Review, Final Quiz
Managerial Economics: Eco 685
Quiz Date: Thursday, October 6

The quiz covers up-charging and strategy. The corresponding notes are pages 63-64 of the pricing notes and all of the business strategy notes. All questions come from the class notes. The chapters in the book are 9 and 12 (8 and 11 in the 7th edition). Additional study materials: homework 3 and this review sheet. Note: this review sheet covers only material since the last homework.

QUIZ DATE:

Section 52: Tuesday October 17 10:15 am - 12:15, room SB302.

Section 55: Tuesday October 17, 1:15 am - 3:15, room SB302.

EQUATIONS:

Conditions for Profit Maximization

$$P = \frac{1}{\frac{1}{e_p} + 1} MC,$$

Markup

$$\text{Markup} = \frac{P - \text{cost}}{\text{cost}}, \quad \text{Optimal Mark up} = \frac{-1}{e_p + 1}$$

Question 1

In the "Blue Light Special Game" a seller is trying to disguise the date of the sale from price sensitive consumers by offering sales on random days. A customer observes the following sales dates:

Week	Sale Day	Week	Sale Day
1	Tuesday	8	Monday
2	Friday	9	Thursday
3	Thursday	10	Saturday
4	Sunday	11	Friday
5	Wednesday	12	Wednesday
6	Saturday	13	Tuesday
7	Monday	14	

Table 1: Blue Light Specials.

a. What mistake is the company likely making?

b. On what day will the customer shop in week 14?

Question 2

We have seen in general that threats of retaliation are often not credible because retaliating can hurt the player retaliating. But taking pre-emptive actions can put the other player in the position of having to make non-credible threats of retaliation against the pre-emptive action. For each of the following situations, give a pre-emptive action that can deter the opponent from playing the given action.

a. Intel would like deter AMD from entering the chip market.

b. Apple would like to deter a supplier from renegotiating a contract which gives the supplier the right to be the sole supplier of a particular IPhone part to Apple.

c. Folger's, which supplies coffee primarily to the East coast, would like to deter Maxwell House, a West coast supplier, from launching an East Coast ad campaign and entering the East Coast market.

d. A union would like to deter a firm from taking a hard line in negotiations.

e. Home Depot would like to deter other hardware chains from building stores in towns that can support at most one store.

Question 3

Consider the sport bike/cruiser problem in the notes, but suppose it is played sequentially.

2

a. Find all (if any) sub game perfect equilibria if Harley moves first.

b. Find all (if any) Nash equilibria which are not sub game perfect if Harley moves first.

c. Repeat (a) if Buell moves first.

d. Repeat (b) if Buell moves first.

e. Is there a first mover advantage in this game? Explain.

Question 4

From a Fox Business Channel discussion of a panel of franchise owners:

Question: "You are the face of the national company. How does the national company make sure the franchises are presenting a good image for the company?"

First franchise owner: <some nonsense about providing training>

Second franchise owner: "The national franchise conducts random inspections."

Suppose the franchise can put in high or low effort in presenting a good image. The national company can inspect or not. The game is:

		National Company	
		Inspect	Don't Inspect
Franchise	High effort	10,15	2,18
	Low effort	2,1	10,0

Table 2: Inspection game.

a. Find all (if any) pure strategy Nash equilibria.

b. Find all (if any) mixed strategy Nash equilibria.

c. The national company strongly benefits when the franchise puts in high effort. In equilibrium does the franchise put in high effort very often? Explain why/why not.

Question 5

Suppose Global Mining Corp. (GMC) has the opportunity to build a mine in Peru. Building a mine requires large up front capital costs (moving lots of equipment to Peru and digging the mine), and GMC knows that Peru may attempt to renegotiate or otherwise invalidate any contract with GMC. Suppose we have the following data:

- GMC moves first and decides whether or not to sign the contract. The contract calls for GMC to pay $100 million in taxes, once the mine is operational. The tax payments are the payoff to Peru. If the contract is not signed, the game ends and both players earn zero.

3

- If the contract is signed, GMC builds the mine and pays the up front cost of $125 million.

- GMC realizes that Peru could renegotiate the contract after the mine is built but before the mine is operational. Assume that Peru could renegotiate the contract so that tax payments were $175 million instead of $100 million. Of course, GMC has little recourse if the contract is breached as one cannot sue the Peruvian government for breach of contract in Peru.

- After Peru decides whether or not to renegotiate, GMC decides whether or not to operate the mine. If GMC operates the mine, GMC earns $250 million in profits (NOT including the cost of setting up the mine OR tax payments) and Peru gets the (potentially renegotiated) tax payment. If GMC decides not to operate the mine, it still pays the up front cost ($100 million), but does not have to pay the tax and does not get any of the mine profits.

a. Construct the extensive form (tree) diagram for the game between Peru and GMC.

b. Find all (if any) Sub Game Perfect Equilibria.

c. According to the sub game perfect concept, is a threat by GMC not to operate the mine if Peru renegotiates credible? Explain.

d. Find all (if any) Nash Equilibria which are not sub game perfect.

e. Is a promise by Peru not to renegotiate credible? Explain.

f. Is a threat by GMC not to operate the mine if Peru renegotiates credible? Explain.

g. Give one preemptive action by either or both players that would help GMC and Peru reach a better outcome (think outside the rules of the game above).

