Revenue & Economic Profit

Revenues

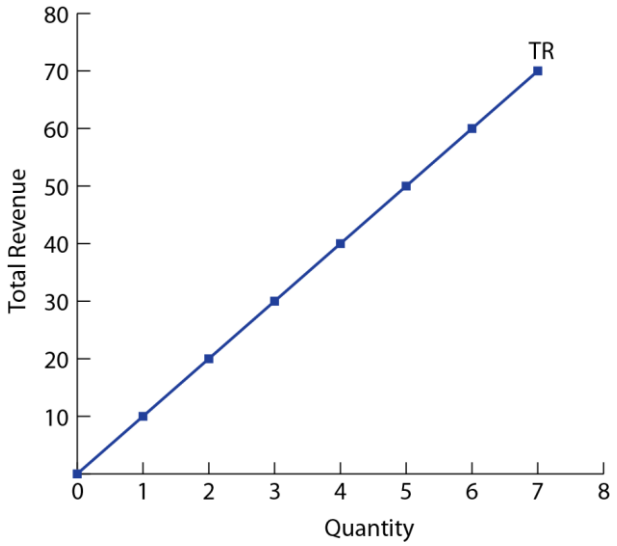
- **Total Revenue (TR):** is obtained by multiplying the price at which the good is sold (P) by the number of units of the good sold (Q)
  - **$TR = P \times Q$**
- **Marginal Revenue (MR):** is the additional revenue arising from the sale of an additional unit of output
  - **$MR = \Delta TR \div \Delta Q$**
- **Average Revenue (AR):** is the revenue per unit of output sold. It is always equal to the price.
  - **$AR = TR \div Q$**
    $= P$

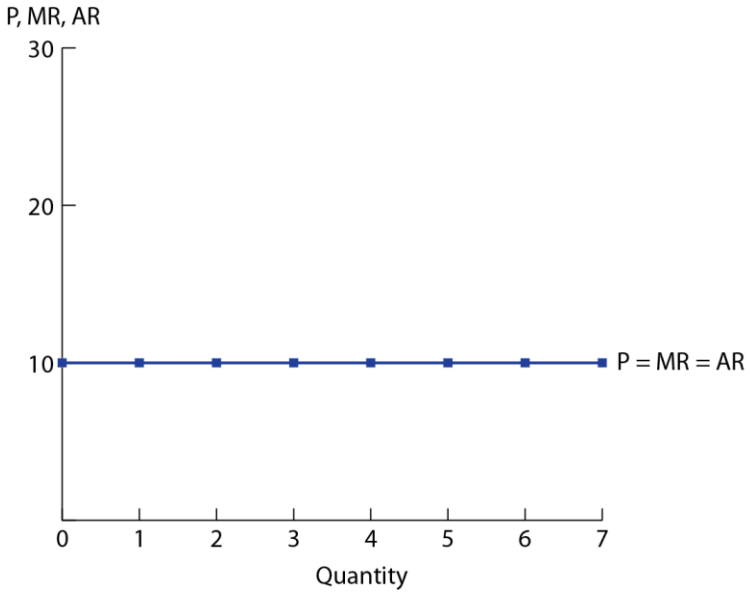
Revenues for Perfect Competition

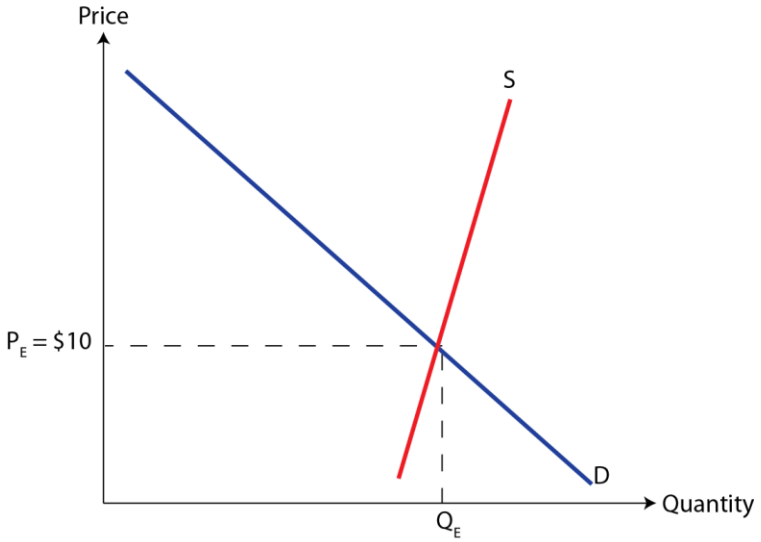
- Perfectly competitive firms compete in a market with a large number of firms each producing an identical product, and each firm's output making up a tiny fraction of the total market supply
    - It is impossible for a single firm to affect the market price, and price at which the firm sells remains unchanged regardless of output

