

Chapter 17: Oligopoly

- What outcomes are possible under oligopoly?
- Why is it difficult for oligopoly firms to compete?
- How are antitrust laws used to foster competition?

Types of Imperfectly Competitive Markets

- _____: Only a *few sellers*, each offering a similar or identical product to the others.
- _____: *Many firms* selling products that are similar but not identical.

Concentration ratio:

Oligopoly:

Strategic behavior in Oligopoly:

Game theory:

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

A duopoly Example: Cell phone in small town (T-Mobile, Verizon)

Price	Quantity	Total Revenue
\$0	140	\$0
5	130	650
10	120	1,200
15	110	1,650
20	100	2,000
25	90	2,250
30	80	2,400
35	70	2,450
40	60	2,400
45	50	2,250

○ Each firm's costs: FC = \$0, MC = \$10

P	Q	TR	Cost	Profit
\$0	140	\$0	\$1,400	-1,400
5	130	650	1,300	-650
10	120	1,200	1,200	0
15	110	1,650	1,100	550
20	100	2,000	1,000	1,000
25	90	2,250	900	1,350
30	80	2,400	800	1,600
35	70	2,450	700	1,750
40	60	2,400	600	1,800
45	50	2,250	500	1,750

○ If we are in perfect competition, what would the equilibrium Price & Quantity, profit be?

- If we were in a monopoly, what would be the equilibrium P&Q, profit?
- Where will the duopolists (or oligopolists) produce?

DEF: COLLUSION:

DEF: CARTEL:

Note: most famous cartel is OPEC (Organization of Petroleum Exporting Countries).

Collusion vs. Self-Interest

ACTIVE LEARNING 1
Collusion vs. self-interest

P	Q
\$0	140
5	130
10	120
15	110
20	100
25	90
30	80
35	70
40	60
45	50

Duopoly outcome with collusion:
Each firm agrees to produce $Q = 30$,
earns profit = \$900.

If T-Mobile reneges on the agreement and
produces $Q = 40$, what happens to the
market price? T-Mobile's profits?

Is it in T-Mobile's interest to renege on the
agreement?

If both firms renege and produce $Q = 40$,
determine each firm's profits.

- If both firms stick to agreement, each firm's profit = \$900.
- If T-Mobile reneges on agreement and produces $Q = 40$, market Q? P? T-Mobile's profit?
- Verizon will conclude the same, so both firms renege, each produces $Q = 40$. Market Q? P? each firm's profit?

Both firms would be better off if both stick to the cartel agreement.
But each firm has incentive to renege on the agreement.

Lesson:

The Equilibrium for an Oligopoly

ACTIVE LEARNING **2**
The oligopoly equilibrium

P	Q
\$0	140
5	130
10	120
15	110
20	100
25	90
30	80
35	70
40	60
45	50

If each firm produces $Q = 40$,
market quantity = 80
 $P = \$30$
each firm's profit = \$800

Is it in T-Mobile's interest to increase its
output further, to $Q = 50$?

Is it in Verizon's interest to increase its
output to $Q = 50$?

- If T-Mobile increases output to $Q = 50$: market quantity? P ?
- T-Mobile's profit?

DEF: NASH EQUILIBRIUM:

- Our duopoly example, the NE occurs when each firm produces $Q = 40$.
- Given that Verizon produces $Q = 40$, T-Mobile's best move is?
- Given that T-Mobile produces $Q = 40$, Verizon's best move is?

- When firms in an oligopoly individually choose production to maximize profit,
Oligopoly Q is _____ than monopoly Q , but _____ than competitive Q .
Oligopoly P is _____ than competitive P but _____ than monopoly P .

The Output and Price Effects

- When an oligopolist decides to increase output, 2 things occur:
 - a. Because $P > MC$, increasing output will increase profit. This is the _____.
 - b. Because increasing output will raise total quantity sold, the price will fall and will therefore lower profit. This is the _____.

