Monopoly
&
Imperfect Competition

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Monopoly

- A monopoly firm is the only seller of a good or service with no close substitutes
  - Market in which the monopoly firm operates is called a monopoly market
- Key concept is notion of substitutability
- Definition of monopoly firm or market may seem precise
  - But in real world, definition is not always so clear-cut
- Because we all have different tastes and characteristics, we can have different opinions about what is, and what is not, a “close” substitute
  - As a result, we can have different ideas about how broadly or how narrowly we should define a market when trying to decide if it is a monopoly

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Why Monopolies Exist

- Existence of a monopoly means that something is causing other firms to stay out of the market
  - Rather than enter and compete with firm already there
- What barrier prevents additional firms from entering the market?
  - Several possible answers
    - Economies of scale
    - Legal barriers
    - Network externalities

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Economies of Scale

- If economies of scale persist to the point where a single firm is producing for entire market, the market is a natural monopoly
  - Market in which, due to economies of scale, one firm can operate at lower average cost than can two or more firms
- Unless government intervenes, only one seller would survive—market would naturally become a monopoly
- Small local monopolies are often natural monopolies
  - Because they continue to enjoy economies of scale up to point at which they are serving entire market

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Imperfect Competition

- Perfectly Competitive Markets
- Maximize economic surplus
- Do not always exist
- Imperfectly Competitive Markets
- Reduce economic surplus to varying degrees
- Are very common

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Imperfect Competition (Cont.)

- Imperfectly Competitive Firms
- Have some control over price
- Price may be greater than the cost of production
- Long-run economic profits are possible

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Imperfect Competition (Cont.)

- Various Forms of Imperfect Competition
- Pure Monopoly (most inefficient)
- The only supplier of a unique product with no close substitutes
- Oligopoly (more efficient than a monopoly)
- A firm that produces a product for which only a few rival firms produce close substitutes

Imperfect Competition

- Different Forms of Imperfect
- Competition
- Monopolistic Competition
  (closest to perfect competition)
- A large number of firms that produce slightly
  differentiated products that are reasonably close substitutes for one another

Imperfect Competition

- The Essential Difference Between
- Perfectly and Imperfectly Competitive
- Firms
- The perfectly competitive firm faces a perfectly elastic demand for its product (horizontal line at the market price).
- The imperfectly competitive firm faces a downward-sloping demand curve.

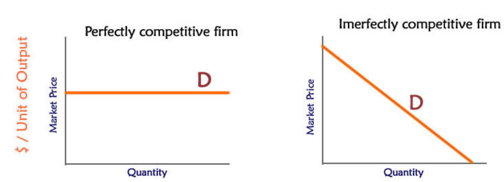
Imperfect Competition

- In perfect competition
- Supply and demand determine equilibrium price. *The firm has no market power*.
- At the equilibrium price, the firm sells all it wishes.

Imperfect Competition

- With imperfect competition
- The firm has some control over price or some *market power*.
- The firm faces a downward sloping demand curve.

The Demand Curves Facing Perfectly and Imperfectly Competitive Firms



Five Sources of Market Power

- Exclusive control over inputs
- Patents and copyrights
- Government licenses or franchises
- Economies of scale (natural monopolies)
- Network economies

Oligopoly

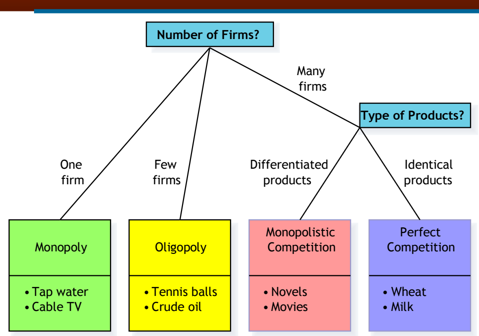
Between MONOPOLY and PERFECT COMPETITION

- Imperfect competition refers to those market structures that fall between perfect competition and pure monopoly.
- Imperfect competition includes industries in which firms have competitors but do not face so much competition.

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.

Four Types of Market Structure



Markets with 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

Market Concentration

- Economists use concentration ratios to measure the degree of concentration in the market.
- *Four-firm concentration ratio* measures the percentage of total output produced by the largest four firms.

A Duopoly Example:

- A duopoly is an oligopoly with only two members. It is the simplest type of oligopoly.
- We will look first at an example where two firms compete by choosing quantity.
- This type of competition is called Cournot competition

Demand 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

Assume that the cost of water is zero

How many units will be produced if this was a perfectly competitive market?

If this was a monopoly market?

