22 August 2023 08:38 PM

Monopoly

Features:

1. **One seller** and **many buyers.**
2. Seller can make his own price.
   Sellers are **price makers.**
3. **Barriers** to entry.
   (No free entry and exit).
   (so there are restrictions)
   different types of restrictions are Copyrights, Patents, access to critical inputs.
4. In this market there are **no substitute** goods.
5. A monopolist determines the price according to demand curve (which is AR curve).
6. Monopolist can **price discriminate.**

Why monopoly market exists?

1. Suppose firm has key to a **critical input** or resource for example Diamonds.
2. If the firm receives **exclusive rights by government** to produce a particular product. Like **patents** on medicines. **Copyrights** for books written or

to produce a particular [illegible] new drugs, copyrights for books written or software etc.

③ If cost of production of a firm is more efficient than other firms in the market, then there will be increase in returns to scale and eventually there will be a single seller.

This is also called a natural monopoly.

[if there is IRS ⇒ then average cost of firm falls
⇓
cost of production decreases with more output.
⇓
firm with this advantage can charge lower price and remaining firms cannot compete with the firm because they cannot charge lower price and hence loose the customer and exit the market.

So the only seller remains in the market (with cost advantage) → Natural monopoly.]

What are the different sources of monopoly?

What are the different sources of [illegible] ?

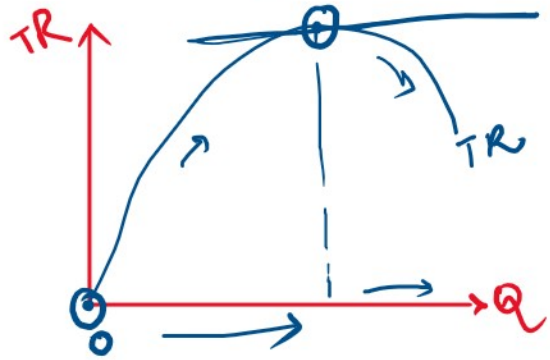
1. Barriers
   - legal (like patents, copyrights).
2. economies of scale ⇒ a firm with IRS ⇒ cost advantage
3. technological superiority.
4. Control of natural resources.
5. Network externalities.
6. Capital requirements.
7. No suitable substitutes.

Revenue curve under Monopoly:

① Total Revenue, TR = Price × Quantity

$$TR = P \times Q$$

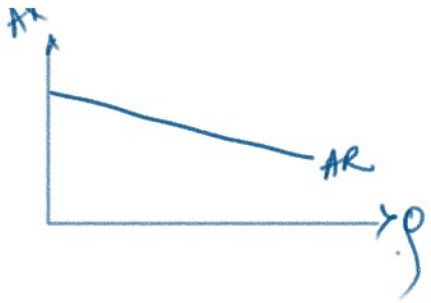
(In a monopoly market, Total Revenue (TR) first increases with Q reaches a maximum and then falls with Q. as shown in the diagram.



② Average Revenue, $AR = \frac{TR}{Q}$ i.e. Revenue per unit of production.

AR

$AR = \frac{P \times Q}{Q} = P$ (Here price is not constant price is a function of Q)



$AR = \frac{1}{Q} \cdot 1$ (price is a function of Q)

i.e. $AR = P(Q)$

↑ price is a fn of output (Q)

AR is the demand curve.

and we know price and quantity varies inversely. Therefore AR (demand curve is downward sloping).

③ Marginal Revenue, $MR = \frac{\text{Change in Total Revenue (TR)}}{\text{Change in Output (Q)}}$

$$MR = \frac{\Delta TR}{\Delta Q}$$

Relation between Total Revenue (TR) and Marginal Revenue (MR) in a monopoly market:

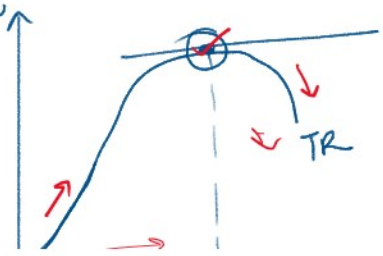
* Marginal revenue $(MR) = \frac{\Delta TR}{\Delta Q}$ is the slope of (TR) ← total Revenue.

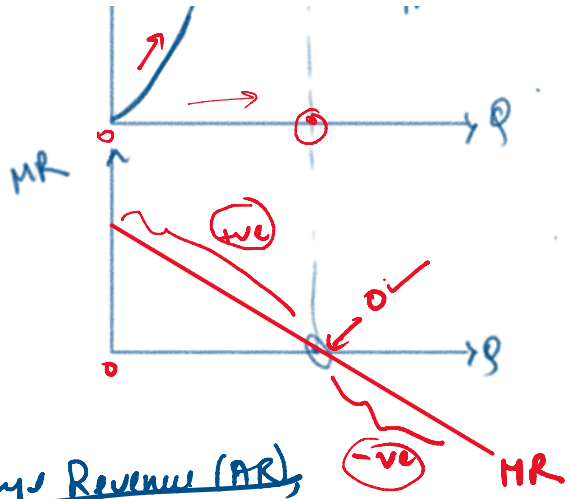
When (TR) is increasing ⇒ (MR) is +ve.

(TR) is maximum ⇒ MR is 0.

TR is falling ⇒ (MR) is -ve.

