Imperfect Competition

Imperfect competition refers to those market structures that fall between perfect competition and pure monopoly.

Types of Imperfectly Competitive Markets

- **Oligopoly**
  - Only a few sellers, each offering a similar or identical product to the others.

- **Monopolistic Competition**
  - Many firms selling products that are similar but not identical.

The Four Types of Market Structure

- **Monopoly**
  - One firm
  - Identical products
  - Examples: Tap water, Cable TV

- **Oligopoly**
  - Few firms
  - Differentiated products
  - Examples: Tennis balls, Crude oil

- **Monopolistic Competition**
  - Many firms
  - Differentiated products
  - Examples: Novels, Movies

- **Perfect Competition**
  - Many firms
  - Identical products
  - Examples: Wheat, Milk

Markets With Only a Few Sellers

Because of the few sellers, the key feature of oligopoly is the tension between cooperation and self-interest.
Characteristics of an Oligopoly Market

- Few sellers offering similar or identical products
- Interdependent firms
- Best off cooperating and acting like a monopolist by producing a small quantity of output and charging a price above marginal cost

A Duopoly Example

A duopoly is an oligopoly with only two members. It is the simplest type of oligopoly.

A Duopoly Example: Demand Schedule for Water (Assume MC = $0)

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Price</th>
<th>TR &amp; Total Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>$120</td>
<td>$0</td>
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<tr>
<td>10</td>
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<tr>
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<td>30</td>
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<td>40</td>
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<tr>
<td>120</td>
<td>0</td>
<td>0</td>
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</tbody>
</table>

A Duopoly Example: Price and Quantity Supplied

- The price of water in a perfectly competitive market would be driven to where the marginal cost is zero:
  \[ P = MC = $0 \]
  \[ Q = 120 \text{ gallons} \]
- The price and quantity in a monopoly market would be where total profit is maximized:
  \[ P = $60 \]
  \[ Q = 60 \text{ gallons} \]

A Duopoly Example: Price and Quantity Supplied

- The socially efficient quantity of water is 120 gallons, but a monopolist would produce only 60 gallons of water.
- So what outcome then could be expected from duopolists?

Competition, Monopolies, and Cartels

- The duopolists may agree on a monopoly outcome.
- Collusion
  - The two firms may agree on the quantity to produce and the price to charge.
- Cartel
  - The two firms may join together and act in unison.
Competition, Monopolies, and Cartels

Although oligopolists would like to form cartels and earn monopoly profits, often that is not possible. Antitrust laws prohibit explicit agreements among oligopolists as a matter of public policy.

The Equilibrium for an Oligopoly

A Nash equilibrium is a situation in which economic actors interacting with one another each choose their best strategy given the strategies that all the others have chosen.

The Equilibrium for an Oligopoly

When firms in an oligopoly individually choose production to maximize profit, they produce quantity of output greater than the level produced by monopoly and less than the level produced by competition.

The Equilibrium for an Oligopoly

The oligopoly price is less than the monopoly price but greater than the competitive price (which equals marginal cost).

Summary of Equilibrium for an Oligopoly

- Possible outcome if oligopoly firms pursue their own self-interests:
  - Joint output is greater than the monopoly quantity but less than the competitive industry quantity.
  - Market prices are lower than monopoly price but greater than competitive price.
  - Total profits are less than the monopoly profit.

A Duopoly Example: Demand Schedule for Water

<table>
<thead>
<tr>
<th>Quantity</th>
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</tr>
</thead>
<tbody>
<tr>
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How the Size of an Oligopoly Affects the Market Outcome

- How increasing the number of sellers affects the price and quantity:
  - The output effect: Because price is above marginal cost, selling more at the going price raises profits.
  - The price effect: Raising production lowers the price and the profit per unit on all units sold.

As the number of sellers in an oligopoly grows larger, an oligopolistic market looks more and more like a competitive market.

- The price approaches marginal cost, and the quantity produced approaches the socially efficient level.

Game Theory and the Economics of Cooperation

- Game theory is the study of how people behave in strategic situations.
- Strategic decisions are those in which each person, in deciding what actions to take, must consider how others might respond to that action.

Because the number of firms in an oligopolistic market is small, each firm must act strategically.

- Each firm knows that its profit depends not only on how much it produced but also on how much the other firms produce.

The Prisoners’ Dilemma

The prisoners’ dilemma provides insight into the difficulty in maintaining cooperation.

Often people (firms) fail to cooperate with one another even when cooperation would make them better off.
**The Prisoners’ Dilemma**

The dominant strategy is the best strategy for a player to follow regardless of the strategies pursued by other players.

Cooperation is difficult to maintain, because cooperation is not in the best interest of the individual player.

