

1) There is at least one incumbent i.e. a firm already existing in the market, and one potential entrant to the market. Potential as well as incumbent firms are assumed to face same set of productive techniques and market demands.

2) There is no legal restrictions on market entry and exit.

3) There are no special costs that must be borne by any entrant as well as incumbent firms. In other words, the technology may offer scale economies but must not require sunk costs. It means that the capital investment is fully recoverable and mobile i.e. it is resaleable or reusable without any loss in earlier business.

4) Incumbent firms can only change prices with a non-zero time lag (price sustainability assumption) but consumers respond to price differences with shorter time-lag.

Given the above conditions a perfectly contestable market operates in a simple way. Incumbent, i.e existing firm in the market fix or post prices for their products. Their prices would remain unchanged for some time. A new firm enters (i.e. hits) the market with somewhat lesser prices for its products than that of the incumbent firms and earns more profit or sales by attracting customers from it rivals, i.e. incumbent firms because of price

differences. The incumbent firm respond to the new prices in the market with a time lag after the new firm invades the markets. The incumbent firms may not have much cost disadvantages at this state. They can cut their prices by increasing the scale of production although it takes sometime. By reducing the prices by the incumbent firms some what below the prices of the entrant firm, they reestablish their market share and in fact may increase it attracting customers from the entrant firm. At this stage, the entrant firm leaves the market (i.e. runs away) since the retaliatory price-cuts by the incumbent firms leave no scope for profitable existence for the firm. There are no sunk costs so the firm would not face any problem of capital loss in leaving the market. Thus, the entrant firm may be regarding as following the 'hit and run' tactics in the market. This is a major characteristics of the contestable markets.

Suppose the entrant firm charges less prices for its products which are inferior than the product of the incumbent firms. Sooner the consumers will detect these facility products but before that the entrant firm runs away from the market. In the short period of stay in the market such firm makes lot of gains with no prospect of it if the firm continues in the market under the changed situation.

The contestable market as briefly described above is different from the perfect competition. Although both the types of market assume frictionless free entry and exist, they differ on the number criteria. Under perfect competition the number of sellers and buyers has to be quite large so that each one of them is not able to influence the market individually but under contestable market there is no such restriction. This type of market may be in operation even with one incumbent and one entrant firms. Further homogeneity of the product assumption as under perfect competition need not to be equally valid for the contestable market. in fact, a contestable market paves the way for the multi product firms.

The theory of contestable market as developed by Baumol, Panzar and Willig is an important contribution in industrial organization. It provides the normative base for increase in industrial efficiency under effective threat from the entrant even under monopoly. However, from empirical or operational point of view it has several drawbacks. The assumption of price sustainability, perfect mobility of capital with no sunk costs, etc., may not hold true in practice. Further every firm in the market will be entrant at some point of time. If it follows the 'hit and run' tactics then how to justify the existence of the incumbent firms at all. It appears that the notion of 'contestable market' is a faulty one and it will take long time before the theory of constable markets is totally acceptable as a working model for operation.

12.5 SUMMARY

After going through this unit you will be able to measure the market concentration through the concentration ratio, the Hirschman-Herfindahl index, and the entropy index. You have also understood the connection between the concentration and the market performance.

12.6 QUESTIONS

1. Explain how the market concentration is measured?
2. Explain the Hirschman-Herfindahl index.
3. Discuss the Entropy index.
4. Examine the concept of concentration and market performance.

13

Module - 6
INDIAN INDUSTRY
SMALL SCALE INDUSTRY

Unit Structure :

13.0 OBJECTIVES

- To understand the meaning of SSI
- To study the role of SSI in Indian Economy
- To study the performance of SSI during post independence period in India.

13.1 INTRODUCTION

In 1947 after gaining independence, India initiated a path of industrialization to achieve economic prosperity. India focused on developing the manufacturing base. Much of the countries development was done through the five year plans. Industries like iron and steel, oil refineries, cement and fertilizer were brought under the gamut of public sector enterprises. The decision makers then encouraged the development of small scale industries. They perceived that Indian small scale industries would play a vital role in the economic progress of the country and had immense potential for employment generation. Developing small scale sector would also result in decentralized industrial expansion, better distribution of wealth and to encourage investment and entrepreunial talent.

The government has initiated several policies for the growth and development of small scale industries. They included reservation of certain items to be manufactured only by the small scale sector. Other measures include credit marketing, technology,

and entrepreneurship development, fiscal, financial and infrastructural support. In 1999, the government established the Ministry of Small Scale Industries and Agro and Rural industries to make policy decisions for the development and well being of the small scale industries.

Initially the small scale sector was characterized as traditional labor intensive units with outdated machineries and inefficient production techniques. But in the recent past the condition of the small scale units has improved. Today they have installed modern machines, applied better management techniques and are much more productive than before.

Definition and historical context

The definition for small-scale industrial undertakings has changed over time. Initially they were classified into two categories- those using power with less than 50 employees and those not using power with the employee strength being more than 50 but less than 100. However, the capital resources invested on plant and machinery buildings have been the primary criteria to differentiate the small-scale industries from the large and medium scale industries. An industrial unit can be categorized as a small- scale unit if it fulfils the capital investment limit fixed by the Government of India for the small-scale sector.

As per the latest definition which is effective since December 21, 1999, for any industrial unit to be regarded as Small Scale Industrial unit the following condition is to be satisfied: -

Investment in fixed assets like plants and equipments either held on ownership terms on lease or on hire purchase should not be more than Rs 10 million.

However, the unit in no way can be owned or controlled or ancillary of any other industrial unit

The small companies are defined as those with less than US $180,000 in capital equipment (USAEP, 1996). In India the definition of SSI has undergone changes over the years in terms of investment limits in the following manner.

Table-I Investment limit of SSIs

Year	SSI	Remarks
1950	Gross Investment in Fixed Assets: not Exceeding Re. 0.5 Million	Employment less than 50 Workers Per Day (with the Use of Power) or Less than 100 Workers Per Day (Without the Use of Power)
1958	Gross Investment in Fixed Assets: Less than Re. 0.5 Million	Employment less than 50 Workers Per Day (with the Use of Power) or Less than 100 Workers Per Day (Without the Use of Power) except that the Criteria based on the employment 'per day' was henceforth replaced by a 'per shift' provision
1959	Gross Invesment in Fixed Assets: Value of Machinery (Original)	Employment less than 50 Workers Per Day (with the Use of Power) or Less than 100 Workers Per Day (Without the Use of Power) except that the Criteria based on the employment 'per day' was henceforth replaced by a 'per shift' provision
1960	Gross Investment in Fixed Assets: Value up to Re. 0.5 Million	The employment condition was dropped from the definition
1966	Up to Re. 0.75 million	No condition
1975	Up to Re. 1 million	No condition
1977	Up to Re. 1 million	No condition
1980	Up to Rs. 2 million	No condition
1985	Up to 3.5 million	No condition
1991	Up to Rs.6 million	No condition
1997	Up to Rs. 30 million	No condition
1999	Up to Rs. 10 million	No condition

Source: SIDBI Report on Small Scale Industries Sector 2000, Small Industries Development Bank of India.

Traditional and modern small industries:

Traditional small industries include khadi and handloom, village industries, handicrafts, sericulture, coir, etc. Modern SSIs produce wide range of goods from comparatively simple items t sophisticated products such as television sets, electronics, control system, various engineering products, particularly as ancillaries to the large industries. The traditional small industries are highly labour-intensive while the modern small- scale units make the use of highly sophisticated machinery and equipment. For instance, during 1979-80, traditional small-scale industries accounted for only 135 of the total output but their share in total employment was 56%. As against this, the share of modern industries in the total output of this sector was 74% in 1979-80 but their share in employment was only 33%. Obviously, these industrial units would be having higher labour productivity. One special characterstic of traditional small-scale industries is that they cannot provide full time employment to workers, but instead can provide only subsidiary or part time employment to agricultural laborers and artisans. Among traditional village industries, handicrafts possess the highest labour productivity, besides handicrafts make a significant contribution to earning foreign exchange for the country. Nowadays Indian small-scale industries (SSIs) are mostly modern small-scale industries. Modernization has widened the list of products offered by this industry. The items manufactured in modern Small-scale service & Business enterprises in India now include rubber products, plastic products, chemical products, glass and ceramics, mechanical

engineering items, hardware, electrical items, transport equipment, electronic components and equipments, automobile parts, bicycle parts, instruments, sports goods, stationery items and clocks and watches.

SSI-Location

Small Scale Industries are located throughout the country, though predominantly in the rural areas. The small scale industries in the rural areas are skill based, wherein the skill for manufacturing is passed on from one generation to another. Some of the goods manufactured in these units are textile handicrafts, woodcarving, stone carving, metal ware etc. Small scale industrial factories are also present in urban areas and usually they account for the maximum volume of production for that particular good in the country. For e.g. Ludhiana in the state of Punjab is the main center in the country for producing woolen hosiery, sewing machine parts, bicycles and its parts, similarly Tiruppur in Tamil Nadu accounts for small scale firms that are involved in spinning, weaving and dying of cotton garments.

SSI -After Post Liberalization

Post liberalization economic conditions has created immense growth prospect for the small scale industries. The government has also supported the small scale industries by the way of implementing policies like investment ceiling for the SSI sector and priority lending. The formation of WTO in 1995 resulted in a major challenge to the well being of the SSI. The protection given to the SSI in the form of reservation and quantitative restrictions has been withdrawn. More than 160 items reserved under the SSI category have been de reserved. It has been found that if the SSI upgrades the technology, adopt better management practices, reengineer the factories to improve productivity and provide qualitative product, they would be competitive in the post WTO scenario. The advancement in computer and telecommunication technology, increase in e commerce, opening up of markets due to WTO, mergers and acquisitions, improved infrastructure and outsourcing noncore area of business have all contributed to the growth of SSi.

13.2 KEY ROLE OF SSI IN THE INDIAN ECONOMIC STRUCTURE

India has traditionally always had a very vibrant and competitive SSI. Even after the dawn of industrialization, British producers of textiles found hand made Indian textiles such a threat that they lobbied hard to have its import banned, succeeding in the

late eighteenth century . During pre-economic liberalization period a wide variety of incentives, concessions and institutional facilities were extended for the development of SSIs. But these socialistic promotional policy measures, in many cases resulted in protection of weak units rather than the independent growth of units under competitive business environment. Such situation was continued up to the mid of 1991. Under the regime of economic liberalization, the focus was shifted from “protection” to “competitive promotion”.

The public policy in India had been attaching lot of importance to village and SSI on the following grounds. SSI being labor-intensive, helped to increase the volume of employment, particularly in rural areas, it is estimated that about 2 crore persons are engaged in India in these industries. The handloom industry alone employs 50 lakh people. They account for 6% of GDP, 95 % of all industrial units, and 34% of total exports. Around 39 lakhs SSIs in India has emerged versatile producing over 8000 products, from traditional handicrafts to high-end technical instruments.

In developed OECD economies, about 60 % of GDP is generated by small enterprises, i.e., enterprises with a maximum of 50 employees. The reason being large number of small enterprises guarantees a high degree of competition, and variety of economic activities that require millions of enterprises to be reasonable competitive and efficient. The indirect jobs created through forward and backward linkages are no less important. In real terms, the SSI recorded a growth rate of 10.1% in 1994-95 as against 7.1% in 1993-94 and 5.6% in 1992-93. By the year 2025, if not controlled, this sector will grow even more rapidly (Parthasarathy, 1996).

Generalizations are also difficult because though there are firms which are growing rapidly, there also exist 1,38,000 sick units within the sector in India. The contribution of SSI in India to national development was meager as compared to the contribution of SSI in other countries of the world. India’s SSI shared 95 % of all establishments, 40 % of output, 45% of employment and 35 % of exports. But Taiwan ranked first with a share of 97% of establishments, 81 % of output, 7% of employment, 48 % of exports followed by Japan contributing highly with 99 % of establishments, 52 % of output, 72 % of employment and 13 % of exports (SIDBI Report, 2000).

1. SSI’s Role in Production:

The small-scale industries sector plays a vital role in the growth of the country. It contributes almost 40% of the gross industrial value added in the Indian economy.

It has been estimated that a million Rs. of investment in fixed assets in the small scale sector produces 4.62 million worth of goods or services with an approximate value addition of ten percentage points.

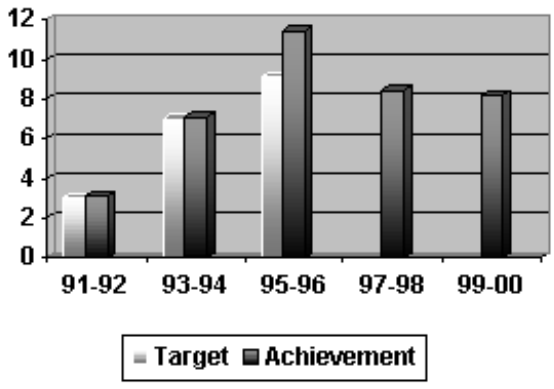
The small-scale sector has grown rapidly over the years. The growth rates during the various plan periods have been very impressive. The number of small-scale units has increased from an estimated 0.87 million units in the year 1980-81 to over 3 million in the year 2000.

When the performance of this sector is viewed against the growth in the manufacturing and the industry sector as a whole, it instills confidence in the resilience of the small-scale sector.

Year	Target	Achievement
1991-92	3.0	3.1
1992-93	5.0	5.6
1993-94	7.0	7.1
1994-95	9.1	10.1
1995-96	9.1	11.4
1996-97	9.1	11.3
1997-98	*	8.43
1998-99	*	7.7
1999-00	*	8.16
2000-01 (P)	*	8.90

P-Projected (April-December)

* Target not fixed at constant prices



2. SSI's role in Employment

SSI Sector in India creates largest employment opportunities for the Indian populace, next only to Agriculture. It has been

estimated that 100,000 rupees of investment in fixed assets in the small-scale sector generates employment for four persons.

3. Generation of Employment - Industry Group-wise

Food products industry has ranked first in generating employment, providing employment to 0.48 million persons (13.1%). The next two industry groups were Non-metallic mineral products with employment of 0.45 million persons (12.2%) and Metal products with 0.37 million persons (10.2%).

In Chemicals & chemical products, Machinery parts except Electrical parts, Wood products, Basic Metal Industries, Paper products & printing, Hosiery & garments, Repair services and Rubber & plastic products, the contribution ranged from 9% to 5%, the total contribution by these eight industry groups being 49%.
In all other industries the contribution was less than 5%.

4. Per unit employment

Per unit employment was the highest (20) in units engaged in beverages, tobacco & tobacco products mainly due to the high employment potential of this industry particularly in Maharashtra, Andhra Pradesh, Rajasthan, Assam and Tamil Nadu.

Next came Cotton textile products (17), Non-metallic mineral products (14.1), Basic metal industries (13.6) and Electrical machinery and parts (11.2.) The lowest figure of 2.4 was in Repair services line.

Per unit employment was the highest (10) in metropolitan areas and lowest (5) in rural areas.

However, in Chemicals & chemical products, Non-metallic mineral products and Basic metal industries per unit employment was higher in rural areas as compared to metropolitan areas/urban areas.

In urban areas highest employment per unit was in Beverages, tobacco products (31 persons) followed by Cotton textile products (18), Basic metal industries (13) and Non-metallic mineral products (12).

Location-wise Employment Distribution –

Rural

Non-metallic products contributed 22.7% to employment generated in rural areas. Food Products accounted for 21.1%, Wood Products and Chemicals and chemical products shared between them 17.5%.

Urban

As for urban areas, Food Products and Metal Products almost equally shared 22.8% of employment. Machinery parts except electrical, Non-metallic mineral products, and Chemicals & chemical products between them accounted for 26.2% of employment.

In metropolitan areas the leading industries were Metal products, Machinery and parts except electrical and Paper products & printing (total share being 33.6%).

State-wise Employment Distribution

Tamil Nadu (14.5%) made the maximum contribution to employment.

This was followed by Maharashtra (9.7%), Uttar Pradesh (9.5%) and West Bengal (8.5%) the total share being 27.7%.

Gujarat (7.6%), Andhra Pradesh (7.5%), Karnataka (6.7%) and Punjab (5.6%) together accounted for another 27.4%.

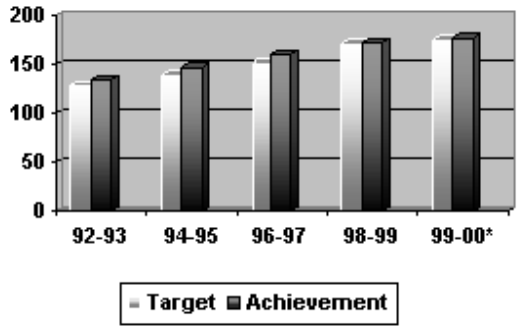
Per unit employment was high - 17, 16 and 14 respectively - in Nagaland, Sikkim and Dadra & Nagar Haveli.

It was 12 in Maharashtra, Tripura and Delhi.

Madhya Pradesh had the lowest figure of 2. In all other cases it was around the average of 6.

