



Lecture Notes

Microeconomics

Semester II

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Continued from Section I

Business Economics Paper I Section II ♦

Revenue Concepts

Average Revenue, Marginal Revenue, Total Revenue- Relationship between Average Revenue and Marginal revenue and elasticity of demand

Objectives of firm: Profit, sales and Growth Maximization, Break even analysis

Markets

Equilibrium under perfect competition in the long run, Monopoly, Equilibrium in the long run, Monopolistic competition: features, Oligopoly: features, Globalization: cartels and price leadership in oligopoly

Case studies

Pricing Methods

Marginal cost, Full Cost, Discriminatory, multi-product and transfer pricing
Capital Budgeting- Meaning and importance- Investment criteria: Payback period, Net present value and internal rate of return methods

♦ Please follow class room instructions before using the notes

Objectives of Firm

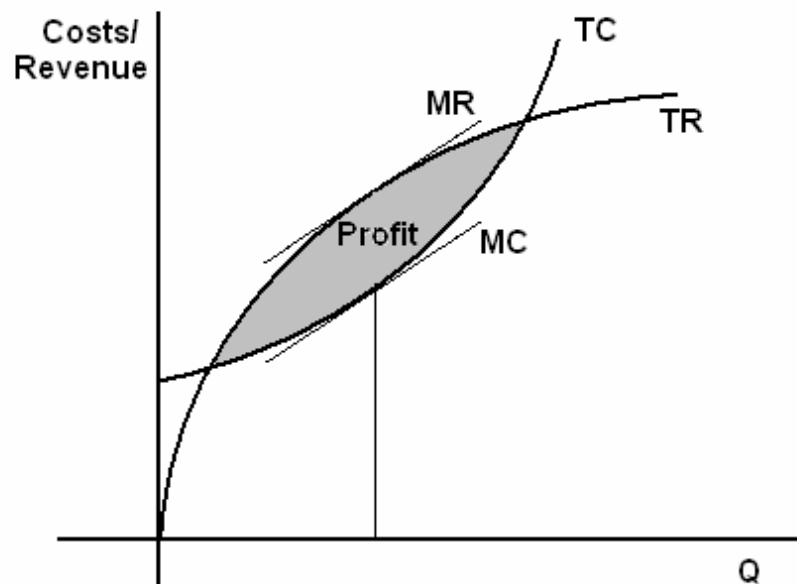
The firm may have several objectives ranging from, economic, short run, long run material and non material in nature. All objectives are important. However the firm may decide its own priorities in objectives. Certain firms may have material objectives significant certain other firms may have normative objectives significant. Some objectives are uniformly significant for all firms.

Following are some of the important objectives of a firm.

a. Economic objectives

Economic objectives are material objectives which may be short as well as long run. Economic objectives are normally considered by all firms. These economic objectives can be classified as follows:

1. Profit maximization:



Each firm tries to maximize profits. This is a universal objective for firms. The firms aim at maximizing the difference between total revenue and total cost.

The firm will produce such output which will give maximum profit. The gap between TR and TC can be maximized by drawing two tangents, one on each with same slope.

The slope of TC is MC and slope of TR is MR. By equating slopes; MC is equated with MR.

So, $MC=MR$ emerges as equilibrium condition for optimizing output for a firm.

Firms may aim at maximizing rate of profit or profit. The rate of profit is maximized by pricing so that there is larger gross profit margin. On the other hand maximizing profit may be attained by maximizing output.

2. *Workers welfare*

Workers welfare helps in maintaining harmonious relationships and also maintaining high levels of productivity and loyalty.

3. *Consumer satisfaction*

Consumer satisfaction helps in maintaining brand image, market share, prevents defection of consumers to another brand.

4. *Investors benefit*

In case of joint stock companies, the firm will aim at increasing the net asset value of the company. Accordingly, it will have an investor friendly policy in dividends and bonus.

5. *Specialization*

Specializing in certain product or service will be useful in establishing brand image, market share and growth.

6. *Creating brand equity*

Every firm aims at creating a brand and as large a consumer following as possible. This is in the long run interest of the firm.

b. Long run objectives

1. *Survival*

The basic objective of a firm is to survive in the long run. In the long run the competition may increase, in such a market the basic principle is to survive.

2. *Market leadership*

The firm will always aim at being the market leader. This is a material objective as well as a normative objective. In most cases profit depends on this objective.

3. *Increasing market share*

The firms will initially aim at increasing market share. This is the objective before aspiring for market leadership.

4. *Growth: forward and backward integration*

The firm may go for forward integration thus adopting an additional process of production or take up backward integration whereby, produce locally such component which was earlier brought from the factor market.

c. **Non material objective**

1. *Social responsibility*

The firms may assume social responsibility as an important factor. It is give back from the society from where the firm makes a living.

2. *Environmental protection*

The firm may work in the direction of protecting the environment. This is done by being eco-friendly and having less pollution.

3. *Resource conservation*

The resource conservation may help in reducing costs but it also helps in reducing social costs. The society benefits from resource conservation

4. *Creating social infrastructure*

The firm may create social infrastructure by constructing educational institutions, hospitals, townships, and afforestation.

Revenue concepts

Total revenue (TR): This is the revenue got by the firm by selling certain amount of output.

Average Revenue (AR): This is the average proceeds per unit. This is same as the price. For this reason, the demand curve is same as the average revenue curve.

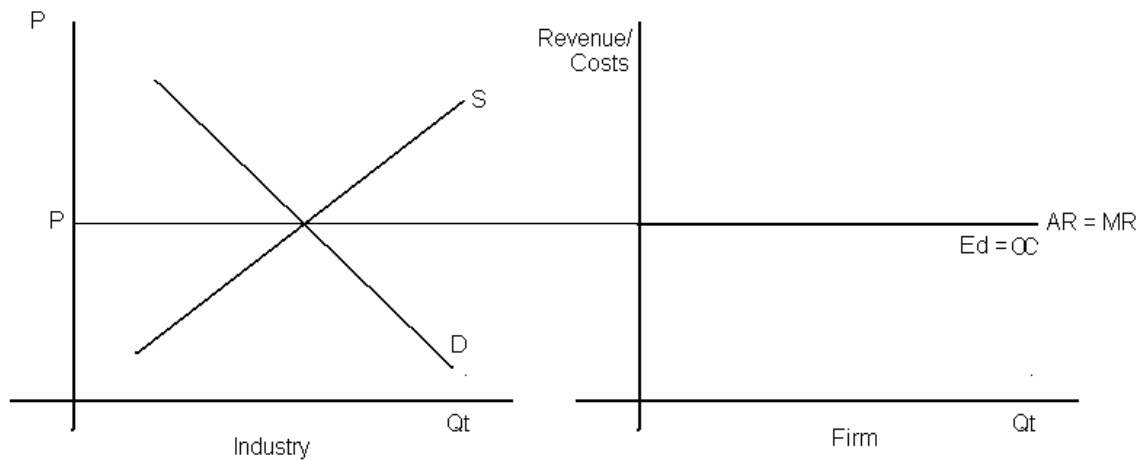
Marginal Revenue (MR): This is the additional revenue got by a firm by selling an additional unit.

Revenue relationships under perfect competition

The price under perfect competition is determined by the industry. A single firm is too insignificant to determine the price. Larger number of firms together determines the price. Under perfect competition the number of firms is so large that no single firm can, alone, influence the price.

A firm can produce only an insignificant part of the total out put. This is the reason why a firm continues to get the same price at any level of out put. It means that the fir has a demand curve with infinite elasticity.

Quality	Price	TR	AR	MR
1	10	10	10	10
2	10	20	10	10
3	10	30	10	10
4	10	40	10	10
5	10	50	10	10
6	10	60	10	10



Under perfect completion the firm is a price taker and it has to determine that level of out put which will give maximum profits. The firm has also $AR=MR$ in revenue relationships.

Revenue relationships under imperfect competition

A monopolist faces a downward sloping demand curve: Under monopoly, there is no distinction between firm and industry. The demand is direct on to the firm. Incase of perfect competition, the industry faces down ward sloping demand curve and the firm gets the perfectly elastic demand curve. In case of monopoly the firm directly faced the downward facing demand curve.

It means that the firm can sell more only by reducing price. With this difference, the relationship between AR and MR also changes

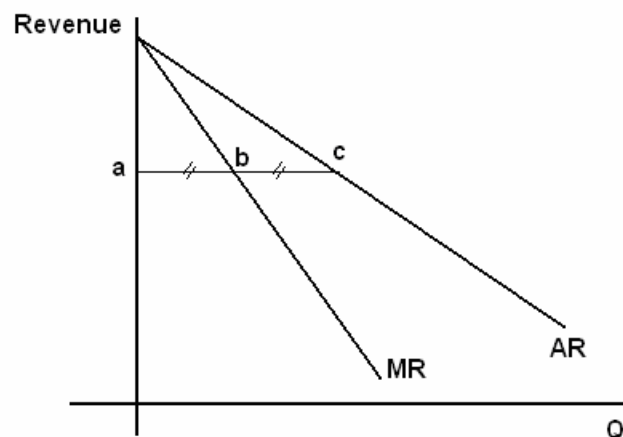
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1	10	10	10	10
2	9	18	9	8
3	8	24	8	6
4	7	28	7	4
5	6	30	6	2

Relationship between AR and MR

$$AR \neq MR$$

$$\text{Also, } AR > MR$$

$$\text{and, } AR = MR \frac{e}{[e - 1]}$$



AR and MR are downward sloping curves. MR curve lies below AR curve. MR curve cuts the plane below AR curve into two halves.

Geometrically, it has a property:

A perpendicular drawn on Y axis will show

$$ab = bc.$$

Relationship between Elasticity of demand and Revenues

$$\text{Elasticity of Demand} = \frac{\text{Average Revenue}}{\text{Average Revenue} - \text{Marginal Revenue}}$$

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

$$eAR - eMR = AR$$

$$-eMR = AR - eAR$$

$$MR = eAR - \frac{AR}{e}$$

$$MR = AR \left[\frac{e-1}{e} \right]$$

$$AR = MR \left[\frac{e}{e-1} \right]$$

Where e – is the point elasticity of Demand, AR is average revenue and MR is Marginal Revenue.

Perfect Competition

Perfect competition refers to a competition between large number of buyers and sellers dealing in homogenous product at uniform price.

Features of perfect competition

1. Large number of buyers and sellers

The number of buyers and sellers should be so larger that no firm can determine the supply or no single buyer can determine demand and no single person can determine the price.

2. Homogenous product

The product is homogenous, so that no firm has a reason to charge a different price.

3. Free entry and exit of firms:

When there is free entry and exit of firms, the firms keep joining the production as long as there are profits. With new firms joining the super normal profits, get distributed among more and more firms.

At the same time when the profits decrease the less efficient firms leave the industry. So in the long run, efficient firms which can operate at normal profits only exist. In the long run the perfect competition has only firm which operate on normal profits.

4. Perfect knowledge

The buyers and sellers have perfect knowledge of demand, supply and price.

5. Free mobility of factors of production

Free mobility of factors ensures that the cost of factors is same across all the regions. Equal factor prices give all the firms same opportunity to make profits and survive. So, efficiency of firms will determine the profitability of firms.

6. No transport cost

The transport cost should be insignificant as compared with the cost of production. This is possible only when the firms cater to local markets.

7. No advertising

The firms need not advertise, because each firm will have infinite market at the given price. Advertising will add to cost and reduce profits

8. Uniform price

Uniform price ensures that the consumers have choice between firms and the firms have no reason to charge different price due to homogenous product.

9. No Government restrictions

There are no government interventions by way of taxes or mobility of goods.

