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## Oligopoly

# BETWEEN MONOPOLY AND PERFECT COMPETITION

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

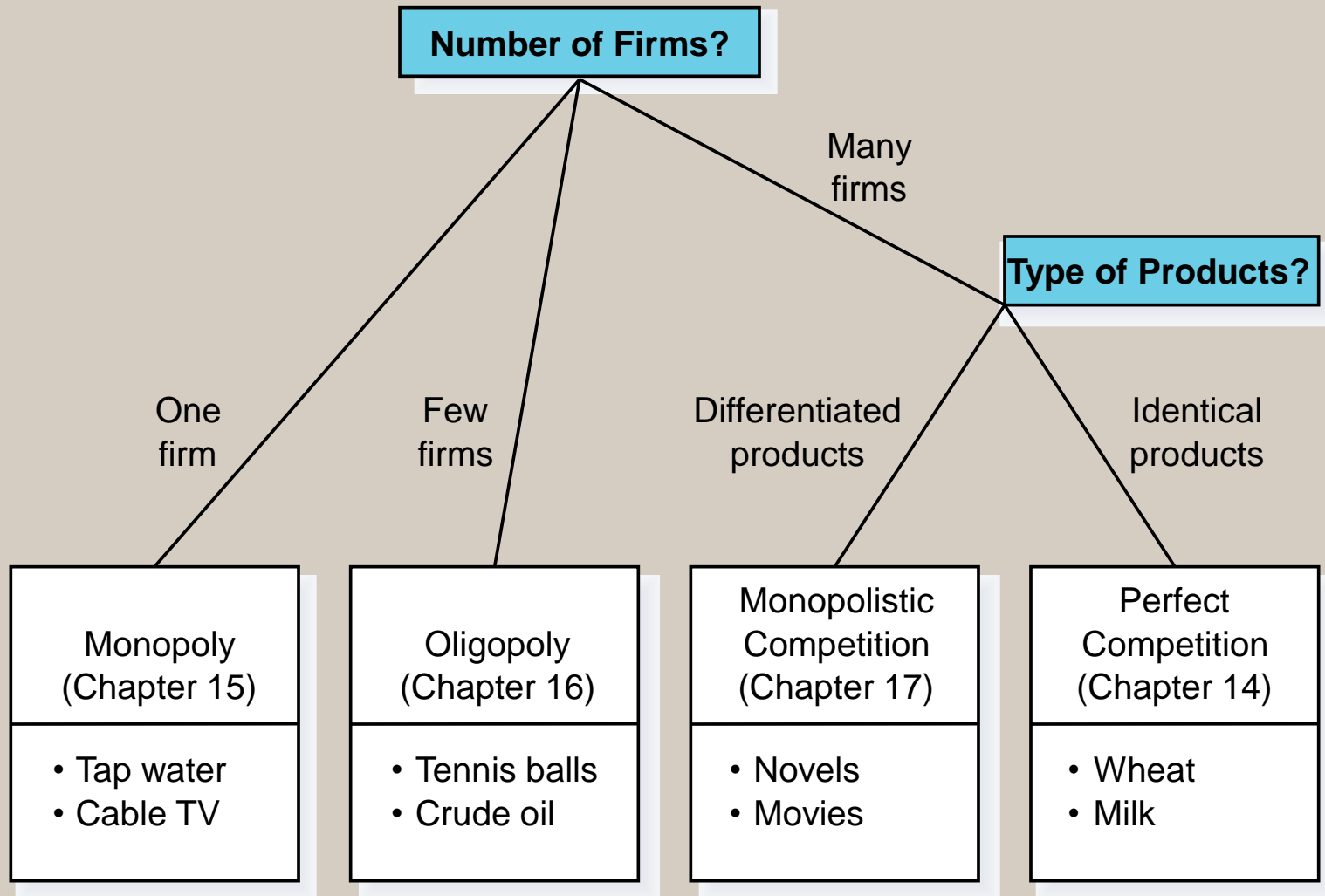
# BETWEEN MONOPOLY AND PERFECT COMPETITION

- Imperfect competition includes industries in which firms have competitors but do not face so much competition that they are price takers.

# BETWEEN MONOPOLY AND PERFECT COMPETITION

- 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.

# Figure 1 The Four Types of Market Structure



# MARKETS WITH ONLY A FEW SELLERS

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

# MARKETS WITH ONLY A FEW SELLERS

- 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.