Year	Target (lakh nos.)	Achievement (lakh nos.)	Growth rate
1992-93	128.0	134.06	3.28
1993-94	133.0	139.38	3.28
1994-95	138.6	146.56	5.15
1995-96	144.4	152.61	4.13
1996-97	150.5	160.00	4.88
1997-98	165	167.20	4.50
1998-99	170.1	171.58	2.61
1999-00	175.4	177.3	3.33

P-Provisional



5. SSI's role in Export:

SSI Sector plays a major role in India's present export performance. 45%-50% of the Indian Exports is contributed by SSI Sector. Direct exports from the SSI Sector account for nearly 35% of total exports. Besides direct exports, it is estimated that small-scale industrial units contribute around 15% to exports indirectly. This takes place through merchant exporters, trading houses and export houses. They may also be in the form of export orders from large units or the production of parts and components for use for finished exportable goods.

It would surprise many to know that non-traditional products account for more than 95% of the SSI exports.

The exports from SSI sector have been clocking excellent growth rates in this decade. It has been mostly fuelled by the performance of garments, leather and gems and jewellery units from this sector.

The product groups where the SSI sector dominates in exports, are sports goods, readymade garments, woollen garments and knitwear, plastic products, processed food and leather products.

The SSI sector is reorienting its export strategy towards the new trade regime being ushered in by the WTO

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Year	**Exports (Rs. Crores) (at current prices)**
1994-95	29,068 (14.86)
1995-96	36,470 (25.50)
1996-97	39,249 (7.61)
1997-98	43946 (11.97)
1998-99	48979 (10.2)
1999-00 (P)	53975 (10.2)

P-Provisional

These industries are also very important for welfare reasons. People of small means can organize these industries. This in turn increases their income levels and quality of life. As such these can help in reducing poverty in the country. Further, these industries tend to promote equitable distribution of income. The reasons are obvious. One, a large proportion of income generated in these enterprises is distributed among the workers. Two, income are distributed among a vast number of persons throughout the country. All these benefits flow from the fact that these industries are highly labour-intensive, and that these can be set up anywhere in the country. Distributive aspect of small-scale industries further unravels their two-fold beneficial character. On the one hand, these industries enable a vast number of people to earn income, and on the other hand, the very people among whom these are distributed generate this income

13.3 POLICY ISSUE AND PERFORMANCE

After independence, Indian planners and policy-makers felt that protection was essential to the development of a strong and indigenous economy. The Indian state played an integral role in the industrial and economic development of the country resulting in a dominant public sector and heavily regulated private sector. Viewing this, the protection was also extended to SSI as it was an important tool in employment generation, value creation and poverty alleviation. These SSI also support entrepreneurial talent and skills, stimulate personal savings, and help in developing innovative and appropriate indigenous technology, providing dynamism and contributing to competition. Over 800 products were exclusively reserved for SSI, where some of the products produced were purchased by government agencies. Apart form this, supply of scarce materials, input price concessions like lower interest rates and numerous fiscal measures such as excise duty exemptions and other tax concessions were also given (Source-Business Today, September 10, 2006).

Government has reserved certain products for manufacture in the small scale sector in areas where there is techno-economic justification for such an approach. Large/Medium units can; however, manufacture such reserved items provided they undertake to export 50% or more of their production. As on March 2005, the total number of items reserved for small-scale sector is 506.

In the second plan (1956-61), the SSI was given priority due to its consequence in creation of diversified employment opportunities and wide dispersal of industrial production. The policies proposed then, were, and remain the main backbone of public policy relating to the SSI. What we see however is that this

policy has been largely unhelpful, if not detrimental to the development of the sector. The policy regulations relating to the SSI are such that they ensure that units stay just small.

Promotional measures aim to increase the efficiency and economic viability of small units by providing infrastructure facilities and improving access to markets. On the other hand, protective measures give small units preferential treatment. Continuous measures are those benefits which a small unit may avail of as long as it falls under that category, while one-shot are those which may be availed of only once, and tends to be discretionary in nature. Most policies like preference in government purchases; lower interest rates etc. are continuous in nature. Discretionary measures are those, which require an examination on a case-by-case basis and are not blanket measures available to all units, which fall under the definition of small. Non discretionary, by implication, are those measure which are based on some objective criteria and are applicable to all units that meet the criteria. The government has also provided measures such as greater infra-structural support, more and easier availability of credit, lower rates of duty, technology up-gradation, assistance to build entrepreneurial talent, facilities for quality improvement, and export incentives.

The Ministry of Small Scale Industries (MoSSI) designs policies, programmes, projects and schemes in consultation with its organizations. It also performs the function of policy advocacy with other Ministries/Departments of the Central Government and the States and Union Territories. Implementation of the policies and programmes/projects/schemes for providing various support services to the MSEs is undertaken through its attached office, namely, the Office of Development Commissioner (Small Scale Industries) also known as Small Industries Development Organisation (SIDO) and the National Small Industries Corporation (NSIC) Ltd., a public sector undertaking of the Ministry. There are three national level Entrepreneurship Development Institutes supported by the Ministry viz. National Institute of Small Industry Extension Training (NISIET), Hyderabad, National Institute of Entrepreneurship and Small Business Development (NIESBUD), NOIDA and Indian Institute of Entrepreneurship (IIE),Guwahati.

Financial aid for SSI

Credit is the prime input for sustained growth of SSI and its mobilization for meeting fixed and working capital needs poses the foremost problems. Credit provided for creation of fixed assets like land, building, plant and machinery is called long term credit. Credit provided for running the industry for its day-to-day requirement for purchasing raw material and other input like electricity and water etc. and for payment of wages and salaries is called short-term credit or working capital.

The Laghu Udyami (small enterprise) Credit Card Scheme has been provided to SSI where they can credit up to Rs.10lakhs. Apart from this, credit facilities up to maximum of Rs.25lakhs are provided through Credit Guarantee Fund Trust in collaboration with SIDBI and Govt. of India. Table X provides further insight into credit related information. The SSI is provided working capital by commercial banks and in some cases by cooperative banks and regional rural banks. Term loans are provided by State Financial Corporations (SFCs), Small Industries Development Corporations (SIDCs), National Small Industries Corporation (NSIC) and National Bank for Agriculture and Rural Development (NABARD). Financial assistance from NSIC and to some extent from SIDCs is available in the form of supply of machinery on hire purchase basis/deferred payment basis. Small sized SSI and tiny units also get some term loans from commercial banks along with working capital in the form of composite loans. The Small Industries Development Bank of India (SIDBI) provides refinance to these institutions. Such refinance comprises assistance provided to State Financial Corporation Bills, Finance Scheme, Special Capital/Seed Capital Scheme, and new debt instruments and to National Small Industries Corporation. Long-term loan are provided to the smalls scale industrial units by SFCs mainly through Single Window Scheme and National Equity Fund as also direct assistance provided to State Financial Corporations in the form of refinance. Some part of working capital for pre-operative expenses is also provided by State Financial Corporations to Small Scale Industrial Units under the Single Window Scheme.

13.4 SUMMARY:

Small industry sector has performed exceedingly well and enabled our country to achieve a wide measure of industrial growth and diversification. By its less capital intensive and high labor absorption nature, SSI sector has made significant contributions to employment generation and also to rural industrialization. Under the changing economic scenario, SSI has both the challenges and opportunities before them. The business can compete on cost, quality and products at domestic and international level only if ideal investment in technology production process, R&D and marketing are made. Infrastructure bottlenecks are not completely solved. The promotional activities for SSI in India need to concentrate on improved credit flows, human resource development, appropriate technology and funds for modernization. It may be said that the stance is optimistic, indeed promising, given some protection. This expectation is based on an essential feature of the Indian industry and the demand structures. The variety in the demand structures will ensure long-term co-existence of many layers of demand for consumer products / technologies / processes. There will be flourishing and well grounded markets for the same

product/process, differentiated by quality, value added and sophistication. This characteristic of the Indian economy will allow complementary existence for various diverse types of units.

13.5 QUESTIONS

1. Define small scale industry. Explain the role of SSI in Indian Economic structure.
2. Explain policy issues & performance of SSI after independent.

14

INDUSTRIAL LOCATION AND REGIONAL IMBALANCE

Unit Structure :

14.0 OBJECTIVES

- To study the meaning and factors influencing industrial location.
- To Study Weber's Theory of industrial location.
- To study the causes of regional imbalance
- To study the impact of Globalization and Privation on Indian industries.

14.1 INTRODUCTION

Location of industries is influenced by economic considerations though certain non-economic considerations also might influence the location of some industries. Maximisation of profit which also implies cost minimization is the most important goal in their choice of particular places for the location of industries. There are several factors which pull the industry to a particular place. Some of the major factors influencing location are discussed below:

Factors Influencing Industrial Location

1. **Availability of raw materials:**
   In determining the location of an industry, nearness to sources of raw material is of vital importance. Nearness to the sources of raw materials would reduce the cost of production of the industry. For most of the major industries, the cost of raw materials form the bulk of the total cost. Therefore, most of the agro-based and forest-based industries are located in the vicinity of the sources of raw material supply.

2. **Availability of Labour:**
   Adequate supply of cheap and skilled labour is necessary for and industry. The attraction of an industry towards labour centres depends on the ratio of labour cost to the total cost of production which Weber calls 'Labour cost of Index'. The availability of skilled workers in the interior parts of Bombay region was one of the factors responsible for the initial concentration of cotton textile industry in the region.

3. **Proximity to Markets:**
   Access to markets is an important factor which the entrepreneur must take into consideration. Industries producing perishable or bulky commodities which cannot be transported over long distance are generally located in close proximity to markets. Industries located near the markets could be able to reduce the costs of transport in distributing the finished product as in the case of bread and bakery, ice, tins, cans manufacturing, etc. Accessibility of markets is more important in the case of industries manufacturing consumer goods rather than producer goods.

4. **Transport Facilities:**
   Transport facilities, generally, influence the location of industry. The transportation with its three modes, i.e., water, road, and rail collectively plays an important role. So the junction points of water-ways, roadways and railways become humming centres of industrial activity. Further, the modes and rates of transport and transport policy of Government considerably affect the location of industrial units. The heavy concentration of cotton textile industry in Bombay has been due to the cheap and excellent transportation network both in regard to raw materials and markets.

5. **Power:**
   Another factor influencing the location of an industry is the availability of cheap power. Water, wind, coal, gas, oil and electricity are the chief sources of power. Both water and wind power were widely sought at sources of power supply before the

invention of steam engine. During the nineteenth century, nearness to coal-fields became the principal locating influence on the setting up of new industries, particularly, for heavy industries. With the introduction of other sources of power like electricity, gas, oil, etc. the power factor became more flexible leading to dispersal and decentralization of industries.

6. **Site and Services:**
   Existence of public utility services, cheapness of the value of the site, amenities attached to a particular site like level of ground, the nature of vegetation and location of allied activities influence the location of an industry to a certain extent. The government has classified some areas as backward areas where the entrepreneurs would be granted various incentives like subsidies, or provision of finance at concessional rate, or supply of power a cheaper rates and provision of education and training facilities. Some entrepreneurs induced by such incentives may come forward to locate their units in such areas.

7. **Finance**:
   Finance is required for the setting up of an industry, for its running, and also at the time of its expansion. The availability of capital at cheap rates of interests and in adequate amount is a dominating factor influencing industrial location. For instance, a review of locational history of Indian cotton textile industry indicates that concentration of the industry in and around Bombay in the early days was mainly due to the presence of rich and enterprising Parsi and Bhatia merchants, who supplied vast financial resources.

8. **Natural and Climatic Considerations:**
   Natural and climatic considerations include the level of ground, topography of a region, water facilities, drainage facilities, disposal of waste products, etc. These factors sometimes influence the location of industries. For instance, in the case of cotton textile industry, humid climate provides an added advantage since the frequency of yarn breakage is low. The humid climate of Bombay in India and Manchester in Britain offered great scope for the development of cotton textile industry in those centres.

9. **Personal Factors:**
   In deciding location of industrial units, sometimes an entrepreneur may have personal preferences and prejudices against certain localities. For instance, Mr. Ford started to manufacture motor cars in Detroit simply because it was his home-town. In such cases, personal factor dominates other considerations. However, this kind of domination is rare.

10. Strategic Considerations:

In modern times, strategic considerations are playing a vital role in determining industrial location. During war-time a safe location is assuming special significance. This is because in times of war the main targets of air attacks would be armament and ammunition factories and industries supplying other commodities which are required for war. The Russian experience during the Second World War provides and interesting example.

11. External Economies:

External economies also exert considerable influence on the location of industries. External economies arise due to the growth of specialized subsidiary activities when a particular industry is mainly localized at a particular centre with port and shipping facilities. External economies could also be enjoyed when a large number of industrial units in the same industry were located in close proximity to one another.

12. Miscellaneous Factors:

Historical incidents also play a dominating role in determining the location of industries in certain cases. The development of cotton-textile industry in Lancashire provides an interesting example for this. Further, the size of and industrial unit would also have much influence in choosing location. This is because the size of industrial units depends upon the radius of the circle within which they can profitably distribute their goods and upon the density of population living within the circle.

14.2 WEBER'S THEORY OF INDUSTRIAL LOCATION (THE PURE THEORY)

Alfred Weber, a German economist, enunciated a systematic theory of industrial location in 1909. Weber's theory of location is purely deductive in its approach. He analyzed the factors that determine the location of industry and classified these factors into two divisions. These are:

(i) Primary causes of regional distribution of industry (regional factors)
(ii) Secondary causes (agglomerative and deglomerative factors) that are responsible for redistribution of industry.

(i) Primary Causes (Regional Factors)

According to Weber, transport costs and labour costs are the two regional factors on which his pure theory is based. Assuming that there are no other factors that influence the distribution of industry, except transportation costs. Then it is clear that the

location of industry will be pulled to those locations which have the lowest transportation costs. The key factors that determine transportation costs are

(i) the weight to be transported and
(ii) the distance to be covered.

Weber lists some more factors which influence the transportation costs such as – (a) the type of transportation system and the extent of its use, (b) the nature of the region and kinds of roads, (c) the nature of goods themselves, i.e., the qualities which, besides weight, determine the facility of transportation.

However, the location of the place of production must be determined in relation to the place of consumption and to the most advantageously located material deposits. Thus, 'locational figures' are created. These locational figures depends upon (a) the type of material deposits and (b) the nature of transformation into products. Weber classifies and calls those raw materials, which are available practically everywhere as 'ubiquities' (like brick-clay, water, etc) and 'localised' (like iron-ore, minerals, wood, etc) which are available only in certain regions. It is clear that localized materials play a more important role on the industry than the ubiquities. Further, regarding the nature of the transformation of materials into products, Weber categorized the raw materials as 'pure' and 'weight losing'. Pure materials impart their total weight to the products (eg. cotton, wool, etc) and the materials are said to be 'weight losing' if only a part enters into the product (eg. wood, coal, etc.). Hence, the location of industries using weight-losing materials is drawn towards their deposits and that of industries using pure-materials towards the consumption centres.

Weber further examines the cause of deviation of industrial location from the centres of least transport costs. The existence of differences in labour costs leads an industry to deviate from the optimal point of transport orientation. Geographical distribution of the population would give rise to differences in wages for labour. Naturally, the transport oriented location of an industry is drawn out and attracted towards the cheaper labour centres. Such migration of an industry from a point of minimum transport costs to a cheaper labour centre may be likely to occur only where the savings in the cost of labour are larger than the additional costs of transport which it ought to incur.

(ii) Secondary Causes (Agglomerative and Deglomerative Factors)

An agglomerative factor is an advantage or a cheapening of production or marketing which results from the fact that production is carried on at one place. A deglomerative factor is a cheapening

of production which results from the decentralization of production i.e., production in more than one place. To some extent these agglomerative and deglomerative factors also contribute to local accumulation and distribution of industry. These factors will operate only within the general framework formed by the two regional factors, i.e., costs of transportation and costs of labour. The advantages which could be derived in this context are external economies.

The pulls which the agglomerative factors possess to attract an industry to a particular point are mainly dependent on two factors. Firstly, on 'the index of manufacture' (the proportion of manufacturing costs to the total weight of the product) and secondly, on the 'locational weight' (the total weight to be transported during all the stages of production). To deduce a general principle, Weber uses the concept of "co-efficient of manufacture" which is the ratio of manufacturing cost to locational weight. Agglomeration is encouraged with high co-efficient of manufacture and deglomeration with low co-efficient of manufacture and these tendencies are inherent in their nature.

Split Location:

Productive activities could be divided depending on the nature of raw-materials, industry and market. Weber considers the location for an industry at more than one place. According to Weber, a split of production into several locations will be the rule for productive process which can technically be split. For instance, the first stage of production may be near the raw material deposits and the subsequent stages near the place of final consumption. Likewise, in a paper industry the manufacture of pulp may be carried on near the supplies of the raw materials and the second stage of paper manufacture near the consumption outlet.

Locational Coupling:

Weber also conceived the advantages of setting up different types of industries in the same locality. The production of quite different articles may be combined in one plant because several raw materials may diverge from a common source. This may be either due to technical or economic reasons: for instance, certain chemical industries, garments factories which manufacture over-coats, shawls, blouses, etc. Locational coupling may also occur due to connection through materials. If the by-product of an industry happens to be the raw material of another industry, then the two industries may select a single place of location. For instance, the dye-stuff industry is connected with other industries using coke, because coal tar (upon which the dye-stuff industry is based) is a by-product of the burning coke.

Criticisms:

Weber's theory of location has been criticized on various grounds which may be summarized as follows:

1. Weber has been criticized for his unrealistic approach and deductive reasoning. According to Sargant Florence, vague generalizations cannot provide suitable solutions to the theory of location as non-economic considerations will also influence which are not mentioned in the pure theory. He says that Weber's theory fails to explain locations resulting from historical and social forces.
2. A.Predohl criticizes Weber's theory as more a selective theory than a deductive theory. The very distinction between primary and secondary is itself artificial, illogical and arbitrary.