Output (Q)	**Price (P)**	**Total Revenue** $TR = P \times Q$	**Marginal Revenue** $MR = \Delta TR \div \Delta Q$	**Average Revenue** $AR = TR \div Q$
1	10	10	10	10
2	10	20	10	10
3	10	30	10	10
4	10	40	10	10
5	10	50	10	10
6	10	60	10	10
7	10	70	10	10

- For a perfectly competitive firm, **P = D = MR = AR**



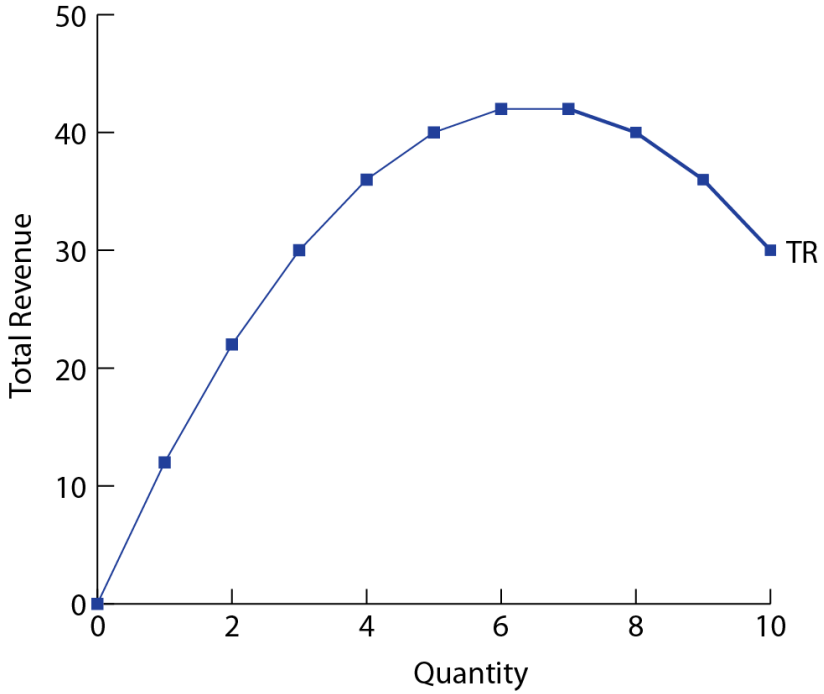


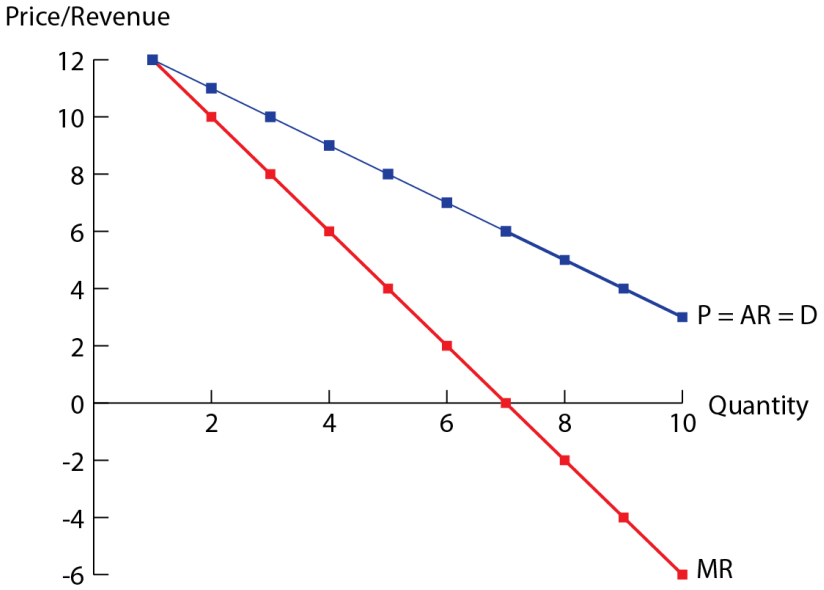


Revenues for Imperfect Competition

- Imperfectly competitive firms have some degree of control over price, and the price varies with output. Such market structures include,
  - Monopolistic competition, Oligopoly, and Monopoly

Output (Q)	**Price (P)**	**Total Revenue** $TR = P \times Q$	**Marginal Revenue** $MR = \Delta TR \div \Delta Q$	**Average Revenue** $AR = TR \div Q$
1	12	12	12	12
2	11	22	10	11
3	10	30	8	10
4	9	36	6	9
5	8	40	4	8
6	7	42	2	7
7	6	42	0	6
8	5	40	− 2	5
9	4	36	− 4	4
10	3	30	− 6	3


50
40
30
20
10
0
Total Revenue
TR
0
2
4
6
8
10
Quantity


Price/Revenue
12
10
8
6
4
2
0
-2
-4
-6
P = AR = D
Quantity
2
4
6
8
10
MR

Profit & Revenue Maximization

- Recall, **Profit = Total revenue − Total cost**
  = TR − TC
  = Total revenue − Explicit costs − Implicit costs