Price determination under perfect competition (Industry)

The price under perfect competition is determined by the industry. Perfect competition is a market condition where the buyers and sellers are equally important in the determination of price. It is an ideal situation whether both the buyers and the sellers are equally represented.

Under perfect competition the price is determined by the firms and buyers, no single firm or buyer can influence the price. The buyers are represented by demand curve and the firms are represented by supply curve.

The demand curve indicates

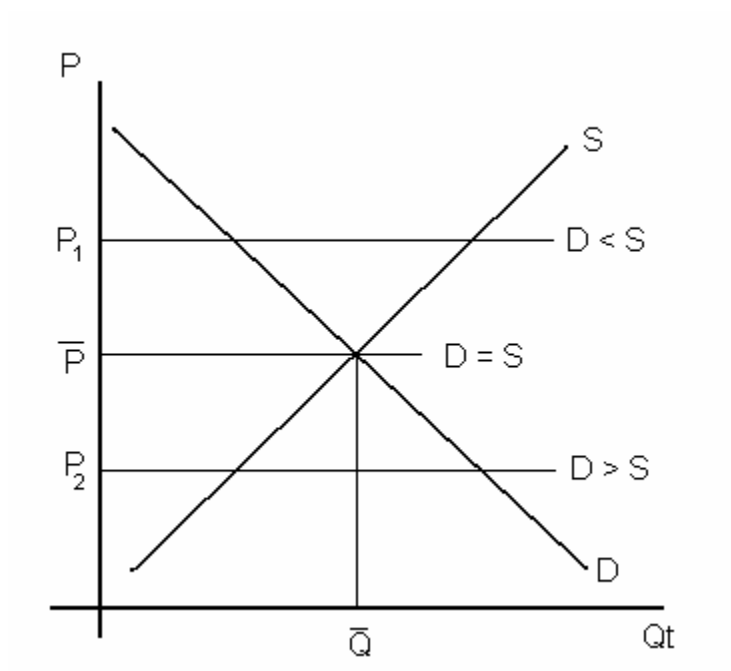
- The choice and tastes of the consumers
- The utility of the good

- The utility behavior of the consumer
- The capacity and willing of the consumer to pay the price

Similarly, the supply curve indicates

- The willing ness of the firm, to sell goods at different price
- The cost conditions
- Nature of factor markets

Supply and demand curve together determine the equilibrium price. The equilibrium price is the one which is acceptable to both buyers and sellers. This is determined by the large number of buyers and spellers.



Price	Quantity demanded	Quantity Supplied		Market
10	600	1000	D<S	Surplus
9	700	900	D<S	Surplus
8	800	800	D=S	Equilibrium
7	900	700	D>S	Scarcity
6	1000	600	D<S	Scarcity

At P1 D<S, Goods are not being sold, price is high

At P2 D>S, there is scarcity, the firms do not accept low price

At P_3 $D=S$, the price is acceptable to both sellers and buyers
 This is the equilibrium price. The price remains unchanged as long as the demand and supply remain constant.

Nature of perfect competition:

Demand and supply are both responsible in the determination of equilibrium. According to classical economics, the equilibrium is a natural process; the demand and supply get equated automatically.

Perfect competition encourages efficiency of firms. It leads to efficient allocation of resources.

Perfect competition is an assumption for all the theories of economics.

The equilibrium quantity and price remain unchanged as long as the demand and supply remain constant.

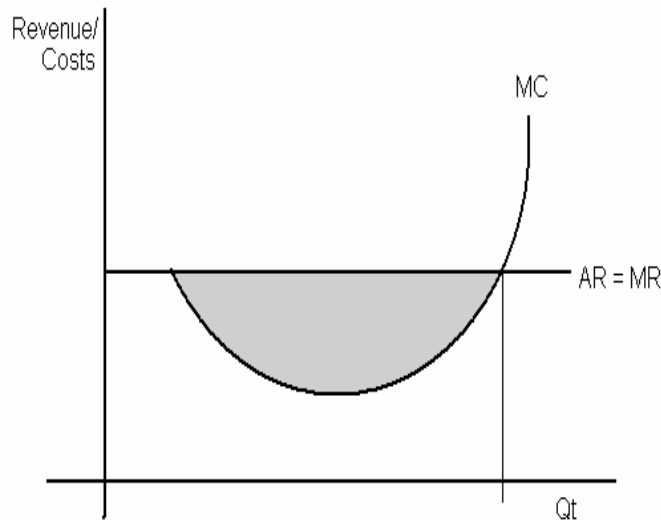
Out put determination under perfect competition by a firm

Perfect competition is a market condition where the buyers and sellers are equally important in the determination of price. It is an ideal situation whether both the buyers and the sellers are equally represented.

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Under perfect completion the firm is a price taker and it has to determine that level of out put which will give maximum profits. The firm has also $AR=MR$ in revenue relationships.

Given, these condition the firm will optimize its out put at a point where $MC=MR$,

Conditions of out put determination:

While maximizing out put the firm shall follow two conditions

I Order condition: $MC=MR$

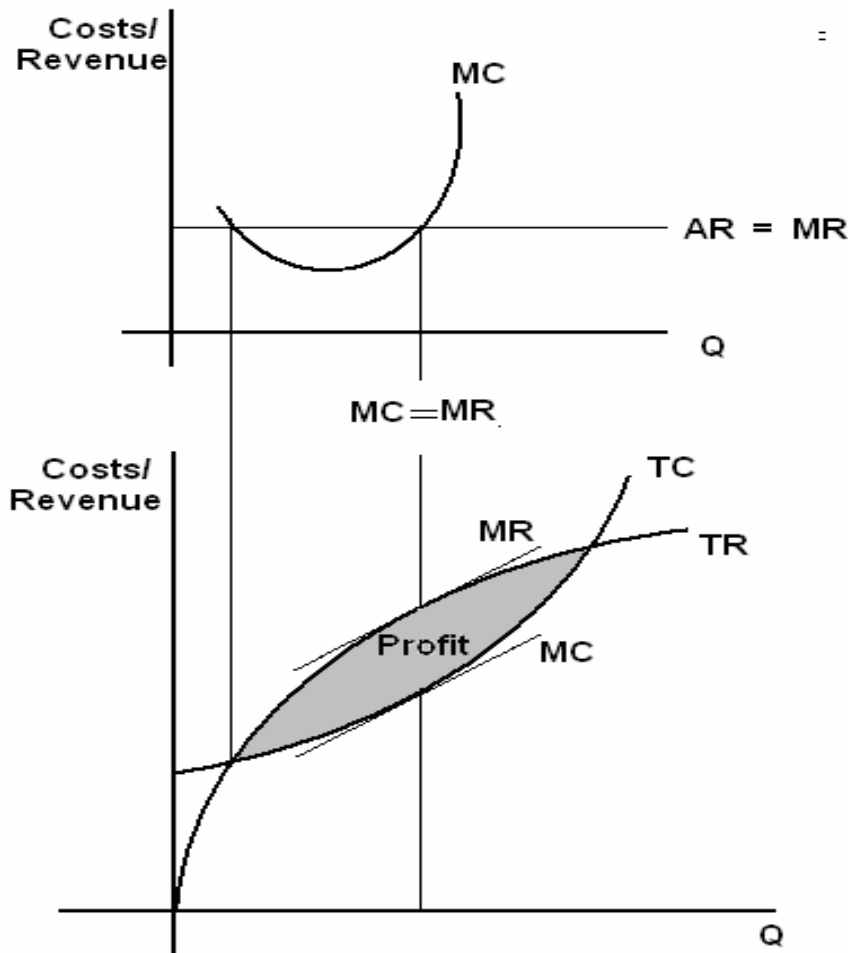
II Order Condition: MC cuts MR from below.

At a point where $MC=MR$ the difference between TC and TR will be maximum.

The gap between TR and TC can be maximized by drawing two tangents, one on each with same slope.

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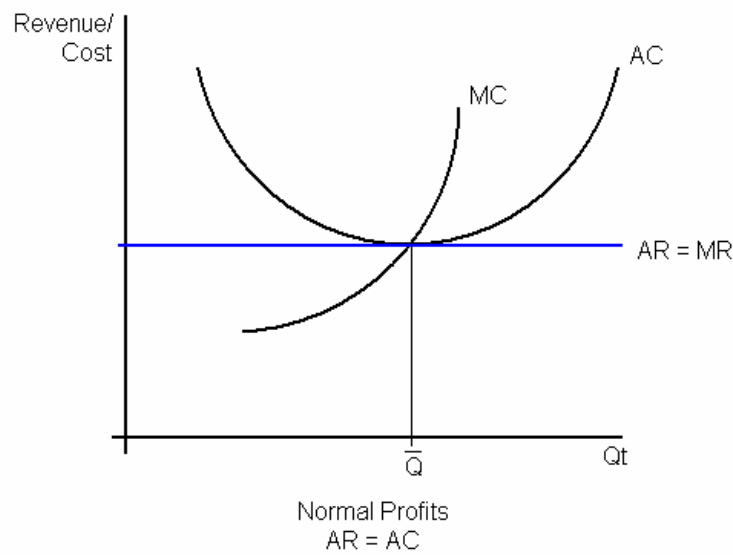
Nature of firm

A firm can make profits or incur losses depending on the price and costs. A firm can earn profits; normal profits and super normal profits or incur losses; maximum bearable loss and shut down condition. Each one of this will determine the nature of firm. This is true in case of any firm, whether perfect competition or imperfect competition.

Normal profit:

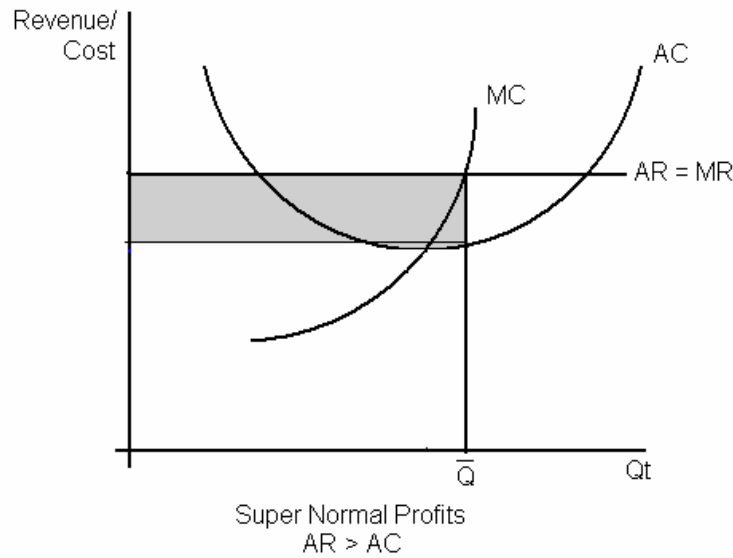
A firm is said to be making normal profit when $AR = AC$. The price (AR) covers the costs. The cost includes the managers' remuneration. However there is no surplus above managers' remuneration. If the entrepreneur himself is the manager, he will receive normal profit as his share of remuneration

Normal profit is also called '*no profit no loss*' condition or break even point in managerial economics.



Super Normal profit:

A firm is said to be making supernormal profits if $AR > AC$. The price charged by the firm covers all the costs and also generates a surplus over the expenditure. In this case the firm receives the managers' remuneration (normal profits) and also a surplus over it. Hence it is called super normal profits.



