MBA 605
September 2006
Quiz #3

Name: KEY

5 questions, 12 pts. each. 60 pts. total.

1. Your professor's brother-in-law Bubba owns a restaurant/bar in Fort Walton Beach, Florida. On a recent visit Bubba shared the following information:

Income Statement for Bubba's Bar

Costs		Revenues
Wholesale cost of food and beer	$40,000	Sales of food and drinks $130,000
Wages and salaries (including $20,000) for himself)	$50,000	
taxes and insurance	$12,000	
interest paid on bank loans $100,000 @ 10%	$10,000	
	$112,00	

Bubba has $50,000 of his own money invested in the bar. He anticipates that business will continue like this for the foreseeable future. Bubba also has a standing offer of $30,000 to manage another bar in Fort Walton Beach. Suppose a national restaurant/bar chain offers Bubba $150,000 to sell his bar, which would enable him to pay back the $100,000 bank loan and recoup his own $50,000. Should he take the offer? (Hint: what are Bubba's economic profits?)

Net revenue = $130,000 − $112,000 = $18,000

Implicit costs not accounted for in the above:

① opportunity cost of his time = $10,000
($30,000 minus the $20,000 he pays himself.)

② interest earnings foregone on his investment ($50,000 @ 10%) = $5,000

So, economic profits are $3000 after these implicit costs are subtracted.

If Bubba were to sell the bar and go to work for someone else, he would bring home $35,000 per year ($30,000 in salary plus $5000 in interest earnings.) That is $3000 less than he is currently making ($20,000 salary plus $18,000 accounting profit).

2. Because your sister-in-law happens to be mayor, you were fortunate enough to be awarded the monopoly franchise to provide cable TV services to your hometown. As such, you are the only provider and as long as you have no competition, the discounted present value of your economic profit stream is $24,000,000. Trouble looms on the horizon, however, because a satellite TV company is considering entering your market. Your monopoly franchise rights only apply to hard-wired cable TV, and do not apply to satellite signals and rooftop 18-inch satellite dishes. If entry occurs and you share the market with a competitor, your discounted present value of economic profits will fall to $10,000,000. If you contest entry and fight a price "war," the discounted present value of economic profits is -$1,000,000.
   a) You announce publicly that if entry occurs, you will fight. Is your threat credible?
   b) In preparation to fight a price war, you could add capacity to your system, so that you could offer additional channels that your competitor did not. The cost of adding such capacity in preparation to battle for customers is $12,000,000. Only if entry occurs would you find it necessary to utilize this capacity. Should you make such a commitment to deter entry? Explain why or why not.

(a) your threat is not credible, since your profits from fighting a price war are less than your profits from sharing the market:

$\pi_d = \$10m$, $\pi_w = -\$1m$, $\pi_w < \pi_d$

(b) You should add capacity to deter entry if the post-commitment monopoly profits exceed the pre-commitment duopoly profits and if your threat to fight a price war is credible.

① $\pi_m - C \overset{?}{>} \pi_d$

$24 - 12 > 10$ ✓

② $\pi_w \overset{?}{>} \pi_d - C$

$-1 > 10 - 12$ ✓

So commit and deter entry.

3. There are two Ford dealerships in town, Woman-O'-Peace Ford and Paul Miller's Sister's Ford. Each of these new car dealers have three alternative strategies that they could pursue: (1) highlight service department quality; (2) be the low-price dealer on all automobile sales; or (3) hire a local well-known basketball coach and engage in extensive advertising in outlying small towns and rural areas. The payoffs (profits) of these strategies are listed below, with Woman-O'-Peace Ford's profits being the first number in each cell and Paul Miller's Sister's Ford's profits being the second number in each cell.

		Paul Miller's Sister's Ford:		
		Service	Low Cost	Advertising
Woman-O'-Peace Ford:	Service	24,33	18,36	15,42
	Low Cost	36,27	24,30	18,24
	Advertising	33,18	30,24	12,18

a) Does either firm have a dominant or dominated strategy? If so, explain why and what the implications are for their strategy.
b) What do you predict will be the outcome of this strategic interaction between these two firms? i.e. what strategy will each firm choose? Briefly explain why.

