

Principles of Economics I: Microeconomics – Final [1/9/2015]

Note: You have 3 hours (9:10am-12:10pm), and there are 100 (+ 5 bonus) points. Allocate your time wisely. Write each part on a separate answer sheet. You need not start from Part A.

Part A: (43 + bonus 5%) Economics in the News: The Market of Cellular Service

Excerpts from “T-Mobile, Sprint Cut Prices After Merger Talks: T-Mobile Fires Back With Referral Program After Sprint’s New Plans to Grab Rivals’ Customers” by Thomas Gryta (Wall Street Journal 8/21/2014)

“...For the better part of this year, Sprint and T-Mobile were in advanced talks to merge as a way to better compete against Verizon and AT&T, which control the bulk of the industry's profit and subscribers. Sprint walked away two weeks ago in the face of regulatory resistance and named a new chief executive to reinvigorate its long-struggling wireless business that has lost millions of customers in recent years...”

1. (6%) What is the marginal cost of providing cellular service to another customer (when there is no congestion)? What is the fixed cost? Explain why cellular service is a natural monopoly.
2. (4%) Draw a graph to explain how would a monopoly provider price its cell phone service if it is not congested?
3. (bonus 5%) How would your above answers change when there is congestion?
4. (3%) Would a merger of Sprint and T-Mobile result in a monopoly? Why or why not?

“A few weeks ago Sprint Corp. and T-Mobile US Inc. were contemplating a merger, and now they are out to steal each other's customers. In T-Mobile's new offer, existing customers can bring a new subscriber to the carrier and both will get unlimited LTE data for a year for no extra monthly charge... (omitted) ...On Thursday, Sprint also announced new pricing for individuals that undercuts T-Mobile's rate by \$20. Starting Friday, Sprint will begin selling plans for \$60 a month that include unlimited talk, text and data. Customers pay \$80 for an identical plan at T-Mobile...”

Three months later (from “Sprint trims subscriber losses in Q3, hangs on as third-largest U.S. carrier” by Matt Hamblen, Computerworld, 2014/11/3): “Sprint's wireless customer base includes 29.9 million postpaid connections (for all devices, not just smartphones); 15.1 million prepaid connections; and another 9.9 million connections made from Sprint affiliates, wholesale customers and devices of various types. In contrast, T-Mobile said last week it had added 2.3 million subscribers in the same quarter, giving it 52.89 million customers.”

5. (4%) T-Mobile usually requires \$20 per month for each additional line added to one's monthly plan. What is the yearly savings of T-Mobile's new offer/referral program?

What is the yearly savings of Sprint's new unlimited talk, text and data plan, compared to T-Mobile?

6. (6%) Suppose all postpaid customers are on the new unlimited plan. What is Sprint's revenue earned from monthly subscription fees? What is Sprint's annual revenue loss due to this price war? What is Sprint's revenue loss due to this price war if only 2.3 million new subscribers are on the new plan? Which situation is more likely? Why?
7. (4%) Assume that T-Mobile has the same amount of postpaid subscribers, and all 2.3 million new subscribers were added under the new referral program but nobody else. What is T-Mobile's revenue loss due to this price war? Is this assumption (exactly 2.3 million benefitted) realistic? Why or why not?
8. (4%) Suppose if only one company cuts prices as described above, the low-price firm gains 4.6 million new subscribers while the other firm loses 2.3 million existing customers. Calculate the gains/loss in revenue for each firm.
9. (8%) Use your answer to the above questions to draw the payoff matrix for this oligopoly game. Are there any dominant strategies for each firm? What is the Nash equilibrium of this game?
10. (4%) What are the potential benefits for T-Mobile and Sprint to merge into one firm? What are possible concerns for anti-trust regulators regarding such mergers?

Part B: (25%) Economics in the News – (Not) Giving Them a Second Chance?

Excerpts of "Sunflower Leader Quits Miaoli By-election," by Jake Chung/Staff writer, Taipei Times, 2014/12/26

"Sunflower movement leader Chen Wei-ting (陳為廷) yesterday dropped out of the by-election for the legislative seat representing Miaoli County due to fears that past cases of sexual harassment would overshadow the political changes he and other like-minded people have sought to introduce. Chen revealed on Tuesday that he was involved in two sexual harassment cases during his sophomore year and senior year in college, and was granted deferred prosecution for the first incident, triggering a polarized public reaction. Chen said the decision to reveal the two acts of delinquency is a necessary examination of his personal integrity by the public, but due to personal cowardice he had been unable to completely come clean, adding that he had indeed committed similar incidents in the past. His withdrawal came after a social media post accused him of groping a woman's breast on a bus about six to eight years ago... (omitted) ...Chen said he hoped that one day he would be able to face his past and become a better person, while offering his sincere apologies to those his actions had harmed."

