

# Oligopoly

# Imperfect Competition

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

# Imperfect Competition

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

# Types of Imperfectly Competitive Markets

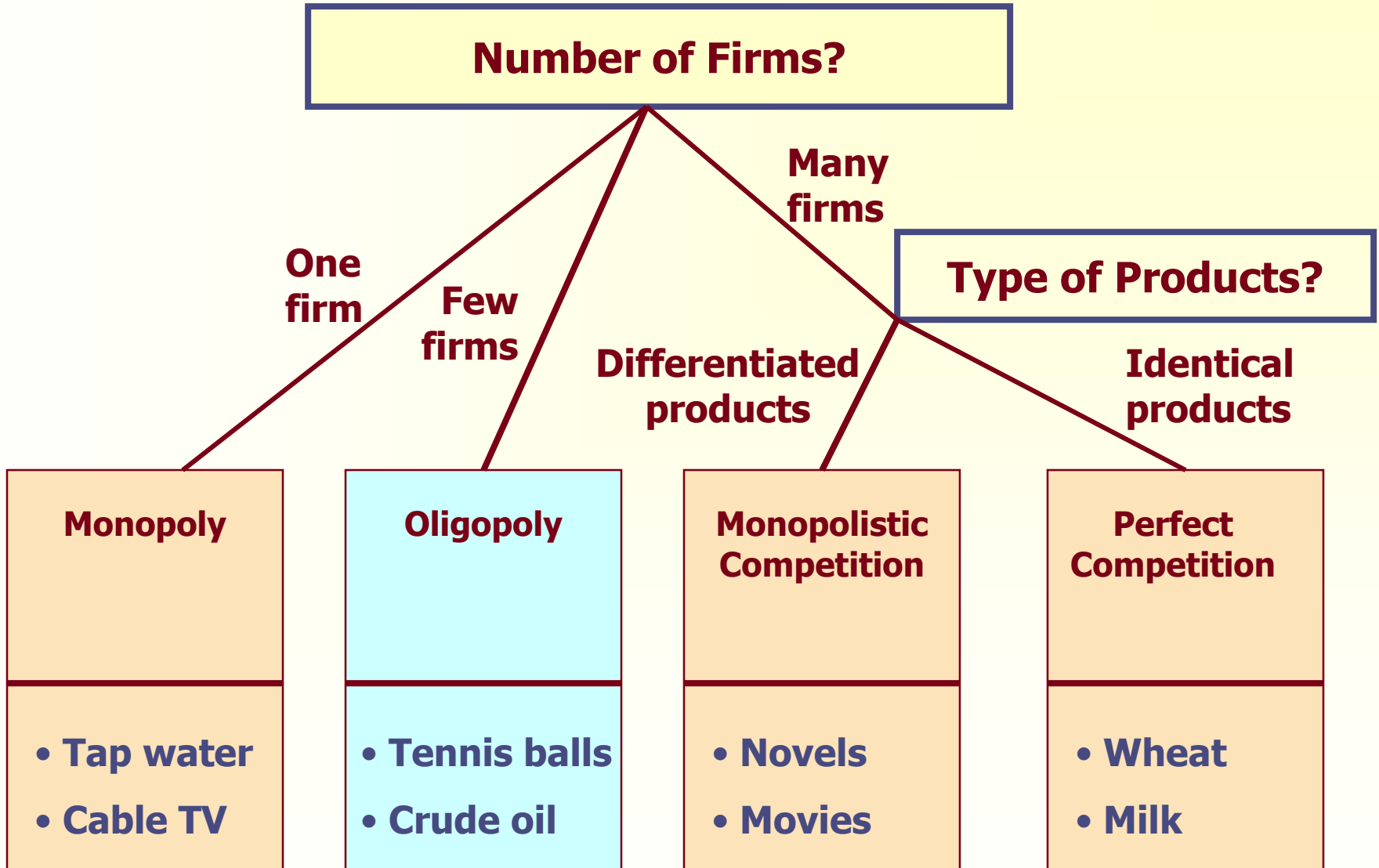
## ◆ Oligopoly

- ◆ 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



# **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

Quantity	Price	Total Revenue
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:

$$P = MC = \$0$$

$$Q = 120 \text{ gallons}$$

- ◆ 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

Quantity	Price	Total Revenue
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100	20	2,000
110	10	1,100
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 lowers 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 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