# Table 1 The Demand Schedule for Water

Quantity (in gallons)	Price	Total Revenue (and total profit)
0	\$120	\$ 0
10	110	1,100
20	100	2,000
30	90	2,700
40	80	3,200
50	70	3,500
60	60	3,600
70	50	3,500
80	40	3,200
90	30	2,700
100	20	2,000
110	10	1,100
120	0	0

# 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:
    - $P = MC = \$0$
    - $Q = 120$  gallons
  - The price and quantity in a monopoly market would be where total profit is maximized:
    - $P = \$60$
    - $Q = 60$  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*
    - An agreement among firms in a market about quantities to produce or prices to charge.
  - *Cartel*
    - A group of firms acting 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).



# Equilibrium for an Oligopoly

- Summary
  - 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.

# Table 1 The Demand Schedule for Water

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120	0	0

# 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 will increase the amount sold, which will lower the price and the profit per unit on all units sold.

# How the Size of an Oligopoly Affects the Market Outcome

- 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.

# GAME THEORY AND THE ECONOMICS OF COOPERATION

- 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 produces 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 prisoners' dilemma is a particular “game” between two captured prisoners that illustrates why cooperation is difficult to maintain even when it is mutually beneficial.



## Figure 2 The Prisoners' Dilemma

		Bonnie's Decision	
		Confess	Remain Silent
Clyde's Decision	Confess	Bonnie gets 8 years Clyde gets 8 years	Bonnie gets 20 years Clyde goes free
	Remain Silent	Bonnie goes free Clyde gets 20 years	Bonnie gets 1 year Clyde gets 1 year

# The Prisoners' Dilemma

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

# The Prisoners' Dilemma

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

## Figure 3 An Oligopoly Game

		Iraq's Decision	
		High Production	Low Production
Iran's Decision	High Production	<div>Iraq gets \$40 billion</div> <div>Iran gets \$40 billion</div>	<div>Iraq gets \$30 billion</div> <div>Iran gets \$60 billion</div>
	Low Production	<div>Iraq gets \$60 billion</div> <div>Iran gets \$30 billion</div>	<div>Iraq gets \$50 billion</div> <div>Iran gets \$50 billion</div>

# 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.

## Figure 4 An Arms-Race Game

**Decision of the United States (U.S.)**

**Arm**

**Disarm**

**Arm**

**Decision  
of the  
Soviet Union  
(USSR)**

**Disarm**

<div>U.S. at risk</div> <div>USSR at risk</div>	<div>U.S. at risk and weak</div> <div>USSR safe and powerful</div>
<div>U.S. safe and powerful</div> <div>USSR at risk and weak</div>	<div>U.S. safe</div> <div>USSR safe</div>

## Figure 5 An Advertising Game

		Marlboro's Decision	
		Advertise	Don't Advertise
Camel's Decision	Advertise	Marlboro gets \$3 billion profit Camel gets \$3 billion profit	Marlboro gets \$2 billion profit Camel gets \$5 billion profit
	Don't Advertise	Marlboro gets \$5 billion profit Camel gets \$2 billion profit	Marlboro gets \$4 billion profit Camel gets \$4 billion profit

## Figure 6 A Common-Resource Game

		Exxon's Decision	
		Drill Two Wells	Drill One Well
Texaco's Decision	Drill Two Wells	<div>Exxon gets \$4 million profit</div> <div>Texaco gets \$4 million profit</div>	<div>Exxon gets \$3 million profit</div> <div>Texaco gets \$6 million profit</div>
	Drill One Well	<div>Exxon gets \$6 million profit</div> <div>Texaco gets \$3 million profit</div>	<div>Exxon gets \$5 million profit</div> <div>Texaco gets \$5 million profit</div>



# 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.

# Figure 7 Jack and Jill Oligopoly Game

## Jack's Decision

**Sell 40 Gallons**

**Sell 30 Gallons**

**Sell 40 Gallons**

## Jill's Decision

**Sell 30 Gallons**

	Jack gets \$1,600 profit Jill gets \$1,600 profit	Jack gets \$1,500 profit Jill gets \$2,000 profit
Jill gets \$1,500 profit	Jack gets \$2,000 profit	Jack gets \$1,800 profit Jill gets \$1,800 profit

# 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

# Controversies over Antitrust Policy

- Resale Price Maintenance (or fair trade)
  - occurs when suppliers (like wholesalers) require retailers to charge a specific amount
- 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
- Tying
  - when a firm offers two (or more) of its products together at a single price, rather than separately

# Summary

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- 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

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- 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

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