

Principles of Microeconomics – Midterm [2020/11/13]

Note: You have 180 minutes (9:10am-12:10pm) to earn 116 points. Allocate your time wisely.

Part A (26%): Excerpts of “[投書] YouBike 2.0 試辦後，台灣公共自行車要邁向什麼樣的未來?” (2020/9/16)¹

...YouBike 2.0 主打廣而密的設站，某種程度上也可預期使用者在短程的騎乘時間會更短。在公館台大商圈試營運期間，騎乘時間超過 60 分鐘的旅次(使用次數)僅佔總量的 3.5%；在 15 分鐘以內的旅次則佔 85%，高於(全台北市) YouBike 1.0 的 60%。以試營運後的數據來看，若大多數民衆的旅程皆遠低於 30 分鐘，站點「更近更密」的設計也鼓勵了更多短途的騎乘次數，費率應延續目前以 30 分鐘切割的標準嗎？還是應以更符合使用者騎乘趨勢的時距重新設計？若要將 YouBike 2.0 推行至全市，屆時觀察新系統的旅次，並重新檢討票價，應該是要考慮的面向。...(以下問卷調查結果取自該篇讀者投書所引用之「檢核報告」)

問卷回應	III. 未來試營運期結束後 (前半小時 使用費率自 2 元回復至 5 元)，是否 仍會繼續使用 YouBike 2.0?	IV. 若未來調整收費方式為前半小時內 每十五分鐘 3 元，是否仍會繼續使用 YouBike 2.0?
會(繼續)使用	42%	72%
會減少使用	33%	18%
會大幅減少使用	17%	5%
不會(繼續)使用	8%	5%
合計	100%	100%

Assume survey respondents have similar YouBike usage, and those who “will (continue to) use (會(繼續)使用)” do not change at all, those who “will reduce usage (會減少使用)” reduce usage by half, and those who “will significantly reduce usage (會大幅減少使用)” or “not (continue to) use (不會(繼續)使用)” drop all usage.

Answer the following questions:

1. (2%) According to the survey results of Question III, what is the estimated amount of total YouBike 2.0 rentals after the trial period end?
2. (2%) Given the starting point of 100% and the end point of your answer to the previous question, use the midpoint method to find the percentage change of quantity for YouBike 2.0 rentals.
3. (4%) What is the rental rate for YouBike 2.0 during the trial period? What is the original rental rate after the trial period has ended? Use the midpoint method to calculate the percentage change in rental price.
4. (3%) Use your answers to the previous two questions to calculate the price elasticity of demand for YouBike 2.0 rentals. Is YouBike rental demand elastic or inelastic?
5. (2%) Do respondents have incentives to tell the truth in the survey? Why or why not? If there were exaggerated survey responses, how would your estimates of price elasticity be biased?

Now consider the proposed rental rate of NT\$3 per 15 minutes. Still assume that all respondents have similar YouBike usage, and those who “continue to use” do not change it, those who “would reduce usage” reduce it by half, and those who “will significantly reduce usage” or “not (continue to) use” drop all usage.

¹ 黃瑋程/報導者: <https://www.twreporter.org/a/opinion-youbike-2-0-plot> with link to “YouBike 2.0 於臺灣大學校總區試辦檢核報告” <https://drive.google.com/file/d/1PlIbSUfT9YhyhnWNEYr-9tdnCGUK6cML/view>

6. (2%) Use the midpoint method to calculate the percentage change in rental rate of NT\$3 (compared to the trial period rate of NT\$2) for YouBike 2.0 rentals less than 15 minutes.
7. (4%) According to the survey results of Question IV, what would be the estimated amount of total YouBike 2.0 rentals if the proposed rental rate of NT\$3 per 15 minutes is implemented? Use the midpoint method to find the new percentage change of quantity for YouBike 2.0 rentals.
8. (4%) Use your answers to the previous two questions to calculate a new price elasticity of demand for YouBike 2.0 rentals. Is your conclusion regarding elastic or inelastic demand sensitive to using different sources of information? Why or why not?
9. (3%) Is the assumption that all respondents have similar YouBike usage regardless of their survey response realistic? How would your estimated drop in total YouBike 2.0 rentals change be affected if it fails? Explain.