## Bonnie's Decision

**Confess**

**Remain Silent**

**Confess**

**Bonnie gets  
8 years**

**Clyde gets  
8 years**

**Bonnie gets  
20 years**

**Clyde goes  
free**

**Clyde's  
Decision**

**Remain  
Silent**

**Bonnie goes  
free**

**Clyde gets  
20 years**

**Bonnie gets  
1 year**

**Clyde gets  
1 year**

	<b>Confess</b>	<b>Remain Silent</b>
<b>Confess</b>	<b>Bonnie gets 8 years Clyde gets 8 years</b>	<b>Bonnie gets 20 years Clyde goes free</b>
<b>Remain Silent</b>	<b>Bonnie goes free Clyde gets 20 years</b>	<b>Bonnie gets 1 year Clyde gets 1 year</b>



# The Prisoners' Dilemma

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

# The Prisoners' Dilemma

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

# Oligopolies as a Prisoners' Dilemma

Iraq's Decision

High Production

Low Production

High  
Production

Iraq gets  
\$40 billion

Iraq gets  
\$30 billion

Iran gets  
\$40 billion

Iran gets  
\$60 billion

Iran's  
Decision

Iraq gets  
\$60 billion

Iraq gets  
\$50 billion

Low  
Production

Iran gets  
\$30 billion

Iran gets  
\$50 billion

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

# **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.**

# An Arms-Race Game

Decision of the United States (U.S.)

Arm

Disarm

Arm

Disarm

Decision of the Soviet Union (USSR)

U.S. at risk USSR at risk	U.S. at risk and weak USSR safe and powerful
U.S. safe and powerful USSR at risk and weak	U.S. safe USSR safe

# 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

# A Common-Resources Game

		Exxon's Decision	
		Drill Two Wells	Drill One Well
Arco's Decision	Drill Two Wells	Exxon gets \$4 million profit Arco gets \$4 million profit	Exxon gets \$3 million profit Arco gets \$6 million profit
	Drill One Well	Exxon gets \$6 million profit Arco gets \$3 million profit	Exxon gets \$5 million profit Arco gets \$5 million 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

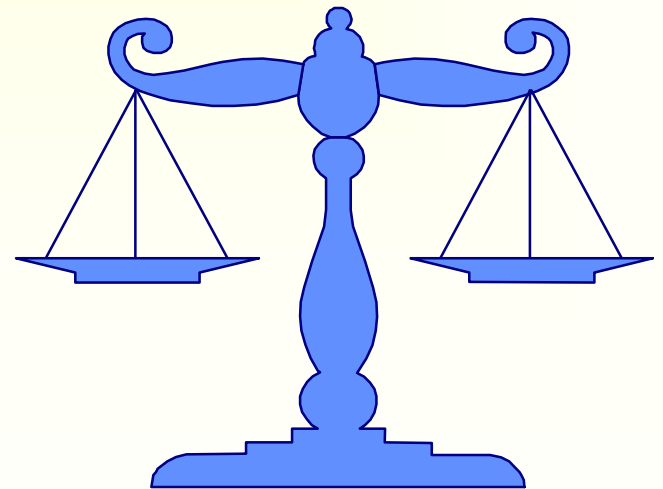
		Jack's Decision	
		Sell 40 gallons	Sell 30 gallons
Jill's Decision	Sell 40 gallons	Jack gets \$1,600 profit Jill gets \$1,600 profit	Jack gets \$1,500 profit Jill gets \$2,000 profit
	Sell 30 gallons	Jack gets \$2,000 profit Jill gets \$1,500 profit	Jack gets \$1,800 profit Jill gets \$1,800 profit

