

Principles of Economics I: Microeconomics – Midterm [2015/11/13]

Note: You have 3 hours (9:10am-12:10pm), and there are 100 points. Allocate your time wisely.

Part A: (24%): True or False:

Determine whether these statements are true or false, and briefly state your reasoning (less than 200 words):
(Note: Simply stating True or False without reasoning earns at most 1 point.)

1. (4%) True or False. After Typhoon Soudelor hit Taiwan, supply for bok choy (Chinese cabbage) fell. As a result, the price of bok choy will rise, causing the supply to go back up.
2. (4%) True or False. The invention of a new air-conditioned motorcycle helmet that is safer, cheaper, and easier to use would reduce the number of head injuries in Taipei City.
3. (4%) True or False. Apple's iPhone 6S contains A9 chips made by two other manufacturers, Samsung and TSMC. If Apple employed only TSMC, iPhone 6S would be cheaper.
4. (4%) True or False. If Prince Housing & Development Corp. were made liable to student parents for the effects of sexual assaults that occurred at NTU's BOT dorms, the number of such assaults would go down.
5. (4%) True or False. If a new law states that NTU students can claim 50% of the intellectual property rights resulting from being RAs, then more students will become co-authors with their professors.
6. (4%) True or False. According to Wall Street Journal, sales (aka revenue) fell 10.4% after the five big publishers won a legal case to set retail prices for e-books sold on Amazon to avoid steep discounts and raised their book prices to an average of \$10.81 (compared to \$4.95 for all other e-books). This means e-book demand is elastic.

Part B-1 (12%): Taipei City YouBike Price Hike

Excerpts: With End of Free YouBike Rides, Taipei Sees Better-than-Expected Results (TotalTaipei.com, 2015/4/1)

The free half hour of use for the YouBikes came to an end in Taipei today. The first half hour is now NT\$5. It was previously free for 30 minutes and then NT\$10 for the second half hour. The city changed the pricing scheme because most YouBike users only rode the bikes for less than 30 minutes, which cost the city millions in annual revenue. ... (omitted) ... On the first day of the new pricing scheme, the city saw better-than-expected results. From 6:00 to 12:00, the number of rides on the YouBikes totaled 17,338, compared with 21,553 for the same time period yesterday. The city expected usage to fall to 70% of previous usage numbers...

Answer the following questions:

1. (3%) **[Estimation 1]** Calculate the elasticity of demand for YouBike rides using the midpoint method based solely on the numbers reported in Article 1. Is the demand elastic or inelastic?
2. (2%) List two ceteris paribus (aka other things equal) assumptions you need to make to conduct this estimation.
3. (2%) Based on your estimated elasticity, what would have happened if YouBike charged NT\$10 instead of NT\$5 for the first half hour?
4. (3%) The City government expected usage to fall to 70% of previous usage numbers. Calculate the “expected” elasticity of demand for YouBike rides using this percentage (and the midpoint method for price change).
5. (2%) Based on the “expected” elasticity, what would have happened if YouBike charged NT\$10 instead of NT\$5 for the first half hour? Was this expectation too pessimistic? Explain.

Part B-2 (20%): “YouBike Monthly Rental Statistics” from Taipei City Department of Transportation (2015/10/13)

2014	Stations	Rentals	2014	Stations	Rentals	2015	Stations	Rentals
April	159	1,938,518	October	167	2,313,976	April	196	1,662,426
May	160	1,811,150	November	180	2,129,694	May	196	1,554,657
June	160	1,839,191	December	196	1,983,106	June	196	1,534,574
July	163	2,011,787	January	196	2,270,149	July	196	1,584,211
August	165	2,184,482	February	196	1,880,072	August	196	1,345,017
September	167	1,894,608	March	196	2,065,266	September	196	1,483,945

6. (4%) **[Estimation 2]** Calculate the elasticity of demand for YouBike rides using the midpoint method based on the monthly information of March 2015 and April 2015 reported in Article 2.
7. (3%) What ceteris paribus assumptions do you need to make? Based on your estimated elasticity, what would have happened if YouBike charged NT\$10 instead of NT\$5 for the first half hour?
8. (4%) **[Estimation 3]** Compute the elasticity of demand for YouBike rides using the midpoint method based on average rentals for six-month before (October 2014 to March 2015) and after (April to September 2015) the price hike.
9. (3%) What ceteris paribus assumptions do you need to make? Based on your estimated elasticity, what would have happened if YouBike charged NT\$10 instead of NT\$5 for the first half hour?
10. (4%) **[Estimation 4]** Calculate the elasticity of demand for YouBike rides based on your answer to the previous question, assuming a seasonal cycle (so last year’s data is a good prediction of what would have happened).
11. (2%) Based on your estimated elasticity, what would have happened if YouBike charged NT\$10 instead of NT\$5 for the first half hour?