Part B (13%): Excerpts “向山旅館再開說明會 邵族人拒出席表達強烈反對,” 曾以寧/環境資訊中心 (2020/10/30)²

...向山觀光旅館 BOT 案，於 2008 年 6 月由日月潭國家風景區管理處(下稱日管處)發起招標，在向山遊客服務中心停車場旁 2.8 公頃的腹地建設旅館。當年 9 月由香港寶聲集團投資的仲成大飯店股份有限公司得標，計畫斥資 20 億打造 300 間客房的四星級旅館。邵族人自得知此案後，因開發範圍是邵族祖墳地，即多次表達反對。...日管處今日晚間再舉辦地方溝通說明會議，...邀請業者仲成大飯店股份有限公司與邵族人出席發表意見。會中，仲成大飯店總顧問劉長泰表示，雖然邵族的法定傳統領域仍在訴訟中，但「100%理解、同意」，也支持邵族人傳統領域的權利。但是為了規劃未來營運與財務預測，「身為一個民間開發商，我們需要知道有哪些法條我們要依循、遵守。」邵族民族議會決議以不出席說明會，但是在會場外拉白布條，表達退回 BOT 案的訴求。...(omitted)

Answer the following questions:

The Thao people have a population size of 818³ and claim the hotel land as their traditional territory that buried many ancestors. Suppose each of the Thao people values this tradition at about NT\$10,000, and preserving the site requires around NT\$5,000,000. First assume the bargaining cost is negligible.

1. (3%) What would the negotiation outcomes be if the law specifies the Thao people have the property rights to their traditional territory? What if the law specifies the government has the right to allocate the land to the hotel company? Are the results efficient or not? Explain.

Now suppose preserving the site requires NT\$10,000,000 instead.

2. (3%) What would the negotiation outcomes be if the law specifies the Thao people have the property rights to their traditional territory? What if the law specifies the government has the right to allocate the land to the hotel company? Are the results efficient or not? Explain.
3. (2%) Knowing the answers to the above questions, would the company or Thao people willingly tell the truth regarding their willingness-to-pay? Would it be easy for the government to accurately estimate the cost and benefits of preserving the Thao people's traditional territory? Explain.
4. (2%) How would your answers to the previous questions change if the bargaining cost is not negligible?
5. (3%) Is the bargaining cost indeed negligible if the Thao people were to negotiate with the hotel company? Are there institutions described in the news that lowers this cost? How does this relate to the Coase Theorem and difficulties in implementing it in reality? Explain.

² <https://e-info.org.tw/node/227794>

³ https://en.wikipedia.org/wiki/Thao_people

Part C (37%): Excerpts from “雲林豬價下跌 張麗善向中央喊話重視養豬產業” by 中央社 (2020-09-22)⁴

...有媒體報導全國養豬頭數最多的雲林縣豬肉批發價格直直落，相較於其他縣市目前仍維持每頭毛豬平均每公斤新台幣 70 多元肉品行情，雲林縣近一個禮拜以來卻出現跌至每公斤 67 元多的價格，...張麗善指出，雲林肉品市場近期豬隻拍賣頭數由約 2500 頭下降至 2200 頭，減少數百頭，但拍賣價格卻下跌，可能與食品業者、加工業者等不進場購買有關...

1. (3%) According to the data provided in the article, is the recent price elasticity of pork in Yunlin elastic or inelastic? Is this the price elasticity of demand or supply? Explain.

Excerpts from “學者質疑：政府都說沒影響 幹嘛訂豬價下限” by 彭宣雅/聯合報 (2020/9/18)⁵

爲了安撫國內養豬戶，農委會推出百億養豬基金，希望未來維持拍賣價格每公斤平均批發價七十至八十元，高於平均成本六十五元，讓豬農有利潤。...(omitted)...台大農經系教授雷立芬說，政府一直說萊克多巴胺豬肉進口對國內產業不會受到影響，既然不受影響，「那幹嘛要訂價格下限？」...(omitted)...逢甲大學國際經營與貿易學系教授楊明憲表示，若以稻米保價收購的角度來看，過去保價收購是稻米成本，加上兩成合理利潤，這是一個浮動、非固定的價格；若未來養豬的成本繼續上漲，所謂的穩定毛豬拍賣價格七十至八十元，是否還會往上增加？...

The Council of Agriculture is planning to maintain the wholesale pork price at NT\$80/kg. They can achieve this by imposing a price floor or buying excess supply at a guarantee price.

2. (4%) Draw a supply and demand diagram to analyze the effect of imposing a price floor of NT\$80 on total surplus. Does this policy create deadweight loss? Why or why not?
3. (4%) Draw a supply and demand diagram to analyze the effect of buying all excessive pork at a guarantee price of NT\$80 on government revenue and total surplus. Does this policy create deadweight loss? Explain.
4. (3%) Which policy is a better to maintain pork prices at NT\$80/kg? (Hint: State your value judgment!)