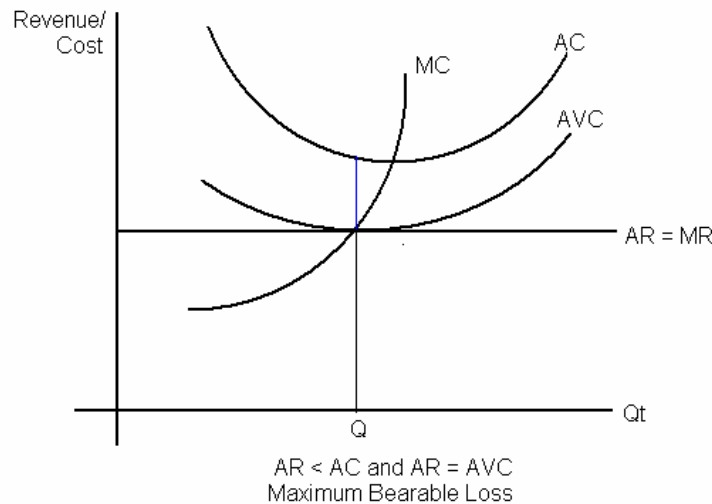
Losses

A firm is said to be making losses if, $AR < AC$. In case of loss there is a need for further analysis. The firm needs to decide whether to stay in production or shut down. In such a case Average variable cost (AVC) is considered.

Maximum bearable loss:

If $AR = AVC$ the firm is said to be at maximum bearable loss.

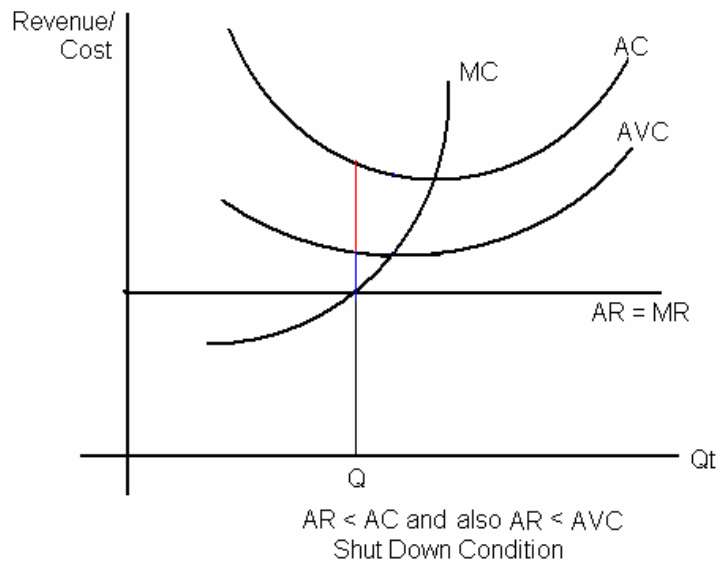
The price received covers the AVC and the fixed cost is not covered. So even if the firm closes down, in the short run the fixed cost remains as loss. This is a case where, the loss remains same (fixed cost) whether the firm stays in production or shuts down. This is called the maximum bearable loss.



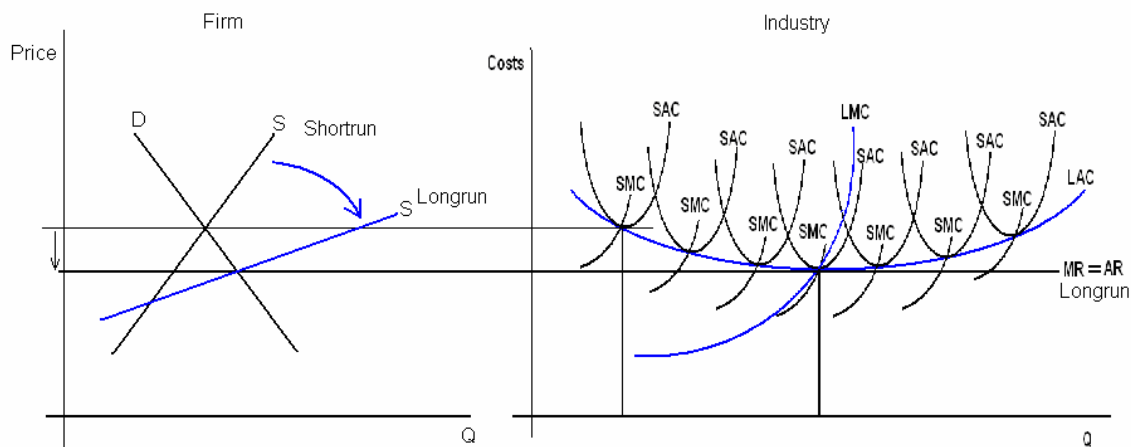
Shut down Condition

If $AR < AVC$, the firm needs to close down.

The price received fails to cover fixed cost as well as a part of variable cost. So if the firm closes down the loss is equal to fixed cost. If the firm continues to produce the loss will be fixed cost and a part of variable cost. So, the firm can reduce losses by closing down. This is called Shut down condition



Long run equilibrium under perfect competition



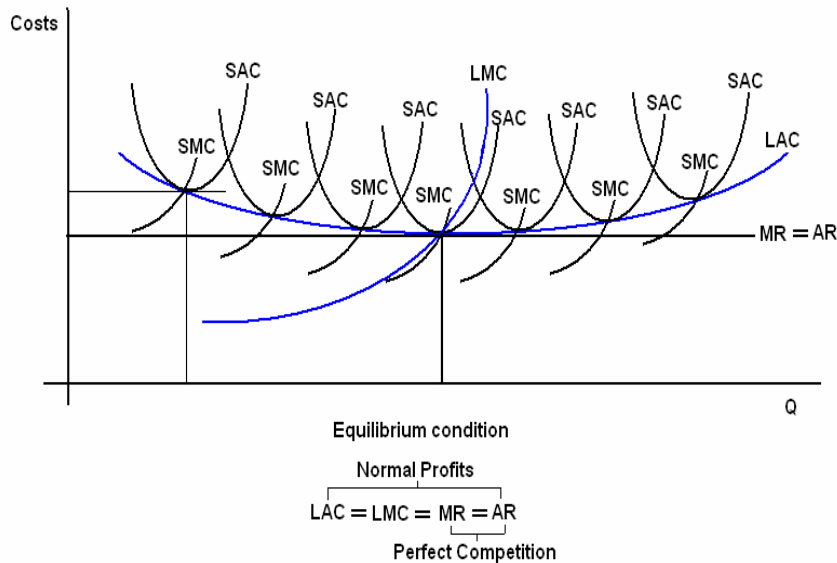
In the long run the following factors operate:

The supply becomes more elastic: With time, supply becomes more and more elastic. So the price tends to decrease. The $AR=MR$ received by the firm also decrease. However, at the same time the average cost curve also becomes flatter, showing decline in costs. Flatter AVC means more out put being produced at lesser cost.

There is free entry and exit of firms: When there is free entry and exit of firms, the firms keep joining the production as long as there are profits. With

new firms joining the super normal profits, get distributed among more and more firms.

At the same time when the profits decrease the less efficient firms leave the industry. So in the long run, efficient firms which can operate at normal profits only exist. In the long run the perfect competition has only firm which operate on normal profits.



The long run average cost curve becomes flatter than short run cost curve Following are the long run factors responsible for changes in average cost curve in the long run:

1. Population

Though population changes even in the short run. The effect of population can be seen only in the long run, by way of changes in the pattern of demand and labor force.

2. Technology

Technology helps in the long run in reducing costs and making production function efficient.

3. Alternative sources of raw material and energy

Alternative and cheaper sources of raw material and energy change the production function and help in expanding output and making it economical.

4. Expanding markets

Expanding markets provide purpose for the industry to produce and distribute. In the long run, mass consumption in the economy increases.

Hence in the long run the equilibrium of the firm is arrived at a point where:

$$LAC = MR (\text{long run}) = LMC = AR(\text{long run})$$

Where

MR (long run) = MC represents determination of optimum out put,

LAC = LMC indicate the firm operating at optimum level, and

LAC = AR (long run) means the firm is operating on normal profits

Monopoly

Monopoly refers to an imperfect market situation where a single seller sells the product in different markets at uniform or discriminating prices. Monopoly is identified with single firm large number of buyers and the monopolist as the price maker.

Following are the features of monopoly market.

Features of Monopoly

1. Single seller: The monopoly market has a single firm. There is no distinction between firm and industry. Since a single firm supplies to the large number of buyers, the firm tends to be large and specializing in its production
2. Large number of buyers: There is a large market even under monopoly. However there may be differences in the elasticity of demand in each segmented market.
3. Product: The product may be homogenous or even differentiated depending on the nature of market and division of submarkets.
4. Monopoly power: The entry into monopoly market for other firms is restricted. This is due to the monopoly power the firm has. The monopoly power is got by the firm due to following factors.
 - a. Legal restriction: The law may prevent other firms from entering. E.g. Government monopolies on entry
 - b. Exclusive ownership of technology of production: If the technology of production is known only to a single firm the monopoly power remains un effected.
 - c. Exclusive ownership of raw material: Access to raw material is held by a single firm, the monopoly power remains intact

- d. Registered trade marks and brands: In case of registered trade marks; firms can not duplicate and compete in a market. It remains as monopoly.
 - e. Personal monopolies: Personal monopolies have individual branding. They can not be duplicated. The personal monopolies continue
5. Price discrimination: With price discrimination a monopolist sells the same product at different prices in different markets at the same time. The objective of price discrimination is profit maximization.
6. A monopolist faces a downward sloping demand curve: Under monopoly, there is no distinction between firm and industry. The demand is direct on to the firm. In case of perfect competition, the industry faces downward sloping demand curve and the firm gets the perfectly elastic demand curve. In case of monopoly the firm directly faced the downward facing demand curve. It means that the firm can sell more only by reducing price. With this difference, the relationship between AR and MR also changes

Relationship between Average revenue and Marginal revenue under monopoly

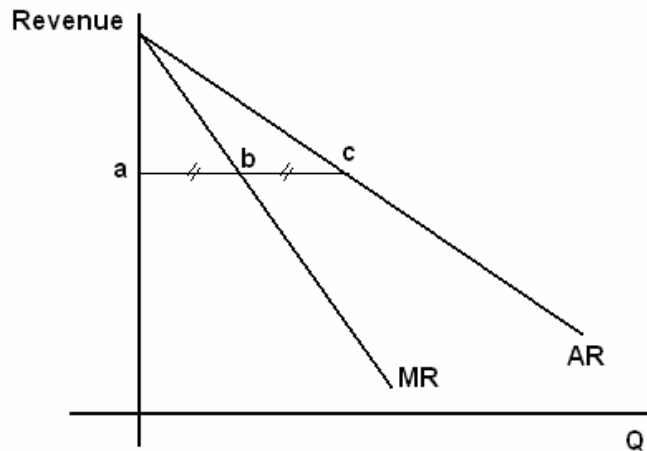
A monopolist faces a downward sloping demand curve, so he can sell more only by reducing the price. This will change the AR and MR relationship. Since it is an imperfect market, AR is not equal to MR. It can be seen that AR is greater than MR. Further, AR and MR are related through elasticity of demand.

Q	Price	TR	AR	MR
1	10	10	10	-
2	9	18	9	8
3	8	24	8	6
4	7	28	7	4
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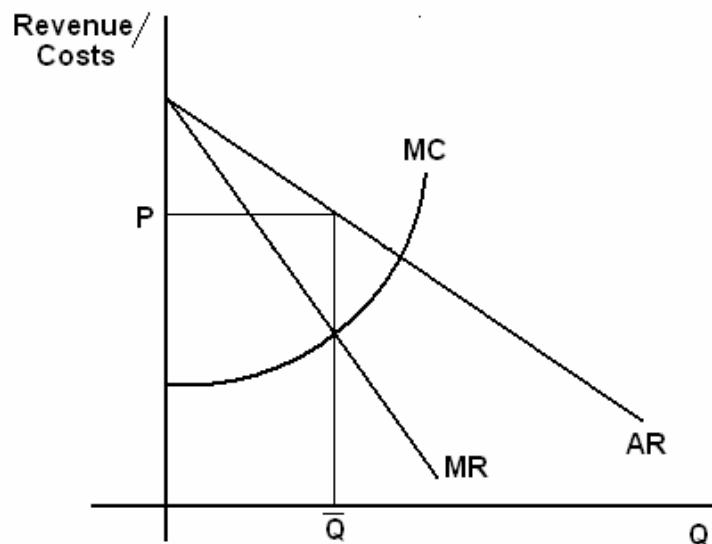
$$\text{and, } AR = MR \frac{e}{[e - 1]}$$



Geometrically, AR curve cuts the plain below AR into two halves. So any perpendicular drawn on Y axis will show the property, $ab = bc$

Equilibrium under simple monopoly

Under monopoly, the demand curve is downward sloping, so the AR and MR curves also slope down wards and look different. However the optimizing condition for out put remains same as in case of perfect competition.



