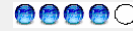


Ch. 24: Monopoly



Two extreme examples of market structure:

Polypoly **Firms are price takers**

Monopoly **The single firm faces entire demand**

Thus, the firm determines price (or qty), and quantity (price) is determined by market demand.

Monopoly



Maximization problem

$$\max_y p(y)y - C(y) = R(y) - C(y)$$

Optimality condition

$$p + \frac{dp}{dy}y - \frac{dC}{dy} = 0 \Leftrightarrow$$

$$p + p'y = C' \Leftrightarrow$$

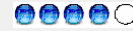
$$MR(y) = MC(y)$$

Compared with
the solution under
perfect competition:

$$p + \underbrace{\frac{dp}{dy}y}_0 - \frac{dC}{dy} = 0 \Leftrightarrow$$

$$p = MC(y)$$

Monopoly: Market power



Def: Market power is the ability of a firm to charge a price above MC and to earn positive profits.

By re-expressing the optimality condition:

$$MR(y) = p + p'y = MC(y) \Leftrightarrow$$

$$p\left(1 + \frac{p'y}{p}\right) = MC(y) \Leftrightarrow$$

$$p\left(1 - \frac{1}{|\varepsilon_{x,p}|}\right) = MC(y) \Leftrightarrow$$

Lerner-Index

$$\frac{p - MC(y)}{p} = \frac{1}{|\varepsilon_{x,p}|}$$

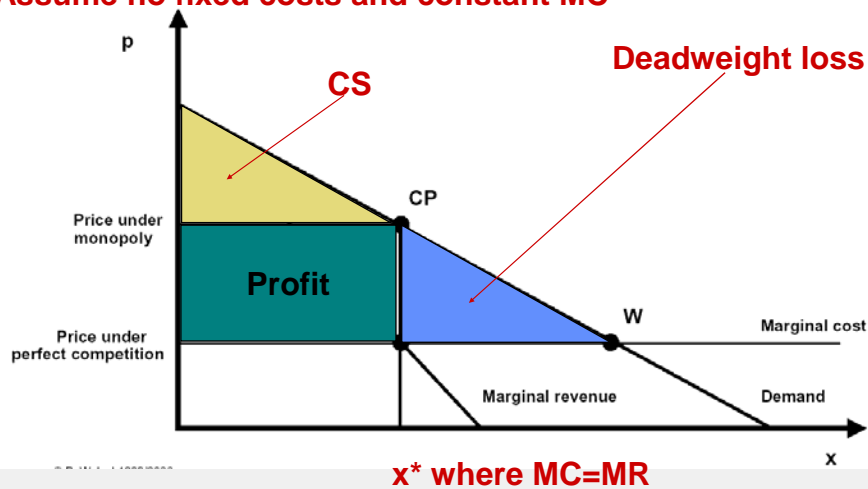
Interpretation: Lerner-Index is the price markup as ratio of the difference between p and MC.

Competitive Firm: LI = 0, Monopoly: up to 1.

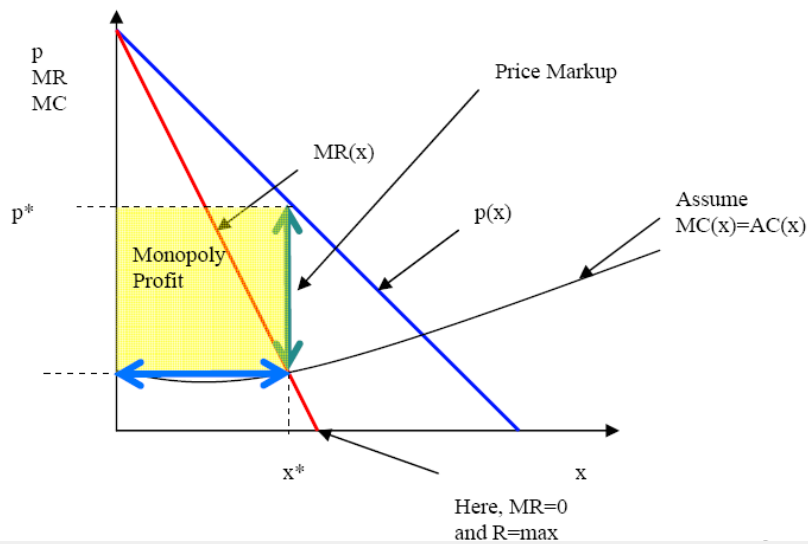
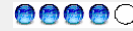
Monopoly: Graphing linear demand