3. Weber assumes fixed labour centres and unlimited supplies of labour which are unrealistic. The rise of industry may create new labour centres and we cannot assume unlimited labour supplies at any centre.

4. In a competitive market structure, the assumption of fixed points of consumption is unrealistic. Country-wise scattering, usually, of consuming public is a reality and there may be a shift in the consuming centres with a shift in industrial population.

5. A. Robinson also considers Weber's division of raw materials into 'ubiquities' and 'localised' as artificial.

Weber's deductive theory of location, in spite of the shortcomings, is the only theory which has been neither enjoying the universal acceptance and application, as all the other alternative suggestions are neither complete nor comprehensive.

14.3 REGIONAL IMBALANCE: (Regional disparity and development policies in India)

I) Post-Independence Period:

Government's economic policies during the colonial period were more to protect the interests of the British economy rather than for advancing the welfare of the Indians. The primary concerns of the Government were law and order, tax collection and defence. As for development, Government adopted a basically laissez-faire attitude. Of course, railways, irrigation systems, road network and modern education system were developed during this period. Railways and road network were more to facilitate movements of goods and defence personnel and to facilitate better administrative control. Irrigation canal system was mainly to fight repeated droughts and famines and to boost land revenue.

Education, to begin with, was developed mainly to train lower-ranking functionaries for the colonial administration.

Particularly lacking was a sustained positive policy to promote indigenous industry. Indeed, it is widely believed that government policies, far from encouraging development, were responsible for the decline and disappearance of much of India's traditional industry.

Altogether, the pre-independence period was a period of near stagnation for the Indian economy. The growth of aggregate real output during the first half of the twentieth century is estimated at less than two per cent per year, and per capita output by half of a per cent a year or less.

There was hardly any change in the structure of production or in productivity levels. The growth of modern manufacturing was probably neutralised by the displacement of traditional crafts, and in any case, was too small to make a difference to the overall picture.

Along with an impoverished economy, independent India also inherited some useful assets in the form of a national transport system, an administrative apparatus in working order, a shelf of concrete development projects and a comfortable level of foreign exchange. While it is arguable whether the administrative apparatus built by the British helped or hindered development since 1947, there is little doubt that its existence was a great help in coping with the massive problems in the wake of independence such as restoring civil order, organising relief and rehabilitation for millions of refugees and integrating the Princely States to the Union.

The development projects initiated in 1944 as a part of the Post-war Reconstruction Programme was of particular value to Independent India's first government. Under the guidance of the Planning and Development Department created by the Central Government, a great deal of useful work was done before Independence to outline the broad strategy and policies for developing major sectors and to translate them into programmes and projects. By the time of Independence several of these were already under way or ready to be taken up. They included programmes and projects in agriculture, irrigation, fertilizer, railways, newsprint and so on. Though the first Five Year Plan began in 1950-51, with the establishment of Planning Commission, a well-rounded planning framework was in place only with the second Five Year Plan after five years. By and large, the basis of the first Five Year Plan was the groundwork done before independence. Most of the principal projects were continuations and major efforts were made to complete them early.

II. Recent Trends

Regional disparities are the result of our unfinished task of nation building. These reflect essentially the inadequacies of the development strategy followed since independence and its failure to correct the distortions brought about by colonial rule. Of late, these tensions have acquired alarming proportions and are threatening to strike at the very roots of the nation state. This has brought to sharp focus the need of better understanding of the pattern of regionalization, the nature of regional imbalances and their changing structure over time.

Hence, balanced regional development is necessary for the harmonious growth of federal state like India, however, presents a picture of wide regional variations, in terms of per capita income, proportion of population living below the poverty line, working population in agriculture, the percentage of urban population over total population, etc.

To study the regional imbalance, the 15 major states of India have been classified into two major groups

Forward States (48% of Total Population)	Population as per 2001 census	Backward States (42% of Total Population)	Population as per 2001 census
Punjab	2,43,58,999	Madhya Pradesh	6,03,85,118
Maharashtra	9,67,52,247	Assam	2,66,55,528
Haryana	2,11,44,564	Uttar Pradesh	16,60,52,859
Gujarat	5,06,71,017	Rajasthan	5,64,73,122
West Bengal	8,01,76,197	Orissa	3,68,04,660
Karnataka	5,28,50,562	Bihar	8,29,98,509
Kerala	3,18,41,374		
Tamil Nadu	6,24,05,679		
Andhra Pradesh	7,62,10,007		

Imbalance in per capita :

Forward States	Per Capita Income atcurrent prices (2005-2006) in Rs.	Rank
Punjab	36759	3
Maharashtra	37081	2
Haryana	38832	1
Gujarat	34157	4
West Bengal	25223	9
Karnataka	27291	7
Kerala	30668	5
Tamil Nadu	29958	6
Andhra Pradesh	26211	8
Average	31798	
Backward States		
Madhya Pradesh	15647	3
Assam	18598	6
Uttar Pradesh	13262	2
Rajasthan	17863	5
Orissa (2004-2005)	16306	4
Bihar	7875	1
Average	14925	

Since, per capita income shows the average annual earnings of a single person in a particular region. It can be treated as an indicator for regional development. As the past record shows that the Punjab topped the list as it had the highest per capita income in 1990-91 and Orissa was at bottom. In 2002-03, Maharashtra was at top and Bihar was at bottom on the basis of per capita income. However, this list was again changed in 2005-06, Haryana was at top and Bihar was at bottom on the basis of per capita income. This implies that the backward states with very large population share – U.P., Bihar and Madhya Pradesh – acted as a drag on the growth process of the Indian Economy.

Indian economy has experienced an average annual growth rate of around 6 per cent during the last two decades. Though, moderate compared to the performance of several east Asian economies during the same period, this was quite impressive compared to the performance of Indian economy during the preceding three decades when the average growth logged 3.5 per cent per annum. Even the growth rate of 3.5 per cent experienced during the first three decades of the republic had been spectacularly better that the virtual stagnation of the Indian economy during the first half of the Twentieth Century. In terms of per capita income, the improvement has been even more remarkable - around 4 per cent per annum in the recent period as compared to less than 1.5 per cent in the earlier period. Further, during the recent period, there has been a steady acceleration in the growth performance over the years. The average compound growth per annum was 5.7 per cent during the Sixth Five Year Plan (1980-85), 6.0 per cent during the Seventh Plan (1985-90) and 6.6 per cent during the Eighth Plan (1992-97). While the growth rate dropped to 3.1 per cent during the two-year period 1990-92 in the wake of international payment crisis and the introduction of major economic reforms, the growth process picked up fast in the subsequent years. Indeed, the growth averaged about 7.5 per cent during the three-year period ending 1996-97, which is impressive by any standards. The growth rate has been somewhat lower in the subsequent three years. In contrast to stagnation/negative growth of most of the East Asian economies India's performance, however, is remarkable. The World Bank and other international agencies have characterized India as one of the fastest growing economies of the world.

As is to be expected, improvement in economic growth and per capita income translated, at least partly, into reduction in the level of poverty in the country. Though there are differences in the estimates of the percentage of the poor by different sources, all agree that there has been a secular decline in the share of poor in the population since the late Seventies. The official estimates of population below poverty line released by the Planning Commission

on the basis of the Expert Group methodology indicate this secular downward trend:

Year	1977-78	1983	1987-88	1993-94	1999-2000
Percentage of poor	51.3	44.5	38.9	36.0	26.10

The last two decades had seen the introduction/expansion of several anti-poverty programmes and public intervention policies in favour of the poor including public distribution of subsidized food grains. The reduction in poverty in the recent period is attributed to anti-poverty programmes by their protagonists and to accelerated economic growth by market friendly experts.

Along with faster economic growth and reduction in poverty, there has been accelerated improvement in various indicators of human development since the early Eighties whether it is in the case of demographic characteristics or social development indicators. During the last two decades, the country has made major strides in health and education sectors. The economy got diversified significantly and the share of the service sector in employment and incomes improved considerably. While there is a broad consensus on the overall improvement of the economy and quality of life during the period under consideration, there are significantly differing perceptions about the distributional impacts of these gains.

Disparities in economic and social development across the regions and intra-regional disparities among different segments of the society have been the major planks for adopting planning process in India since independence. Apart from massive investments in backward regions, various public policies directed at encouraging private investments in such regions have been pursued during the first three decades of planned development. While efforts to reduce regional disparities were not lacking, achievements were not often commensurate with these efforts. Considerable level of regional disparities remained at the end of the Seventies. The accelerated economic growth since the early Eighties appears to have aggravated regional disparities. The on-going economic reforms since 1991 with stabilisation and deregulation policies as their central pieces seem to have further widened the regional disparities. The seriousness of the emerging acute regional imbalances has not yet received the public attention it deserves.

Most of the studies on inter-country and inter-regional differences in levels of living and income are done within the theoretical framework of neoclassical growth models. These

models, under plausible assumptions demonstrate convergence of incomes. Three notable recent studies[3], however, indicate that in the Indian context these convergence theories do not explain the ground realities.

The scope of analysis in this section is restricted to a comparative analysis of the emerging trends in fifteen major States[4] in respect of a few key parameters which have an intrinsic bearing on social and economic development. The variables chosen for examination include those which have a bearing on gender and equity issues. The fifteen States together account for 95.5 per cent of the population of India. The remaining 4.5 per cent of the population is spread out in 10 smaller States and seven Union Territories including the National Capital Territory of Delhi. Leaving out these States and UTs from detailed study is mainly due to non-availability of all relevant data and also to keep the data sets analytically and logistically manageable. The fifteen States taken up for the detailed study have been grouped into two - a forward group and a backward group. The forward group consists of Andhra Pradesh, Gujarat, Haryana, Karnataka, Kerala, Maharashtra, Punjab and Tamil Nadu. The backward group comprises of Assam, Bihar, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh and West Bengal.

Geographically, the forward group of States fall in the Western and Southern parts of the country and are contiguous except for Punjab and Haryana which are separated by Rajasthan from the rest of the States in this group. The group of backward States are in the Eastern and Northern parts of the country and are geographically contiguous. Another notable geographical feature is that while six out of eight States, except Haryana and Punjab, in the first group have vast sea coasts, only two out of the seven in the second group viz., Orissa and West Bengal are littoral. While the forward group of States account for about 40.4 per cent of the national population, the backward group accounts for as much as 55.1 per cent of the population of the country according to 2001 census[5]. In terms of natural resources including mineral wealth, water resources and quality of soil, the latter has definite edge over the former.

A limitation of inter-regional analysis using States as units is the fact that this may not be able to capture the significant intra-State disparities in economic and social development, which exists today. The larger States in both the groups have regions within themselves, which are vastly different in terms of various indicators of development. There are identifiable distinct regions, at different stages of development, in several States. After discussing the inter-regional disparities in development, treating States as units, we will take up intra-State disparities for a brief analysis in the latter part of the present study.

14.4 POLICY INITIATIVES FOR BALANCED REGIONAL GROWTH

We shall initiate the discussion on initiatives for balanced regional growth by illustrating two instances of initiatives in the past. One relates to agriculture and the other relates to industry, the two most important sectors of our economy. The strategy to boost agricultural production and to ensure food security was evolved in the mid-Sixties when the country faced a grim situation following two consequent years of severe draught. The strategy consisted of various incentives to farmers to adopt high yielding seeds of wheat and paddy along with complimentary inputs, assured minimum support prices for the output, buffer stocking of the foodgrains and supplying the same to the States to distribute through the public distribution system (PDS) to the consumers, especially in the deficit regions. To back up this strategy, institutions like Agricultural Prices Commission (APC), Food Corporation of India (FCI) and Warehousing Corporation of India and other ancillary institutions were established. Arrangements were made to spread the message of high yielding seeds and the associated package of inputs and practices.

The above strategy ushered in a green revolution, which resulted in doubling of wheat and rice production in the country over a short period. Adequate foodgrains surpluses were generated to build up the needed buffer stock. India was no more a 'basket case'.

The initial success of green revolution strategy was restricted to Punjab, Haryana and western Uttar Pradesh where assured irrigation networks already existed. Subsequently it was extended to a few irrigation commands in the South and West also. It was, however, expected that with the expansion of assured irrigation the green revolution would spread to other parts of the country soon. In the event this did not happen. Even today almost the entire foodgrain surpluses are generated by the small region, which benefited initially. Though massive public funds are spent on food subsidies, very little is spent on spreading irrigation. Besides food subsidies, large implicit subsidies to farmers for power, diesel, canal irrigation, fertilizer and credit are born by public exchequer at the Centre and in the States.

Agricultural Price Policy which was evolved by APC to ensure adequate protection to the interests of the producers and consumers has been 'high-jacked' to serve the interests of the large farmers who produce for the market. It hardly serves the interests of farmers in the emerging surplus regions. The distinction between support price and procurement price is no more there.

Similarly, the Food Corporation of India and the associated procurement agencies operate, by and large, only in the traditional surplus regions and farmers in newly emerging surplus regions almost invariably end up selling their surpluses in distress.

Today the foodgrain management and the food security system is near collapse. As against a total requirement of 24 million tonnes of foodgrain for buffer stock and PDS together, the public stock is over 60 million tones as on July 1,2001. A substantial share of this is not even properly stored and may not be suitable for human consumption. On the other hand due to severe drought conditions large scale unemployment and hunger are reported from several States. Per capita net availability in the market has come down. PDS system has virtually collapsed. Poor people cannot afford the 'so called economic price' of foodgrains available in the PDS shops.

The economic liberalization policy initiated since the early 1991 has made large-scale delicensing of industry and changes in the industrial location policies, and thus, curtailed the role of the state as industrial owner and location regulator. With the increasing dominance of private sector in industrialization under liberalization it is expected that industries will be more spatially concentrated in the leading industrial regions. However, the neoclassical principle suggests that in the long run "divergence is followed by convergence". This is in contrast with the theory that raises the question about the regional industrial development in India under the two policy regimes.

Industrial undertakings are free to select the location of a project. In the case of cities with population of more than a million (as per the 1991 census), however, the proposed location should be at least 25 KM away from the Standard Urban Area limits of that city unless, it is to be located in an area designated as an ''industrial area'' before the 25th July, 1991. (List of cities with population of 1 million and above is given at Annexure-V). Electronics, Computer software and Printing (and any other industry which may be notified in future as "non polluting industry") are exempt from such location restriction. Relaxation in the aforesaid location restriction is possible if an industrial license is obtained as per the notified procedure.

The location of industrial units is further regulated by the local zoning and land use regulations as also the environmental regulations. Hence, even if the requirement of the location policy stated in paragraph 1.3 is fulfilled, if the local zoning and land use regulations of a State Government, or the regulations of the Ministry of Environment do not permit setting up of an industry at a location, the entrepreneur would be required to abide by that decision.

Liberalisation of the Location Policy A significantly amended locational policy in tune with the liberlised licensing policy is in place. No industrial approval is required from the Government for locations not falling within 25 kms of the periphery of cities having a population of more than one million except for those industries where industrial licensing is compulsory. Non-polluting industries such as electronics, computer software and printing can be located within 25 kms of the periphery of cities with more than one million population. Permission to other industries is granted in such locations only if they are located in an industrial area so designated prior to 25.7.91. Zoning and land use regulations as well as environmental legislations have to be followed.

Policy for Small Scale A differential investment limit has been adopted since 9th October 2001 for 41 reserved items where the investment limit upto rupees five crore is prescribed for qualifying as a small scale unit. The investment limit for tiny units is Rs. 25 lakhs.

749 items are reserved for manufacture in the small scale sector. All undertakings other than the small scale industrial undertakings engaged in the manufacture of items reserved for manufacture in the small scale sector are required to obtain an industrial licence and undertake an export obligation of 50% of the annual production. This condition of licensing is, however, not applicable to those undertakings operating under 100% Export Oriented Undertakings Scheme, the Export Processing Zone (EPZ) or the Special Economic Zone Schemes (SEZs).

Non-Resident Indians Scheme

The general policy and facilities for Foreign Direct Investment as available to foreign investors/company are fully applicable to NRIs as well. In addition, Government has extended some concessions specially for NRIs and overseas corporate bodies having more than 60% stake by the NRIs. These inter-alia includes (i) NRI/OCB investment in the real estate and housing sectors upto 100% and (ii) NRI/OCB investment in domestic airlines sector upto 100%.NRI/OCBs are also allowed to invest upto 100% equity on non-repatriation basis in all activities except for a small negative list. Apart from this, NRI/OCBs are also allowed to invest on repatriation/non-repatriation under the portfolio investment scheme.

Electronic Hardware Technology Park (EHTP)/Software Technology Park (STP) scheme for building up strong electronics industry and with a view to enhancing export, two schemes viz. Electronic Hardware Technology Park (EHTP) and Software Technology Park (STP) are in operation. Under EHTP/STP scheme, the inputs are allowed to be procured free of duties.

The Directors of STPs have powers to approved fresh STP/EHTP proposals and also grand post-approval amendment in repsect of EHTP/STP projects as have been given to the Development Commissioners of Export Processing Zones in the case of Export Oriented Units. All other application for setting up projects under these schemes, are considered by the Inter-Ministerial Standing Committee (IMSC) Chaired by Secretary (Information Technology). The IMSC is serviced by the SIA.