At a point where $MC = MR$ the firm finds its equilibrium out put. When $MC = MR$ the difference between TC and TR will be maximum.

The output is found on the x axis. The price determination is done by AR curve. This is the demand curve which will tell the maximum price that can be charged for this level of output.

In case of simple monopoly, there will be only one product and single price. In case of differentiated monopoly

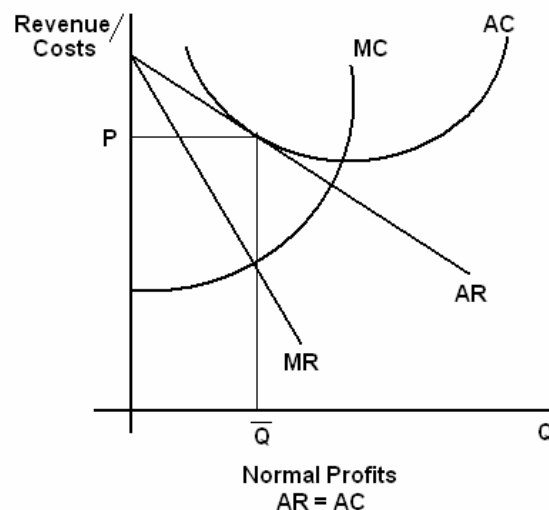
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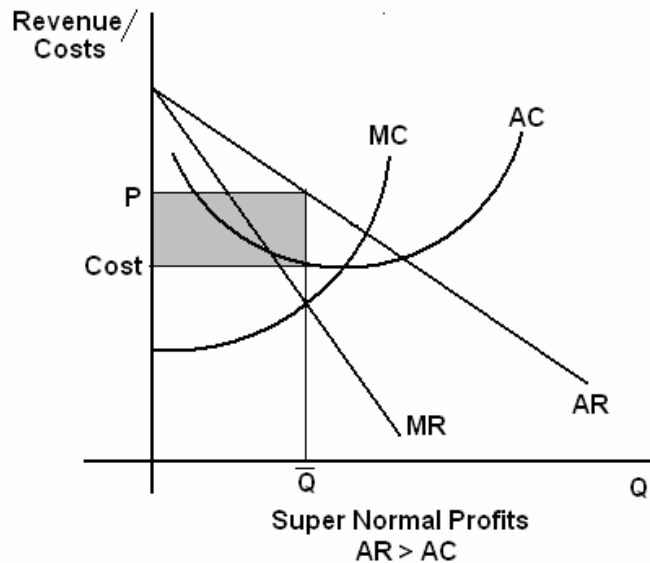
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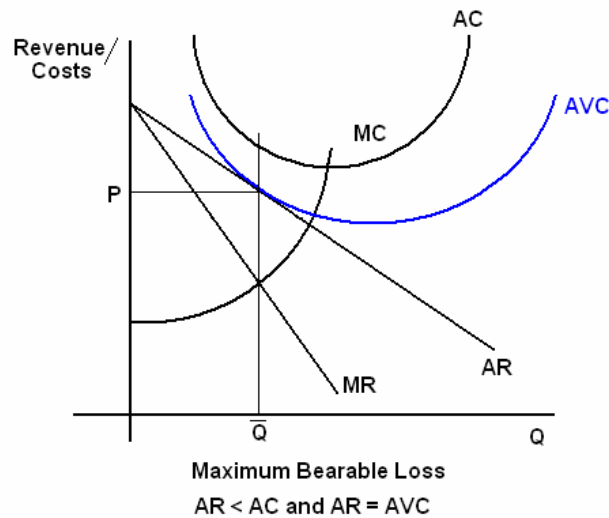
expenditure. In this case the firm receives the managers' remuneration (normal profits) and also a surplus over it. Hence it is called super normal profits.



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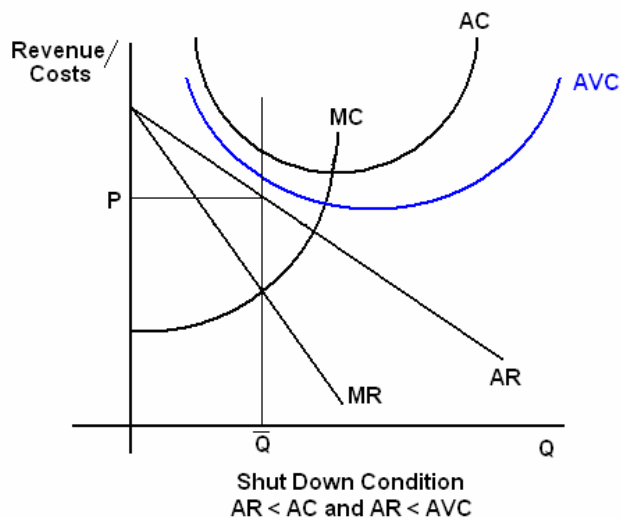
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Shut down Condition

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Monopolistic Competition

Monopolistic competition is a case of imperfect competition where limited number of firms, compete with differentiated product at dissimilar prices.

Following are the features of monopolistic competition:

1. Large number of buyers: The number of buyers is large. It is a large market where firms compete.
2. Limited number of firms: The number of firms remains limited due to intense competition. The entry is not restricted by law, but competition discourages new firms.
3. The prices need not be uniform. Each firm produces goods as per their own market, so the product quality, utility differ. In such a case the prices also differ.

4. Product differentiation

Product differentiation means the same product being projected different, by modifying with additional utility, quality or term of sale.

The product differentiation is done in following ways:

- a. By an additional quality: the firm may show a different quality of the product which may not exist in the market. The quality should be such that the utility of the product gets enhanced.
- b. Additional quality: The product can be designed with an additional utility. Products with different utilities have elastic and larger demand. This is one method of improving the appeal of the product. It is seen that dual utilities have improved the quality of the product like the two-in-one products.
- c. By different term of sale: the firm may offer a different terms of sale. It may be by way of guarantees, after sale service, quizzes, contests, prices, Etc.

The objective of price differentiation is to claim monopoly power in an imperfect market. This is done by creating *unique selling proposition*.

Product differentiation means differences in cost. With differences in cost the price also changes. Firms sell at different prices. The competition between firms with different prices is called non-price competition. The

firms justify the price by either different image/ brand equity or by different qualities/utility of the product.

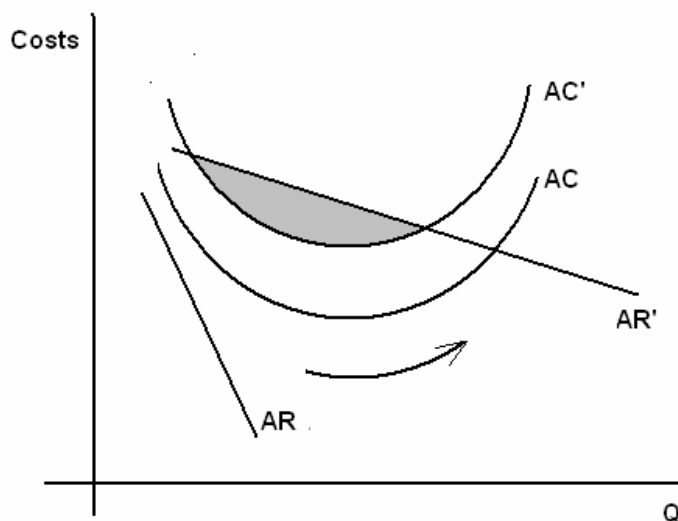
Non-price competition benefits the firms. The consumer is made to pay higher prices which are falsely justified through advertising.

5. Selling cost

Selling cost is the cost of generating demand. Under monopolistic competition, the firms engage in non price competition. The firms charging different prices justify their prices by advertising, publicity, field campaign and similar promotional activities.

Selling cost helps in generating demand, brand image and justifying the price. Selling cost does not give utility. Selling cost is a burden on the consumer. Production cost on the other hand generates utility. The production cost decreases with increasing output in proportion. This is due to economies of scale. Whereas, the selling cost increases in larger proportions to increasing output. This is because, advertising becomes more and more expensive, with increasing output.

Selling cost makes demand elastic and shifts demand curve upwards. In the diagram it can be seen that, selling cost has increased the average cost. Yet, the demand curve has shifted upwards and also became elastic. This is the advantage the firm receives by spending selling cost.

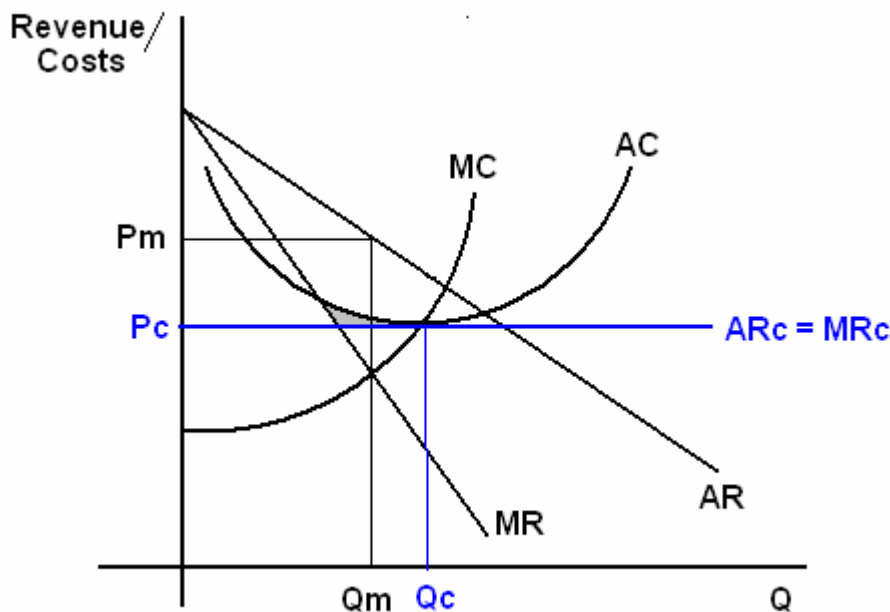


Comparison between Imperfect and perfect competitions

(Wastages in Monopolistic competition)

A comparison between perfectly competitive firm and that of imperfect competition shows that there are wastages and exploitation under, imperfect competition.

1. The price monopolistic competition is higher than the competitive price. The AR being high at the equilibrium out put the firm charges higher price.
2. The out put under imperfect competition is lesser than the competitive output. By restricting the out put the firm can charge higher price.
3. Imperfect competition leads to less than optimum size of out put: The monopoly firm restricts the out put so that it can realize higher price. In the process it produces less than optimum size of out put. The firm will be producing at higher cost, but the price charged, will be much higher granting larger profits to the monopoly firm.



4. Imperfect competition will lead to unfair competition. Monopolistic competition has wasteful advertising. Advertising leads to increases in cost and does not yield any utility to the consumer.

