

Econ 101 Discussion Section

Worksheet 12: Chapter 17

Review of Concepts:

- Oligopoly
- Game Theory
- Nash Equilibrium
- Dominant strategy

Practice Exercises: Short Answers

Question 1:

Suppose there are two companies, Quality Products and Perfection Performed, in a market that compete with one another. Both firms are trying to decide independently of one another whether they should engage in an advertising campaign or not. If Quality Products advertises while Perfection Performed does not advertise, Quality Products will earn profits of \$1000 while Perfection Performed will earn profits of \$0. If Quality Products advertises and Perfection Performed also advertises, each firm will earn \$500 in profits. The payoffs for advertising or not advertising for Perfection Performed are symmetric to those facing Quality Products. Finally, you know that when both firms decide not to advertise, they each earn \$700 in profits. Use this information to complete the payoff matrix below.

		Perfection Performed	
		Advertise	Not Advertise
Quality Products	Advertise		
	Not Advertise		

- Complete the above matrix given the information provided in this question.
- If Perfection Performed and Quality Products cooperate with one another, which choice of strategy for each firm will result in the greatest joint profits?
- What is the dominant strategy for Quality Products?
- What is the dominant strategy for Perfection Performed?
- What do you predict will be the outcome of this “game” given the above information? What will the value of joint profits be given this predicted outcome?

Question 2

Suppose that there are two musicians: Ricky Rock Star and Harry Hip Hop. Working by himself Ricky can capture the rock audience and earn a profit of \$5 million. Working by himself Harry Hip Hop can capture the rap audience and earn a profit of \$5 million. If the two musicians decide to collaborate, they can also capture a third audience of listeners who like rap-rock fusion. Capturing this audience is worth a total of \$3 million in profit that the two musicians would need to split evenly.

Both musicians have two possible options: (1) he can collaborate with the other musician and share all three markets or (2) he can go it alone and try to win over the other markets separately.

If a musician chooses not to collaborate, then he can release a CD much more quickly than if he worked with another artist. Therefore, if one musician chooses to collaborate and the other does not, then the artist going it alone will be able to release a CD and earn all of their own market and the fusion audience. If both decide to work alone, then the fusion audience becomes disillusioned with the music industry and refuses to buy any records.

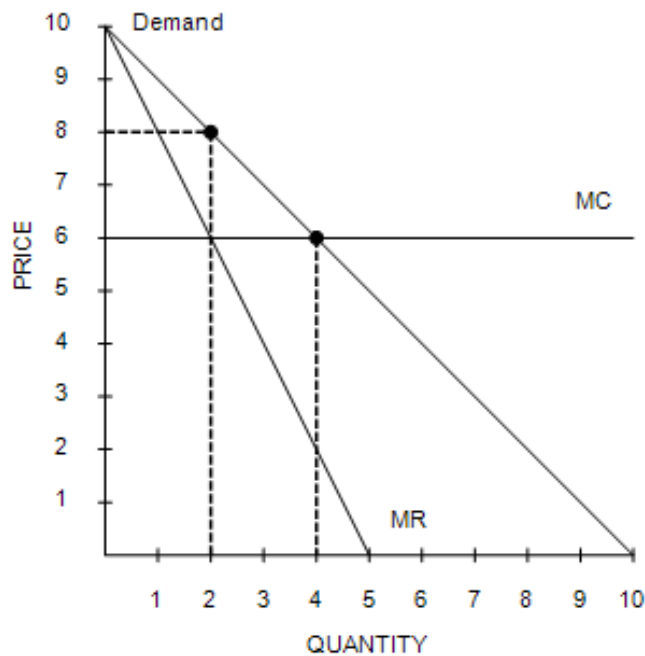
- a. Construct a payoff matrix from the above information. The following matrix is provided for your convenience.

		Ricky Rock Star	
		Alone	Collaborate
Harry Hip Hop	Alone		
	Collaborate		

- b. Is there a strictly dominant strategy for Ricky Rock Star?
- c. Is there a strictly dominant strategy for Harry Hip Hop?
- d. What will be the outcome of the game?
- e. Is this outcome socially optimal (i.e. can no one be made better-off without making someone else worse-off)? If so, why? If not, which outcome is socially optimal?