- If output effect > price effect:
- If price effect > output effect:

The Size of the Oligopoly

- The larger the number of sellers in the industry, the less concerned each seller is about its own impact on market price. As oligopoly grows the magnitude of price effect falls.
- Thus, as the number of sellers in an oligopoly grows larger, an oligopolistic market looks more and more like a competitive market.

Game Theory and the Economics of Cooperation

Def: Dominant strategy:

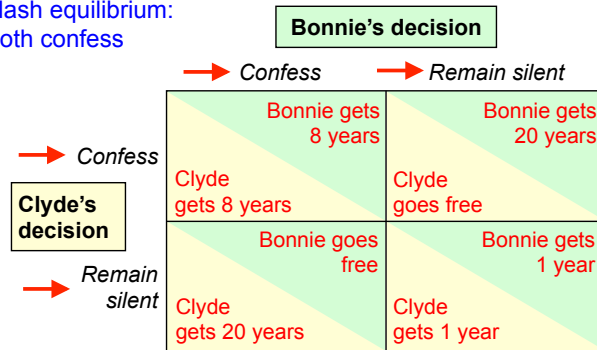
Def: Prisoners' Dilemma

The Prisoners' Dilemma

Prisoners' Dilemma Example

Confessing is the dominant strategy for both players.

Nash equilibrium:
both confess



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Memo:

1. Example—2 students have been captured. The Honor Council believes they both cheated on their econ exam by buying an old exam from a frat, but need a confession to convict them.
2. The Honor Council locks the 2 in separate rooms and offers each of them a deal:
3. We can construct a payoff matrix to describe the decisions of the 2 students:

		John's Decision	
		Confess	Don't Confess
Jane's Decision	Confess	Jane: 0 on exam, probation John: 0 on exam, probation	Jane: retake exam John: expulsion
	Don't Confess	Jane: expulsion John: retake exam	Jane: 0 on exam John: 0 on exam

4. John and Jane's dominant strategies are to confess
5. If they had both remained silent, they would have been better off collectively. But, by each pursuing his or her own self-interests, the 2 prisoners together reach an outcome that is worse for both of them.

Oligopolies as a Prisoners' Dilemma

When oligopolies form a cartel in hopes of reaching the monopoly outcome, they become players in a prisoners' dilemma.

1. Example—T-Mobile and Verizon are duopolists in Smalltown. The cartel outcome maximizes profits: each firm agrees to serve $Q = 30$ customers.
2. Here is their payoff matrix:

T-Mobile & Verizon in the Prisoners' Dilemma

		T-Mobile	
		$Q = 30$	$Q = 40$
Verizon	$Q = 30$	T-Mobile's profit = \$900 Verizon's profit = \$900	T-Mobile's profit = \$1000 Verizon's profit = \$750
	$Q = 40$	T-Mobile's profit = \$750 Verizon's profit = \$1000	T-Mobile's profit = \$800 Verizon's profit = \$800

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3. The dominant strategy for T-Mobile:
4. The dominant strategy for Verizon:

Other examples of the Prisoners' dilemma:

Why People Sometimes Cooperate

1. While cooperation is difficult to maintain, it is not impossible.
2. Cooperation is easier to enforce if the game is repeated and there is enforced penalty with non-cooperation.

Public Policy toward Oligopolies

Role for policymakers:

Controversies over Antitrust Policy

1. Resale Price Maintenance

- a. Resale price maintenance:
- b. Prevents retailers from competing in price.
- c. Economists have argued that this policy has a legitimate goal.

2. Predatory Pricing

- a. When firms with monopoly power are faced with new competition, they may cut prices drastically to drive the new competition out of business and restore their monopoly power.
- b. This behavior is called _____.
- c. Economists doubt whether this strategy is used often, because it would mean that the monopoly would have to sustain large losses.

3. Tying

- a. Tying occurs when:
- b. Economists do not believe this to be a problem because people will not be willing to pay more for 2 products sold together than they would be willing to pay for the 2 products separately. Thus, this practice cannot change market power.
- c. Instead, tying may simply be a form of price discrimination. Profits may rise if a firm charges a combined price closer to the buyers' total WTP.