Policy for Foreign Direct Investment (FDI) The Department has put in place a liberal and transparent foreign investment regime where most activities are opened to foreign investment on automatic route without any limit on the extent of foreign ownership. Some of the recent initiatives taken to further liberalise the FDI regime, inter alia, include opening up of sectors such as Insurance (upto 26%); development of integrated townships (upto 100%); defence industry (upto 26%); tea plantation (utp 100% subject to divestment of 26% within five years to FDI); Encenhancement of FDI limits in private sector banking, allowing FDI up to 100% under the automatic route for most manufacturing activities in SEZs; opening up B2B e-commerce; Internet Service Providers (ISPs) without Gateways; electronic mail and voice mail to 100% foreign investment subject to 26% divestment condition; etc.

14.5 GLOBALIZATION

One of the most significant changes in the world economy over the past two decades has been a growing globalization of markets and industries. Numerous forces have contributed to rising globalization, including reductions in multilateral and regional trade barriers, reduced costs of international transport and communications and reform and greater global integration of capital markets. The ongoing consequences of globalization include widespread industry rationalization and heightened competition at national, regional, and global levels as evidenced by significantly higher levels of foreign competition and increases in both cross-border mergers and acquisitions and the number of multinational firms.1 Increasing vertical linkages, as production activities become more specialized and spatially dispersed,2 have complemented the growing horizontal linkages among nations. The ongoing processes of globalization, particularly changes in the competitive conditions facing firms as markets and industries globalize, are significant economic phenomena that can, like other phenomena that change a firm’s business and competitive conditions, be expected to induce changes in corporate strategy. Such influences may in particular impact a firm’s international diversification strategy, defined as the decision to expand

Definition: Though the precise definition of globalisation is still unavailable a few definitions worth viewing, Stephen Gill: defines globalisation as the reduction of transaction cost of transborder movements of capital and goods thus of factors of production and goods. Guy Brainbant: says that the process of globalisation not only includes opening up of world trade, development of advanced means of communication, internationalisation of financial markets, growing importance of MNC's, population migrations and more generally increased mobility of persons, goods, capital, data and ideas but also infections, diseases and pollution

Globalization and competition:

1) The causes of increased global trade include:

- Economic growth itself which both creates ever increasing demand for imports and also increases the capacity of economies to produce exports; it also generates greater amounts of savings which may be invested domestically and internationally to meet the greater investment demands associated with economic growth.

- Technological innovation. This pervades most fields of economic activity but is especially great in the areas of information and communication technology. A sector particularly affected by technological growth in these areas is the financial services sector which, in turn, facilitates higher degrees of financial and economic interaction between economies in different countries.

- Falling transport costs.

- International, as well as domestic, liberalisation of trade, investment and economic activity generally.

It is important to note that the European Union has been particularly active in trying to promote a global approach to competition policy and in promoting the inclusion of competition issues in the next round of trade negotiations at the WTO.

2) Global Cartels

Global cartels, that is, cartels organised on an international scale, have been in existence since the beginnings of international trade. There is a long history of cartels, in particular, during the nineteenth and early parts of the twentieth century. Indeed, in 1907 an important US Antitrust case sought to end the tobacco cartel which had divided up world markets between British producers, who controlled the UK; US producers, who controlled the US; and the rest of the world, which was divided up and allocated to either

British or American producers who agreed not to compete in one another's markets.

3) Global mergers:

In recent times there has been a spectacular increase in the extent of international merger activity, in one sector after another finance, communications, oil, airlines, pharmaceuticals, automotive professional services and so on. For the most part, these mergers are not anticompetitive and pose no major challenge to the global economy's major competitiveness. Indeed, in many cases, they enhance competitiveness and improve economic efficiency by creating more efficient arrangements for international business transactions.

4) Globalizations facilitated by rapid advances in technology, are creating new dynamics of competition and, in so doing, render the determinants of competitiveness much more complex. As already established in the preceding discussion, greater efficiency is the source of competitiveness. In the context of international trade, competitiveness is traditionally defined in terms of exchange rates, costs and prices. Nowadays a distinction is drawn between static competitiveness and dynamic competitiveness.2 In the former, the emphasis is on price competition whereby firms compete on the basis of received endowments such as low-cost labour and natural resources. Under these circumstances, retaining competitiveness is dependent on maintaining or lowering production costs. This is the basis on which many developing country firms compete. Dynamic competitiveness is associated with the changing nature of competition, which places a premium not only on the relationship between costs and prices but also on firm-level ability to learn, rapidly adjust to new market conditions and innovate (where innovation is defined in the broadest terms and is not necessarily confined to radical technological innovation).3 In this framework, competitiveness refers to the ability of firms to produce goods and services that stand the test of international competition, while upgrading technological capabilities.

5) With globalization and liberalization, the boundaries between national and international markets have become blurred, traditional distinctions between national and international competitiveness thus becoming redundant. This blurring of boundaries has implications particularly for small and medium-sized enterprises (SMEs), which were previously insulated from international competition by national borders. A lack of finance and insufficient technological capabilities limit the ability of even firms that were domestically competitive prior to liberalization to respond to competition that cuts too quickly into their market share. In underdeveloped markets with few participants, technological learning can be extremely risky and expensive for the individual

firm and is often not undertaken in the absence of supporting policies to facilitate their adjustment.

6) A notable feature of the changing nature of competition is a radical alteration in the organization of firms as well as the organization of production, marketing and distribution of goods and services at the international and national levels. In order to adapt and remain competitive firms are exploiting externalities or "knowledge spillovers" through inter-firm cooperation. Access to and possession of knowledge, in addition to technical hardware, has become an important asset for global producers. Networking and being part of a production network is an increasingly important way in which firms get to "know-what", "know-how", "know-why" and know-who" in their particular line of business. The importance of innovation, and its research and development costs, has given rise to the duality of cooperation and competition.

7) An increasingly significant form of inter-firm cooperation and coping mechanism utilized by firms in the face of the new competition is mergers and acquisitions. Globalization, capital market pressures, the evolution of technical infrastructure required to support networking and the advent of the Internet have precipitated global industry consolidation. Among the industries in which this trend towards consolidation is documented are banking and financial services, cigarettes, petroleum products, airlines, telecommunications, chemicals, sport shoes, beverages, automobile production and food services. According to a recent study on the phenomenon,5 at the end of the various stages of consolidation, the three largest market participants will typically have captured 70–80 per cent of the market.

8) Although high concentration does not necessarily equate with a lack of competition and need not have a negative impact on economic performance, it does facilitate the exercise of market power and anti-competitive behaviour.6 The duality between cooperation and competition is not only a justification for countries to develop and enforce competition policies, but it also demands increased vigilance and sophistication on the part of competition policy enforcement authorities to ensure that cooperation does not lend itself to anticompetitive behaviour by merged or networked firms, care being taken at the same time not to stifle innovation and, in so doing, competition and competitiveness.

14.6 PRIVATIZATION

The term "privatization" also has been used to describe two unrelated transactions. The first is a buyout, by the majority owner, of all shares of a public corporation or holding company's stock,

privatizing a publicly traded stock, and often described as private equity. The second is a demutualization of a mutual organization or cooperative to form a joint stock company.

Privatization is frequently associated with industrial or service-oriented enterprises, such as mining, manufacturing or power generation, but it can also apply to any asset, such as land, roads, or even rights to water. In recent years, government services such as health, sanitation, and education have been particularly targeted for privatization in many countries.

Privatization is the incidence or process of transferring ownership of a business, enterprise, agency or public service from the public sector (the state or government) to the private sector (businesses that operate for a private profit) or to private non-profit organizations. In a broader sense, privatization refers to transfer of any government function to the private sector - including governmental functions like revenue collection and law enforcement.

In theory, privatization helps establish a "free market", as well as fostering capitalist competition, which its supporters argue will give the public greater choice at a competitive price. Conversely, socialists view privatization negatively, arguing that entrusting private businesses with control of essential services reduces the public's control over them and leads to excessive cost cutting in order to achieve profit and a resulting poor quality service.

In general, nationalization was common during the immediate post-World War 2 period, but privatization became a more dominant economic trend (especially within the United States and the United Kingdom) during the 1980s and '90s. This trend of privatization has often been characterized as part of a "global wave" of neoliberal policies, and some observers argue that this was greatly influenced by the policies of Reagan and Thatcher. The term "privatization" was coined in 1948 and is thought to have been popularized by *The Economist* during the '80s.

Indian scenario:

1) The process of privatization in India is linked with the economic reforms launched in 1991. The trigger for the reforms was a severe financial crisis the government faced. Caused by the profligate external borrowing of the eighties and the 1991 Gulf crisis, a severe shortage of foreign exchange led to a situation where basic petroleum supplies could not be obtained. Under pressure from the World Bank and the International Monetary Fund (IMF), the government agreed to several macroeconomic reforms. At that time it was realized that a process of

microeconomic reforms could be implemented. Several of these ended the policy of trade and industrial licensing that the 'licence raj' had been built on. These opened up the Indian industry to the forces of entrepreneurship and competition, and made Indian markets contestable. The entry by private enterprises into sectors that were reserved for the state or where the state had a significant presence could, therefore, create competitive pressures on existing state-owned units to perform better, or through a process of atrophy reduce the proportion of overall low performing units in Indian industry as a whole.

2) With respect to the issue of privatization, the government recognized the need, from a fiscal perspective, of superior performance from the public sector. State-owned enterprises were an economic deadweight, causing substantial losses to the economy. The main activities during the reforms process were that of de-licensing and removal of controls. These activities required notification processes to be undertaken, and these to be undertaken by the ministries concerned, rather than the undertaking of several operational activities required to actually implement procedural changes in government departments or agencies. Institutional competence extended to the drafting of resolutions, but not to the myriad operational tasks that would normally accompany the re-structuring of processes and procedures or the sale of assets.

3) In accordance with this approach, the public-sector reforms were initially based on what I term a *strategy of notification*, this being a relatively easy and painless activity to perform relative to the much harder to perform privatization activity with its various operational tasks and requirements. Before the reforms were launched in 1991, 17 specific areas of activity were exclusively reserved for the public sector. The reforms of 1991 reduced the number of exclusive areas reserved for the public sector to eight, which were: arms, ammunition, defence equipment, including aircraft and warships; atomic energy; coal and lignite; mineral oils; mining of ferrous and certain non-ferrous metals, gold and diamonds; atomic mineral; and railway transport. In 2002, this list has been subsequently brought down to three sectors: atomic energy; atomic minerals; and railway transport. This opening up of industry segments would energize the private sector and lead to the entry of new firms.

4) Several actual privatizations were anticipated.10 Nevertheless, in the period 1991–92 to 1997–98, the pace of privatization of government-sector enterprises in India has been extremely slow. Unlike, say, the privatization process in the United Kingdom, in which majority stakes in state enterprises were sold

outright in a short time, small minority stakes were sold in Indian companies. Data from the Department of Disinvestment show that in the early years of the reforms process, the years 1991–92 and 1992–93, minority stakes in 47 and 35 companies were sold. In all of the subsequent later years to 1997–98, minority stakes in just 20 companies were sold. Of the targeted receipts of almost Rs 30,000 crore from privatization, the actual receipts from privatization amounted to Rs 11,000 crore in the entire period. These were extremely trivial amounts.

5) The amounts raised via privatization are extremely small when viewed against the average book value of investments of, say, Rs 200,000 crore in the central sector enterprises in that same overall period. The receipts from the privatization of the enterprises owned by the governments of the various states of the Indian union, in which approximately over Rs 250,000 crore have been sunk, has been nil and on the other hand, a number of these enterprises have been closed down with the governments making separation payments to the staff involved. The sums received are hardly likely to make more than a tiny hole in the fence that runs around the boundaries of the involvement of the state in Indian industry, or for that matter, in the fiscal deficit.

6) Thus, a reasonably easy conclusion to draw is that the quantum of privatization in India has been so negligible as to be non-existent. This, in part, may reflect the ambivalence of the then prime minister, the late Mr P.V. Narasimha Rao, towards privatization. Das writes that: He was against privatization of the public sector because of his deep faith in Nehru's mixed economy. 'You don't strangulate a child to whom you have given birth,' he said. However, he sought to improve the public sector's performance by introducing competition from the private sector. (Das 2002: 223)

7) If privatization has been negligible and inconsequential, are the boundaries of the state in Indian industry shrinking at least because of private-sector enterprise growth, or do they still remain as they were? In the next section, the DCA data that are used to address this issue are described. The results of the analyses are reported on in subsequent sections.

14.7 SUMMARY

1) The economic reforms initiated in 1991 were also essentially crisis driven. It was the international payment crisis which forced the country to carry out deregulation of trade and industry. Again, once the crisis was overcome reforms also slowed down. There are several vital areas of reforms, which we have been talking about for the last one decade without

doing much—public sector reforms, reform of labour laws, reform of the legal system, establishment of effective regulatory bodies and so on. Again, it is the politicians, the bureaucrats, the 'Deshi' industrialists and the trade union leaders who are standing in the way. They do not want to give up the powers, perks and monopoly profits, which they have been enjoying.

2) The main interest of the foreigners in India is its large potential market. Unless the rural incomes grow, especially in the backward regions this potential market will not be realized. Corporate India must realize that its future lies with the masses. Raising rural incomes should no longer be looked upon only as a philanthropic objective.

3) Also reduction of regional disparities should be looked upon as a national objective. The strength of a building depends on the strength of its weakest pillar. In a similar way the strength of the Indian economy depends on the strength of the economy of Bihar. Similarly, the bottomline of India's human development will depend on the incomes and socio-demogrpahic indicators of development in northern and eastern India.

4) While the development of depressed regions is a national responsibility, the solution mainly rests with the local leadership. Unless the local leadership—political, bureaucratic and intellectual—resolve to usher in development based on sharing the gains on egalitarian basis with the masses, results will be hard to come by. Resources are not the real constraint. It is the way resources are spent. Large sums are spent on education and health care in the backward States. But the results are not there. This happens because the teachers and medical personnel who are expected to provide the requisite services draw their salaries but provide poor services or no services. Unless this kind of work culture in public services changes, funds alone will not solve the problems.

5) Industrial growth is essential for raising the economic growth in a country like India. However, the regional variation in the industrial development is one of the primary causes of the regional disparities in India. The findings show that the post liberalization period has witnessed more concentration of manufacturing industries, which suggests widening the inter-regional divergence in India in terms of industrial development in the post liberalization period. The Southern region has gained employment shares over the years at the cost of the Eastern region and to some extent Central region. At the states level, the share of West Bangle and Maharashtra has declined significantly, while that of Andhra Pradesh and Tamil Nadu has increased. Considering the degree of diversification it if found that Central and Southern regions have become more

diversified, while Eastern and Northwest regions become less diversified over the years. It is observed that the nature of specialization varies with the degree of diversification. The less diversified states, in general, specialized in a set of consumer goods industries, while the middle level diversified and diversified states are specialized in intermediate goods and capital goods industries. Further, it show that the less diversified states remain in the same relative ranks over the years, while changes have taken place in the relative ranks of the middle level diversified and diversified states. On the whole it concludes that India is diverging, not converging in terms of inter-regional distribution of manufacturing industries in the post liberalization period. The tendency to catch up the industrially developed states is hardly seen among the backward states. Thus, we can say that the regional development of industries in India in the post liberalization period follows the classic "virtuous cycle" principles.

14.8 QUESTIONS

1. Explain the factors influencing Industrial location.
2. Critically examine the Webers' Theory of Industrial location.
3. Discuss the causes of regional imbalances in India.
4. Explain the Policy initiatives by the government for balanced regional growth in India.
5. Discuss the impact of Globalization and Privatization on Indian industries.

15

INDUSTRIAL SIKNESS AND EXIT POLICY

Unit Structure :

15.0 OBJECTIVES

- To understand the meaning and causes of industrial sickness
- To study the reasons for sickness in small scale industry
- To study the remedies for industrial sickness
- To study the Exit policy
- To understand the concept of competitiveness
- To study the concept of Total Factor Productivity
- To study the Pricing Policy

15.1 INTRODUCTION

The Industrial Sickness causes loss of production, loss of employment, loss of revenue to the Central and State Governments and locking up of investible funds.

Definition according to companies Act, 2002 Sick industrial company means an industrial company which has Accumulated losses in any financial year which are equal to50 percent or more of its average net worth during four year immediately preceding such financial year Failed to repay its debts within any three consecutive quarter on demand made in writing for its repayment by a creditor of such company.

As per the industrial policy Public enterprises which are chronically sick and which are unlikely to be turned around will, for the formulation of revival rehabilitation scheme, be referred to the board for industrial and financial reconstruction (BIFR).

Industrial sickness is growing at an annual rate of about 28% and 13% respectively in terms of number of units and out standing number of bank credit. It is reckoned that as of today there are more than 2 lakhs sick units with an outstanding bank credit of over Rs7000crore nearly 29000 units are added to sick list every year.

Industrial sickness especially in small-scale Industry has been always a demerit for the Indian economy, because more and more industries like – cotton, Jute, Sugar, Textile small steel and engineering industries are being affected by this sickness problem.

