Eco 340 Industrial Economics
Market Structures: The Monopoly

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Monopoly: Main Features

- Monopoly is the only supplier in the market. So it faces to entire demand curve (i.e., not the residual demand curve)
- It can set its price without fearing that there will be a competitior underpricing it.
- As the (downward sloping) demand curve is a given for the monopoly – when it sets a price, the demand level is also set. Or vice-versa.
- Monopoly is still a profit maximizer. So, it has to set its price (and thus the quantity demanded) so that its profit is maximızed.

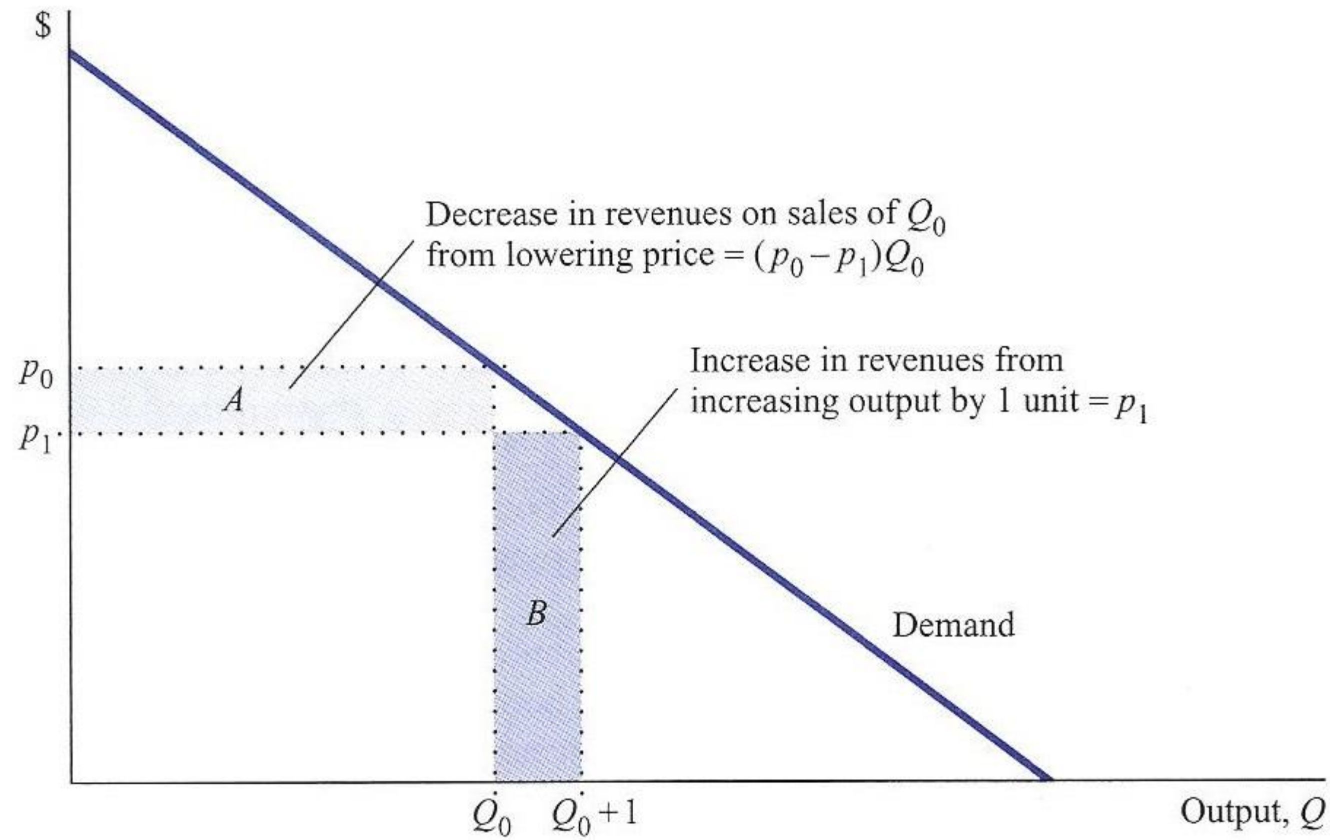
The Monopolistic Behavior

The monopoly can set its price (and thus quantity at will).

What happens if it selects a (p,Q) set?