# 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

# 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.

# 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.**

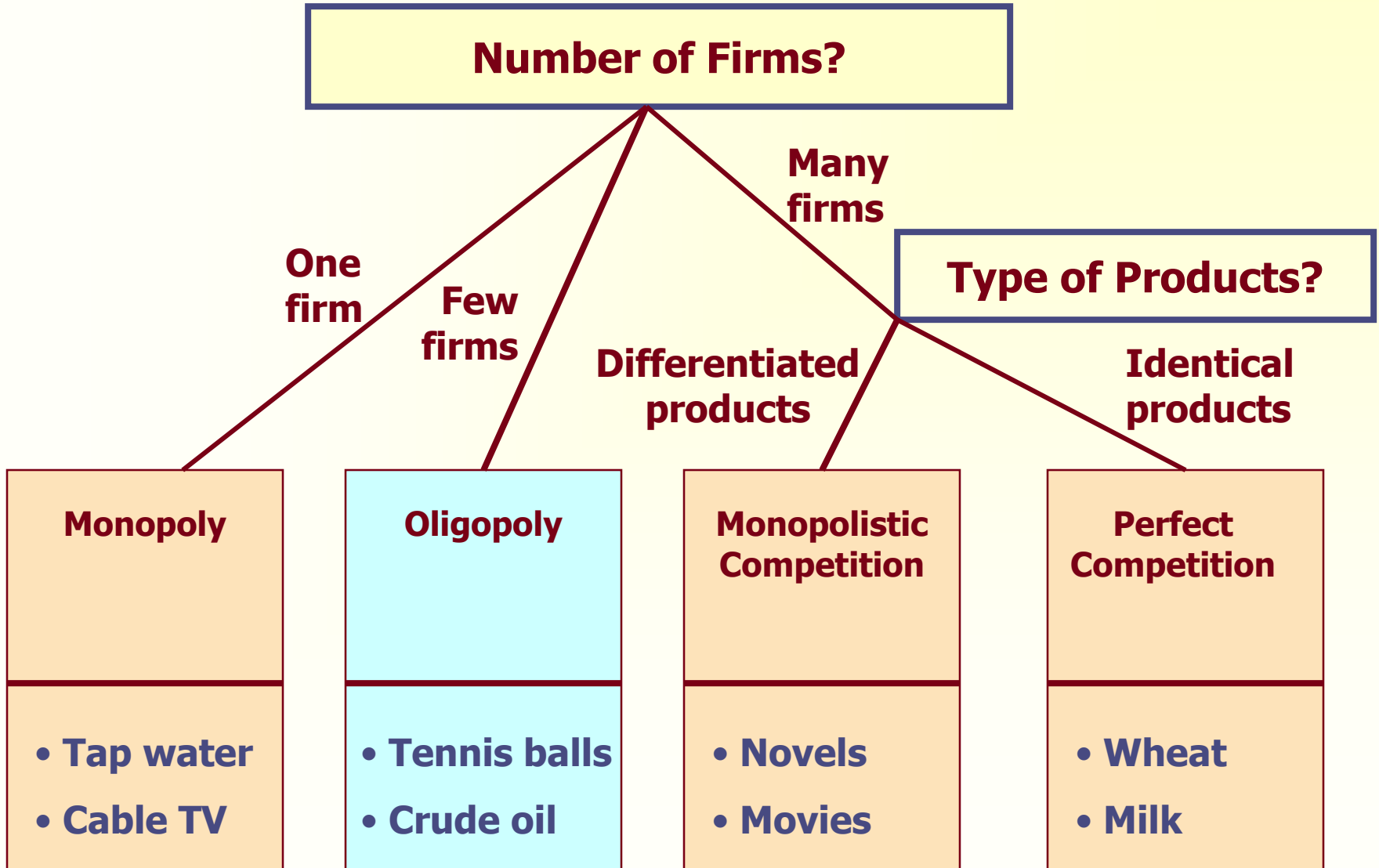
# Summary

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

**Graphical**

**Review**

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