Question 6

Consider the curious (but true) case of Eastern Airlines. In the early 1980s, Eastern Airlines was a small airline competing with the much larger United on a route between DC and New York. Eastern then entered a new market, New York to London, where United had a dominate position.

Eastern offered the following deal: buy a ticket from DC to New York and receive a coupon worth half off a New York to London ticket. To compete, United offered to honor Eastern's coupons: by presenting an Eastern coupon, one could get half off a United flight from New York to London. Eastern responded by drastically limiting the number of flights to London. Still, however, many travelers bought tickets from DC to New York on Eastern, just to get the half off price of a United flight from New York to London.
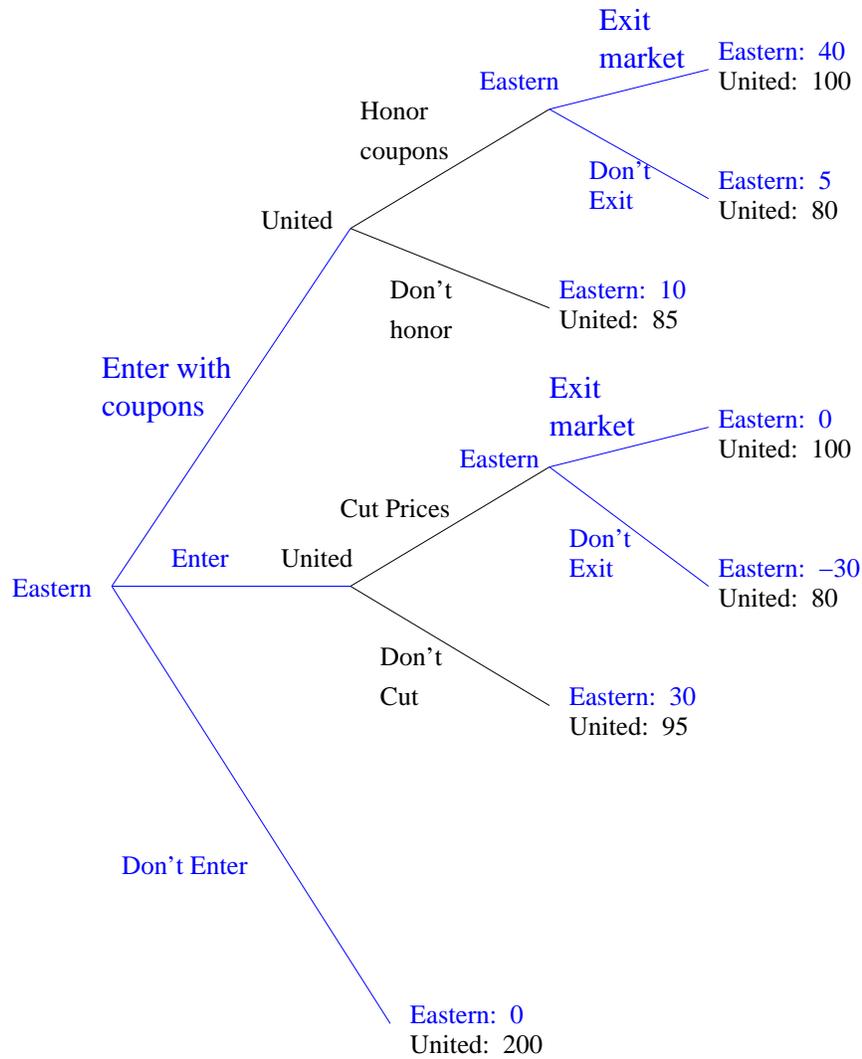
The game and payoffs are:

Figure 1: Eastern Airlines.

The outcomes reflect that:

- Both firms compete in the New York to London market. If Eastern stays out of the NY/London market, both firms earn 0 profits in the competitive NY/DC market. However, United earns monopoly profits of 200 in the NY/London route.

- If both firms stay in and United competes by cutting prices or honoring Eastern's coupons, then competition is fierce and both firms have low profits.

- If Eastern exits the NY/London market after United honors Eastern's coupons, then Eastern will dominate the NY/DC route, as customers will buy tickets on Eastern to get the coupons which can be used on United.

- The last choice by Eastern is whether or not to exit the NY/London route (in reality, they kept a small presence on that route).

a. Find all (if any) sub-game perfect equilibria.

b. Find all (if any) Nash equilibria which are not sub-game perfect.

c. Does the game predict Eastern will exit the NY/London route? If so carefully explain how United was able to get Eastern to exit.

d. Typically, the first mover has an advantage, but in the true story United was able to keep the NY/London route with little competition from Eastern. Did Eastern have a first mover advantage? Explain.