Compare (p_0, Q_0) with (p_1, Q_1)

FIGURE 4.1 Demand Curve Facing a Monopoly



Profit Maximization by the Monopoly

- $\pi(p, q) = R(p, q) - C(q) = \mathrm{p(q)q} - \mathrm{C(q)}$

As the demand curve faceddictates the relationship between p and q the profit equiation can be rewritten as:

$$\pi(q) = \mathrm{p(q)q} - C(q)$$

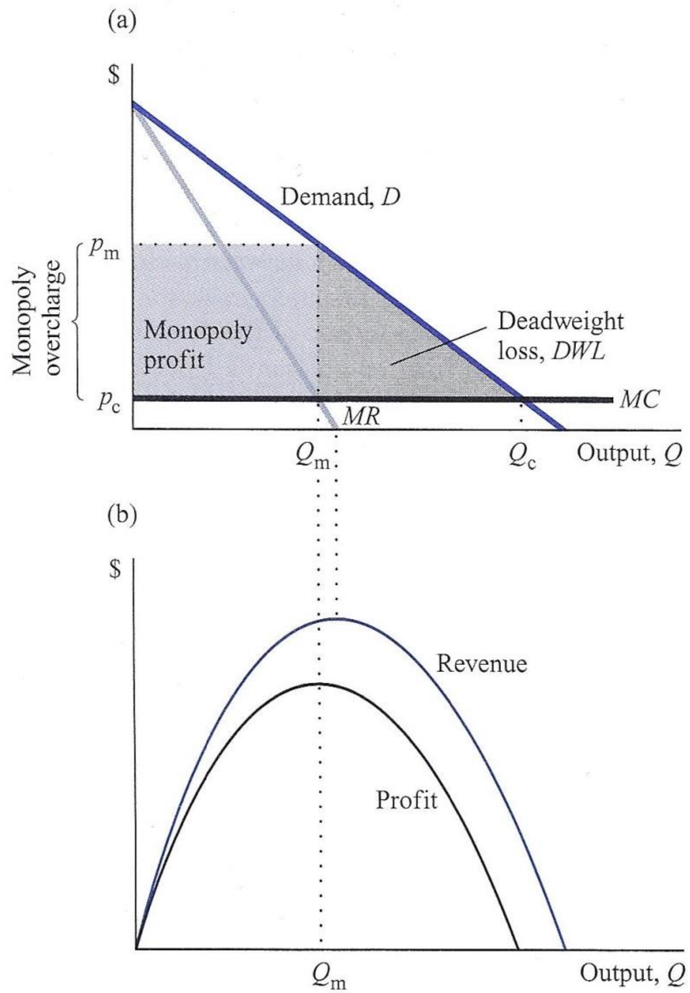
The profit maximization (equate the derivative (of $\pi(q)$ with respect to q) is at

MR= MC

Note that at the competitive market (but not in a monopolistic market): MR=p and thus profit maximization means:

p=MC

FIGURE 4.2 Monopoly Profit Maximization



Revenue maximization vs profit maximization

- Total revenues are maximized when MR = 0 (after this point, as 1 increases, MR is negative and thus revenue starts to decrease)
- However, revenue maximizing output level is higher than profit maximizing output. Profit is maximized where MR=MC (that is at Q_m)
- Note that, $Q_m < Q_c$; where Q_c is determined at the intersection of market supply curve (horizontal MC and the market demand curve)
- That is, monopoly's output is smaller than the output level that would be supplied if the market was competitive.

Monopoly overcharge and deadweight loss

- Monopoly causes an “overcharge” and a deadweight loss (welfare cost) to the society.
- Monopoly overcharge arises from the fact that the monopoly charges a non-competitive price, p_m.
- Monopoly overcharge depends on the shape of the demand curve. That in turn is determined by the elasticity of demand which determines the slope of the demand curve.
  - Relatively more inelastic demand leads to a steeper demand curve. Changes in price lead to small changes in demand
  - More elastic demand leads to flatter demand curve. Even small changes in price leads to a high change in demand.

- Total revenue and profit of the monopoly depends on the size of MR.

$$MR = p\,(1 + \frac{1}{\epsilon})$$

  - When $\epsilon<-1$ (demand curve elastic), MR>0
    - MR increases with elasticity increasing (in absolute value; as $\epsilon<0$)
  - When $\epsilon=-1$ we have MR=0. That is where revenues are maximized.
  - When $-1< \epsilon<0$ (demand curve inelastic) MR<0

Market power of the Monopoly

MR = p (1 + 1/ ϵ) rule is equivalent to

$$\frac{p - MC}{p} = -\frac{1}{\epsilon}$$

Here, p-MC is **the Lerner index**, also called the price-cost margin. It shows the power of the monopoly in raising its price above the MC (the competitive solution).

The Monopoly can not charge a high price-cost margin if elasticity is high. Simply because charging high will overreduce the demand and lead to lower profits.

In other words, the more elastic the demand curve, the closer the price to the competitive market.

So market power is determined by elasticity of demand.