(a) Neither firm has a dominant strategy, but the service strategy is dominated by the low cost strategy for both firms. Hence service can be eliminated from consideration.

(b) Analyzing the remaining 2×2 payoff matrix, we see that low cost is the dominant strategy for the column player - Paul Miller's Sister's Ford. Woman-O-Peace Ford, knowing that PMSF will play the low-cost strategy, can maximize her return by choosing the advertising strategy.

4. One large pig and one small pig are placed in a box. At one end is a lever which when pressed causes a dispenser at the other end of the box to release ten units of food. The effort expended in pressing the lever costs each pig two units. If the small pig presses the lever, the big pig eats nine units of food and only one unit is left for the small pig (i.e. the small pig receives a net payoff of -1 units.) If the big pig presses the lever, the small pig can consume four units of food by the time the big pig has crossed the box. If both pigs press the lever, the small pig can get to the food first, but can only consume three units of food by the time the big pig arrives and shoves it aside. If neither pig presses the lever, each gets zero.
   a) Illustrate the payoff matrix for this game.
   b) What do you predict will be the outcome and why?
   c) Is your predicted outcome a Nash equilibrium? Explain why or why not.

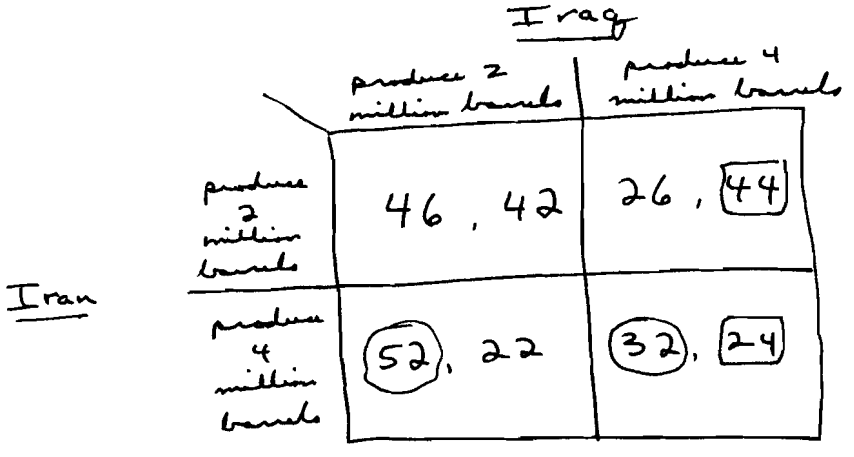
(a)

Big Pig \ Small Pig	press	wait
press	5, 1	[4], (4)
wait	[9], -1	0, (0)

(b) Dominant strategy for the small pig is to wait. Realizing that, the big pig will choose to press the lever.

(c) The predicted outcome is a Nash equilibrium. Given that the small pig chooses to wait, the big pig's best strategy is to press. Given that the big pig chooses to press, the small pig's best strategy is to wait.

5. Suppose that the oil industry consists of only two producers, Iran and Iraq. Each country chooses between producing either 2 million or 4 million barrels of oil per day. Depending on their decisions, total output in the world market will be 4, 6, or 8 million barrels. Suppose that the world price of oil will be $25, $15, or $10 depending on how much oil is produced by the two nations. Extraction costs are $2 per barrel in Iran and $4 per barrel in Iraq. Illustrate the choices of strategy and the profit payoffs of each nation in a 2x2 matrix. What do you predict will be the outcome of this game if played only once? If played repeatedly?



If they play the game only once, each country is likely to play their dominant strategy and produce 4 million barrels. World output will be 8m barrels and price will be $10. Iran will have profits of $32m and Iraq will earn $24m.

If they play the game repeatedly, it is likely that both will realize that they can do better if they cooperate (collude) and restrict output. If both restrict output to 2m barrels per day, profits can be increased to $46m for Iran and $42m for Iraq.