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**Oligopolies as a Prisoners’ Dilemma**

Self-interest makes it difficult for the oligopoly to maintain a cooperative outcome with low production, high prices, and monopoly profits.

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**An Arms-Race Game**

Decision of the United States (U.S.)

<table>
<thead>
<tr>
<th>Decision of the United States (U.S.)</th>
<th>Arm</th>
<th>Disarm</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. at risk</td>
<td>USSR at risk</td>
<td>U.S. safe and powerful</td>
</tr>
<tr>
<td>USSR at risk</td>
<td>U.S. at risk and weak</td>
<td>U.S. safe</td>
</tr>
<tr>
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<td>U.S. safe</td>
<td>USSR at risk and weak</td>
</tr>
</tbody>
</table>

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**An Advertising Game**

Marlboro's Decision

<table>
<thead>
<tr>
<th>Decision of the United States (U.S.)</th>
<th>Advertise</th>
<th>Don’t Advertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marlboro gets $3 billion profit</td>
<td>Marlboro gets $2 billion profit</td>
<td></td>
</tr>
<tr>
<td>Marlboro gets $5 billion profit</td>
<td>Marlboro gets $4 billion profit</td>
<td></td>
</tr>
<tr>
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<td>Marlboro gets $4 billion profit</td>
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</table>

Camel’s Decision

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<th>Don’t Advertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camel gets $3 billion profit</td>
<td>Camel gets $2 billion profit</td>
<td></td>
</tr>
<tr>
<td>Camel gets $5 billion profit</td>
<td>Camel gets $4 billion profit</td>
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</table>
Cigarette Example

- In 1971, Congress passed a law banning cigarette advertisements on television.
- Many people were surprised when the powerful cigarette companies did not lobby to oppose the law.
- When the law went into effect, cigarette advertising fell, and profits went up.
- The law did for cigarette companies what they could not do on their own: it solved the prisoner’s dilemma by enforcing the cooperative outcome with low advertising and high profit.

Why People Sometimes Cooperate

Firms that care about future profits will cooperate in repeated games rather than cheating in a single game to achieve a one-time gain.

Jack and Jill’s Oligopoly Game

<table>
<thead>
<tr>
<th>Jack’s Decision</th>
<th>Jill’s Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sell 40 gallons</td>
<td>Sell 40 gallons</td>
</tr>
<tr>
<td>Jack gets $1,600 profit</td>
<td></td>
</tr>
<tr>
<td>Jill gets $1,600 profit</td>
<td></td>
</tr>
<tr>
<td>Sell 30 gallons</td>
<td>Sell 30 gallons</td>
</tr>
<tr>
<td>Jack gets $1,500 profit</td>
<td></td>
</tr>
<tr>
<td>Jill gets $2,000 profit</td>
<td></td>
</tr>
</tbody>
</table>

Public Policy Toward Oligopolies

Cooperation among oligopolists is undesirable from the standpoint of society as a whole because it leads to production that is too low and prices that are too high.

Restraint of Trade and the Antitrust Laws

- Antitrust laws make it illegal to restrain trade or attempt to monopolize a market.
- Sherman Antitrust Act of 1890
- Clayton Act of 1914

Controversies over Antitrust Policy

- Antitrust policies sometimes may not allow business practices that have potentially positive effects:
  - Resale price maintenance
  - Predatory pricing
  - Tying
Resale Price Maintenance

Resale price maintenance (or fair trade) occurs when suppliers (like wholesalers) require the retailers that they sell to, to charge customers a specific amount.

Predatory Pricing

Predatory pricing occurs when a large firm begins to cut the price of its product(s) with the intent of driving its competitor(s) out of the market.

Predatory Pricing Example

- Suppose there are 2 airlines: Coyote Air and Roadrunner Express.
- Suppose Coyote had a monopoly but now Roadrunner entered the market and has captured 20% of airline tickets.
- If Coyote start selling cheap tickets at a loss to drive Roadrunner out of the market, Coyote had better be ready to fly more planes because the lower price will attract more consumers.
- Roadrunner, meanwhile, can respond to Coyote’s predatory pricing by cutting back its flights.
- As a result, Coyote ends up bearing more than 80% of the losses, putting Roadrunner in a good position to withstand the price war.

Tying

Tying refers to when a firm offers two (or more) of its products together at a single price, rather than separately.

Summary

- Oligopolists maximize their total profits by forming a cartel and acting like a monopolist.
- If oligopolists make decisions about production levels individually, the result is a greater quantity and a lower price than under the monopoly outcome.

Summary

- The prisoners’ dilemma shows that self-interest can prevent people from maintaining cooperation, even when cooperation is in their mutual self-interest.
- The logic of the prisoners’ dilemma applies in many situations, including oligopolies.
Summary

Policymakers use the antitrust laws to prevent oligopolies from engaging in behavior that reduces competition.