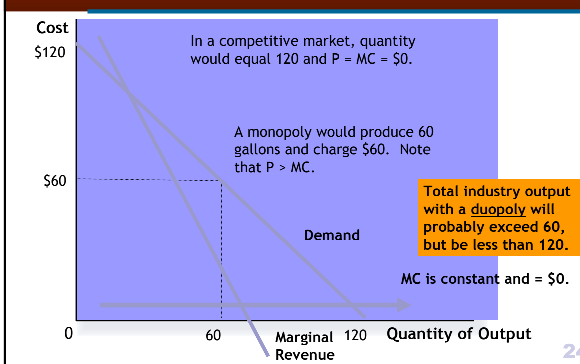
A Duopoly Example

- Price and Quantity Supplied
  - The price and quantity of water in a perfectly competitive market:
    - $P = MC = \$0$
    - $Q = 120$ 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 a duopoly?

The Market for Water



Bertrand Competition

- Alternatively, firms may compete by choosing price instead.
- The firm with the lowest price attracts all buyers.
- *What would the equilibrium price in this market be?*

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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.

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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.

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GAME THEORY and the ECONOMICS OF COOPERATION

- Because the number of firms in an oligopoly 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.

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The Nash Equilibrium

- 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.
- A situation where each agent is satisfied with (i.e. does not want to change) his strategy (or action) given the strategies of all other agents.

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Games

- A game is comprised of players, strategies and payoffs.
- Strategies refers to the set of possible actions for all outcomes.
- Payoffs are the rewards to each player based on both players actions.

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Example 1: Find the Nash Equilibrium.

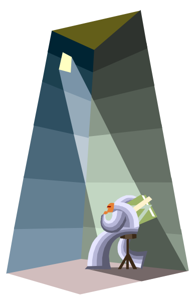
Jane's Decision \ Ann's Decision	right	left
Up	Ann gets 8 Jane gets 2	Ann gets 10 Jane gets 0
Down	Ann gets 0 Jane gets 0	Ann gets 10 Jane gets 6

Example 2: Coordination game

Jane's Decision \ Ann's Decision	Ballet	Opera
Ballet	Ann gets 8 Jane gets 8	Ann gets 0 Jane gets 0
Opera	Ann gets 0 Jane gets 0	Ann gets 10 Jane gets 10

Example 3: 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.

The Prisoners' Dilemma

- Two people committed a crime and are being interrogated in separate rooms.
- The are offered:
  - If both confessed, each spend 8 years in jail.
  - If both remained silent, each spends 1 year in jail.
  - If one confessed and the other remained silent, the one who confessed is set free while the other spends 20 years in jail.

The Prisoners' Dilemma Game

Kyle's Decision \ Ben's Decision	Confess	Remain Silent
Confess	Ben gets 8 years Kyle gets 8 years	Ben gets 20 years Kyle goes free
Remain Silent	Ben goes free Kyle gets 20 years	Ben gets 1 year Kyle gets 1 year

Dominant Strategy

- A dominant strategy is the strategy that is always the best response (i.e. does better) to all of the other player's possible actions.
- If a player has a dominant strategy then he will play it in equilibrium
- Not all games have dominant strategies

The Prisoners' Dilemma Game

		Ben' s Decision	
		Confess	Remain Silent
Kyle's Decision	Confess	Ben gets 8 years Kyle gets 8 years	Ben gets 20 years Kyle goes free
	Remain Silent	Ben goes free Kyle gets 20 years	Ben gets 1 year Kyle gets 1 year

Confessing is a dominant strategy for both players

The Prisoners' Dilemma Game

		Ben' s Decision	
		Confess	Remain Silent
Kyle's Decision	Confess	Ben gets 8 years Kyle gets 8 years	Ben gets 20 years Kyle goes free
	Remain Silent	Ben goes free Kyle gets 20 years	Ben gets 1 year Kyle gets 1 year

Confess - Confess is a Nash Equilibrium

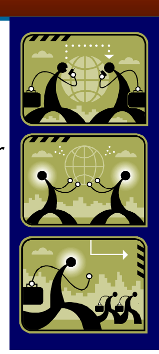
The Prisoners' Dilemma Game

		Ben' s Decision	
		Confess	Remain Silent
Kyle's Decision	Confess	Ben gets 8 years Kyle gets 8 years	Ben gets 20 years Kyle goes free
	Remain Silent	Ben goes free Kyle gets 20 years	Ben gets 1 year Kyle gets 1 year

If they both cooperate to remain silent they can be better off

Oligopolies as a Prisoners' Dilemma

- The dominant strategy is the best strategy for a player to follow regardless of the strategies chosen by the other players.
- Cooperation is difficult to maintain, because cheating is in the best interest of the individual player.



Facilitating Practices

- Most Favored Customer treatment: if a firm offers a low price to one customer it has to do so to all other customers.
- Price Matching: if a competitor offers a lower price, the firm matches it.

PUBLIC POLICY TOWARD OLIGOPOLIES

- Although oligopolists would like to form cartels to earn monopoly profits, often it is not possible.
- Antitrust laws prohibit explicit agreements among oligopolists.
- 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*.

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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 Antitrust Act of 1914

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Controversies over Antitrust Policy

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

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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

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