Practice Exercises: Multiple Choice

Figure 17-1



- 1. Refer to Figure 17-1.** Suppose this market is served by two firms who each face the marginal cost curve shown in the diagram. The marginal revenue curve that a monopolist would face in this market is also shown. If the firms are able to collude successfully,
 - a. the total output will be 2 units and the price will be \$6.00 per unit.
 - b. the total output will be 2 units and the price will be \$8.00 per unit.
 - c. the total output will be 4 units and the price will be \$6.00 per unit.
 - d. there will be no deadweight loss.

- 2. Refer to Figure 17-1.** Suppose this market is served by two firms who each face the marginal cost curve shown in the diagram and have zero fixed cost. The marginal revenue curve that a monopolist would face in this market is also shown. If the firms are able to collude successfully, each firm should earn a profit equal to
 - a. \$8.00.
 - b. \$2.00.
 - c. \$4.00.
 - d. \$16.00.

Table 17-6

Two home-improvement stores (Lopes and HomeMax) in a growing urban area are interested in expanding their market share. Both are interested in expanding the size of their store and parking lot to accommodate potential growth in their customer base. The following game depicts the strategic outcomes that result from the game. Increases in annual profits (in millions of dollars) of the two home-improvement stores are shown in the following figure.

		Lopes	
		Increase the size of store and parking lot	Do not increase the size of store and parking lot
HomeMax	Increase the size of store and parking lot	Lopes = 1.0 HomeMax = 1.5	Lopes = 0.4 HomeMax = 3.4
	Do not increase the size of store and parking lot	Lopes = 3.2 HomeMax = 0.6	Lopes = 2.0 HomeMax = 2.5

3. **Refer to Table 17-6.** Pursuing its own best interest, Lopes will
 - a. increase the size of its store and parking lot only if HomeMax also increases the size of its store and parking lot.
 - b. increase the size of its store and parking lot only if HomeMax does not increase the size of its store and parking lot.
 - c. increase the size of its store and parking lot regardless of the decision made by HomeMax.
 - d. not increase the size of its store and parking lot regardless of the decision made by HomeMax.

4. **Refer to Table 17-6.** Pursuing its own best interest, HomeMax will
 - a. increase the size of its store and parking lot only if Lopes also increases the size of its store and parking lot.
 - b. increase the size of its store and parking lot only if Lopes does not increase the size of its store and parking lot.
 - c. increase the size of its store and parking lot regardless of the decision made by Lopes.
 - d. not increase the size of its store and parking lot regardless of the decision made by Lopes.

5. **Refer to Table 17-6.** If both stores follow a dominant strategy, Lopes's annual profit will grow by
 - a. \$0.4 million.
 - b. \$1.0 million.
 - c. \$2.0 million.
 - d. \$3.2 million.

6. **Refer to Table 17-6.** When this game reaches a Nash equilibrium, annual profit will grow by
- \$1.5 million for HomeMax and by \$1.0 million for Lopes.
 - \$3.4 million for HomeMax and by \$0.4 million for Lopes.
 - \$0.6 million for HomeMax and by \$3.2 million for Lopes.
 - \$2.5 million for HomeMax and by \$2.0 million for Lopes.
7. Which of the following examples illustrates an oligopoly market?
- A farmers' market with many individuals selling sweet corn and tomatoes
 - A city whose electrical service is provided by one electric co-operative
 - A city with two firms who are licensed to sell school uniforms for the local schools
 - A city with many independently owned hair styling salons

Indicate whether the statement is true or false.

8. Game theory is just as necessary for understanding competitive or monopoly markets as it is for understanding oligopolistic markets.
- True
 - False
9. In a competitive market, strategic interactions among the firms are not important.
- True
 - False
10. Oligopolies produce more when they collude than when they do not.
- True
 - False
11. A dominant strategy is a strategy that is best for a player in a game regardless of the strategies chosen by the other players.
- True
 - False

Works Cited:

- Mankiw, Gregory. *Principles of Microeconomics. 9th ed. Cengage Learning. 2021*
- <https://www.ssc.wisc.edu/~ekelly/econ101/>