5. Non price competition leads to price exploitation of consumers. Under non price competition the firms sell goods at different price and justify higher price by advertising. In case of perfect competition the prices are low and uniform.

Oligopoly

Oligopoly is an imperfect market condition identified with limited number of firms with high interdependence competing with differentiated or uniform product at uniform prices.

Following are the features of oligopoly market

1. Limited number of firms:

The number of firms is limited due to intense competition. The industry remains as a small group of firms.

2. Large number of buyers

The number of buyers will be very large. There will be huge market for which the firms compete.

3. High degree of interdependence between firms

The firms will have high degree of interdependence in terms of price and product design. The firms almost share the same demand curve. However, the demand is made elastic or remains inelastic depending on the nature of advertising.

No firm can deviate and change the product description. Any change made by the firm will lead to the consumer shifting to other competing firms. The demand remains very flimsy for a firm. The demand is maintained carefully by maintaining the same price, similar product details and advertising.

4. Rigid and uniform prices

The price will remain uniform and rigid. When the price is accepted by the firms and the buyers, it continues for a long time. A consumer will not pay a higher price because he can continue to get the same price from other firms. A firm will not reduce the price because the consumer is willing to pay the given price. On the other hand reduction in the price may be treated as a loss of quality. This is called as price illusion.

5. Advertising

Advertising is an essential part of oligopoly market. Advertising is essential for registering the product with the consumer. Advertising allows the product to have the required exposure to the consumer so that the consumer can include the product in his options.

Further, advertising make the demand elastic. By making the demand elastic, the firm will be able to sell more goods at the given price.

6. Types of oligopoly

There are different types of oligopoly each based in a different marketing practices followed to manage competition.

a. Pure and differentiated oligopoly

Pure oligopoly deals with goods are homogenous whereas differentiated oligopoly may have apparent product differentiation. The market offers flexibility the firms to change the nature of the product keeping the base utility same. In ace of pure oligopoly it is easy to maintain price uniformity. With product differentiation, the price tends to change because of cost variations. Even in theses conditions the firms need to maintain the uniform prices. For this reasons the firma can only adopt apparent product differentiation without changing the cost structure.

b. Complete and partial oligopoly

Complete oligopoly refers to market where all the firms are equally placed in terms of competition, price and market share. Whereas in case of partial oligopoly, there can be one large firm emerging as the leader. The leader will have the advantage of giving a lead price to the product which other firma will follow. The leadership firm will have the privilege of designing the product, price and the nature of competition.

Pure oligopoly may at times change to partial oligopoly by frequent mergers. Firms merge among themselves to form a large firm so that a leadership role can be achieved.

c. Collusive and Non collusive oligopoly

Non collusive oligopoly refers to a market where the forms operate independently, however with interdependence. In case of collusive oligopoly, the firms may collide, enter into agreements to lessen competition and share the market to exploit the consumers.

7. Cartels

Cartels are a case of collusive oligopoly. Firms in market with intense competition form arrangements to avoid competition by making agreements so that all firms tend to benefit at the cost of the consumer. Cartels are harmful business organization formed to enhance exploitation and increase profits.

There can be different types of cartels depending on agreements.

- a. In a cartel, the firms with high price may insist that its price prevail, so that all firms can maximize profits.
- b. At the same time the firm with lesser price may insist on its price to be followed so that larger output can be sold.
These are price cartels. In both these cases competition is avoided and market becomes lucid.
- c. The firms may divide the market geographically and restrict mutual entry in respective territory. In this case the market has one monopoly firm selling the product.
- d. The firms may have system of marketing royalties as consideration for sharing territory for attaining monopoly power. A firm operating in market as an exclusive monopolist may have to pay market royalty to other firms restricting entry.

The cartels can be operating at international levels, where the regions are shared on the basis of trading currencies or countries. The countries may form commodity agreements, bilateral agreements, and multilateral agreements for a specific time. All these agreements where the firms or the countries get captive markets belong to cartels.

Duopoly

Duopoly is a model of oligopoly market with two firms designed to study the interdependence of firms for pricing.

Following are the features of a model duopoly market:

1. Two firms:

The number of firms is limited to two. This is for the purpose of studying the details of interdependence. Hence it is a model of oligopoly.

2. Large number of buyers

The number of buyers will be very large. There will be huge market for which the firms compete.

3. High degree of interdependence between firms

The two firms will have high degree of interdependence in terms of price and product design. Two firms almost share the same demand curve. However, the demand is made elastic or remains inelastic depending on the nature of advertising.

Single firm can deviate and change the product description. Any change made by the firm will lead to the consumer shifting to other competing firm. The demand remains very flimsy for a firm. The demand is maintained carefully by maintaining the same price, similar product details and advertising.

4. Rigid and uniform prices

The price will remain uniform and rigid. When the price is accepted by both the firms and the buyers, it continues for a long time. A consumer will not pay a higher price because he can continue to get the same price from other firm. A firm will not reduce the price because the consumer is willing to pay the given price. On the other hand reduction in the price may be treated as a loss of quality. This is called as price illusion.

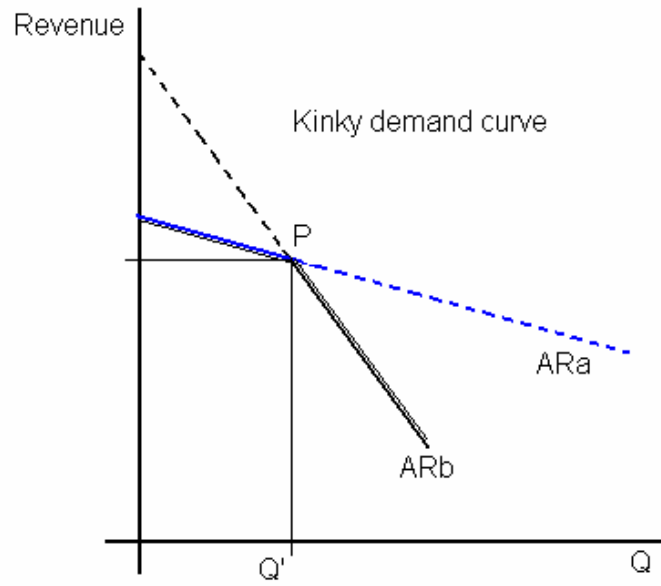
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Further, advertising make the demand elastic. By making the demand elastic, the firm will be able to sell more goods at the given price.

6. Kinky demand curve

The demand curve for the duopoly market is med up of the individual demand curves of two forms. These are the demand curves made by the firms by the independent advertising campaigns and publicity.



Yet the firms will have demand curves with different elasticities. The demand curve for the market is made up of these two demand curves.

The inelastic segment of the demand curve at lower prices and the elastic segment of demand curve at higher prices form the segmented demand curve in duopoly.

It is learned in point elasticity of demand that all goods tend to be elastic at higher prices and inelastic at lower prices.

The firms will be operating on the segmented demand curve which forms a kink at P. P is the point which is common on both the demand curves. This is the price which can be followed on both the firms.

P is the uniform and rigid price followed by firms under duopoly.

Case Studies

Illustrative case study I (Objectives of firm)

Tata group of Companies are regular in paying their taxes to the Government. They have a clean track record of tax remissions over years. In compliance with the environmental laws the company is serious and has ISO 14000 certification. In general HR management and productivity is good with least attrition harmonious relations.

Customer care and customer relations are held high the company documents reveal. However, the company has been making profits with good dividend record and net worth.

Illustrative Case Study II (perfect competition)

Goldmine Inc. launched its new range of gold jewelry in Indian market. In a market which is governed by seasonal demand and fluctuating gold prices, Goldmine inc. had two product ranges. The ethnic designs which were priced 12 percent more than the trendy designs.

Goldmine Inc joined the manufacturers' guild to advertise for gold jewelry and contributed 3 percent of its cost of production for common product promotion.

Liberal gold import policy helped Goldmine keep its products in competitive range.

Illustrative Case study III (Monopolistic Competition)

Venus Soaps and detergents entered the Indian market recently with its new brand of toilet soap 'Rainbow'. The soap had multiple layers, each with a different color and fragrance. It claimed that the soap will provide a variety of fragrances to alleviate the consumer from boredom.

The soap contained a small 10 mm plastic toy in it, which could be revealed after continuous usage. The consumers are advised to collect these toys and exchange for a larger 18" rose wood replica.

Three such rosewood replicas would entail the consumer for a cruise in a luxury liner for ten days.

Being a new entrant in the market Venus soaps provided an advertising/promotional budget of Rs 12 crores which is 18 percent of market price of the product.

The price of the soap was priced at Rs. 18. The price is ten rupees more than the average price of soap in the market.

Illustrative Case Study IV (Oligopoly- Collusive- cartel)

Swiss Spring Aqua bottles mineral water in India. The company found that the product could not afford a lavish promotional budget due to slender profit margins. However the company proposed a moderate advertising budget of Rs 3.5 crores which could help register its product with consumers.

Swiss Spring Aqua knew it no longer afford the advertising budget on a regular basis, so it negotiated with a leading Indian company Aqua-pura and bought territory right of Western India for a royalty of Rs 1.5 crores, which is much less than it's advertising budget.

Swiss Spring Aqua could sell the product at 10 percent higher price. With a 40 percent market share now Swiss Spring Aqua could sustain price and other companies hiked their price by ten percent.

Illustrative case study V (Monopoly)

Dr Anant Malhotra, a neurologist, treats Parkinson's disease with guarantee. He developed his own sonic pulsar for stimulating neural activity. Two months basic treatment costs Rs 2,25,000. To visiting patients from other countries the fees amount to \$ 45,000.

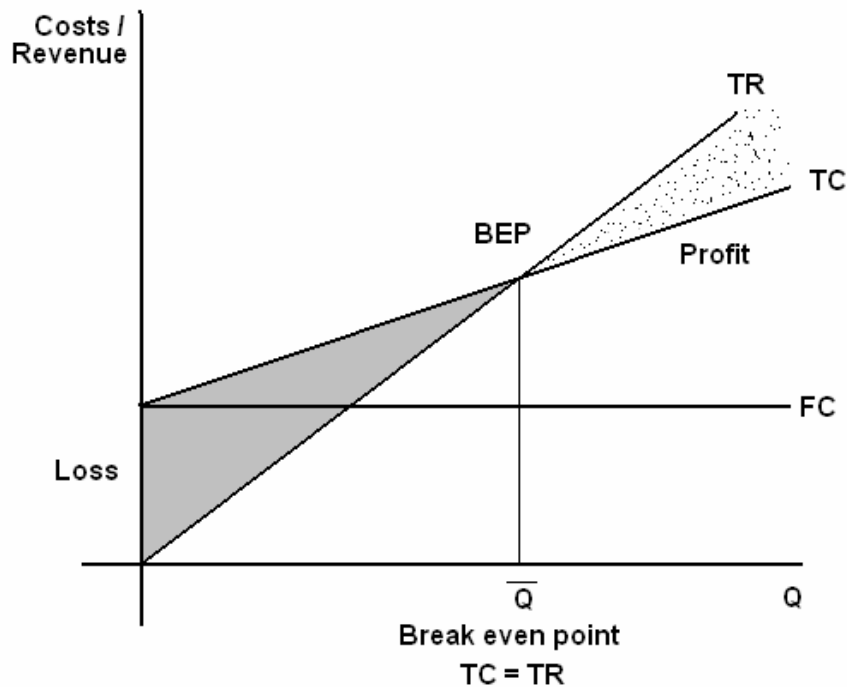
Dr Malhotra has a nursing home where poorer patients are offered out patient treatment for a fee of Rs.15, 000. Dr Malhotra runs Anant Ashram at Neral where older patients are housed and treated free. He visits the Ashram twice each week.

