MANAGERIAL ECONOMICS

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Lecture No - 28 : Monopoly

Recap from last Session

- **Feature of Monopoly**
- **Reasons and Types of Monopoly**
- **Demand and Marginal Revenue for a monopoly firm**
- **Price and Output Decision in the short run/Long run**

Session Outline

- Supply Curve of a Monopoly Firm
- Price and output decision of Multi plant monopoly
- Measures of Monopoly power

Supply curve of a monopoly firm

- The intersection of a monopolist's marginal revenue and marginal cost curve identifies the profit maximizing quantity, but the price is found on the demand curve

- Thus, there is no curve that shows both price and quantity supplied ➔ there is no *monopolist supply curve*

Supply curve of a monopoly firm

- Supply of goods by the monopolist at a given price would be determined by both the market demand and MC curve.
- There is no definite supply curve for a monopolist.

Price and output decision of Multi plant monopoly

- When the firm produces the homogeneous product in two different plants each with different costs, the multi plant monopolist has to decide also how to allocate the profit maximizing output between two plants.

Price and output decision of Multi plant monopoly

- Firm must determine how to distribute production between both plants
  1. Production should be split so that the MC in the plants is the same
  2. Output is chosen where MR=MC. Profit is therefore maximized when MR=MC at each plant.

Price and output decision of Multi plant monopoly

- Q_1 and C_1 is output and cost of production for Plant 1
- Q_2 and C_2 is output and cost of production for Plant 2
- $Q_T = Q_1 + Q_2$ is total output
- Profit is then:

$$\pi = PQ_T - C_1(Q_1) - C_2(Q_2)$$

Price and output decision of Multi plant monopoly

- Firm should increase output from each plant until the additional profit from last unit produced at Plant 1 equals 0

Price and output decision of Multi plant monopoly

$$\frac{\Delta \pi}{\Delta Q_1} = \frac{\Delta (PQ_T)}{\Delta Q_1} - \frac{\Delta C_1}{\Delta Q_1} = 0$$

$$MR - MC_1 = 0$$

$$MR = MC_1$$

Price and output decision of Multi plant monopoly

- Same for Plant 2
- The firm should choose to produce where

$$MR = MC_1 = MC_2$$

- We can show this graphically
  - MR = MC_T gives total output
  - This point shows the MR for each firm
  - Where MR crosses MC_1 and MC_2 shows the output for each firm

Effect of a shift in the demand on Monopoly

- An upward shift in the demand curve, MC curve remaining the same, will increase the equilibrium output level.
- Effect on equilibrium price is indeterminate.
- It may increase/decrease or remain constant.

Effect of a shift in the cost on Monopoly

- In case of increase in the fixed cost, there will be no impact on the equilibrium price and output, since fixed cost vanishes when differentiated.
- In case of increase in variable cost, the MC curve will shift to left in the upward direction. Given the MR curve , this will lead to an increase in the equilibrium price and decrease in the equilibrium level of output.

Imposition of Tax under Monopoly

- Imposition of Lump sum tax
- Reduce excess profit
- Equilibrium will be remain same.

Imposition of Tax under Monopoly

- Imposition of profit tax
- It reduces the abnormal profit, but the equilibrium in the market is not affected as long as profit tax does not bite into normal profits of the monopolist.

Imposition of Tax under Monopoly

- Imposition of specific sales tax
- Firstly, if the MC curve of monopolist has a positive slope, the increase in the price will be smaller than specific tax, as in the case of perfect competition. The monopolist will pass part of the specific tax. ($\Delta P <$ Tax)

Imposition of Tax under Monopoly

- Imposition of specific sales tax
- Secondly, if the MC of the monopolist is horizontal, the monopolist will raise the price, but not by the full amount of the tax. Even when MC curve is infinitely elastic, the monopolist will bear some amount of specific tax ($\Delta P <$ Tax).

Imposition of Tax under Monopoly

- Imposition of specific sales tax
- Thirdly, the examination of the conditioned under which monopolist can pass the total tax burden to the consumer by charging a suitable higher price or can raise the price more than the amount of tax, too complicated.

Measures of Monopoly Power

- Monopoly power mean the amount of discretion which a seller enjoys in regard to the framing of price and outut policy.
- It indicate the degree of control which seller yields over price and output of his product.

Measures of Monopoly Power

- **Lerner's Index of Monopoly Power**
  - L = (P - MC)/P
    - The larger the value of L (between 0 and 1) the greater the monopoly power
  - L is expressed in terms of E_d
    - $L = (P - MC)/P = -1/E_d$
    - E_d is elasticity of demand for a firm, not the market

Measure of Monopoly Power: cross elasticity of Demand

Used by Prof Triffin

Value of elasticity is

- Zero for pure monopoly
- Infinity in case f perfect competition

If it is finite – neither it is pure competition nor pure monopoly

Lower the value of cross elasticity of Demand the greater will be the degree of monopoly power and vice versa.

Measure of Monopoly Power: Herfindahl – Hirschman Index

HHI is used popularly to ascertain market concentration.

Calculated by squaring the share of entire market by each firm in the industry nad then summing across all firms in the industry.

The value of index zero in case of competitive market to 1 as in monopoly.

Measure of Monopoly Power: Herfindahl – Hirschman Index

A higher value of HHI would imply a greater market power possesses by large firms, while a decrease in the index is generally indicates a loss of pricing power and an increase in competition.

Measure of Monopoly Power: Rothschild's Index

This index shows how far a particular firm controls the market for a particular good.

Rothchild's Index = slope of demand curve of firm/slope of demand curve of industry

In case of pure monopoly – index is equal to unity

In case of perfect competition – index is equal to zero.

Graphical presentation

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Graphical presentation

Session References

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