Read the above article and answer the following questions:

1. (4%) Would having sexual harassment cases harm one's ability to become a good legislator in Congress? Why or why not?

2. (5%) More generally, consider an employer who is considering whether to hire a person with sexual harassment cases against him/her. Is it more costly to hire this person (compared to another person with the same qualifications but without such record)? Why or why not? Would your answer change depending on characteristics of the job? Why?
3. (3%) Would your above answer change depending on whether the person was a first-time offender (vs. a serial offender)?
4. (3%) Suppose all employers refuse to hire people with sexual harassment records. What are the possible externalities imposed on the society as a whole?
5. (4%) Is hiring or not-hiring a dominant strategy for each employer? Explain why the Nash equilibrium of this situation looks like the tragedy of commons.
6. (6%) What are solutions people use to solve problems like the tragedy of commons? Which of these solutions do you think is the most suitable to help solve the above problem of sexual harassment records? Explain.

Part C: (32%) Economics in the News – The Market of Tour Guides

Excerpts from “At a Historic Paris Cemetery, Rival Guides Find Stiff Competition” By Stacy Meichtry and Marion Halftermeyer (Wall Street Journal, 2014/8/20)

PARIS — Because dead men tell no tales, visitors to Père Lachaise cemetery lend their ears to Bertrand Beyern. On a daily basis, the 48-year-old leads crowds through the timeworn tombs, charging them for the one thing the celebrated Parisian cemetery's management won't provide: information on its famous tenants. Countless tourists have wound up lost in this labyrinthine graveyard, fruitlessly searching for the graves of Oscar Wilde, Jim Morrison and Marcel Proust. Entrance to the cemetery is free, but its staff doesn't give tours—or even basic directions—to the 3 million visitors who enter the site every year. Père Lachaise is a place of eternal rest—the cemetery's management says—not an amusement park. That solemn principle has spawned a cottage industry with a number of self-appointed tour guides who regale visitors with anecdotes on the dead. It has also bred cutthroat competition, where the spoils of tourist season go to the guide with the best source material and acting chops. “The cemetery is a theater,” Mr. Beyern says, scoffing at his rivals. “I’m the only one. The others are pretenders.”

Read and answer the following questions:

1. (3%) Do you expect Mr. Beyern to earn ten times more than the other “pretenders” competing with him? Why or why not? (Hint: What are the two criteria required?)
2. (2%) How could technology changes let superstar phenomenon more/less likely here?

“The role of Père Lachaise's leading man, however, is hotly contested. Striding amid the tombs in a safari jacket, scarf and fedora in sweltering heat, 54-year-old Thierry Le Roi casts himself as the sole heir to Père Lachaise's tour-guide throne. Such standing, he says, was

conferred on him by a retired nonagenarian guide that Mr. Le Roi regards as the cemetery's original raconteur. "The baton was passed," says Mr. Le Roi, whose name literally translates as "the king." The two raconteurs each charge 10 euros (about \$13) per client but otherwise they are a study in contrasts. Mr. Beyern has branded himself the cemetery's chief "necrosophe," a term he coined from the Greek roots for "dead" and "wisdom." Mr. Le Roi calls himself a "necro-romantique" in a nod to Romantic-era art."

3. (6%) First assume Mr. Le Roi is a perfect substitute of Mr. Beyern. What kind of market structure is this? Assume there are many identical tour guides on the market. How would the guides choose prices and quantity in this market in the short run?
4. (7%) Draw a graph and explain the long run equilibrium of this market. Assuming Mr. Le Roi and Mr. Beyern are in long run equilibrium, what is each person's marginal cost? What is each person's long-run average total cost?

"The silver-haired Mr. Beyern totes a black-leather briefcase loaded with documentation on the dead as he crisscrosses the nearly 110-acre cemetery. His tours last four hours, and he never pauses for food or water, allowing his lips to become chapped. Mr. Le Roi carts speakers in his satchel so he can play Edith Piaf songs at her grave. And he frequently refreshes his crowd with blasts from a spray bottle, generating a trail of mist he refers to as his "spa treatment." Each man gathers clients at different meeting points, charting separate routes through the cemetery. But their paths inevitably cross at popular graves, exacerbating the duel over who wields the last word on some of history's most august legacies."

5. (6%) Now assume Mr. Le Roi is at most a partial substitute of Mr. Beyern. What kind of market structure is this? How would the guides choose prices and quantity in this market in the short run?
6. (8%) Draw a graph and explain the long run equilibrium of this market. Assuming Mr. Le Roi and Mr. Beyern are in long run equilibrium, what is each person's long-run average total cost? Are they earning any economic profit? Why or why not?