CAUSES OF INDUSTRIAL SICKNESS:

Most of the Indian authors and researchers have classified the different types of industrial sickness under two important categories. They are:

1) Internal Cause for sickness:

We can say pertaining to the factors which are within the control of management. This sickness arises due to internal disorder in the areas justified as following:

a) Lack of Finance:

This including weak equity base, poor utilization of assets, inefficient working capital management, absence of costing & pricing, absence of planning and budgeting and inappropriate utilization or diversion of funds.

b) Bad Production Policies :

The another very important reason for sickness is wrong selection of site which is related to production, inappropriate plant & machinery, bad maintenance of Plant & Machinery, lack of quality control, lack of standard research & development and so on.

c) Marketing and Sickness:

This is another part which always affects the health of any sector as well as SSI. This including wrong demand forecasting, selection of inappropriate product mix, absence of product planning, wrong market research methods, and bad sales promotions.

d) Inappropriate Personnel Management:

The another internal reason for the sickness of SSIs is inappropriate personnel management policies which includes bad wages and salary administration, bad labour relations, lack of behavioral approach causes dissatisfaction among the employees and workers.

e) Ineffective Corporate Management:

Another reason for the sickness of SSIs is ineffective or bad corporate management which includes improper corporate planning, lack of integrity in top management, lack of coordination and control etc.

2) External causes for sickness:

a) Personnel Constraint:

The first for most important reason for the sickness of small scale industries are non availability of skilled labour or manpower wages disparity in similar industry and general labour invested in the area.

b) Marketing Constraints:

The second cause for the sickness is related to marketing. The sickness arrives due to liberal licensing policies, restrain of purchase by bulk purchasers, changes in global marketing scenario, excessive tax policies by govt. and market recession.

c) Production Constraints:

This is another reason for the sickness which comes under external cause of sickness. This arises due to shortage of raw material, shortage of power, fuel and high prices, import-export restrictions.

d) Finance Constraints:

Another external cause for the sickness of SSIs is lack of finance. This arises due to credit restrains policy, delay in disbursement of loan by govt., unfavorable investments, fear of nationalization.

15.2 REASONS FOR SICKNESS IN SMALL SCALE INDUSTRY

Small enterprises are presently seriously handicapped in comparison with larger units by an inequitable allocation system for scarce raw materials and imported components, lack of provision of credit and finance; low technical skill and managerial ability; and marketing contracts. It is, therefore, essential to develop an overall approach to remove these disabilities.

It is thus obvious that these industries, despite their importance in the economy, are not contributing to their full towards the development of the country along the desirable lines. It is because these are beset with a number of problems concerning their operations. These may be described as under:

• Inadequacy of finance:

A serious problem of these industries is in respect of credit both for long-term and short-term purposes. This is evident from the fact that the supply of credit has not been commensurate with their needs associated with fixed and working capital.

Difficulties of Marketing:

These industries are also up against the crucial problem of marketing their products. The problem arises from such factors as small scale of production, lack of standardization, inadequate market intelligence, competition from technically more efficient units, etc. Apart from the inadequacy of marketing facilities, the cost of promoting and selling their products too is high.

• Shortage of raw materials:

Then there is the problem of raw materials which continues to plague these industries. Raw materials are available neither in sufficient quantity, nor of requisite quality, nor at reasonable price. Being small purchasers, the producers are not able to undertake bulk buying as the large industries can do. The result is taking whatever is available, of whatever quality and at high prices.

• Low-level technology:

The methods of production, which the small and tiny enterprises use, are old and inefficient. The result is low productivity and high costs. There is little of research and development in this field in the country. There is almost no agency to provide venture capital to cover risks associated with the introduction of new technologies.

• Competition from large-scale industries:

Another serious problem, which these industries face, is that of competition from large-scale industries. Large-scale industries, organized as they are on modern lines, using latest production technology and having access to many facilities, can easily outsell the small producers.

15.3 REMEDIES

Majority of sick units is retrievable in order to tackle the problem of sickness from the two angles the role of three agencies assumes significance: a) The government b) Financial institutions and the industry associations.

a) The Role of Government:

If the number of units in the country has increased some 10 times since independence and if we have diversified industrial structure with wide spread entrepreneurship the credit for this largely belongs to government.

Second area where the government can be helpful is Vis-à-vis industrial licensing. The very existence of licensing and monopoly regulation legislation implies that there is a stampede to "to get in" when ever licensing is liberalized for an industry or an economy as a whole

b) The Role Of Financial Institutions:

The following are the ways by which sickness can be prevented by financial institutions :

1. Continuous monitoring of unit
2. Careful project appraisal
3. Professional institutional response to unit's problems
4. Required systems at client units
5. Incentives to units to remain healthy

c) The Role Of Industry Associations :

A good practical review by each industry association of installed and usable capacity in the industry , capacity utilization , growth trends , problems etc should be useful 4 the potential new entrants 4 deciding whether 2 enter the industry or not. The industry can have some sort of 1st aid cell this could consist of professionals who could go to the aid of a unit that is beginning to fall with the offer of managerial and technical help also.

15.4 EXIT POLICY

Exit policy is a directive by the administration on wrapping up industry operations. It helps an enterprise to draw out from its business (for any reason) while securing the interests of engaged parties. Exit Policy envisages the shutting down of sick public sector units and the retrenchment of surplus labor. It does not let company exit without any protection for workers.

The introduction of reforms in India and the consequent liberalisation of the economy have exposed the entrepreneurs to an ever increasing competition. Since then, several policy measures have been undertaken by the Government in order to enhance the global competitiveness of the Indian companies. One of the important sets of policy measures relates to reforms in the labour

sector. But the most contentious issue in this sector which still remains unaddressed is that of the EXIT policy. This is because the companies have been arguing for a flexible EXIT policy while the labour unions have been against such a step because of their fear of loss of job security. But a liberal policy towards the entry and expansion of firms would be beneficial only if it is accompanied with a rational policy towards the exit of unviable firms. It is a necessary condition for inducing competition and enhancing the efficiency of resource use.

The term 'exit' is the obverse of the term 'entry' into industry. It refers to the right or ability of an industrial unit to withdraw from or leave an industry or in other words to close down. The proposal to introduce an exit policy was first mooted in 1991 when it was felt that without labour market flexibility, efficient industrialisation would be difficult to achieve. The need for such a policy arises as a result of modernisation, technology upgradation, restructuring as well as closure of industrial units. Such a policy will allow employers to shift workers from one unit to another and also retrench excess labour. In India, the Industrial Disputes Act, 1947 puts restrictions on employers in the matter of reducing excess staff by retrenchment, by closure of establishments and the retrenchment process involved lot of legalities and complex procedures. Also, any plans of retrenchment and reduction of staff and workforce are subjected to strong opposition by trade unions.

The key consideration in evolving a practical industrial exit policy is the protection of the legitimate interests of workers, both in the public and the private sector. Hence, the Government policy has been that if a unit can be made economically viable by restructuring it and retraining/redeploying the labour, no efforts should be spared to do this. Only in the case of units where even restructuring would not render it economically viable should the option of closure of the unit be allowed. Even here, to minimise the adverse effects of closure of a unit on labour, several options like social security nets, insurance schemes and other employee benefit schemes as well as creation of a fund to pay retrenchment benefits to employees have been in place. Some of the measures introduced are:-

The most important measure is the introduction of Voluntary Retirement Scheme(VRS). It was introduced as an alternative legal solution to solve this problem. It is the most humane technique to provide overall reduction in the existing strength of the employees. It is a technique used by companies for trimming the workforce employed in the industrial unit. It is now a common method used to dispense off the excess manpower and thus improve the performance of the organisation. It is a generous,tax-free severance payment to persuade the employees to voluntarily retire

from the company. It is also known as 'Golden Handshake' as it is the golden route to retrenchment.

VRS allows employers including those in the government undertakings, to offer voluntary retirement schemes to off-load the surplus manpower and thus no pressure is put on any employee to exit. These schemes are also not subjected to vehement opposition by the Unions, because the very nature of its being voluntary and not using any compulsions. It was introduced in both the public and private sectors. Public sector undertakings, however, have to obtain prior approval of the government before offering and implementing the VRS.

A business firm may opt for a voluntary retirement scheme under the following circumstances:-

- Due to recession in the business.
- Due to intense competition, the establishment becomes unviable unless downsizing is resorted to.
- Due to joint-ventures with foreign collaborations.
- Due to takeovers and mergers.
- Due to obsolescence of Product/Technology.

- In order to protect the interest of workers, Government had set up a National Renewal Fund (NRF) in 1992. The objectives and scope of the National Renewal Fund were:- (a) to provide assistance to cover the costs of retraining and redeployment of employees arising as a result of modernisation, technology upgradation and industrial restructuring. (b) to provide funds, where necessary, for compensation of employees affected by restructuring or closure of industrial units, both in the public and private sectors. (c) to provide funds for employment generation schemes both in the organised and unorganised sectors in order to provide a social safety net for labour needs arising from the consequences of industrial restructuring.

The National Renewal Fund had two constituents:-

- **National Renewal Grant Fund (NRGF)** dealt with the immediate requirements of labour arising from the revival or closure of sick units. The funds were disbursed in the form of grants for funding approved schemes relating to retraining, redeployment, counselling and placement services of employees affected by technology upgradation, modernisation, restructuring and revival of industrial undertakings. These funds were also utilised for compensation payments to employees affected by rationalisation in industrial undertakings and parts thereof.

- **Employment Generation Fund (EGF)** disbursed grants for approved employment generation schemes for both the organised and unorganised sectors. It included schemes such as:- (a) Special programme designed to regenerate employment opportunities in areas affected by industrial restructuring. (b) Employment generation schemes for the unorganised sectors in defined areas.

  Though this fund was dissolved, but the Government has been continuously making efforts in this direction.

- Scheme of Counselling, Retraining and Redeployment (CRR) of rationalized employees of Central Public Sector Undertakings (CPSUs)

  The objective and scope of the scheme is to provide opportunities of counselling, retraining and redeployment to the rationalized employees of Central Public Sector Enterprises (CPSEs) rendered redundant as a result of modernization, technology upgradation and manpower restructuring in the Central PSEs. It consists of three main elements:-

- **Counselling:-** is the basic pre-requisite of the rehabilitation programme of the displaced employees. The displaced employees need psychological counselling to absorb the trauma suffered by them due loss of job and the resulting challenges both for himself and for the members of his family. He needs to be made aware of the new market opportunities so that he may, depending upon his aptitude and expertise, take up suitable economic activities.

- **Retraining:-** is to help the rationalized employees in rehabilitation. The trainees will be helped to acquire necessary skills/expertise/ orientation to start new activities and re-enter the productive process after loss of their jobs.

- **Redeployment:-** of such rationalized employees in the production process through the counselling and retraining efforts. At the end of the programme they should be able to engage themselves in alternate vocations of self-employment. Whereas there cannot be any guarantee that the rationalized employee will be assured of alternate employment, yet possible help from the identified nodal training agencies as well as from the concerned Central Public Sector Undertakings (CPSUs) would be extended to them for starting new avocations.

The scheme was introduced by the **Department of Public Enterprises (DPEs)** and has been assigned the responsibility of implementing the scheme through its **CRR Cell**. For carrying out

various activities for implementation of the CRR Scheme, many **nodal training agencies** have been set up which have several **Employees Assistance Centres** located all over the country to meet the training needs under the Scheme.

15.5 CONCEPT OF COMPETITIVENESS

Competitiveness can be defined at the firm level, the industry level, and the national level.

At the firm level, competitiveness is the ability to provide products and services more effectively and efficiently than relevant competitors. This includes sustained success in international markets without protection or subsidies. Measures of competitiveness at the firm level include firm profitability and measures of cost and quality, the exports or foreign sales divided by output, and regional or global market share. Performance in the international marketplace provides a direct measure of the firm's competitiveness.

At the industry level, competitiveness is the ability of the nation's firms to achieve sustained success versus foreign competitors, without protection or subsidies. Measures of competitiveness at the industry level include the overall profitability of the nation's firms in the industrial sector, the industry's trade balance, the balance of outbound and inbound foreign direct investment, and direct measures of cost and quality at industry level.

At the national level, competitiveness means the citizens' ability to achieve a high, and constantly rising, standard of living. In most countries, the standard of living is determined by productivity, which deploys national resources and the output of the economy per unit of labor and/or capital employed. A high and rising standard of living for all nationals can be sustained only by the continuous improvement of productivity, either through achieving higher productivity in existing businesses or through successful entry into higher productivity businesses.

NOMINAL PROTECTION COEFFICIENT: (NPC)

Nominal protection coefficient shows the ratio between the price paid for a product upon entering the country and the price paid inside the nation by consumers. Both imported and exported goods have their own ratios to show the level of additional fees added to products between their point of origin and the final buyer. A higher ratio indicates more government charges and taxes added to the border price, which raises the amount paid by citizens on imported items.

A) Divide the border production price by the price paid for the item in the market (domestic producer price) to find the nominal protection coefficient for imported goods. For instance, a border price of Rs100 per unit divided by a domestic price of Rs 50 per unit would yield a nominal protection coefficient (NPC) of 100/50 = 2.

B) Find nominal protection coefficient for exported items by dividing the private price for the income of an item divided by the public price for the item. For example, a farmer earns Rs. 30 per unit produced, but it sold at Rs.60 on the market, would result in an output NPC of 30/60 = ½ = .5.

C) Examine your data: NPC for input below one suggests taxes, subsidies, government intervention or a restriction of trade. Look for an NPC for output greater than one as an indicator of producer subsidies since the producer earns more than the market would pay.

In other words the *nominal rate of protection* (NRP) on any good is the proportional difference between its domestic and international price arising from the trade policies in question. These policies can include import tariffs, export taxes, quantitative restrictions (licensing requirements, prohibitions, rules of origin, local purchase requirements, etc.) and other 'incentives' such as subsidies and tax rebates. If the only relevant trade policy were a 20 percent import tariff, the NRP would be 20 percent –the proportional difference between the *cif* import price and landed price (and therefore of closely competitive locally produced goods) in the domestic market. With a more complex set of trade policy measures the NRP is an estimate of the equivalent *ad valorem* tariff that would lead to the same difference between domestic and international prices as prevails under the policies in question. The NRP, therefore, is a measure of the total price-raising (or reducing) effects on a tradable good of the trade policies being examined.

THE EFFECTIVE RATE OF PROTECTION (NRP):

The *effective rate of protection* is a commonly used measure of net effect of trade policies on the incentives facing domestic producers. The measurement of effective protection is clearly a two stage process – first determining the nominal protection of the policies in question, and second, analyzing the implications for effective protection of different firms, sectors or activities. Just as increases in nominal protection reduce overall economic welfare by distorting the information provided by domestic prices about relative scarcities of different goods, increases in effective protection cause economic waste by inducing producers to supply goods

domestically even when their domestic costs are higher than their opportunity costs through trade. At the same time, producers of goods with relatively low levels of effective protection are induced to refrain from producing goods domestically even when this could be done at a lower cost than in international markets.

ERP illustration through Example:

The effective rate of protection measures the net protective effect on producers of any product due to the structure of protection on both its inputs and its outputs.

Example:

Consider a simple example of a producer of 'garments' that requires only one intermediate input 'cloth'. Suppose that production of garments worth 100 at world market prices requires the use of cloth worth 75 in world markets. 'World value added' or the cost of all manufacturing margins, including labor and normal returns to capital is 25 (the difference between 100 and 75).

Now consider a domestic producer of garments in a county providing nominal protection at a rate of 30 percent on garments and 20 percent on cloth. The protection provided to garments is clearly beneficial to garment makers, while that on cloth is harmful. What is the net effect? The net effect depends not only on the nominal protection, but also on the market in which the producer wishes to sell.

Case 1: Sales in the Domestic Market

Under this structure of protection the domestic price of garments becomes 130 (100 times 130 percent) while the cost of the cloth required to produce these garments becomes 90 (75 times 120 percent). The maximum domestic value added (or cost of all manufacturing margins) that will permit domestic garment producers to still be able to compete with imports is 40 (130 minus 90), which is higher than 'world value added' of 25. In other words, domestic value added permitted by the structure of protection on cloth and garments is 160 percent of or 60 percent higher than world value added. This increase in domestic value added permitted by the protection structure is known as the *effective rate of protection* provided to local garment production directed at the domestic market.

Case 2: Exports to World Markets

Consider now a garment producer working under the same protection structure but wanting to sell for export in world markets. In this case, the domestic protection of garments is of no

assistance; in order to compete in world markets, the garments must be priced at 100. However, the protection of cloth still raises its cost to 90 (75 times 120 percent). In order to compete in the export market, therefore, the producer must be able to manufacture garments with a margin of no more than 10 – the 'domestic value-added' permitted in this case cannot exceed this amount. This is substantially less than 'world value-added.' In other words, the effective protection provided by the domestic protection structure in this case is negative – minus 60 percent (the domestic value-added of 10 is 60 percent less than world value-added of 25).

This example illustrates an important point. Nominal protection in the domestic market does not provide any benefit to domestic producers wanting to sell this good for export. However, protection of goods which are a firm's inputs raises production costs and so provides negative effective protection to exports.

The only way around this is to eliminate protection of inputs altogether, or to provide special provisions whereby goods used as inputs by exporters are free of the cost-raising effects of protection.

Export processing zone privileges usually include tax-free access to imported inputs; duty drawback and exemption programs for exporters have a similar effect. Eliminating protection on inputs results in effective protection for exporters of zero percent. In the example shown here, this is a big improvement over minus 60 percent. But it is still much less attractive than the effective protection of plus 60 percent for garment production for the domestic market. Under this structure of protection there is clearly a very large incentive to produce for the domestic market rather than for export. The anti-export of bias of protection is something to which we return later.

