

University of Notre Dame
Department of Finance
Economics of the Firm
Fall 2011
Practice Final Exam

- 1) Suppose that you are a monopoly facing the following regional demand curve. Q represents total sales for a region, P is the price you are charging, and I represents average income in the region in thousands.

$$Q = 20 - 4P + .1I$$

You are considering selling to two regions. You have a fixed cost of \$5 and then a constant marginal cost of \$4.

Region A: Average Income = \$40,000

Region B: Average Income = \$80,000

- a) Suppose that you could prevent resale across the two regions and, hence could set different prices across the regions. What prices would you charge in the two regions?
 - b) Calculate your profits. What is your producer surplus?
 - c) Now, suppose that you could not prevent resale across the two regions and therefore, had to set one common price. How would you go about finding this price?
- 2) Suppose that you are a potato farmer. You have three potato fields with varying degrees of productivity:

Field #1: You can harvest 10 pounds of potatoes per hour (80 pounds max)

Field #2: You can harvest 5 pounds of potatoes per hour (50 pounds max)

Field #3: You can harvest 2 pounds of potatoes per hour (20 pounds max)

You pay your potato picker \$10 per hour. Assume that you bought the land for \$1,000.

- a) Sketch your supply curve for potatoes.
- b) Suppose that there are 99 other farmers in the area that are exactly like you. Sketch the market supply curve for potatoes.
- c) Suppose that the demand curve for potatoes is $Q = 18000 - 3000P$. Could \$2 be an equilibrium price for potatoes? At a \$2 price, calculate the % return in potato farming. Are firms earning economic profits? If so, what will happen?
- d) Suppose that potato pickers formed a labor union and negotiated a \$15 per hour wage. What will happen?

- 3) Suppose that the market for beef is perfectly competitive. Explain how each of the events would affect the supply of beef (i.e. will the event influence supply decisions), demand for beef (i.e. will the event effect buying decisions), and the market equilibrium (market price, total sales).
- Ethanol production pushes up the price of corn (used in the feed for cattle)
 - A recession causes consumers to tighten their household budgets.
 - Poultry prices increase.
 - Cattle ranchers are found guilty of animal abuse and are fined \$10,000.
- 4) Suppose that you are the manager of a bar. You know that you face two populations that frequent your bar; students from the local college and natives that live in town. You've identified their demands as follows. You have a marginal cost of your drinks equal to \$3.

College Students: $Q = 10 - 2P$

“Townies”: $Q = 5 - P$

- Now, suppose that you could distinguish between the two groups and charge them different drink prices. What would your prices be?
 - Now, suppose that you are considering a cover charge for the bar. Assuming that, once in the bar, patrons can buy drinks for \$3, and that you can charge different cover charges to different people what would you charge.
 - How would your answer to (d) change if you couldn't distinguish between types?
 - Suppose that, instead of a cover charge, you offered different drink packages (i.e. X drinks for Y dollars). What would your drink packages be and how much would they cost?
 - How would your answer to (d) change if you couldn't distinguish customer type?
- 5) Suppose that there are two firms in a market producing identical products and facing a common industry demand curve given by

$$P = 28 - 2Q$$

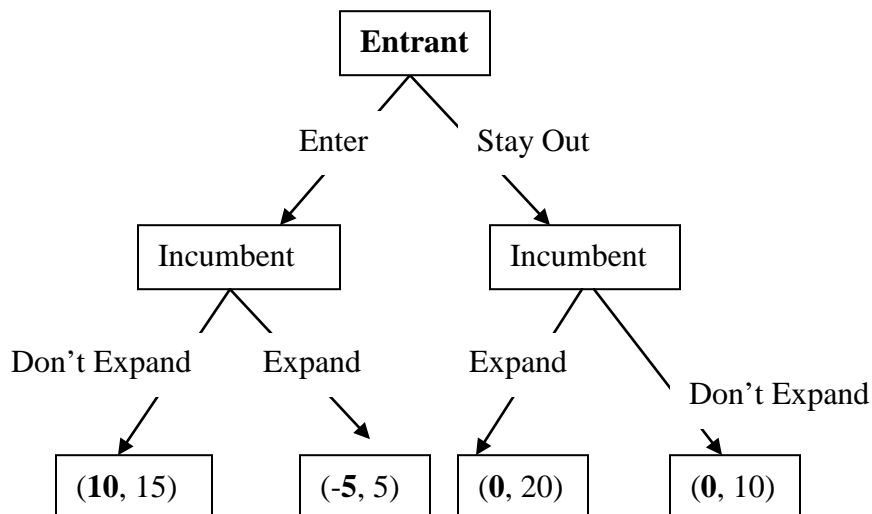
Where Q is the combined output of the two firms and P is the market price. Each firm has a constant marginal cost equal to \$4.