Break even Analysis

Break even out refers to the level of output where $TR = TC$. This is the minimum out put the firm need to produce its costs. Any output there after will grant profit to the firm. Usage of break even point for corporate decision making is called Break even analysis.

At break even point total cost is equal to total revenue. After break even point the profitability begins. The out put less than break even out put shows losses.

Every firm aims at break even level of output in the beginning. The break even level is a no profit no loss condition. In other words it is case of normal profits. The costs cover only the manager's remuneration and there is no surplus over that. It is similar to the condition $AR = AC$.



At break even point there are no profits, so $TR = TC$

$$\begin{aligned} TR &= TC \\ P \times Q &= TFC + AVC \times Q \\ P \times Q - AVC \times Q &= TFC \\ Q(P - AVC) &= TFC \\ Q &= \frac{TFC}{P - AVC} \end{aligned}$$

Where,

TR is total revenue
 TC is total cost
 P is price
 AVC is average variable cost
 TFC is total fixed cost
 Q is out put

Hence, at break even out put $Q = \frac{TFC}{P - AVC}$

Break even analysis is based on the following assumptions

1. The cost and revenue functions are linear functions. This is for the sake of simplicity.
2. The firm can estimate the cost and revenues in advance.
3. Price remains uniform at all levels of out put.
4. The costs are made up of fixed and variable costs.

Angle of Incidence

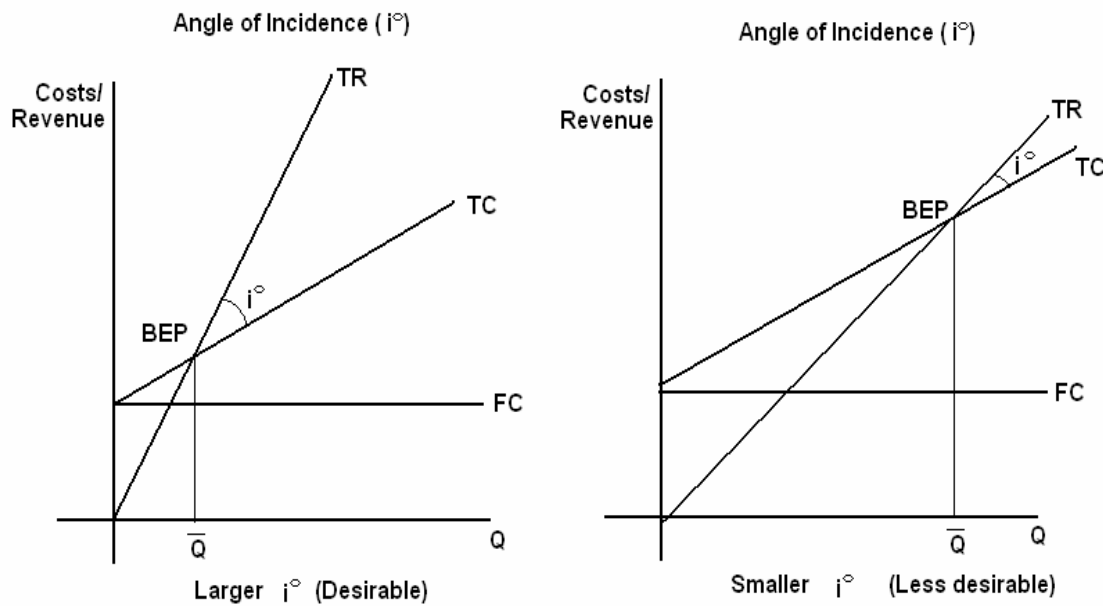
The angle of incidence is the angle made by the TR and TC functions at the break even point. In break even analysis the angle of incidence is very important in selecting a project among various competing projects.

The angle of incidence decides the nature of break even point.

If the angle of incidence is larger the break even out put will be smaller. In other words, if the angle of incidence is smaller the break even out put will be larger.

While comparing competing projects on the basis of break even points, a project with larger angle of incidence will be selected. Because a firm will

always wishes to keep the Break even out put small so that, it can operate on profits hat sooner.



Application of Break even analysis

A firm will firstly, attain the break even out put so that it can be out of losses and start making profits.

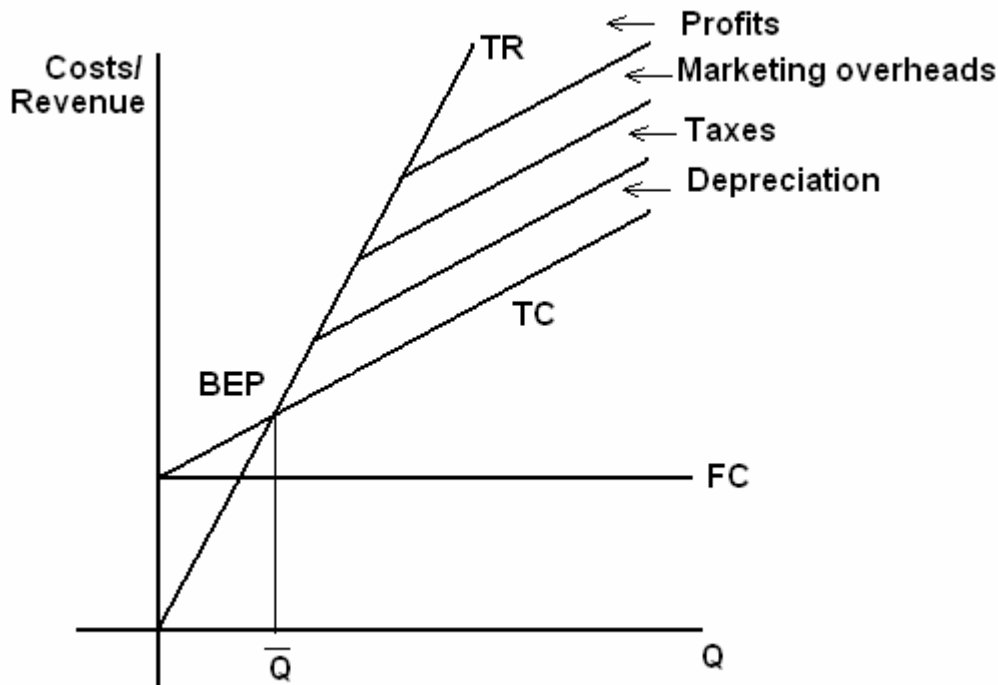
However, the firm needs to allot revenues for different purposes depending on the earnings of profit or revenue.

Firstly, the firm will slot revenue for depreciation on assets. Depreciation is a nominal expenditure. It is that part of fixed assets that is consumed during the year and that part of fixed cost that can be charged to the out put. Depreciation is the first priority after attaining break even out put.

When a firm makes profits it has to pay taxes. The firm now provides for taxes after deducting depreciation.

Thereafter, marketing overheads can be deducted. These marketing overheads are for more than one year. So if the revenue permits the firm may provide for durable marketing overheads.

Finally, the revenue in excess of all these provisions yield profits that can be distributed among owners or retained as reserves and surplus.



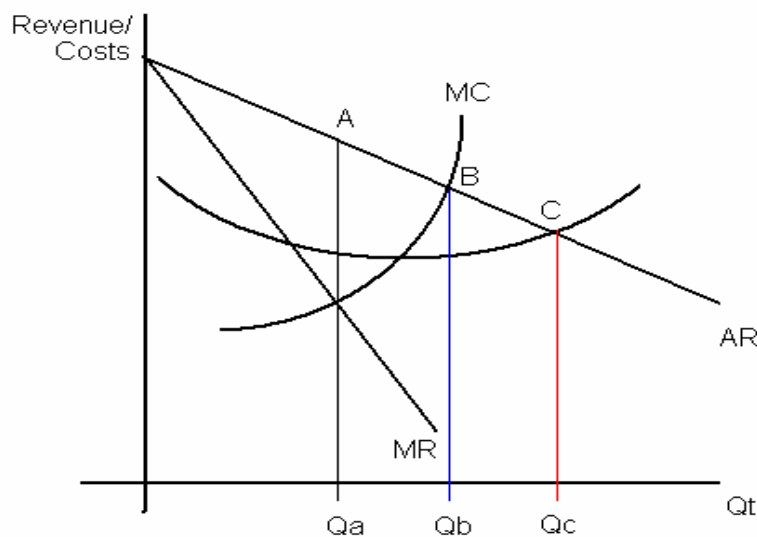
Limitations

1. Break-even analysis is only a supply side analysis, as it tells you nothing about what sales are actually likely to be for the product at these various prices.
2. It assumes that the price remains uniform at levels of out put
3. It assumes that fixed costs are constant
4. It assumes average variable costs are constant per unit of output,
5. It assumes that the quantity of goods produced is equal to the quantity of goods sold
6. In multi-product companies, it assumes that the relative proportions of each product sold and produced are constant

Corporate Pricing Methods

Marginal Cost Pricing

The Conventional pricing is followed when $MC = MR$, the price is determined by AR curve. The conventional pricing is described by the theory of firm and pricing. Independent of markets and competition the output is determined by equating MC and MR. This as an optimizing output will help in determining the price as per the AR (demand) curve.



Marginal Cost pricing: when $AR=MC$, the price is equated with Marginal Cost. The Marginal cost pricing is more advantageous than conventional pricing because, the out put tends to be larger than the conventional method. Further, the price tends to be smaller.

This is the method followed by the Government in most administered pricing methods.

Administered pricing refers to the pricing adopted by the government in determining the price of a product independent of market and profitability considerations.

The resources are put to efficient use when the price equated with MC. The price is lower and the out put is higher.

Thus way the government can encourage the consumption of a product and also utilize the production capacity fully, thus achieving efficient allocation of resources. The Government follows this method for pricing petroleum prices.

Under administered pricing the Government can also follow Average cost pricing: when $AR=AC$, the price is equated with Average Cost. This is a pricing where the firm will be operating at normal profits. In this case the out put is highest and the price is lowest. The government follows this method for pricing products like fertilizers. The consumption of fertilizers is desirable in the national interests in increasing the output of agriculture.

Full Cost Pricing

The corporate pricing practices are mostly based on the cost sheet approach, where the price includes all the costs chargeable to the product. The considerations of average and marginal costs are no more valid. The cost sheet approach to pricing includes relevant inputs of production and overheads.

Out line of cost sheet:

Direct labour + direct material+ direct expenses	= <u>Prime cost</u>
Prime cost + Production over heads	= <u>Works cost</u>
Works cost + administration overheads	= <u>Cost of production</u>
Cost of production + selling and distribution over heads	= <u>Cost of sales</u>

Full cost pricing considers all relevant costs and over heads. The costs include all the variable costs and part of fixed cots. The fixed cost is represented in different ways

As per the standard accounting procedures, the fixed cost is represented as depreciation. It is that part of the fixed capital that is consumed during that year on out put. The amount charged on the out put pit depends on the life span of the asset and cost of replacement.

Alternatively, the fixed cost can be represented as the interest on fixed capital for that year.

In both the cases the fixed capital is represented in the cost of production. To this cost the firm will add a profit mark up. The price so determined is called as the price of the product as per full cost pricing or profit mark-up method.

$$\text{Price} = \text{Mc} + \text{Lc} + \frac{\text{FC}}{q} + \pi$$

Where,

Mc is the cost of material

Lc is the labour cost

FC is the fixed cost apportioned to the out put

q

π is the profit mark-up

Full cost pricing a popular method of pricing method. This is because of its several advantages

1. *Represents all costs*

As against the conventional pricing methods, full cost pricing is realistic

2. *Fixed costs*

Fixed costs are correctly represented. The costs which can be assigned to the out put are correctly drawn.

3. *Realistic representation of creation of utility*

The cost represents the actual inputs going into production representing their scarcities and productivities.

