

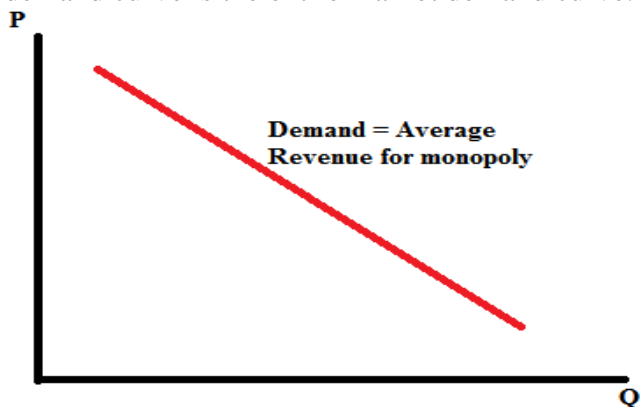
Week #8 Notes – Long Run Costs ~ Government Failure

1. **Pure Monopoly:** occurs when there is a single seller of a product that has no close substitutes.
 - a. A firm has monopoly power if it can influence the market price of its product by making more or less of the product available to buyers. Although pure monopoly is very rare, monopoly power is quite common.
 - b. A barrier to entry is a constraint that prevents additional sellers from entering a monopoly firm's market. The major barriers to entry in a monopoly market are; patents and copyrights, government franchises and licenses, ownership of the entire supply of a resource, the cost advantages of large-scale operations and the emergence of monopolies.
 - c. Barriers to entry of additional sellers in the market must prevail for a profitable monopoly to be maintained.

2. **Characteristics of Monopoly:**
 - a. Single seller
 - b. No close substitutes (this does not mean demand curve of the monopoly is perfectly inelastic. We will see that the demand curve of monopoly is down-ward slopping and has some inelastic and elastic parts)
 - c. Barriers to entry.

3. **The Demand for Monopoly:** Since there is only one firm in a pure monopoly market, there is no distinction between the market demand curve and the demand curve for the firm's product. The output of a pure monopoly firm is the market output. Therefore, *the demand curve for the pure monopolist's product is the downward-slopping market demand curve that would be faced by an entire industry.* For this reason *the monopolist's pricing decision is inseparable from its decision about the amount to offer for sale.* The higher the price it sets, the lower the quantity it will sell.

4. **The Monopolist's Marginal Revenue:**
 - a. Recall that a competitive firm's demand curve is a horizontal line, equals to the price set by the market, and marginal revenue equals to price. $\rightarrow MR = P$
 - b. The monopoly faces a downward-sloping demand curve (entire industry).
 - c. While the competitive firm is a "price-taker", the monopolist is a "price-maker". Therefore, a pure monopolist must lower its price if it wants to sell more because its demand curve is the entire market demand curve.



- d. Since the monopolist's pricing decision is inseparable from its decision about the amount to offer for sale, *the marginal revenue is the difference between the loss in revenue due to the lower price and the gain in revenue due to the increase in the quantity sold.*
- e. *MR* is always less than the price for the monopolist. *MR* declines twice as fast as demand when more is sold. To see this, please check the mathematical proof below. You are not responsible for this math.

* $P(Q) = a - bQ \rightarrow$ inverse demand function (price as a function of quantity)

$$\text{Total Revenue} = TR_1 = P * Q = (a - bQ) * Q$$

Let the change in price be ΔP

Let the change in quantity be ΔQ

*So, the final *TR* after the change in price and quantity

$$TR_2 = (P + \Delta P) * (Q + \Delta Q)$$

$$= P * Q + P * \Delta Q + \Delta P * Q + \Delta P * \Delta Q \quad \text{assume that } \Delta P * \Delta Q = 0$$

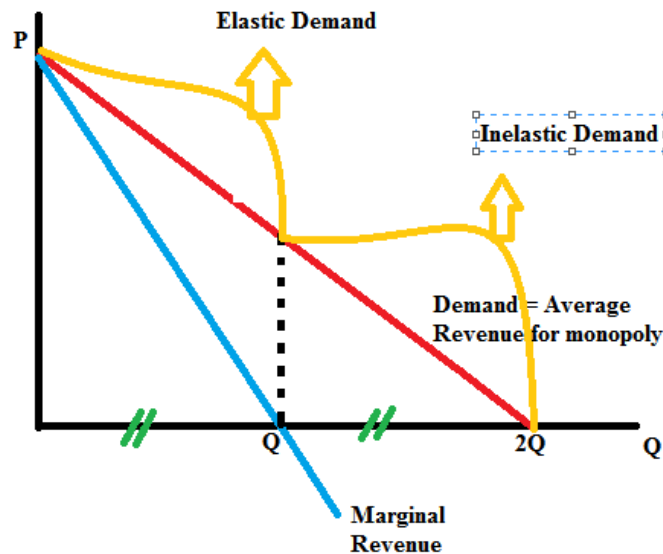
$$TR_2 = P * Q + P * \Delta Q + \Delta P * Q$$

$$\Delta TR = TR_2 - TR_1 = P * \Delta Q + \Delta P * Q$$

$$MR = \frac{\Delta TR}{\Delta Q} = P + Q \left(\frac{\Delta P}{\Delta Q} \right) \quad \text{since } \frac{\Delta P}{\Delta Q} = -b \text{ and } P(Q) = a - bQ$$