Excerpts from “日本開放美萊豬 進口量不增反降,” by 簡惠茹/自由時報 (2020/10/27)⁶

...台灣豬肉進口量今年出現減少趨勢，一到九月冷凍豬肉進口量 43,671 公噸，比去年同期 65,440 公噸，減少三分之一。陳吉仲分析，進口豬肉主要作加工，且要標示產地來源國，很多食品大廠反而希望用國產豬肉。陳吉仲以日本爲例說明，開放萊劑美豬，進口量未必特別提高。日本 2005 年開放美萊豬及內臟進口，第一年進口量是 29.5 萬公噸，去年降到 26.5 萬公噸，占進口豬肉比率由 33% 降到 27%，每人每年美豬消費量從 2.5 公斤降到 2.2 公斤。台灣豬肉外銷量則相對可望再提高。陳吉仲指出，台灣豬肉因爲從口蹄疫區除名，還擋下非洲豬瘟，今年到八月底，生鮮豬肉和加工品出口已超過 2,300 公噸，比去年同期增加 40%，今年年底前可望超過 3,000 公噸，透過出口有效調整養豬產銷，就能反映拍賣市場合理價格。...(omitted)

5. (3%) Consider two pork markets of Taiwan: Frozen pork and fresh pork, which are complements in production. Are they substitutes or complements in consumption? According to the news article, is Taiwan importing or exporting frozen pork (or neither)? What about fresh pork? Explain.
6. (6%) According to the news article, frozen pork imports have reduced “by one third” in the first nine months of 2020, and Chen Chi-chung (陳吉仲) attributes it to “many food processing companies prefer [fresh] domestic pork” citing Japan’s experience (2005 vs. 2019). Draw a supply and demand diagram to

⁴ <https://udn.com/news/story/7326/4879743>

⁵ <https://udn.com/news/story/9750/4871869>

⁶ <https://news.ltn.com.tw/news/focus/paper/1408591>

analyze the effect of a shift in taste favoring fresh domestic pork on the frozen pork market. How does equilibrium price, quantity, and imports/exports change? Who are the winners and losers of this shift in taste?

Excerpts from “7 月豬肉進口量暴增 1.5 倍 農委會：遞延效應” by 陳 億方/農傳媒 (2020/08/12)⁷

...中國大陸是豬肉進口大國，自發生非洲豬瘟疫情以來，更需進口豬肉彌補供應缺口，因需求量大，拉抬國際豬肉行情，影響所及，我進口豬肉的報關價也明顯比前幾年來得貴。臺灣今年上半年進口豬肉每公斤報價約 90 元，去年同期的 82 元，上漲約 9 %。畜牧處指出，中國大陸因非洲豬瘟疫情，損失至少 3 成的豬，供需缺口得靠進口豬肉彌補，...(omitted)...以前沒有非洲豬瘟時，中國大陸每年已需進口 300 萬公噸的豬肉，今年得多進口 150 萬公噸豬肉，才能滿足消費需求...

7. (6%) Unlike the case of Japan in 2005-2019, Taiwan faced the threat of swine fever in 2020. Draw a supply and demand diagram to analyze how the swine fever in China affects equilibrium price, quantity and imports/exports of frozen pork. Who are the winners and losers of this swine fever outbreak in China?
8. (2%) Which of the following better explains the actual situation of import pork price increase? A shift in taste favoring fresh domestic pork, or the threat of swine fever in 2020? Explain.
9. (6%) Now consider the effect of Taiwan eradicating foot-and-mouth disease in July 2019. Draw a supply and demand diagram to analyze the effect on equilibrium price, quantity and imports/exports of fresh pork. Who are the winners and losers of this eradication?

Part D (24%): “Overtourism a blessing and curse for Taiwan’s outlying islands,” Taiwan News (2020/08/01)⁸

...Green Island (Ludao) and Orchid Island (Lanyu), which are both volcanic islands off the southeastern coast of Taiwan, have seen an influx of visitors during the summer break thanks to fine weather during the coronavirus pandemic that has clamped down on international travel. ...Locals have complained about the environment and daily life being disrupted by the overwhelming number of travelers. Sewage treatment issues also badly need addressing to prevent the natural habitats of the intertidal zone from being polluted, one eco-minded resident pointed out. This has revived talk of imposing a cap on tourist numbers for Green Island, which has been floated over the past decade but faced fierce opposition....The offshore archipelago of Penghu is also mulling charging fees for visitors as an answer to overtourism. A NT\$50 (US\$1.70) to NT\$100 per person could be implemented as soon as 2022.