- Economic profit can be positive, zero or negative
  - **Supernormal profit:** TR > Economic cost (**P > AC**)
  - **Normal profit:** TR = Economic cost (**P = AC**)
  - **Loss:** TR < Economic cost (**P < AC**)

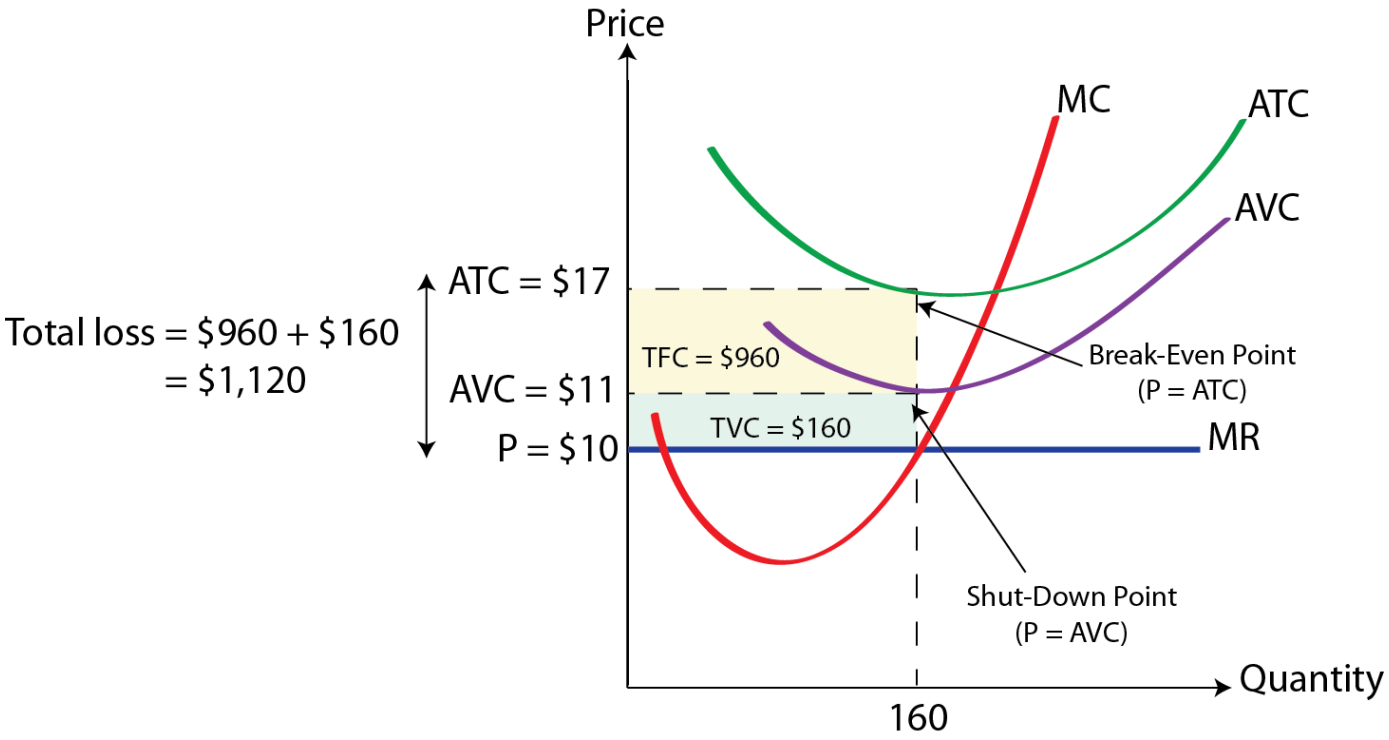
- **Profit-maximization rule:** a firm in any market structure should produce as close as possible to the point at which marginal revenue equals its marginal costs of production, where **MR = MC**

- **Revenue-maximization rule:** the revenue for a firm will be maximized at the output level in which **MR = 0**

Shut-Down & Break-Even Price

- **Break-even price:** the firm's break-even price occurs at the level of output for which the firm is earning a normal economic profit (**P = AC**)

- **Shut-down price:** a firm making an economic loss in the short-run will continue to produce a positive level of output as long as **P ≥ AVC**



Summary

Concept	Definition	Equation
Revenue Concepts		
Total revenue (TR)	The total earnings of a firm from the sale of its output.	**TR = P × Q**
Marginal revenue (MR)	The additional revenue of a firm arising from the sale of an additional unit	**MR = ΔTR ÷ ΔQ**
Average revenue (AR)	Revenue per unit of output	**AR = TR ÷ Q**
Profit Concepts		
Economic profit	Total revenue minus economic costs (or total opportunity costs which is the sum of explicit and implicit costs)	**Profit = TR − TC**
Normal profit	The minimum amount of revenue required by a firm so that it will be induced to keep running.	**TR = TC** or **P = AC**