Costs Curves and Their Shapes

A complicated version of the story . . .

\[ TC = C(q) = a + bq - cq^2 + dq^3 \]

A simpler version of the story . . .

\[ TC = C(q) = a + bq + cq^2 \]

Mankiw, Chapter 12, Figure 5

Mankiw, Chapter 12, Figure 4
Returning to the Issue of Profit Maximization . . .

\[ \pi(q) = R(q) - C(q) \]
\[ d\pi(q)/dq = dR(q)/dq - dC(q)/dq \]

\[ d\pi(q)/dq = MR - MC \]
\[ MR = MC \]

For a price taker, marginal revenue (MR) is constant . . .

Revenue, R and Cost, C

The profit-maximizing, “optimal” output level
Returning to the Issue of Profit Maximization . . .

\[ \pi(q) = R(q) - C(q) \]
\[ d\pi(q)/dq = dR(q)/dq - dC(q)/dq \]

\[ d\pi(q)/dq = MR - MC \]
\[ MR = MC \]

For a price maker, marginal revenue (MR) is declining as a function of q . . .
Equilibrium in a Competitive Market

- The market determines the price that the price taker takes . . .
- The cost function determines whether the firm makes a profit or incurs a loss . . .
- Profits attract new competition (free entry condition).
- Zero profit is “normal” profit.

The Market . . .

The Firm . . .
Short-Run Firm Supply Functions and Supply Curves

Operate at a profit

Continue operations at a loss

Shut down

MR = AR = d

Break even
Short-Run Firm Supply Functions and Supply Curves

Industry Supply

\[ Q_s = \sum_{i} q_{si}, \text{ where } q_{si} = \phi(p, w) \]

Firm Supply

Costs (of inputs)

Prices (of output)

Technology of production and industry structure

Conditions of industry supply

\[ p \]

Firm 1

\[ MC_1 \]

\[ q_1 \]

Firm 2

\[ MC_2 \]

\[ q_2 \]

Firm 3

\[ MC_3 \]

\[ q_3 \]

Industry

\[ S \]

\[ Q \]
**Long-Run Industry Supply**

*Constant Cost Industry*: Horizontal long-run industry supply
**Long-Run Industry Supply**

*Increasing Cost Industry*: Long-run industry supply slopes upward.
Long-Run Industry Supply

*Decreasing Cost Industry*: Long-run industry supply slopes downward
Monopoly and “Market Power”

**Monopoly**  A firm that is the sole seller of a product without close substitutes.

**Market power**

**Rent seeking**

**Collusion**
Sources of Monopoly and “Market Power”

Barriers to Entry

- Control of a key resource
- Government policy
- “Natural” monopoly
  - Extreme Economies of Scale

![Graph showing Cost vs. Quantity of Output with ATC curve]
Equilibrium in a Monopolized Market

- Even for a monopolist, the demand curve still determines price.
- The cost function determines the amount of profit that the monopolist makes.
- Barriers to entry preserve positive ("abnormal") profits.
- Dead weight loss summarizes the inefficiency of monopolization.

For a price maker, marginal revenue (MR) is declining as a function of $q$ . . .
The “standard” case against monopoly

- Monopolies restrict output and thus cause prices to rise above competitive levels.

- Monopolies generate social welfare losses

- Monopolies are likely to engage in “anti-competitive” practices to sustain their advantage (“Rent seeking”).
Social Responses to Monopoly Power

☐ Anti-trust laws

☐ Regulation

☐ Public Ownership  
   (Nationalization)

☐ Do Nothing
## Taxonomy of Market Structures

### Imperfect Competition

<table>
<thead>
<tr>
<th>Number of Firms</th>
<th>Type of Product</th>
<th>Conditions of Entry</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>Unique (no substitutes)</td>
<td>Significant barriers to entry</td>
</tr>
<tr>
<td>Few</td>
<td>Unique or Differentiated</td>
<td>Significant barriers to entry</td>
</tr>
<tr>
<td>Many</td>
<td>Differentiated</td>
<td>Insignificant barriers to entry</td>
</tr>
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### Perfect Competition

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**Price Makers**

- Monopoly
- Oligopoly
- Monopolistic Competition

**Price Takers**

- Perfect Competition
Some Tentative Conclusions (About Market Structure)

- Allocative efficiency
- Productive efficiency
- Economic profits