- Suppose that one firm chooses a production level equal to 2, the other firm's best response is to set a production level equal to 5.
- Show that each firm producing 4 is equilibrium.
- How would market shares change (qualitatively) if firm one experienced a decrease in marginal cost?
- What would the equilibrium in this market be if, instead of choosing quantity, firms were choosing price?

- 6) Consider the following game. Each player can select a high price or a low price. The payouts represent each players profits given each combination of moves.

		Player Two	
		High Price	Low Price
Player One	High Price	\$80 \$80	\$0 \$40
	Low Price	\$40 \$0	\$20 \$20

- a) Describe each player's strategy (i.e. each player's best response to the other players actions). Does either player have a dominant strategy?
- b) Is it possible for each player to play the same move over and over again without regretting his/her decision?
- c) Suppose that Player two follows a strategy of charging a high price half the time. Which move for player 1 is reward dominant? Which move is risk dominant? How will player one react to player two's strategy?
- 7) Consider the following sequential game: A new firm is considering entering an industry. Once the entry decision has been made and the incumbent firm has observed the decision, the incumbent firm can choose to expand production to lower the market price and drive the new entrant out of business or maintain its current production level. The game can be mapped out as (entrants payouts are in bold):



- a) What is the equilibrium to this game? Explain.
- b) What does this game suggest about the possibility of credible threats? Can the entrant make a credible threat in this game?

- 8) Suppose you run a fast food restaurant. You have three items for sale: burgers, fries, and soda. You face four potential customers given below:

(The dollar figures represent the maximum each consumer is willing to pay for each product)

Customer	Burger	Fries	Soda
1	\$4.00	\$2.00	\$1.00
2	\$1.00	\$4.00	\$3.00
3	\$2.00	\$1.00	\$4.00
4	\$3.00	\$2.00	\$2.00

For simplicity, assume that your marginal cost for all three products is \$1.

- a) If you only had an ala carte menu, what would you charge for each item?
 b) Now, suppose that you bundle the three products into a combo meal, what price would you set for a combo meal?
- 9) Consider the following version of the prisoners dilemma game (Player one's payoffs are in bold):

		Player Two	
		Cooperate	Cheat
Player One	Cooperate	\$15 \$15	\$0 \$50
	Cheat	\$50 \$0	\$10 \$10

- a) What is each player's dominant strategy? Explain the Nash equilibrium of the game?
 b) Suppose that this game was to be played ten times in a row. Player 1 makes the following offer: "I will cooperate today. If you cooperate I will trust you and cooperate tomorrow. If you cheat, I will always cheat". Calculate the rewards from cheating and cooperating. Would cooperation occur? Explain.
- 10) Consider the following demand curve:

$$Q = 120 - 6P$$

- a) Calculate the elasticity of demand at a price of \$15.
 b) With a price of \$15, what are your revenues? Would you be better off raising or lowering price if you want to increase revenues? Explain.
 c) If revenues are maximized, what is the elasticity of demand?

- 11) Suppose that the average rental property in south bend costs \$800 per month to rent. Also assume that the average savings account in south bend pays 4% per year. Further, assume that the average home in South Bend can be purchased with an interest only mortgage that requires \$36,000 down and then a monthly payment of \$700 (with an interest only mortgage, you have no equity in the house).
- Would the average south bend resident be better off renting or buying under these circumstances?
 - Given your answer to (a), are the housing markets in South bend in equilibrium? If not, what adjustment would be needed?
- 12) Suppose that there are two theatres in the same town that show the same movie. The demand for that movie is given by

$$Q = 600 - 10P$$

Where P is the ticket price and Q is the number of tickets sold. Suppose that each theatre has a constant marginal cost of \$5 per ticket.

- Assuming that each theatre has 600 seats available, if each theatre gets to choose the price they charge for a ticket, what price will they select? Explain.
- Now, suppose that each theatre decides to reduce its seating capacity to 200 seats. What price will tickets sell for?
- How would the theatres choose the optimal number of seats?