Answer the following questions:

1. (8%) Does tourism create positive or negative externalities on locals? Draw a supply and demand diagram for the tourism market of Taiwan’s off-shore islands to analyze equilibrium price and quantity, and welfare evaluated comparing social cost, social benefits, consumer surplus, producer surplus, and total surplus.
2. (3%) Draw a supply and demand diagram for the tourism market of Taiwan’s off-shore islands to analyze how the COVID-19 pandemic affects market price and quantity.
3. (7%) What is the effect of the proposed tourism tax in the form of an entrance fee of NT\$50 per person? Draw a supply and demand diagram to analyze the effect on equilibrium price and quantity, consumer surplus, producer surplus, government tax revenue, and total surplus.
4. (3%) Would social optimal be achieved under this tourism tax? Why or why not?
5. (3%) Would imposing a cap on tourist numbers achieve the same goal as taxation? Why or why not?

⁷ <https://www.agriharvest.tw/archives/43382>

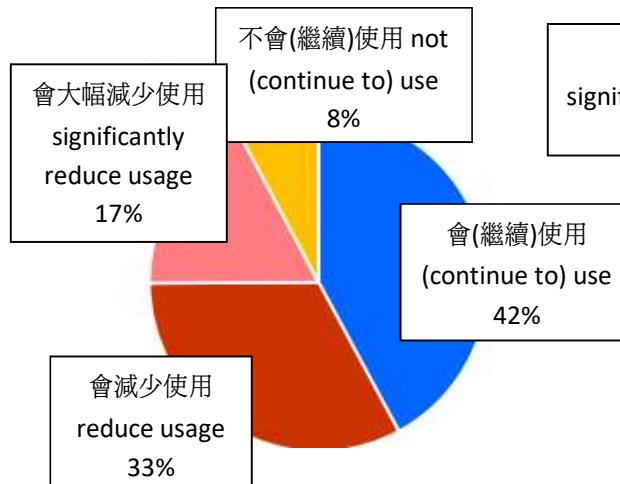
⁸ By Huang Tzu-ti/Taiwan News (2020/8/1): <https://www.taiwannews.com.tw/en/news/3978545>

Translation of “[投書] YouBike 2.0 試辦後，台灣公共自行車要邁向什麼樣的未來?” (2020/9/16)

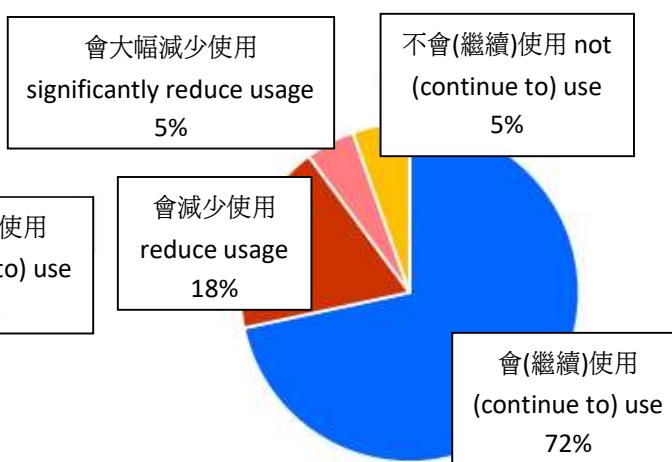
YouBike 2.0 boasts widespread but dense stations. To some extent, shorter ride time across short distances are to be expected. During the trial period of the Gongguan-NTU area, trips longer than 60 minutes accounted for only 3.5% of the total usage; trips within 15 minutes accounted for 85%, which was higher than YouBike 1.0 in Taipei City at 60%. Judging from data after the trial period, when most people journey much less than 30 minutes and the "closer and denser" design encourages more short-distance rides, it is not clear if the rental rate should continue to have 30-minute cutoffs. Maybe it should be redesigned with time intervals more in line with the trend of current usage. If we were to implement YouBike 2.0 on the entire city, we should consider revising the rental rate after observing the then number of trips of the new system... (The following survey results are taken from the cited "review report")

Survey Response	III. Will you continue to use YouBike 2.0 after the trial period ends (when rental rates will be back at NT\$5 instead of NT\$2 for the first 30 minutes)?	IV. Will you continue to use YouBike 2.0 if rental rates become NT\$3 per 15 minutes for the first 30 minutes?
(continue to) use	42%	72%
reduce usage	33%	18%
significantly reduce usage	17%	5%
not (continue to) use	8%	5%
合計	100%	100%

Response to Question III



Response to Question IV



Translation of “向山旅館再開說明會 邵族人拒出席表達強烈反對,” 曾以寧/環境資訊中心 (2020/10/30)