Let us have a look at this relation diagrammatically:





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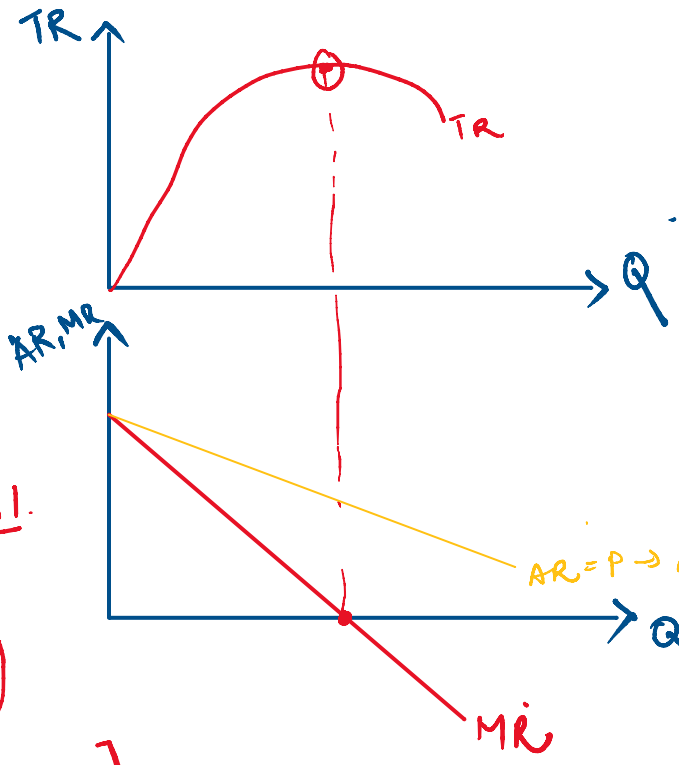
Relation between Average Revenue (AR), Marginal Revenue (MR) and elasticity of demand (ep)



AR curve lies above MR curve.
AR > MR in Monopoly

Relation b/w AR, MR and Iep I.

$TR = P \times Q$

$\frac{\Delta TR}{\Delta Q} = \frac{\Delta P}{\Delta Q} \times Q + P \frac{\Delta Q}{\Delta Q}$

$MR = P\left[\frac{\Delta P}{\Delta Q} \times \frac{Q}{P} + 1\right]$

$MR = AR\left[1 + \frac{1}{\frac{\Delta Q}{\Delta P} \times \frac{P}{Q}}\right]$

$MR = AR\left[1 - \frac{1}{-\frac{\Delta Q}{\Delta P} \times \frac{P}{Q}}\right]$

own price elasticity

$e_p = -\frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$

$MR = AR\left[1 - \frac{1}{-\frac{\Delta q}{\Delta p} \times \frac{p}{q}}\right]$

$MR = AR\left(1 - \frac{1}{|ep|}\right)$ (|ep| is +ve)

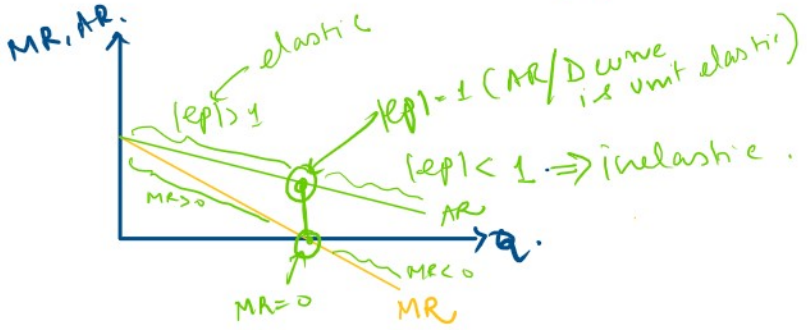
$= AR\left[1 - \frac{1}{1}\right]$

$= 0 = MR$

1. when $|ep| = 1$ (unit elastic) → at $MR = 0$
   (AR / demand is unit elastic)

2. when $|ep| > 1$ (elastic) → at $MR > 0$ (MR is +ve).

3. when $|ep| < 1$ (inelastic) → at $MR < 0$ (MR is -ve).



Profit maximising condition under monopoly.

Profit, $\pi = TR - TC$

Change in profit, $\Delta\pi = \Delta TR - \Delta TC$

$\frac{\Delta\pi}{\Delta q} = \frac{\Delta TR}{\Delta q} - \frac{\Delta TC}{\Delta q}$

Change in profit $= MR - MC$

in profit -

We know that, at profit maximisation,

Change in profit = 0

or, MR - MC = 0

or, **MR = MC**

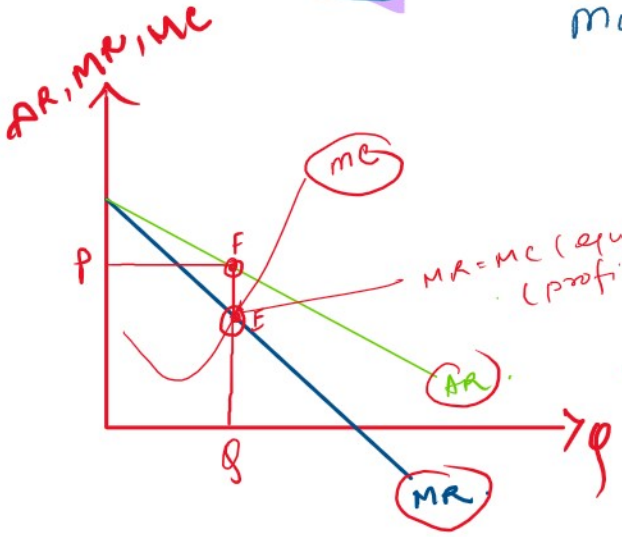
Remember:

In perfect competition: MR = MC = P = AR

But in Monopoly: MR = MC < P

PC: P = MR

Monopoly: P > MR



MR = MC (equil).
(profit max point).

at E MR = MC
at F : P

such that P > MR = MC

Monopoly.