

Single–Price Monopoly

“single–price” means that it charges the same price for each unit it sells : it does not **price discriminate** among different buyers, or among different units bought by the same buyer

two approaches

first : choosing **quantity**

pick quantity q so as to maximize profits

$$p(q)q - C(q, \mathbf{w}) \quad (1)$$

where $p(q)$ is the (aggregate) inverse demand curve it faces — and $C(q, \mathbf{w})$ is the cost function of chapter 3 (with y now called q)

an alternative approach would be to have the firm

choosing price

pick the price P to maximize profits

$$PQ(P) - C(Q(P), \mathbf{w}) \quad (2)$$

where $Q(P)$ is the market demand curve

first-order conditions

$$Q(P) + PQ'(P) - C_q Q'(P) = 0 \quad (3)$$

or

$$Q'(P)P \left[\frac{Q(P)}{Q'(P)P} + 1 \right] - C_q Q'(P) = 0 \quad (4)$$

which can be written

$$-Q'(P)[MC - P(1 - \frac{1}{\epsilon})] = 0 \quad (5)$$

where

$$\epsilon \equiv -Q'(P) \frac{P}{Q(P)} \quad (6)$$

is the (absolute value of the) market own-price elasticity of demand

so at the monopoly's optimum

$$MC = P \left(1 - \frac{1}{\epsilon}\right) \quad (7)$$

marginal revenue :

$$MR \equiv P \left(1 - \frac{1}{\epsilon}\right) \quad (8)$$

since $MR \equiv \frac{d}{dq}(p(q)q)$

mark-up rule :

$$P = MC\left(\frac{\epsilon}{\epsilon - 1}\right) \quad (9)$$

need : $\epsilon > 1$