Part B-3 (19%): The Demand for YouBike in Taipei City

Excerpts: “YouBike 補助 107 年到期費率再漲，前 30 分鐘調回原價 10 元” (自由時報 Liberty Times 2015/10/24)

台北市公共自行車 YouBike 今年 4 月起，租借前卅分鐘免費改為收費 5 元。北市交通局近日研議，107 年與營運單位巨大公司(捷安特)合約到期，軟、硬體移轉市府，前卅分鐘將再多收五元，調回原價十元，... Since April, YouBike raised its rental price for the first 30 minutes from NT\$0 to NT\$5. Taipei City Department of Transportation recently proposed to increase the rental price further to NT\$10 (original price) in 2018 when the BOT contract with Giant Corp. expires and all software and hardware are to be transferred to the City government.

12. (3%) Compare your four estimates regarding “what would have happened to total revenue if YouBike charged NT\$10 instead of NT\$5 for the first half hour?” What does this tell you about the assumptions made?
13. (3%) Did the City government overestimate or underestimate demand elasticity for YouBike rides earlier this year? Would you endorse the proposed policy for 2018 described in Article 3? Why or why not?
14. (2%) If Mayor KP knew the willingness-to-pay for each bicycle rider, how would he subsidize YouBike?
15. (2%) In a more realistic situation, KP would not know the willingness-to-pay for each rider. If KP decide to stop subsidizing NT\$5, what kinds of riders would stop renting YouBike?

16. (4%) Suppose KP randomly handed out 1 million tradable YouBike vouchers per month, each providing a discount of NT\$5. If a trading market is established, who will sell the vouchers? Who will buy the vouchers? Briefly explain why sellers and buyers are willing to do so. (Where did the gains from trade come from?)
17. (3%) Some people might argue that it is “unfair” for KP to hand out tradable vouchers randomly because “rich people who don’t need vouchers can sell them and make a fortune.” Can KP allocate initial property rights some way that is fair and still achieve the efficient outcome? Why or why not?
18. (2%) By creating a tradable voucher market, KP defined property rights clearly and lowered transaction cost to realize some gains from trade previously unavailable. What are some other things that can benefit from such a property right allocation and market creation process?

Part C (25%): Effort against Steel Imports

Excerpts of “U.S. Steelmakers Push Effort against Imports” by John W. Miller, Wall Street Journal, August 13, 2015

American steelmakers on Tuesday filed another petition with the U. S. government demanding tariffs on imports of foreign steel, and warned that China’s devaluation of the yuan could have severe repercussions on their industry...(omitted)... The request targeted imports of hot-rolled coil—used in making cars—from Australia, Brazil, Japan, South Korea, the Netherlands, Turkey and the U. K. China wasn’t named in the petition because the U. S. already has tariffs on imports of that kind of steel from China...(omitted)... The problem for U.S. steelmakers is sluggish prices, which are held down by inexpensive imports. The U.S. index price for hot-rolled coil, a benchmark product, has fallen more than 20% this year to \$468 per ton. That is still about \$100 higher than the price in Europe and \$200 above that in Asia, according to steel buyers, making the US a tempting market. Imports of hot-rolled steel from the seven countries named in the latest petition rose by about 73% from 2012 to 2014, AK Steel said. The problem could be compounded by China’s move this week to devalue its currency. Thomas Gibson, a lobbyist in Washington for U. S. steelmakers, said China’s currency is undervalued and is causing “massive damage” to “our nation’s manufacturing sector, especially the steel industry.” ...(omitted)

Answer the following questions:

1. (2%) What is the domestic price for hot-rolled coil in the US? Is it higher or lower than prices at other places?
2. (6%) Assume the world price is the price of hot-rolled coil in Europe. Draw a supply and demand diagram and explain the effect of the international trade on equilibrium price and quantity, as well as welfare of domestic consumers, producers and total surplus.
3. (7%) The price of hot-rolled coil in Asia is even lower. Assume the price in China is the same as in Asia. What is the amount of tariffs imposed on Chinese steel (ignoring transportation cost)? Draw a supply and demand diagram and explain the effect of this tariff on equilibrium price and quantity, as well as welfare of domestic consumers, producers and total surplus.
4. (7%) What is the effect of China devaluing its currency on the world price of hot-rolled coil? Draw a supply and demand diagram and explain the effect of this change on equilibrium price and quantity, as well as welfare of domestic consumers, producers and total surplus.
5. (3%) Based on your answer to the previous questions, should normal US citizens support the petition filed by American steelmakers? Why or why not?