4. *Easy for firms to adopt*

Since it is simple and provides great scope for analysis of cost of production it is commonly adopted by firms.

5. *Flexible*

The system is very flexible. Simple cost sheet method enables the firm to apply the system across time and products.

6. *Extendable to multi commodity or multi location pricing*

A firm producing multiple goods or producing from various locations can use the method easily. The system can be integrated in multi-product pricing and branch accounting.

Profit mark-up

Profit mark-up is the rate of return expected by the firm on its sales. It is the gross profit margin. Determination of Profit mark-up is matter of great care and risk. Firms determine the Profit mark-up depending on several factors.

The profit mark-up depends on several factors

1. *Corporate policy*

The policy of the firm will determine the level of profit mark-up

2. *Nature of product*

The product can be consumer good, further, consumer durable, luxury good, perishable or similar. Profit mark-up changes in each case.

3. *Nature of market and competition*

Market and competition have great bearing on the Profit mark-up. Highly competitive markets will have lower Profit mark-ups.

4. *Pricing strategy*

Having a certain degree of Profit mark-up can be matter of corporate strategy. It is an internal matter for a firm.

5. *Industry standard*

Every industry has its own standard of Profit mark-up. May it be hospitality, automobile, housing or consumer goods; each has its own degrees of Profit mark-up.

6. *Product life cycle*

The product life cycle decides the degree of Profit mark-up. Whether the product is at introduction, growth, competition, stagnant or decay will all have a Profit mark-up of their own.

7. *Cost of capital*

The cost of capital has a direct bearing on the levels of Profit mark-up expected. There is a direct relation between these.

7. *Expected rate of return or profitability*

Each firm will have its own expected rate of return on investment. The Profit mark-up will depend on that.

Strategic pricing

Corporate pricing policies consider several practices which may include corporate policy and corporate ambitions more than simple cost and profit margin. Strategic pricing considers market, product, corporate policy/image and ambitions of the firm. Accordingly, the pricing strategy may follow a set of procedures.

Strategic pricing has the following objectives:

a. *Increasing the market share competition*

Strategic pricing helps in increasing the competition, market share, independent of profit or profitability.

b. *Increasing the volume of sales*

Profit may increase on volume of sales in certain pricing policies.

c. *Managing competition*

Strategic pricing is most suited for managing competition. In case of new firms or new launch of a product, the company needs to establish its image. Proper pricing policy helps in forming an image.

d. *Managing the market*

The pricing policy changes with changes in the trends in the market. The market is made up of consumer choices, government policies, other firms and technology.

e. *Corporate policy*

The policy of the firm decides the kind of pricing it needs to adopt at a given point of time. This may change from time to time.

f. *Product launch*

When a new product is launched the strategic policy enables the firm decide among various alternatives of pricing.

g. *Growth strategy*

Pricing strategy can aim at the growth of the company. The growth in turn defines strategy in corporate policy.

The pricing strategies are of different types

1. *Penetration pricing policy*
2. *Skimming price policy*
3. *Flexible price policy*
4. *Follow-the-leader price policy*

These are different pricing strategies each having its own advantage the firm will adopt such pricing strategy that suits its corporate policy.

Penetration price policy

The penetration price policy aims at capturing the market by keeping the price as low as possible. The basic objective of penetration price policy is to increase sales and market share, irrespective of profit or profitability.

Penetration price aims at margins on volumes. Low rates of profits but higher profits due to volume of sales. Further, it helps in increasing market share of company. This is one of the major objectives of any firm.

A firm launching the product for the first time may follow penetration price. With penetration price policy the firm will be able to register the product with the consumer. It is like an introductory offer.

Skimming price policy

In case of skimming price policy, the firm will determine a higher price. The objective will be to target the product at a specific consumer group that can pay a higher price.

Such higher price is always justified with the help of advertising and media support. The skimming price is also called as the niche pricing. The firm only targets a small portion of the market and the product will be accordingly designed. The skimming price carries a product image for the higher income groups.

Flexible price policy

In case of flexible pricing policy, the firm may follow one system and switch over to the other. The firm may launch the product with penetration price and thereafter increase the price.

The firm may keep changing the price as per season, competition or costs of production. However the efficiency of this pricing depends on the acceptability at the market,

Follow-the-leader price policy

In certain markets one firm is larger than the others. The firm will have a larger share and it leads the market. This is similar to partial oligopoly.

In such case other firms have no choice but to follow the leader.

Firms in general will follow the price adopted by the leader or determine such price that will be acceptable in the market. However, the leadership price continues to be the shadow price; a bench mark price for other firms to take cue from.

All pricing strategies have their own advantages and justifications. It depends on the firm to choose the right kind of pricing strategy that suits the corporate need.

Discriminative Pricing

Price discrimination means the firm selling the same product in different markets at the same time at different prices. The objective of price discrimination is profit maximization.

Price discrimination is generally followed by a monopolist.

Price discrimination is not always possible. There are certain conditions to be fulfilled for practice of price discrimination.

Price discrimination is possible only under the following conditions

1. *Legal sanction*

The practice of price discrimination shall be accepted by the law. In absence of legal sanction price discrimination will be called cheating.

2. *Geographically distant markets*

The markets with different pieces shall be geographically far. The markets should be far enough to prevent resale of goods.

3. *No possibility of resale*

Resale should be prohibited. In case of resale the monopoly profits will be drained out by those reselling the goods.

4. *No storage possible*

Resale is not possible only I those goods whether storage is not possible.

5. *Apparent product differentiation*

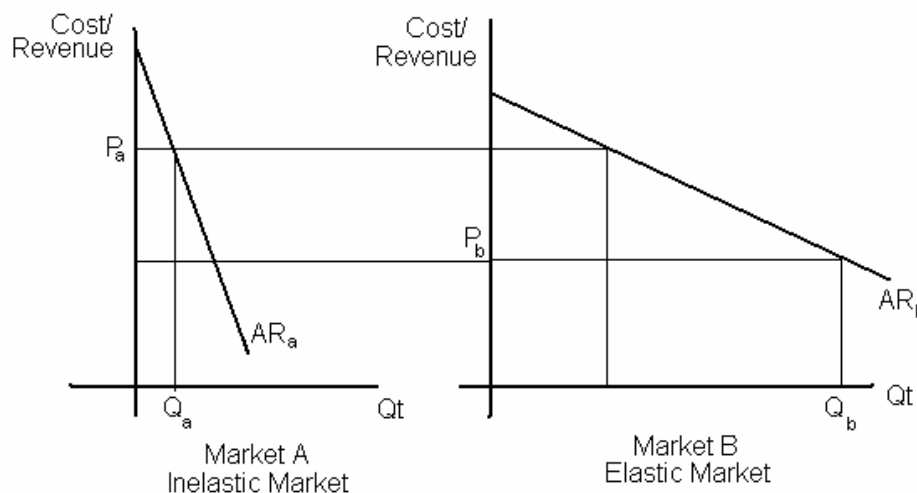
The firm shall follow apparent product differentiation. In such cases the buyers will find justification for paying a different price.

6. *Let go attitude of the consumer*

The consumers should have a let go attitude. In case of consumer resistance, price discrimination is not possible.

7. *Difference in elasticities of demand*

Difference in elasticities is an essential condition for price discrimination. There will be as many sub markets as the differences in elasticities.



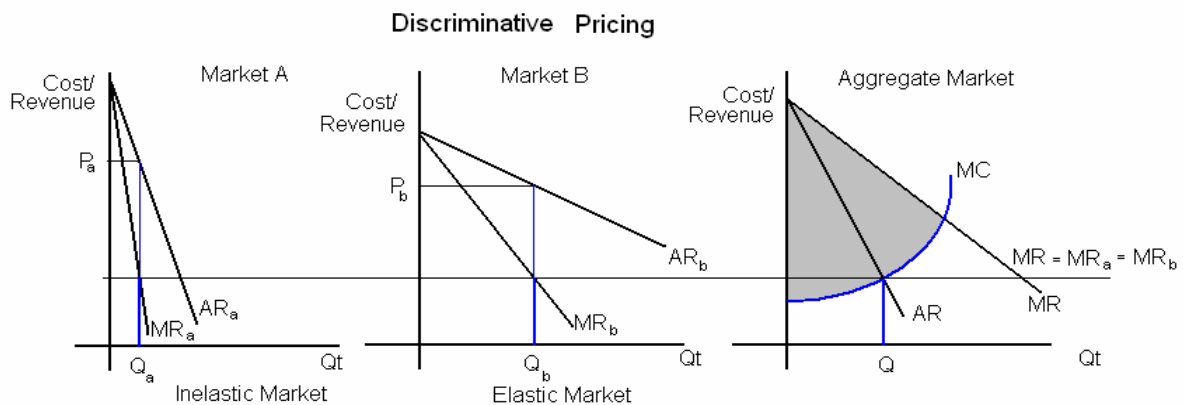
In an elastic market, the firm can not charge higher price. Any increase in price will greatly decrease quantity demanded. So the price tends to be low. In an inelastic market, the quantity is not sensitive to price, so the firm will charge a higher price.

The inelastic market: Market A has higher price and lower out put.

The elastic market; Market B has lower price and higher out put

Equilibrium with price discrimination

Firstly, the market is divided into sub markets depending on the elasticity of demand. Each market will have a different elasticity of demand. Suppose the firm can divide the markets into two sub markets: market A - an inelastic market and Market B - an elastic market.



1. Out put determination

$$MC = \Sigma MR$$

2. Out put distribution

$$\Sigma MR = MR_a = MR_b$$

3. Price determination

The prices are determined as per ARs.

Though the markets are different, the place of production is centralized. The firm will produce at a single place. Depending on the component markets, the aggregate market is constructed.

The firm will determine the equilibrium out put; this is the out put which will be distributed among different markets. The firm will consider the aggregate MR i.e. ΣMR for determining the equilibrium.

Out put determination

$$MC = \Sigma MR$$

This is the optimum out put determined at the aggregate market.

Out put distribution

$$\Sigma MR = MR_a = MR_b$$

The out put is distributed in different markets by equating Marginal revenues. The equilibrium level of MR is passed over to different markets, this way the equilibrium is created in sub markets. The equilibrium level of MR will indicate the out put in different markets.

Price determination

The prices are determined in different markets as per the Average revenues (demand) in different markets.

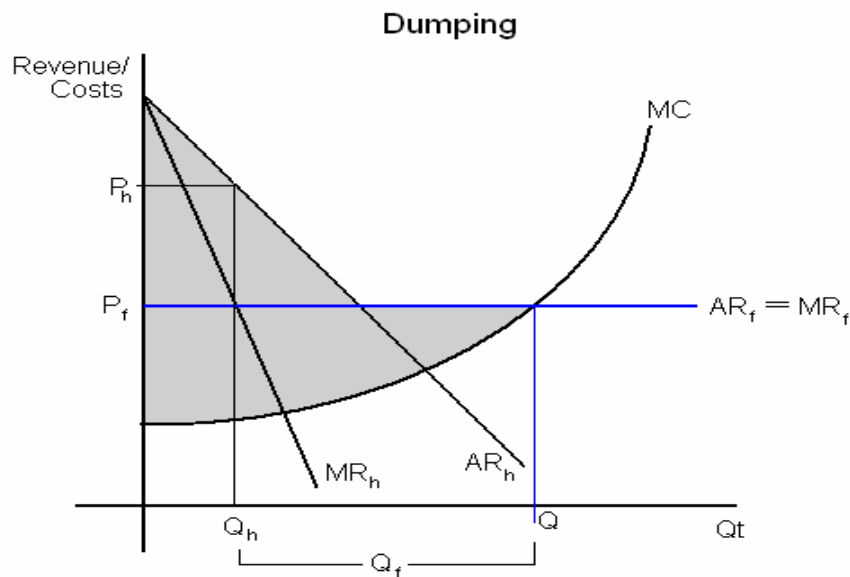
It can be seen that the

The inelastic market: Market A has higher price and lower out put.