Case 3: Preferential Export Sales to Regional Markets

Suppose that this country enters a preferential trading arrangement with a regional partner under which goods produced in each country can be exported duty-free into the other. The effective protection enjoyed by a garment producer exporting under such an arrangement depends on the nominal protection on cloth in the domestic market and the nominal protection on garments in the partner's market.

Suppose that the nominal protection on cloth in the partner country is 40 percent (10 percentage points higher than the 30 percent rate in the domestic market). A garment producer wishing to sell in the partner's market under these circumstances still suffers from the domestic protection of 20 percent on cloth; but it now benefits from the partner country's protection of 40 percent on garments. It can sell garments at a price as high as 140 (100 times

140 percent); its cloth costs are 90 (75 times 120 percent). This means it can have a processing margin as high as 50 (140 minus 90) and still be able to compete in the regional market. The effective rate of protection for sales in the regional market, therefore, is 100 percent (50 is 100 percent higher than the world value-added of 25).

If, on the other hand, the partner country provided nominal protection of only 25 percent on garments, the maximum processing margin that would permit regional garment exports to compete would be 35 (125 minus 90). This would yield an effective rate of protection for preferential sales in this market of 40 percent (35 is 40 percent higher than 25).

15.6 TOTAL FACTOR PRODUCTIVITY (TFP):

The seminal work of Solow's (1957), which derives a methodology to measure technological progress, has been of major importance in Macroeconomics. First, in the growth literature it has become the basis for an extensive theoretical body on growth accounting that tries to quantify the sources of economic growth. Second, the main approach in the study of business cycles, the Real Business Cycle approach, assumes technological innovations (measured by Solow.s procedure) as the main driving force of short-run fluctuations in the economy, and employs it in the simulations of quantitative models. And third, as it is believed that technological progress is an important source of economic growth many researchers have attempted to explain it as the endogenous outcome of economic decisions, which has served as the basis of a new body of literature on endogenous economic growth.

Total Factor Productivity (TFP) is the portion of output not explained by the amount of inputs used in production. As such, its level is determined by how efficiently and intensely the inputs are utilized in production. TFP growth is usually measured by the Solow residual. Let *gY* denote the growth rate of aggregate output, *gK* the growth rate of aggregate capital, *gL* the growth rate of aggregate labor and alpha the capital share. The Solow residual is then defined as

$$gY - \alpha * gK - (1 - \alpha) * gL.$$

The Solow residual accurately measures TFP growth if (i) the production function is neoclassical, (ii) there is perfect competition in factor markets, and (iii) the growth rates of the inputs are measured accurately.

TFP plays a critical role on economic fluctuations, economic growth and cross-country per capita income differences. At business cycle frequencies, TFP is strongly correlated with output and hours worked. Based on this observation, Kydland and Prescott (1982) initiated the real business cycle (RBC) literature. In the standard business cycle model, shocks to TFP are propagated by pro-cyclical labor supply and investment, thereby generating fluctuations in output and labor productivity at business cycle frequencies with an amplitude that resembles the U.S. data. Subsequent work has introduced pro-cyclical fluctuations in measured TFP by incorporating unmeasured labor hoarding and/or capacity utilization in the standard framework (e.g. Burnside et al. (1995) and King and Rebelo, 1999). As shown in the landmark article by Robert Solow (1956), long-run growth in income per capita in an economy with an aggregate neoclassical production function must be driven by growth in TFP. For over 30 years, the conceptual difficulty when trying to endogenize

TFP growth was how to pay for the fixed costs of innovation in a perfectly competitive economy with constant returns to scale in capital and labor. In this context, all output is exhausted by paying capital and labor their marginal products, and therefore, no resources are left to pay for the innovation costs. Romer (1990) and Aghion and Howitt (1992) solved this problem by granting the innovator monopolistic rights over his innovation, which are sustainable through the patent system. In this way, innovators can recoup the initial fixed costs of innovation through the profit margin they make from commercializing their patent. By linking the TFP growth rate to innovation, endogenous growth models shed light on the determinants of TFP growth. R&D subsidies and an abundance of skilled labor reduce the marginal cost of conducting R&D and increase the rate of innovation development and therefore, the TFP growth rate. Increases in the size of markets increase the innovators' revenues, leading to more innovation and higher TFP growth.

Solow (1956) also demonstrated that cross-country differences in technology may generate important cross-country differences in income per capita. Klenow and Rodriguez-Clare (1997) and Hall and Jones (1999) have confirmed that a majority of the gap in income per capita between rich and poor countries is associated to large cross-country differences in TFP. Cross-country differences in TFP can be due to differences in the physical technology used by countries or in the efficiency with which technologies are used. To explore the relative importance of these factors, it is necessary to have data on direct measures of technology. Comin, Hobijn and Rovito (2006) put together direct measures of technology adoption for approximately 75 different technologies and show that the cross-country differences in

technology are approximately four times larger than cross-country differences in income per capita. Further, technology is positively correlated to income per capita. Thus, cross-country variation in TFP is, to a large extent, determined by the cross-country variation in physical technology.

15.7 PRICING POLICY

The price (per unit) of 'primary commodities', such as, agricultural products and minerals is observed to be determined by the market forces of demand and supply, the price of' 'manufactures' is determined/ administered by firms based on the average/ marginal cost of production and the mark-up over and above the cost to accommodate profits. The margin of 'mark-up' in turn, depends on the degree of monopoly in the market. A monopolist is thus able to charge a higher margin of mark-up compared to a competitive firm.

If a public sector has a monopoly in supply, it may fix its price at the level that will maximize the mark-up as well as the gross profits. That may not, however, happen since the government may intervene to moderate the price in the interest of consumers or the user industries. In general, the governments fix/administer the price of goods (and services) being produced by public sector entities based on (a) the true costs of goods and services, (b) cross subsidization between one group and another or between one sector and another, (c) below the costs if that can stimulate demand under conditions of excess/unutilized capacity, (d) differential prices norm for peak and off-peak demand and (c) different prices/ multi-tariffs to include discounts for purchase of larger volumes or for various other incentives. The public sector enterprises in India have had to work under the price regime, for goods and services produced by them, administered by the Government. Paradoxically, while these central public sector enterprises had to avail the government approval for fixing their prices, they have been price-takers for the inputs they utilized for their respective outputs. As such, if the output prices were not raised and the input costs went up, this led to losses to these enterprises. Better capacity utilization meant larger losses to the enterprises. This situation was reviewed in the wake of post- 1991 economic liberalization. With the dismantling of administered price mechanism thereafter, the price of products and services of these central public sector enterprises are now determined on economic grounds and by the market forces. The paragraphs below briefly discuss the evolution of pricing policies in respect of some of the major sectors covered by the public sector enterprises.

Pricing Basics:

To price products, you need to get familiar with pricing structures, especially the difference between margin and markup. As mentioned, every product must be priced to cover its production or wholesale cost, freight charges, a proportionate share of overhead (fixed and variable operating expenses), and a reasonable profit. Factors such as high overhead (particularly when renting in prime mall or shopping center locations), unpredictable insurance rates, shrinkage (shoplifting, employee or other theft, shippers' mistakes), seasonality, shifts in wholesale or raw material, increases in product costs and freight expenses, and sales or discounts will all affect the final pricing.

Overhead Expenses: Overhead refers to all non-labor expenses required to operate your business. These expenses are either fixed or variable:

Fixed expenses:

No matter what the volume of sales is, these costs must be met every month. Fixed expenses include rent or mortgage payments, depreciation on fixed assets (such as cars and office equipment), salaries and associated payroll costs, liability and other insurance, utilities, membership dues and subscriptions (which can sometimes be affected by sales volume), and legal and accounting costs. These expenses do not change, regardless of whether a company's revenue goes up or down.

Variable expenses:

Most so-called variable expenses are really semivariable expenses that fluctuate from month to month in relation to sales and other factors, such as promotional efforts, change of season, and variations in the prices of supplies and services. Fitting into this category are expenses for telephone, office supplies (the more business, the greater the use of these items), printing, packaging, mailing, advertising, and promotion. When estimating variable expenses, use an average figure based on an estimate of the yearly total.

Cost of Goods Sold:

Cost of goods sold, also known as cost of sales, refers to your cost to purchase products for resale or to your cost to manufacture products. Freight and delivery charges are customarily included in this figure. Accountants segregate cost of goods on an operating statement because it provides a measure of gross-profit margin when compared with sales, an important yardstick for measuring the business' profitability. Expressed as a percentage of total sales, cost of goods varies from one type of business to another.

Normally, the cost of goods sold bears a close relationship to sales. It will fluctuate, however, if increases in the prices paid for merchandise cannot be offset by increases in sales prices, or if special bargain purchases increase profit margins. These situations seldom make a large percentage change in the relationship between cost of goods sold and sales, making cost of goods sold a semi variable expense.

Price Determination:
Prices are generally established in one of four ways:

Cost-Plus Pricing:
Many manufacturers use cost-plus pricing. The key to being successful with this method is making sure that the "plus" figure not only covers all overhead but generates the percentage of profit you require as well. If your overhead figure is not accurate, you risk profits that are too low. The following sample calculation should help you grasp the concept of cost-plus pricing:

Cost of materials	Rs.50.00
+ Cost of labor	30.00
+ Overhead	40.00
= Total cost	Rs.120.00
+ Desired profit (20% on sales)	30.00
= Required sale price	Rs.150.00

Demand Pricing:
Demand pricing is determined by the optimum combination of volume and profit. Products usually sold through different sources at different prices--retailers, discount chains, wholesalers, or direct mail marketers--are examples of goods whose price is determined by demand. A wholesaler might buy greater quantities than a retailer, which results in purchasing at a lower unit price. The wholesaler profits from a greater volume of sales of a product priced lower than that of the retailer. The retailer typically pays more per unit because he or she are unable to purchase, stock, and sell as great a quantity of product as a wholesaler does. This is why retailers charge higher prices to customers. Demand pricing is difficult to master because you must correctly calculate beforehand what price will generate the optimum relation of profit to volume.

Competitive Pricing:
Competitive pricing is generally used when there's an established market price for a particular product or service. If all your competitors are charging Rs.100 for a replacement windshield, for example, that's what you should charge. Competitive pricing is

used most often within markets with commodity products, those that are difficult to differentiate from another. If there's a major market player, commonly referred to as the market leader, that company will often set the price that other, smaller companies within that same market will be compelled to follow.

To use competitive pricing effectively, know the prices each competitor has established. Then figure out your optimum price and decide, based on direct comparison, whether you can defend the prices you've set. Should you wish to charge more than your competitors, be able to make a case for a higher price, such as providing a superior customer service or warranty policy. Before making a final commitment to your prices, make sure you know the level of price awareness within the market.

If you use competitive pricing to set the fees for a service business, be aware that unlike a situation in which several companies are selling essentially the same products, services vary widely from one firm to another. As a result, you can charge a higher fee for a superior service and still be considered competitive within your market.

Markup Pricing:

Used by manufacturers, wholesalers, and retailers, a markup is calculated by adding a set amount to the cost of a product, which results in the price charged to the customer. For example, if the cost of the product is Rs.100 and your selling price is Rs.140, the markup would be Rs.40. To find the percentage of markup on cost, divide the dollar amount of markup by the dollar amount of product cost:

Rs.40 ? Rs.100 = 40%

This pricing method often generates confusion--not to mention lost profits--among many first-time small-business owners because markup (expressed as a percentage of cost) is often confused with gross margin (expressed as a percentage of selling price). The next section discusses the difference in markup and margin in greater depth

The main considerations in the formulation of a proper pricing policy for public sector consist of: (1) rational allocation of resources, (2) attainment of the optimum level of operations, (3) generation of surpluses for reinvestment, (4) making products available to consumers as widely as possible, (5) coping with competition from private sector and foreign markets. The pricing policy to be adopted by a particular public enterprise depends upon several factors, e.g., (a) nature of the enterprise-industrial, public utility, promotional, regulatory, etc, (b) nature of the enterprise-industrial, public utility, promotional, etc.

Pricing policies of the Public enterprises:
In India different public enterprise has been found to follow alternative pricing policies:

1) No-Profit-no-Loss Pricing:

Under their Memorandum of Association, Hindustan Insecticides and Hindustan Antibiotics follow this price policy. Break-even pricing is a strategy that yields zero profit on a transaction. At break-even pricing the sales revenue equals expenses and is calculated by totalling the fixed and variable costs. This happens when the Gross Profit that you earn from a business is exactly equal to the Fixed Expenses of the business.

2) Profit Pricing:

Indian Railways, Sindri Fertilisers, Hindustan Machine Tools adopt this policy to contribute to public exchequer and to plough back their earnings.

3) Subsidized Pricing:

The prices of the products of public enterprises charged by the government are blow their cost of the production, the subsidy being paid by the government. Subsidies, by means of creating a wedge between consumer prices and producer costs, lead to changes in demand/ supply decisions. Subsidies are often aimed at :

1. inducing higher consumption/ production
2. offsetting market imperfections including internalisation of externalities;
3. achievement of social policy objectives including redistribution of income, population control, etc

Enterprises running schemes for public welfare follow this policy, e.g., the State Bank of India, Rural Branch Expansion Scheme, State Electricity Boards, Food Corporation of India

4) Parity Pricing:

Parity price is commonly used in the context of convertible securities and often referred to as "conversion parity price" or "market conversion price". It is the price an investor effectively pays to exchange or convert a convertible security into common stock and is equal to the price of the convertible security divided by the conversion ratio (the number of shares that the convertible can be converted into). Conversely, in the case of common stock, it is calculated by dividing market value by the conversion ratio.

In agricultural commodities, you can think of parity price as the purchasing power of a particular commodity relative to a farmer's expenses such as wages, interest on debt, equipment, taxes and so forth. The Agricultural Adjustment Act of 1938 states

that the parity price formula is "average prices received by farmers for agricultural commodities during the last 10 years and is designed to gradually adjust relative parity prices of specific commodities". If the parity price for a commodity is not sufficient enough for a farm operator to support his or her family and operate the business then the government could step in and support prices through direct purchases, or the issuance of non-recourse loans to farmers.

Hindustan Shipyard and such other enterprises follow this policy whose products have to compete with the foreign products. The landed price of imported products is considered.

5) Discriminatory Price:

It leads to lower prices for some consumers and higher prices for others. Output can be expanded when price discrimination is very efficient, but output can also decline when discrimination is more effective at extracting surplus from high-valued users than expanding sales to low valued users. Even if output remains constant, price discrimination can reduce efficiency by misallocating output among consumers.

6) Concessional Pricing for long-term contract or bulk purchases:

Hindustan Steel Ltd. Charges concessional prices on bulk purchases and Chittranjan Locomotives for longterm contract for the supply of locomotives.

7) Cost plus Pricing:

Cost-plus pricing is the simplest pricing method. The firm calculates the cost of producing the product and adds on a percentage (profit) to that price to give the selling price. This method although simple has two flaws; it takes no account of demand and there is no way of determining if potential customers will purchase the product at the calculated price. This appears in 2 forms, Full cost pricing which takes into consideration both variable and fixed costs and adds a % markup. The other is direct cost pricing which are variable costs plus a % markup, the latter is only used in periods of high competition as this method usually leads to a loss in the long run.

Hindustan Aeronautics, Indian telephone industries, Hindustan Cables and the Posts and Telegraphs Department fix prices by adding a certain margin (often 10%) of the cost of production.

8. Dual Pricing:

Under this policy higher prices are charged from rich buyers an lower prices from poor buyers. The practice of setting prices at

different levels depending on the currency used to make the purchase. Dual pricing may be used to accomplish a variety of goals, such as to gain entry into a foreign market by offering unusually low prices to buyers using the foreign currency, or as a method of price discrimination.

Dual pricing can also take place in different markets that use the same currency. This is closer to price discrimination than when dual pricing is implemented in foreign markets and different currencies. Dual pricing is not necessarily an illegal pricing tactic; in fact, it is a legitimate pricing option in some industries. However, dual pricing, if done with the intent of dumping in a foreign market, can be considered illegal.

9) Following the Leader:

An observation made of oligopic business behavior in which one company, usually the dominant competitor among several, leads the way in determining prices, the others soon following. In this case price are fix by the public enterpriser's taking in to consideration the price of similar goods fixed by a leading undertaking in the same line of production. For example While Fixing the price Kerala Sop and oils company tale in to consideration the prices of Godreg Sop, Hindustan liver and Mysore Sop etc.

10) Pooled Pricing:

Prices of fertilizers are fixed on the basis of the fertilizer pool. This pool comprises of retention prices paid to public sector fertilizer units and the price paid for imported fertilizers.

9. Other practices:

Some other pricing practices followed by public enterprises are as follows:

(a) Enterprises like Air India, Shipping Corporation of India fix their rates as per trends in the international market. Similarly petrol prices depend on international prices of oil.

(b) Enterprises with a captive market charge prices so as to generate surplus for expansion, e.g., public sector hotels.

(c) STC, MMTC, etc. operate on the basis of the certain percent service charge on foreign operations.

The pricing in private and public enterprise differs primarily on the supply side. In the long run, private enterprises must cover total costs and provide an adequate return necessary to attract venture capital. In contrast, extra-commercial considerations may influence pricing in public enterprises. They may incur losses in the public interest under explicit directives from the government.

A number of theories of pricing in public enterprises have been put forward. Most important of these are: (1) marginal cost of production theory; (2) no profit, no loss theory; (3) average cost of production theory; (4) theory of making profits. All these theories suffer from a number of weaknesses and none of them taken individually is a satisfactory guide for determining the prices of the products of public enterprises.