Assume no fixed costs and constant MC



Monopoly: Graphing the 'price markup'



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Monopoly: Graphing the 'price markup'



Recall from the slides set on price elasticity of demand that

$$R = p(x)x = R(p, x)$$

and that Marginal Revenue following a quantity change can be expressed as

$$\frac{\partial R}{\partial x} = p + x \frac{dp}{dx}$$

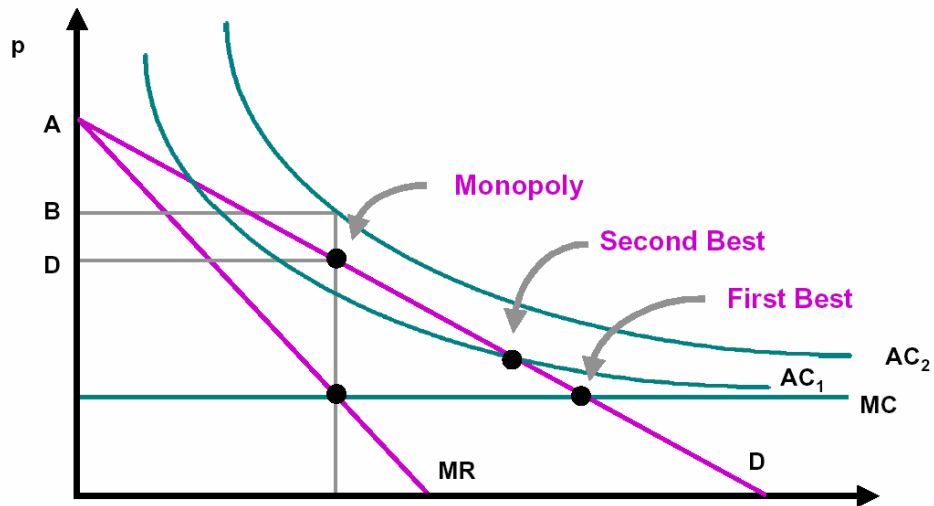
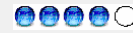
We transformed the right-hand side as follows:

$$MR = p + x \frac{dp}{dx} = p \left(1 + \frac{x}{p} \frac{dp}{dx} \right) = p \left(1 + \frac{1}{\epsilon_{x,p}} \right) = p \left(1 - \frac{1}{|\epsilon_{x,p}|} \right)$$

This notation makes particular sense in a monopoly setting: the $x \frac{dp}{dx}$ term is negative

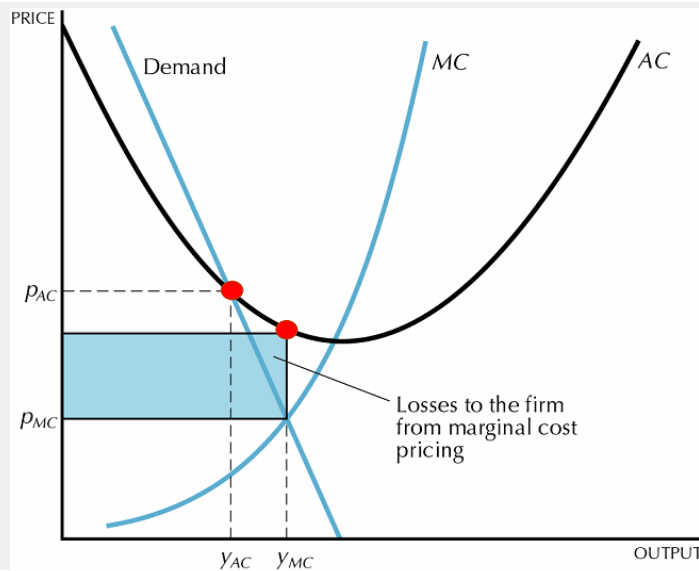
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Natural Monopoly



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Same with increasing MC (fig. 24.6)



Two cases:

1. Government regulates the monopolist to produce the competitive quantity: y^* at $MC=p$.

Problem: monopolist faces a loss.

2. Government requires production y^* at $ATC=p$.

(Average cost pricing)

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