The elastic market; Market B has lower price and higher out put

Dumping

Dumping is a special case of price discrimination where the firm is a monopolist in the home market and faces competition in the foreign market. In the home market the firm faces a downward sloping (demand) AR curve whereas in the foreign market the AR curve is perfectly elastic with AR=MR=Price relation.



The firm firstly, determines the out put to be produced for the local as well as the foreign markets. There after, the out put needs to be distributed among home and foreign markets. Finally, the price is determined.

1. Out put determination

$$MC = MR \text{ (maximum possible MR)}$$

2. Out put distribution

$$MR_h = MR_f$$

3. Price determination

The prices are determined as per AR in the home market and at the existing price at the foreign market.

The out put is determined by equating $MC=MR$. This is the profit maximizing out put. The out put is distributed by equating MRs in different markets. i.e. $MR_f = MR_h$

At this point the out put is allotted for home market and the price is determined as per the downward sloping demand curve. The remaining out put is sold in the foreign market at the price prevailing as per $AR=MR=Price$.

It can be seen that the firm sells a small out put in the home market at high price and a large out put in the foreign market at low price. This is called dumping.

Multi product pricing

When a firm has more than one product the pricing method will be interdependent. The firm will have different AR curves for different products. The demand is generated by nature of product and the consumer acceptance.

So firstly, the firm will determine the equilibrium level of out put, by equating MC and Marginal revenue.

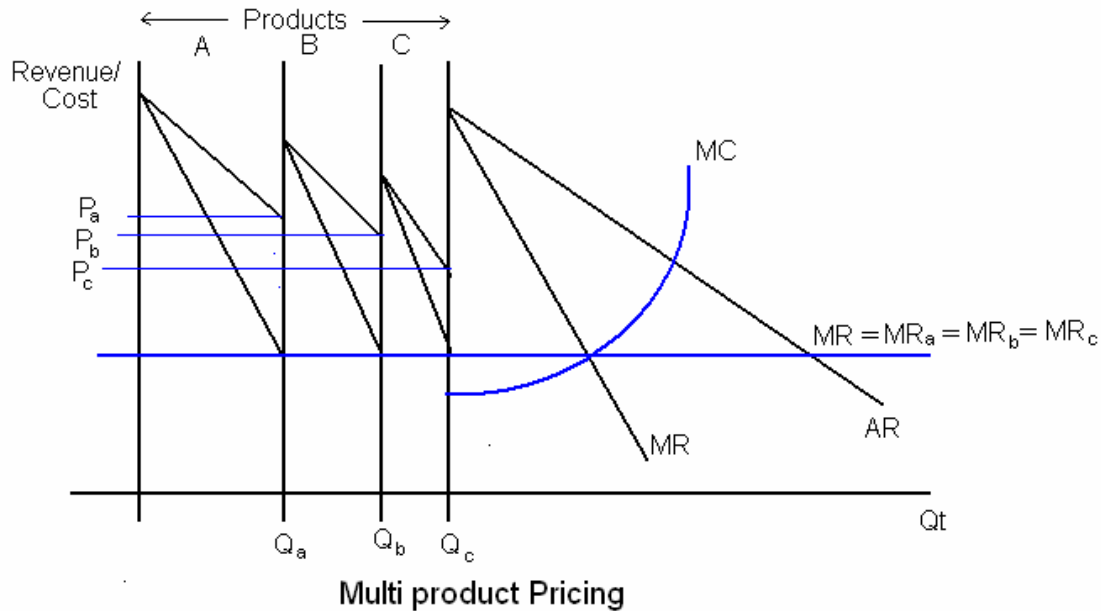
$$MC = MR$$

There after the firm will equate equilibrium level of Marginal Revenues of different products. This is done by equating Marginal revenues of different products at equilibrium level.

$$MR_a = MR_b = MR_c = MR_d = MR \dots$$

This way, the out put of different products is determined as per the markets for these different products.

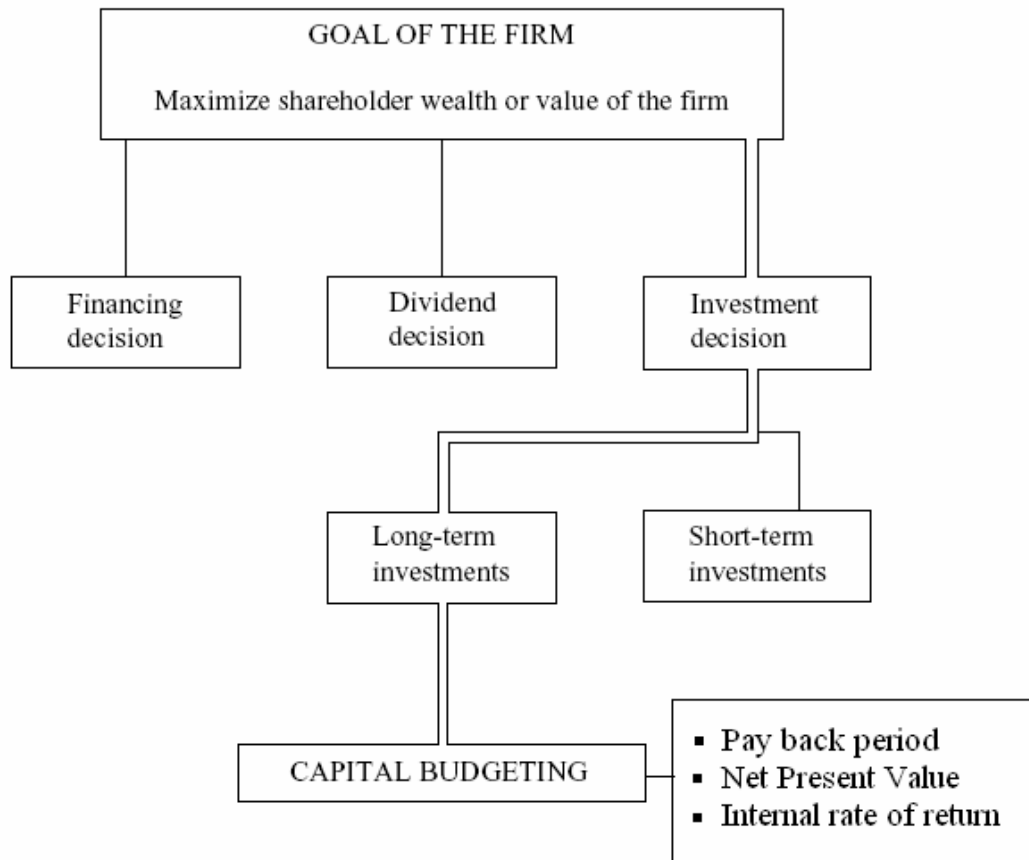
Finally, the prices are determined as per the Average Revenues. The respective demand curves will determine respective prices. It is assumed that the MC is common for all the products and the demand is different for different markets and products.



Capital budgeting

Capital budgeting (or investment appraisal) is the planning process used to determine whether a firm's long term investments such as new machinery, replacement machinery, new plants, new products, and research and development projects are worth.

The non recurring expenditure can be evaluated by methods of project evaluation. In fact all projects are desirable but due to scarcity of resources all projects can not be implemented. The projects need to be prioritized depending on their worth. For this purpose, project evaluation or capital budgeting becomes essential.



Basic Steps of Capital Budgeting

1. Estimate the cash flows

Every project generates cash in flows and cash out flows. The difference between these in and out flows refer to the net flows.

2. Assess the risk in of the cash flows.

The cash flows need to be regular. This is a matter of liquidity of the project. The project needs to be evaluated for its risk in yielding cash in flows

3. Determine the appropriate discount rate

Discount rate is used to reduce the value of future returns to present value. The rate can be based on the cost of capital or the expected rate of return or profitability.

4. Estimates

Find the PV of the expected cash flows. This is done by calculating the annuities. These are annual returns. These

returns need to be discounted as per the waiting time involved. The discounts shall be so designed that they increase with increasing waiting time.

5. Evaluation

Accept the project if Internal Rate of Return satisfies expected Internal Rate of Return or the Present Value is lowest or the pay back period is low

Payback period

Pay back period is the time period during which the sum of the net cash flows equals the investment. Payback period refers to the time required for the project to return back the investment. Every project generates cash in flows and cash out flows. The difference between these in and out flows refer to the net flows.

A project which has a low pay back period is selected. It is method based on the liquidity of the project.

	Project A	Project B	Project C
I Year	30,000	40,000	30,000
II Year	35,000	40,000	30,000
III Year	35,000	20,000	30,000
IV Year	30,000	30,000	30,000

Among three projects Project C is rejected firstly, because the payback period is larger than three years. For Projects A and B the pay back period is three years.

Among Projects A and B, the project which offers larger returns in lesser time is Project B. It gives back 80% of the investment in two years. So, Project B is selected against A. In turn Project A gives only 65% of the investment.

So pay back period considers recovering investment in lesser time, further, the project should return most part of the investment in lesser and lesser time. Hence pay back period totally depends on the liquidity of the project. The draw back of payback period is that it neglects profitability. However this method is most popular means project evaluation only because of its simplicity.

Net Present Value

Net present value refers to the present value of future returns. NPV as method of project evaluation means that the sum of the future returns shall be equal to the present value of the project.

Every income yielding asset has three properties:

- a. The assets yields returns over its life time, different each year
- b. The asset has a fixed life span during which it gives returns
- c. A price is payable for the asset before it yields returns.

These are important issues in making investment decisions.

Net present value refers to the present value of future returns. The present value of any future returns is always low. To arrive at the present value the future value needs to be discounted. The discounts should be such that they should increase with increasing time,

The sum of such discounted future returns is called as the net present value. In this case the rate of discount is determined by the firm. So larger the discount rate, lower will be the net present value.

The present value of the project cash flows of the future,

$$PV = \frac{Q_1}{(e+1)^1} + \frac{Q_2}{(e+1)^2} + \dots + \frac{Q_n}{(e+1)^n}$$

Where Q_1, Q_2, Q_n are expected returns over n years,

$(e+1)^1, (e+1)^2, \dots, (e+1)^n$ are discounts over n years.

$$\left[\frac{Q_i}{(e+1)^i} \right] \text{ is discounted annual return}$$

Internal Rate of Return

The internal rate of return (IRR) is a popular method in capital budgeting. The IRR is a discount rate that makes the present value of estimated cash flows equal to the initial investment.

Every income yielding asset has three properties:

- a. The assets yields returns over its life time, different each year

- b. The asset has a fixed life span during which it gives returns
- c. A price is payable for the asset before it yields returns.

These are important issues in making investment decisions.

The cost of the project,

$$C_0 = \frac{Q_1}{(r+1)^1} + \frac{Q_2}{(r+1)^2} + \dots + \frac{Q_n}{(r+1)^n}$$

Where Q_1, Q_2, Q_n are expected returns over n years

$(r+1)^1, (r+1)^2, \dots, (r+1)^n$ are discounts over n years.

$\left[\frac{Q_i}{(r+1)^i} \right]$ is discounted annual return

And r is the internal rate of return

The Internal rate of return method will result in the same decision as the Net present value method. The decision rule of taking the project with the highest internal rate of return, this may be same as the project with a lower Net present value.

Internal rate of return is commonly used in the evaluation of projects by banks for financing. The banks have bench mark internal rate of returns for each kind of enterprise. If the project fulfills the minimum required internal rate of return, the project is financed.

In case of own funds the enterprise may have the cost of funds as the bench mark for accepting or rejecting the project.

concluded

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