There however exists a strong case for public enterprises, particularly in developing countries, to earn reasonable profits in pricing their products. Public enterprises fostered on public revenues must yield surpluses which can be used either for their own expansion or for financing the general development plans of the country. The profits which a public enterprise can earn are an important indication of the justification for the use of economic resources in that economic activity. Upholding the test of profit not only lessens possibilities of the investment decisions being subjected to political pressures but also safeguards against inefficiency in management. A policy of profits is essential for attaining the goal of building a socialist society. The amount of profits expected from different enterprises, however, cannot be uniform because of diverse objectives sought in the setting up of public enterprises, degree of essentiality of their products, nature of the services provided by them, size of their market, class of their consumers and their paying capacity, conditions of market under which they operate, their role in stimulating growth and social benefits conferred by them.

ADMINISTERED PRICING:

The price of a good or service as dictated by a governmental or other governing agency, administered prices are not determined by regular market forces of supply and demand.

Examples of administered prices included price controls and rent controls. Administered prices are often imposed to maintain the affordability of certain goods and to prevent price gouging during periods of shortages (such as gas prices). Rent controls are intended to stabilize rent in certain cities, where rents are reviewed by a standard of reasonableness.

The two basic types of price controls are price ceilings and price floors. Price ceilings are maximum prices set below the equilibrium price. Price floors are minimum prices set above the equilibrium price. Price controls imposed on an otherwise efficient and competitive market create imbalances (shortages or surpluses) which cause inefficiency. However, imposing price controls on a market that fails to achieve efficiency (due to market control, externalities, or imperfect information) can actual improve efficiency. Price controls have also be used economy-wide in an attempt to reduce inflation.

The proposed rationalisation/relaxation of entry and exit policy should enhance the competitiveness of the industrial sector. These benefits will he somewhat reduced if the Government continues to administer prices and the distribution of various industrial products. At present, the prices of industrial products such as natural gas, petroleum, petroleum products, coal, electricity, fertilizer, sugar and various non-ferrous metals are being administered by the Government. A thorough review of the usefulness of these price controls needs to be carried out. Wherever the product concerned is internationally tradable, the Government should decontrol the prices. In order to ensure that such price decontrols do not allow the existing producers to hike prices and hence enjoy "rents", the tariff rates on the import of these products should be suitably adjusted downwards, as had recently been done in the case of steel. Without such a supportive tariff adjustment, decontrol of hitherto administered prices may lead to unreasonable increase in the prices, thereby hurting the consumers.

Causes of Administered Prices:

There are various causes behind government intervention and controlling the prices. The most important in the farm sector is to give the farmer stable and assured income .In the non farm sector important reason behind fixing the prices is to avoid the alternative of high prices resulting from the profit maximisation motive which inspires production for the market.

1) Price must cover cost plus:

In the case of non agricultural prices, particularly of the goods produce by the public sector, there has been a long history since start of the public sector in the early fifteen till the mid seventeen when the purpose was maintaining the low price by following the principles of no profit no loss. The purpose was the socialist goal.

2) To strengthen weaker section of the society:

The second reason of administered price is to favour the weaker section of the society to get benefited. The price of the goods produce by the public enterprises is fixing below its production cost so that the weaker section get benefited. For example Janta cloth, Levy sugar or in the case of iron and steel used by the small scale industries

3) To avoided inflation:

The third reason to fixing prices is to avoid inflation or what is possibly more appropriate to this country, Stag inflation that is the phenomenon of high and rising prices along with stagnant or declining productivity and production. This latter purpose of countering stag inflation is never mentioned overtly and all emphasize is usually on the dumping down the inflation process.

4) To rise resource for the government:

The fourth purpose of pricing is to raise the resources for the government. The public visaged in the plans or financing the public sector enterprises outlay and then there is resort to rising administered prices. Even more frequently the rising of administered prices is the soft option chosen by the government in the place of increasing of taxes.

5) It may be to discourage or encourage the consumption:

The fifth cause for the administered pricing is to encourage or discourage the consumption of the commodities to make available the commodity at lower price for the weaker section of society and at the same time to avoid the state's subsidizing the lowered pricing, the system of double pricing is introduce , wherein the well to do pay a higher price called the free market price which pay for the lower price of the commodity available to the poor called the levy price, as in case of cement sugar , paper etc.

6) Efficient allocation of the resources:

Finally an important purpose of the pricing is to ensure efficient allocation of the resources. Administered prices have given more offend than not to the wrong signals and resulted in the imbalance and distortion in the investment sector of the economy.

ADMINISTERED PRICING FOR PETROLEUM PRODUCTS:

As an example the country has traditionally operated under an Administered Pricing Mechanism for petroleum products. This system is based on the retention price concept under which the oil refineries, oil marketing companies and the pipelines are compensated for operating costs and are assured a return of 12% post-tax on networth. Under this concept, a fixed level of profitability for the oil companies is ensured subject to their achieving their specified capacity utilisation. Upstream companies, namely ONGC,oil and GAIL, are also under retention price concept and are assured a fixed return.

The administered pricing policy of petroleum products ensures that products used by the vulnerable sections of the society, like kerosene, or products used as feed stocks for production of fertilizer, like naphtha, may be sold at subsidized prices.

Gradually, the Government of India is moving away from the administered pricing regime to market-determined, tariff-based pricing. Free imports are permitted for almost all petroleum products except petrol and diesel. Free imports are permitted for almost all petroleum products except petrol and diesel. Free marketing of imported kerosene, LPG and lubricants by private

parties is permitted. It is contemplated that in a phased manner, all administered price products will be taken out of the administered pricing regime and the system will be replaced by a progressive tariff regime in order to provide a level playing field for new investments in a free and competitive market.

Long Run Marginal Cost of Production (LRMC):

Unlike in the case of tradable goods, it is difficult to deal with administered prices of non-tradable goods, such as, say, electricity and public transportation in which the Government sector has a near monopoly. In these cases, the best that can be done is to ensure that the enterprises producing/providing these goods and services cover the Long Run Marginal Cost of Production (LRMC). The basic idea is that prices should cover capital and current costs of efficient production. While the determination of the LRMC of production is sometimes difficult, the Bureau of Industrial Costs and Prices (BICP) have successfully demonstrated that in the majority of industries the computation of LRMC is practicable. Therefore, for effective implementation of such a normative approach to administered prices of non-tradable goods, an organisation such as the BICP may be charged with the responsibility of undertaking comprehensive studies of cost-price structures of such products every three to five years. It is, however, important to distinguish between fixing the normative prices based on LRMC for an industry at a point of time and providing for justifiable changes in costs over time. In this context, a two- step approach which has been suggested by the Ministry of Finance in its paper on.

Long Run Marginal Cost (LRMC) based tariff:

The primary objective of tariff rationalization is to ensure that every consumer pay at least the cost of supply initially and gradually move to pay more than the cost ,so as to adequate internal surpluses the policy of the government so far, has been to subsidize sectors like agriculture and residential customer..As subsidies cannot be extended till eternity, it is essentially to identify segments in each category and consumers that deserve subsidy. Subsidy extended to such target groups would be so marginal that it would not be difficult for other consumers in the same segment to cross subsidize.

An Example the Electricity pricing in India has based on the broad guideline of the Electricity supply Act., and the basic of pricing is average cost plus a minimum retune of 3% on invested capital. Those user who desire to additional capacity must really pay for it. Thus, if prices based on operating cost (variable prices based on operating cost) are changed to the period, where as others who can manage will shift their loads away from peak to off-peak period, when they not have to pay the additional capacity charges. This would improve the utilization of the power system capacity.

15.8 SUMMARY

The recent RBI guidelines facilitate the detection of sickness at the incipient stage but only for large and medium units. An industrial unit will be termed as "weak," if at the end of any accounting year it has: • accumulated losses equal to or exceeding 50 per cent of its peak net worth in the immediately preceding five accounting years • a current ratio of less than 1:1 • suffered a cash loss in the immediately preceding accounting year. On the other hand, a small scale industry (SSI) unit should be considered sick if it has: • incurred cash loss in the previous accounting year and is likely to continue to incur cash loss in the current accounting year and has an erosion of 50 per cent or more of its net worth • continuously defaulted in meeting four consecutive quarterly instalments of interest or two half yearly instalments of principal on term loans with persistent irregularities in the operation of its credit limits with the bank . While identifying weak units and initiating necessary remedial measures in respect of such units at the stage of 50 per cent erosion of their net worth is a step in the right direction, it will be prudent to distinguish between a newly established unit and ongoing units and long established units. In newly established units with an operating period of about five years, 50 per cent erosion of net worth with an inadequate current ratio would only indicate that the unit had essentially failed to take off as a successful business unit and is perhaps sick from the stage of inception itself. A well established business unit with a long operating period could have accumulated high reserves and surplus and a fairly sound equity base. It would take more than two years to accumulate losses to wipe out more than half of the net worth of such a unit or even longer if it was successful.

Thus, by the time this unit reaches the level of 50 per cent erosion of its net worth, the process of sickness may have already reached a fairly advanced stage. Any deterioration in the performance of the unit which goes beyond a previously defined normal range of business fluctuations should be subjected to careful scrutiny. Continuous monitoring of the performance of business units in this manner is likely to be a strenuous, time-consuming, and costly affair especially since cases of prolonged sickness though reduced will continue.

Government should hike its spending to create more jobs and boost the manufacturing sectors in the country. Government should try to increase the export against the initial export.

The way out for builders is to reduce the unrealistic prices of property to bring back the buyers into the market. And thus raise finances for the incomplete projects that they are developing.

15.9 QUESTIONS

1. Discuss the meaning & causes of Industrial sickness in India.
2. Write a note on Exit Policy.
3. What do you understand by Nominal Protection Coefficient and The effective Rate of Protection?
4. Write a not on Pricing Policy in India.

16

INDUSTRIAL GROWTH IN INDIA

Unit Structure

16.0 OBJECTIVES

- To understand the industrial growth after independence in India.
- To Study the productivity and performance constraints in achieving industrial growth in India.

16.1 INTRODUCTION

The Indian industrial sector underwent significant changes as a result of the economic reforms of 1991, which removed import restrictions, brought in foreign competition, led to privatization of certain public sector industries, liberalized the FDI regime, improved infrastructure and led to an expansion in the production of fast moving consumer goods. Post-liberalization, the Indian private sector was faced with increasing domestic as well as foreign competition, including the threat of cheaper Chinese imports. It has since handled the change by squeezing costs, revamping management, and relying on cheap labour and new technology. However, this has also reduced employment generation even by smaller manufacturers who earlier relied on relatively labour-intensive processes.

The index of industrial production has gone up from 7.9 in 1950-51 to 154.7 in 1999-2000. Electricity generation went up from 5.1 billion Kwh to 480.7 billion Kwh in the same period. Particularly significant achievement has taken place in the field of agriculture. Between 1950-2000, the index of agricultural production increased

more than four-fold. Between 1960 and 2000, wheat production went up from 11 to 75 million tonnes, and the production of rice increased from 35 to 89.5 million tonnes. We are now having a problem of plenty, with Government godowns overflowing with wheat stocks. This is not a mean achievement for a country that relied on imported food aid until the early 1960s. The credit for this green revolution goes to Indian scientists as well as to millions of Indian farmers, who wholeheartedly cooperated with the Government, to make India self-sufficient in the matter of its food requirements.

This economic expansion contributed to a steady and impressive growth in India's GNP. With the exception of 4 years, India experienced a positive rate of growth. As a result, India's per capita Net National Product (NNP) in 1999-2000 was 2.75 times higher than that of 1951. The rate of growth before 1980 was 1.2% per capita. Thereafter, it grew at the rate of 2.4%, and between 1950-90, by 3.2% on average every year. Between 1993-94 and 1999-2000, it registered an average rate of growth of 4.8% per year.

A variety of promotional policies were followed by the Government to achieve this success. In the early years, Indian industry thrived within protective tariff walls. The policy was to encourage Indian industries and though foreign technical collaborations were encouraged, direct foreign investment in any corporate body was restricted to 40%. In 1991, this policy was changed completely and foreign majority investment was encouraged in a variety of industries, import restrictions were removed, customs tariff was brought down and the doors of the Indian economy were opened for foreign competition.

16.2 TREND AND PROSPECTS OF INDIAN INDUSTRY AFTER INDEPENDENCE:

1) PROTECTION TO INDIAN INDUSTRIES:

India is probably one of the few countries in the world which used its import policy for the healthy development of local industries. Barring the first few years after Independence, the country was facing a shortage of foreign exchange, and because of this shortage, imports had to be restricted. Imports of consumer goods were, therefore, disallowed. A good number of restrictions were put on the import of industrial goods, and the effort of the Government was to encourage the production of these goods indigenously. Local industries were encouraged to have foreign collaborations and to import the technical know-how needed to produce what was being imported into the country.

1.1 Levying higher tariffs restricted imports, and there was also a total or partial physical ban on the imports of such products. This gave a much needed sheltered market for Indian goods, and many industries thrived within these protective walls. Initially, products produced by Indian industries were not of good quality. But as years went by, industries acquired experience in manufacturing and turned out quality products comparable with imported products. There was a continuous effort to improve quality.

1.2 During the Second and Third plans, the emphasis was on the development of capital goods industries. India wanted to make machines that helped to produce other machines. Therefore, greater emphasis was given to the development of machine tools, textile machinery, and power equipment and so on. We were importing these mother machines, and the new effort was to produce them in India, to achieve self-sufficiency.

As a result of this policy, encouragement was given to import technical know-how and to enter into foreign collaborations to undertake manufacture of capital equipment locally. This gave further fillip to industrial development.

1.3 Protection from imports encouraged Indian industry to undertake the manufacture of a variety of products. There was a ready market for all these products. The Government also gave encouragement to industries to import parts and components that were required for indigenous production. The import policy was meant to serve two categories of importers - actual users and established importers. Actual users of imported raw materials or products were given preference over the category of established importers i.e. traders. Certain items that were scarce and not available were channelized through the State Trading Corporation, Mines & Minerals Trading Corporation and such other Government bodies. They arranged for the import of such products and distributed them to indigenous industries according to requirements. Thus, imports were strictly controlled by the import policy announced every year by the Government of India.

2) HIGH CUSTOMS TARIFFS:

Apart from strict control over imports and the physical ban on the imports of many products, customs tariffs were raised in some cases to 200 to 300% on imported products. This gave protection to local industries. The price of local products was comparatively cheaper than those of imported goods. The Government also followed a policy of low tariffs on the import of raw materials, parts and components compared to those on finished products. This encouraged Indian industries to import parts and components, and to manufacture or assemble final products in India.

3) FINANCIAL INFRASTRUCTURE:

To provide the financial infrastructure necessary for industry, the Government set up a number of development banks. The principal function of a development bank is to provide medium and longterm investments. They have to also play a major role in promoting the growth of enterprise. With this objective, the Government of India established the Industrial Finance Corporation of India (IFCI) (1948), Industrial Credit and Investment Corporation of India (ICICI) (1955), Industrial Development Bank of India (IDBI) (1964), Industrial Reconstruction Corporation of India (1971), Unit Trust of India (UTI) (1963), and the Life Insurance Corporation of India (LIC) (1956). For financial assistance to small entrepreneurs, Finance Corporations were established in all states on the basis of an Act that was passed by Parliament in 1951. In addition to this, the National Small Industries Corporation was also established at the Centre and a Small Industries Development Bank of India was established in 1989.

4) CONTROL OF INDIAN BUSINESS:

As a consequence of the restrictions on imports, those who were importing products entered into collaboration with their principals and entered the field of manufacturing. Thus, what was once a trading community, gradually transformed into a community of industrialists.

Regulations under the Foreign Exchange and Regulation Act (FERA) restricted foreign investment in a company to 40%. This ensured that much of the control in companies with foreign collaboration remained in the hands of Indians. To succeed, Indian businessmen had to learn and apply modern management and production techniques.

5) ENCOURAGEMENT TO SMALL INDUSTRIES:

Though some of the policies of the Government resulted in inhibiting the growth of large-scale industries, they gave encouragement to small-scale industries by providing a number of support measures for growth. Policy measures undertaken by the Central and State Governments addressed the basic requirements of the SSI like credit, marketing, technology, entrepreneurship development, and fiscal, financial and infrastructural support. These promotional measures covered:

a) Industrial extension services through small industries service institutes and other organisations.

b) Factory space in industrial estates through cooperative and other industrial estates, ready built shades and developed industrial plots made available through State Government agencies.

c) Credit facilities at concessional rates of interest and credit guarantees through commercial banks and State Finance Corporations.

d) Special financial assistance schemes at concessional rates of interest and low margins for technician entrepreneurs.

e) Availability of indigenous scarce raw materials through special quotas and imported materials through import licenses.

f) Provision of training facilities.

g) Subsidised power tariffs and exemption of electricity duties.

h) Supply of local and imported machinery on hire purchase basis.

i) Assistance for domestic as well as export marketing.

j) Special incentives for setting up units in backward areas.

k) Differential central excise levies for the small-scale sector.

l) Preference for products produced in small-scale industries and 15% price preference to them in State Government purchases.

m) Reservation of products for exclusive manufacture in the small-scale sector

n) Creation of a large number of institutions both by the State Governments and the Central Government to help small enterprises.

o) Special effort to promote new entrepreneurs by providing them training in entrepreneurship development.

While most of the institutional support services and some incentives were provided by the Central Government, the State Governments offered others in varying degrees to attract investments and to promote small industries.