...The BOT case of Xiangshan Hotel was initiated by the Sun Moon Lake National Scenic Area Management Office (hereafter the SML office) in June 2008 to build a hotel on a 2.8-hectare piece of land next to the parking lot of the Xiangshan Tourist Service Center. That September, Seaker & Sons Hospitality Inc., a subsidiary of Hong Kong's Bonds Group Company Ltd., won the bid to build a 300-room, four-star hotel spending 2 billion. Since learning about the case, the Thao people have opposed it since that area is the ancestral grave of the Thao. ...The SML office held another local hearing this evening, ...and invited both Seaker & Sons Hospitality and the Thao people to express their opinions. During the hearing, Liu Changtai, the general counsel of Seaker

& Sons Hospitality, stated that they “understand and agree with 100%” to support the rights of the traditional domain for the Thao people, even though the tradition region of the Thao people is still under litigation. However, “we need to know which laws and regulations we must follow and abide by as a private developer” to plan future operations and make financial forecasts. The Thao National Assembly declined to attend the hearing, but protested with a banner outside the venue expressing their hope to block the BOT case.

Translation of “雲林豬價下跌 張麗善向中央喊話重視養豬產業” by 中央社 (2020-09-22)

...The media reported plummeting wholesale pork prices in Yunlin, which has the largest number of pigs in the country. Compared with an average price of around NT\$70/kg in other counties, Yunlin's pork prices has dropped to around NBT\$67/kg this past week. ...Chang Li-shan pointed out Yunlin Meat Market recently saw fewer pigs auctioned off, decreasing from around 2500 to 2200. However, the auction price has also fallen, likely because food companies and food-processing companies stayed out of the market...

Translation of “學者質疑：政府都說沒影響 幹嘛訂豬價下限” by 彭宣雅/聯合報 (2020/9/18)

To appease domestic farmers, the Council of Agriculture launched a 10-billion pig-raising fund to maintain average auction prices at NT\$70-80/kg, higher than the average cost of NT\$65, so farmers would profit. (Omitted)...Professor Lei Lifen (Department of Agricultural Economics, NTU) said the government has always claimed that ractopamine pork imports would not affect the domestic market. But if nothing is affected, “Why set a price floor?” (omitted)...Professor Min-hsien Yang (Department of International Business and Trade, FCU) said the government set the guaranteed price for rice at 20% above cost, which fluctuating. If pig-raising costs continue to rise, will the target price increase above the proposed NT\$70-80 as well? ... (omitted)

Translation of “日本開放美萊豬 進口量不增反降,” by 簡惠茹/自由時報 (2020/10/27)

...Taiwan's pork imports have declined this year. From January to September, Taiwan imported 43,671 tons of frozen pork, a decrease of one-third compared to 65,440 tons in the same period last year. According to Chen Chi-chung (陳吉仲), imported pork is mainly used for processing and country of origin must be labeled. Hence, many major food companies prefer to use domestic pork. Chen Chi-chung used Japan as an example to show that lifting the ban need not increase import quantity. Japan lifted the ban on American pork and pig offal in 2005, and imported 295,000 tons that year, but dropped to 265,000 tons last year. The proportion of imported pork dropped from 33% to 27%, and annual per capita consumption of American pork dropped from 2.5 kg to 2.2 kg. In contrast, Chen Chi-chung pointed out that Taiwanese pork exports could still increase, since Taiwan just eradicated foot-and-mouth disease and blocked African swine fever. This year up to August, Taiwan exported more than 2,300 tons of fresh pork and processed products, an 40% increase over the same period last year, and will likely exceed 3,000 tons by the end of the year. Through the adjustment of exports, reasonable prices would emerge in domestic auction markets...(omitted)

Translation of “7 月豬肉進口量暴增 1.5 倍 農委會：遞延效應” by 陳 儂方/農傳媒 (2020/08/12)

...China is a major pork importer. Since the outbreak of African swine fever, imported pork has been required to bridge the supply gap. Due to this large demand, international pork prices has soared, and the impact is shown in Taiwan's customs declaration price of imported pork, which is significantly higher than in previous years. Taiwan's imported pork was priced at about NT\$90/kg in the first half of this year, compared with NT\$82 in the same period last year, an increase of about 9%. The Department of Animal Industry said that China has lost at least 30% of its pigs in the African swine fever pandemic. This shortage has to be filled by imported pork...(omitted)...In the past, China already imports 3 million tons of pork per year, and 1.5 million tons more is required this year to meet consumer demand...