

Chapter 9 – Profit maximization

Profit maximization

- Economic profit = total revenue - all economic costs
- Economic costs include all opportunity costs (explicit and implicit).

Economic vs. accounting profit

- economic profit = total revenue - all economic costs
- accounting profit = total revenue - all accounting costs
- accounting costs include only current or historical explicit costs, not implicit costs

Economic vs. accounting profit

- the difference between between economic cost and accounting cost is the opportunity cost of resources supplied by the firm's owner.
- the opportunity cost of these owner-supplied resources is called **normal profit**.
- normal profit is a cost of production.

Economic vs. accounting profit

- If the owners of a firm economic profits, they are receiving a rate of return on the use of their resources that exceeds that which can be received in their next-best use.
- In this situation, we'd expect to see other firms entering the industry (unless barriers to entry exist).

Economic vs. accounting profit

- If a firm is receiving economic losses (negative economic profits), the owners are receiving less income than could be received if their resources were employed in an alternative use.
- In the long run, we'd expect to see firms leave the industry when this occurs.

Economic profits = 0

- If economic profits equal zero, then:
 - owners receive a payment equal to their opportunity costs (what could be received in their next-best alternative),
 - no incentive for firms to either enter or leave this industry,
 - accounting profit = normal profit.

Economic profit

- Economic profit = total revenue - economic costs
- when output rises, both total revenue and total costs increase (with a few exceptions that will be discussed in later chapters)
- profits increase when output increases if total revenue rises by more than total costs.
- profits decrease when output rises if total costs rise by more than total revenue

MR & MC

- the additional revenue resulting from the sale of an additional unit of output is called marginal revenue (MR)
- the additional cost resulting from the sale of an additional unit of output is called marginal cost (MC)

MR > MC

- If marginal revenue exceeds marginal cost, the production of an additional unit of output adds more to revenue than to costs.
- In this case, a firm is expected to increase its level of production to increase its profits.

MR < MC

- If marginal cost exceeds marginal revenue, the production of the last unit of output costs more than the additional revenue generated by the sale of this unit.
- In this case, firms can increase their profits by producing less.
- A profit-maximizing firm will produce more output when $MR > MC$ and less output when $MR < MC$.

MR = MC

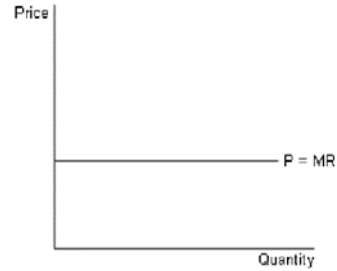
- If $MR = MC$, however, the firm has no incentive to produce either more or less output.
- The firm's profits are maximized at the level of output at which $MR = MC$.

Marginal revenue

- Marginal revenue = additional revenue received from the sale of an additional unit of output.
- In mathematical terms:

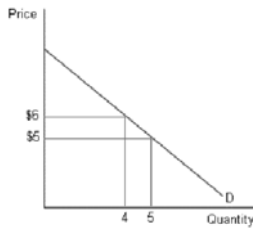
$$\text{Marginal revenue} = \frac{\Delta \text{TR}}{\Delta Q}$$

Firm facing a perfectly elastic demand curve



If demand is perfectly elastic, $MR = P$

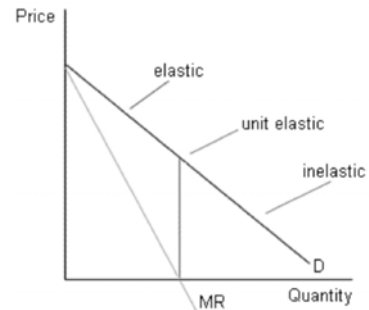
Firm facing a downward sloping demand curve



A firm facing a downward sloping demand curve must lower its price if it wishes to sell additional units of this good.

MR = ?

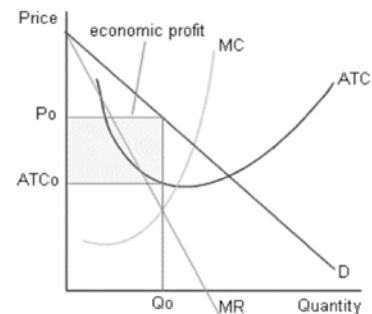
Demand and MR for a firm facing a downward sloping demand curve



Profit maximization

$$\begin{aligned} \text{Profit} &= (\text{profit per unit}) \times \# \text{ of units} \\ &= (P - \text{ATC}) \times Q \end{aligned}$$

Profit maximization



Alternative market structures

- Perfect competition:
 - a very large number of buyers and sellers,
 - easy entry,
 - a standardized product, and
 - each buyer and seller has no control over the market price (this means that each firm is a price taker that faces a horizontal demand curve for its product).

Monopoly

- a single seller producing a product with no close substitutes,
- effective barriers to entry into the market, and
- the firm is a price maker, also called a price searcher because it faces a downward sloping demand curve for its product (in fact, note that this demand curve is the market demand curve).

Natural monopoly

- a monopoly that arises because of the existence of economies of scale over the entire relevant range of output.
- a larger firm will always be able to produce output at a lower cost than could a smaller firm.
- only a single firm can survive in a long-run equilibrium.

Monopolistic competition

- a large number of firms,
- the product is differentiated (i.e., each firm produces a similar, but not identical, product),
- entry is relatively easy, and
- the firm is a price maker that faces a downward sloping demand curve.

Oligopoly

- a small number of firms produce most output,
- the product may be either standardized or differentiated,
- there are significant barriers to entry, and
- recognized interdependence exists (i.e., each firm realizes that its profitability depends on the actions and reactions of rival firms).

Real-world markets

- Most output is produced and sold in oligopoly and monopolistically competitive industries.