6) INVESTMENT IN INFRASTRUCTURE:

Energy-Transport-Communications facilities are extremely essential for smooth and accelerated industrial growth. The Government made huge investments in providing such infrastructure facilities to industries. The Central Government, as well as the State Governments invested huge funds in power generation and distribution, and many new power projects were undertaken and completed. Similarly, investments were made in road building, communications, creation of port facilities etc. Apart from this, various State Governments made developed plots of land or industrial estates with power, water, roads, and communications available to entrepreneurs who wanted to set up industries. This helped considerably in the growth of industries.

Changes in the production of primary commercial energy since 1950-51 are summarised in the following table:

Production of Commercial Energy

Form of energy	Unit	1950-51	1990-91
Coal	**Million tonnes**	**33.00**	**211.73**
Lignite	Million tonnes	-	14.07
Crude oil	Million tonnes	0.26	33.02
Natural gas	Million cubic mets	-	17,998.00
Thermal power	Billion Kwh	3.00	186.45
Hydro power	Billion Kwh	2.52	71.54
Nuclear power	Billion Kwh	-	6.24

Oil and natural gas emerged as significant sources of energy since the eighties.

The pattern of sectoral consumption has also undergone noticeable changes over the years as can be seen from the following table:

Shares Percentage in Final Energy Consumption

Sector	1953-54	1990-91
Industry	39.8	50.4
Transport	46.2	24.5
Domestic	9.9	13.8
Agriculture	1.7	9.0
Others	2.4	2.3
Total	100.0	100.0

Power shortages caused by substantial shortfalls in achieving power targets have been a recurring theme from plan to plan.

7) OIL AND NATURAL GAS:

The Oil and Petroleum industry must be considered a gift of the planning era. The indigenous oil exploration programme gained credibility in the seventies. New sources of oil were discovered, and considerable refining capacity was created. The Oil and Natural Gas Commission was set up for oil exploration. Additional refining capacity was created through the expansion of some of the existing plants, and the commissioning of new refineries.

8) TRAINING AND SKILLS DEVELOPMENT:

Trained manpower is necessary for industrial growth. To cater to the growing needs of industries during the last fifty years, the Government set up a large number of industrial training institutes, all over the country to train skilled workers. It also set up Indian Institutes of Technology, Management Institutes and Engineering Colleges to train persons with higher management and technical skills.

9) SCIENTIFIC RESEARCH:

Research in science and applied technology is very much needed in order to sustain technological development in industries. The Government of India set up 48 national laboratories to undertake applied research in chemistry, physics, electronics, botany, etc., and these research institutes developed a number of new processes which are commercially exploited by industries. Indian scientists and technologists also ushered in the Green Revolution, and the White Revolution, and developed space technologies on their own.

10) BACKWARD AREA DEVELOPMENT:

Before Independence, industries were mostly located in and around port cities like Mumbai, Kolkata or Chennai. After Independence, new centres of industries were developed as a result of the infrastructural facilities that were made available by the State Governments. Baroda, Coimbatore, Bangalore, Pune, Hyderabad, Faridabad, Rajkot, and many others, grew up as new industrial cities.

Both the Central Government and the State Governments followed a deliberate policy of encouraging industries in backward areas. The Central Government selected a few backward districts and offered 25% capital subsidy for industries set up in these areas. Various State Governments also offered similar capital incentives, exemption from sales tax levy, subsidies on power rates, cheap developed land, sales tax, loans and other facilities for the growth of industries in these areas. This considerably helped the growth of under developed or backward areas in the different states.

11) EMPHASIS ON PUBLIC SECTOR:

Right from the beginning, the planners attached great importance to the public sector. It was expected that the sector would control the ‘Commanding heights of the Indian economy.’

In the Industrial Policy Resolutions of 1948 and 1950, a very important role was assigned to the public sector. Power, telephones, communications, atomic energy, defence industries and some areas were reserved for the public sector. Certain

industries like life insurance, civil aviation, banks were nationalised and were included in public sector. Thereafter, whenever there was a shortage, the Government stepped in to bail out, as it did with the cement and paper industries. The Government took over sick industries to provide employment. That is how a large number of textile industries came into the public sector.

Upto the year 1999, there were 235 public sector undertakings and the Government had invested an amount of Rs. 273700 crores in such undertakings. In 1998-99, they made a gross profit of Rs. 397.7 crores.

12) EVOLUTION OF INDUSTRIAL POLICY IN INDIA:

Before Independence, the policy of the British Government was against encouraging industrial development in India. No incentives were offered to Indian industries for their growth. There were many desired and undesired hurdles placed in the way of the growth of Indian industry. Whatever industrial development took place in India was in spite of the negative and hostile attitude of the British Government. Credit must be given to pioneers like Jamshedji Tata, Walchand Hirachand, Lala Sriram, G.D. Birla and others, who laid the foundations of modern industry in India.

13) AFTER INDEPENDENCE:

Immediately after Independence, the Government of India announced its industrial policy in 1948 and laid down the plan for future industrial growth in the country. It also declared its policy on foreign capital in 1949, and invited foreign capital for investment in the country. The Government was keen to dispel the apprehension that foreign enterprises may be taken over.

14) INDUSTRIAL POLICY RESOLUTION, 1948:

The first Industrial Policy Resolution, announced in 1948, broadly laid down the objectives of the Government's policy in the industrial field and clarified industries and enterprises into four categories, namely:

a) Those exclusively owned by the Government, e.g. arms and ammunition, atomic energy, railways, etc.; and in emergencies, any industry vital for national defence.

b) Key or basic industries, e.g. coal, iron and steel, aircraft manufacture, ship building, telephone, telegraphs and communications equipment except radio receivers, mineral oils, etc. The undertakings already existing in this group were promised facilities for efficient working and 'reasonable' expansion for a period of ten years, at the end of which, the State could exercise the option to nationalise them.

c) The third category of 18 specified industries were to be subject to the Government's control and regulation in consultation with the then provincial (now State) Governments.

d) The rest of the industrial field was, more or less, left open to the private sector.

15) INDUSTRIAL (DEVELOPMENT & REGULATION) ACT, 1951:

The Industrial Policy Resolution of 1948 was followed by a Government of India (GOI) Resolution on 2nd September 1948, constituting a Central Advisory Council of Industries under the chairmanship of the Minister for Industry.

In 1951, the Industrial (Development and Regulation) Act was passed by the Parliament. The main provisions of the Act were:

a) All existing undertakings at the commencement of the Act, except those owned by the Central Government were compulsorily required to register with the designated authority.

b) No one except the central Government would be permitted to set up any new industrial undertaking "except under and in accordance with a licence issued in that behalf by the Central Government."

c) Such a licence or permission prescribed a variety of conditions, such as, location, minimum standards in respect of size and techniques to be used, which the
Central Government may approve.

d) Such licenses and clearances were also required in cases of 'substantial expansion' of an existing industrial undertaking.

e) The industries to be brought under regulation were divided into two parts, Part I and II in the Schedule to the Act.

In regard to the industries listed in Part I of the Schedule, the Central Government could issue necessary directions in respect of quality of its products, falling production, rise in prices etc.

16) IMPLEMENTATION OF THE INDUSTRIAL DEVELOPMENT AND REGULATION ACT, 1951 (IDR):

The IDR Act gave very wide powers to the Government. This resulted in more or less complete control by the bureaucracy on the industrial development of the country. They had full control over: a) approval of any proposal on capacity, location, expansion, manufacture of new products etc; b) approval of foreign exchange expenditure on the import of plant and machinery; c) approval for the terms of foreign collaboration.

17) INDUSTRIAL POLICY RESOLUTION, 1956 :

After 1948, India adopted a democratic constitution, guaranteed fundamental rights and also enunciated certain directives of state policy. The Parliament accepted the socialistic pattern of society as the objective of social and economic policy. A new Industrial policy was therefore announced in 1956.

This Industrial Policy divided industries into three categories. All basic and strategic industries were to be set up in the public sector, and were called category A type of industries. In category B industries were private enterprises who could participate along with public enterprises. This sector was called the joint sector. All remaining industries falling in category C, were left to be developed by the private sector. The Industrial Policy of 1956, for the first time, emphasised the role of small-scale industries in the development of the national economy.

The statement pointed out the importance of the SSI Sector in providing employment. It also laid emphasis on the equitable distribution of national income and the effective mobilisation of resources. The industrial policy, therefore, recommended the development of ancillary industries in areas where large industries were to be set up.

18) MONOPOLIES COMMISSION:

In April 1964, the Government of India appointed a Monopolies Inquiry Commission “to inquire into the existence and effect of concentration of economic power in private hands.” The Commission was requested to look at the prevalence of monopolistic and restrictive practices in important sectors of economic activity, the factors responsible for these and the legal solutions for them. The Commission looked at concentration of economic power in the area of industry, and examined industrywise and productwise concentration. The Commission also examined the concentration ratio. This Commission drafted a law to control monopolies and recommended the setting up of a permanent Monopolies and Restrictive Trade Practices Commission. On this basis, an Act was passed and a Monopolies Commission was appointed by the Government in 1969.

19) INDUSTRIAL LICENSING POLICY INQUIRY COMMITTEE:

In July 1969, an Industrial Licensing Inquiry Committee was appointed to examine the shortcomings in licensing policy. The Committee felt that the licensing policy had not succeeded in preventing the practice of pre-empting capacity by large houses; it had not ensured development of industries according to announced licensing policies; it did not prevent investment in non-priority industries etc. In 1969, the Monopolies and Restrictive Trade Practices Act (MRTP) Act was passed by the Government and

following the report of Industrial Licensing Policy Inquiry Committee (ILPIC), a number of new restrictions were put on the large industrial houses in the industrial licensing policy announced in February 1970.

20) FERA AMENDMENT, 1973:

The Foreign Exchange and Regulation Act (FERA) was amended in 1973. This brought a great change in the foreign investment policy of the Government of India. Foreign equity was to be permitted only in companies in Appendix 1 industries, or in those that were engaged in exports. Foreign firms were not allowed more than 40% of equity. Only certain industries in the area of sophisticated technology were allowed 51% foreign capital. FERA companies were subject to many restrictions, and were not allowed to participate in certain industries. They were also not allowed to expand and take up production of new products.

21) INDUSTRIAL POLICY STATEMENT, 1973:

The Policy Statement of 1973 drew up a list of Appendix 1 industries to be started by large business houses so that the competitive effort of small industries was not affected. The entry of Competent Small and medium entrepreneurs was encouraged in all industries including Appendix 1 industries. Large industries were permitted to start operations in rural and backward areas with a view to developing those areas and enabling the growth of small industries around.

A Secretariat for Industrial Approvals (SIA) was set up in November 1973, and all industrial licenses, capital goods, import licenses, terms of foreign collaboration were brought under the SIA.

22) INDUSTRIAL POLICY STATEMENT, 1977:

The thrust of the Industrial Policy Statement of December 1977 was on effective promotion of Cottage and Small Industries widely dispersed in rural areas and small towns. It emphasised that “whatever can be produced by small and cottage industries must only be so produced.” The focal point of development of small-scale industries was taken away from the big cities to districts. The concept of District Industries Centres was introduced for the first time. Each district would have such a district centre which would provide all the support and services required by small entrepreneurs. These included economic investigation of the districts, supply of machinery and equipment, raw material and other resources, arrangement for credit facilities, call for quality control, research and extension etc.

23) ERA OF LIBERALISATION:

After 1980, an era of liberalisation started, and the trend was gradually to dilute the strict licensing system and allow more

freedom to the entrepreneurs. The steps that were taken in accordance with the policy included:

a) Re-endorsement of licenses: The capacity indicated in the licenses could be re-endorsed, provided it was 25% more than the licensed capacity (1984).

b) Automatic re-endorsement of licensed capacities (1988).

c) Broad banding and selective delicensing (1985-86) extended to 25 industries.

d) Liberalisation of 31 May 1990. This policy included: Exemption from licensing for all new units and those having an investment of Rs.2.5 crores in fixed assets, and an entitlement to import upto 30% of the total value of plant and machinery Investment of foreign equity up to 40% was freely allowed. Location restrictions were removed. Investment ceiling for small industries were removed.

Our industries were suddenly required to face international competition. It is no wonder that many of these industries allowed their foreign collaborators to take over, sold their interests or preferred to close down.

Those who remained in the field are trying to downsize and reduce their operations. For the existing ones, it is becoming increasingly difficult not only to face competition in the world, but also competition at home with the products of multinationals, either produced in the country or imported from abroad.

16.3 PRODUCTIVITY AND PERFORMANCE CONSTRAINTS

The following are the major productivity and performance constraint in the Indian industrial sector

1) Infrastructure:

The basic infrastructural facilities are absent and its environment is one of the major obstacles to profitable investment in industry in India. The basic infrastructural problems are inadequate power supply to the industry, lack of transport facilities, skilled manpower, repair facility and ancillary industry in India.

India's Tier 1 cities i.e. Mumbai, Bangalore, Delhi, Chennai and Hyderabad are at breaking point. Serious bottlenecks in basic infrastructure such as power, water, roads and airports exist. The concentrated mushrooming of outsourcing companies in these cities further adds to the strain. The Government has to develop new integrated townships in close proximity to the Tier1 cities, for future expansion of the industrial sector. Companies also need to

expand their presence to Tier 2 and Tier 3 cities in the country, and go beyond the over-saturated metros.

a) **Urban infrastructure problems in India** is a age old problem. The **Infrastructure problems in India** mostly took a back-seat in the economic development policy drafts. The meager budgetary allocation to arrest **infrastructure problems in India** has so far proved to be too little to keep pace with other areas of **business development in India**. Moreover, the tremendous growth of Indian IT, telecommunication, manufacturing, and pharmaceutical industries has consumed the limited **world class urban infrastructure** available in India.

b) **Rural infrastructure problems in India** have gone from bad to worse in recent years. However, the **government of India** has taken some important steps to arrest the age old problems of **rural India**,such as:
   - Connecting 66,800 habitations with all weather **roads**
   - Construction of 1,46,000 km of new **rural roads**
   - Upgrading 1,94,000 km of existing **rural roads**
   - Allocation of investment to the tune of ` 1,74,000 crore envisaged under **Bharat Nirman**.
   - Providing a corpus of ` 8000 crore for **Rural Infrastructure Development Fund (RIDF)**.

2) Competition from Other Countries:

Other nations like China, The Philippines, South Africa and East European countries are competing with India to get a slice of the outsourcing pie. While India is currently well placed in the BPO market, it needs to constantly innovate and stay a few steps ahead of its rivals.

3) Markets constrain:

The majority of the clients that outsource to Indian BPOs are based in the US. India needs to explore other geographical markets like the European Union and Asia. The country needs to ramp up the number of knowledge workers fluent in languages such as French, German, Japanese, and Spanish, to exploit these opportunities.

4) Social Aspect:

It create serious obstacle to the introduction of new forms from without the social resistance to economic change may conveniently be considered in relation to its influence upon the supply of three factor of production: 1) Entrepreneurial ability 2) Labour 3) Capital

a) Leadership ability:

Indian social business environment restrict the in born business leadership because of its social cast structure. Cast

system makes the limitation on the expansion of the business boundaries. Even in the modern era most of the Indian small business is based on the cast system. This is one of the major obstacles in the Indian Industry.

b) Availability of Skilled Manpower:

The industry is facing a shortage of skilled workers in the country. Although the number of engineers and graduates passing out of Indian Universities is high, barely 25% of technical graduates and 10-15% of general college graduates are employable in the industry. Additionally, there is a discernible shortage of quality people in the middle management ranks that will prove to be detrimental to the industry's growth.

c) Quality of Education:

The key reasons why a bulk of the huge pool of graduates in India is unemployable are minimal technical skills and poor command over the English language. To sustain the knowledge and labor pool advantage, it is necessary to foster tie-ups between the industry, the State Governments and educational institutions, with emphasis on changing curriculum at school levels and improving language, computer and soft skills. New integrated certifications and skill-based programs geared towards the outsourcing industry need to be designed and implemented.

The social obstacles to industrial development in India can be surmounted by the communities themselves. It requires more social transformation than that which was required in the early stage of western industrialization. The Industrialization is not merely a technological revolution, it involves profound social changes which must be fully taken in to account if the process is to result in higher material standard and grater degree of human welfare.

5) Inefficient Public Administration:

The insufficient public administration is the handicap to industrial development. The competitive civil services must be set up. Competent and honest in public administration exert an important stabilising effect on the economy. Their absence become obstacle in the economic development.

16.4 SUMMARY

India has made considerable economic progress since its Independence. Most noticeable are the expansion and diversification of production both in industry and agriculture. New technologies were introduced in many industries. Industrial investment took place in a large variety of new industries. Modern management techniques were introduced. An entirely new class of entrepreneurs have come up with the support system from the

Government, and a large number of new industrial centres have developed in almost all parts of the country. Over the years, the Government has built the infrastructure required by the industry and made massive investments to provide the much-needed facilities of power, communications, roads etc. A good number of institutions were promoted to help entrepreneurship development, provide finance for industry and to facilitate development of a variety of skills required by the industry as well as agriculture. The Government also followed a policy of encouraging indigenous industries and provide them all facilities and encouragement. As a result, we have now a widely diversified base of industry and an increased domestic production of a wide range of goods and services.

16.5 QUESTIONS

1. Analyse the trend of industrial growth in India after independence.
2. Explain various constraints in the Indian industrial sector in India.