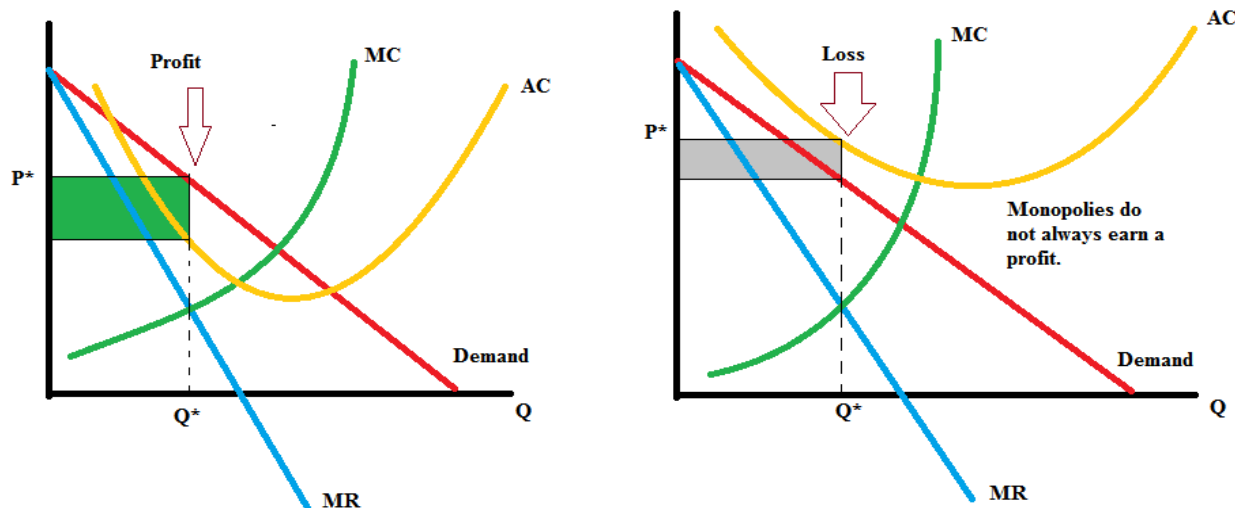
$$MR = a - bQ - bQ$$

$MR = a - 2bQ \rightarrow$ This shows that *MR* has 2*slope of the inverse demand curve. In other meaning, *MR* declines twice as fast as demand when more is sold.



5. Profit Maximization by a Monopoly: You don't need to know the maximization process; however you need to follow the below rules to find out the profit maximization quantity, price and then the total profit.

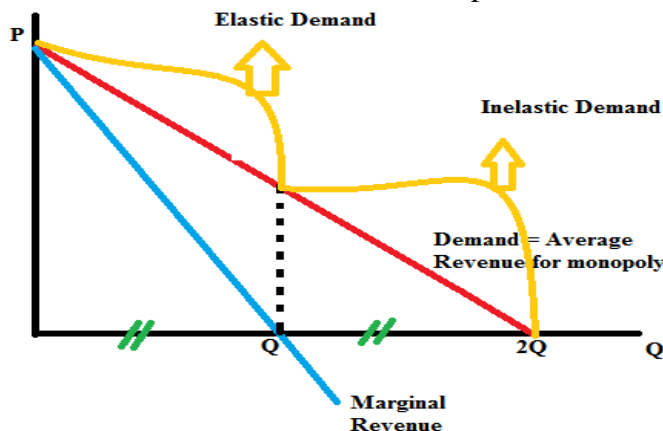
- a. Look where $MC = MR$ to determine the Q^* (profit maximization quantity).
- b. Follow Q^* up to the demand curve to find P^* (price).
- c. Follow Q^* up to AC (average cost curve) to find the unit cost.
- d. Total Profit = $TP = (P - AC) * Q$
- e. As long as the price exceeds the average cost at the output for which marginal revenue equals marginal cost, a monopoly will be profitable.



*Note: In the above graph, it looks like that MC does not pass from the minimum point of AC. It is not correct. Please assume that MC passes from the minimum point of AC.

6. Monopoly Demand, Marginal Revenue & Elasticity:

- a. A monopoly firm will always price its product to ensure that demand is elastic.
- b. Monopoly firms maximize profits by always setting price to achieve the output over any period for which marginal revenue equals marginal cost. Since MC is always positive, it follows that MR must be positive at this point. Therefore, monopoly firms only produce at which $MR \geq 0$, or in another meaning, on the elastic part of the demand curve. Please see the below graph. If a monopoly firm produces when $MR \geq 0$, it should be on the elastic part of the demand curve.



7. **Monopoly vs. Perfect Competition:**

- a. The monopoly price *exceeds* the competitive price, and the monopoly output *falls short* of the competitive equilibrium output.
- b. The price set by the monopolist *exceeds* the marginal cost of its product. Price always *exceeds* the monopolist's marginal revenue (The monopolist chooses the output that sets marginal revenue *equal* to marginal cost, price will also *exceed* marginal cost)
- c. The monopoly firm earns *positive economic* profit by charging a price that *exceeds* the minimum possible average cost of production. The monopoly firm can enjoy *positive economic* profits in long run, whereas firms in competitive equilibrium earn *no economic* profits in the long run.