Principles of Economics I: Microeconomics – Final [2019/1/11]

Note: You have 170 minutes (10:20am-1:10pm), and there are 137 bonus 49 points; allocate your time wisely.

Part A (35%): "主計總處透露高薪密碼：考研究所/進大公司/考台電" by 徐碧華 (經濟日報, 12/30/2018)[1]

(omitted)…主計總處最近發布了「106 年工業及服務業受僱員工全年總薪資中位數及分布統計結果」，主計總處官員說，這是一份統計，而不是抽樣調查，它吻合真實。這份統計先選用財政部的綜合所得稅資料，再比對勞保、勞退和健保的月報繳薪資。抓進統計資料中的是 700 多萬個受僱員工，包括外勞和部分工時者。排列標的是總薪資，是雇主發給勞工的固定月薪、加班費、年終獎金、績效獎金和全勤獎金，但不含雇主提撥的勞健保費和勞退金。主計總處將這些受僱員工總薪資由低到高排列，排在中間的那個數字是「中位數」，106 年的中位數是 47 萬元，亦即有 300 多萬受僱員工的總薪資高於 47 萬元，300 多萬人不高於 47 萬元。

比較各分類的中位數，就得出高薪密碼。第一個密碼是讀研究所。如今在台灣讀大學太容易，衍出學歷無用論，官員說，在職場上，這個泛泛之論完全錯誤。大專學歷的受僱員工總薪資中位數是 51.5 萬元，明顯高過高中職的 41.9 萬元，但與研究所學歷者的 87.4 萬元又有相當的差距。單從一年差 30 多萬元看，唸研究所的投資還是相當值得的。

第二個高薪密碼是進大公司，尤其是 500 人以上的大公司。統計指出，500 人以上的大公司受僱員工總薪資中位數是 65.9 萬元，明顯高過 100~299 人的 51 萬元和 300~499 人的 52.6 萬元，而不到百人的公司，薪資中位數還不到 42 萬元。

第三個密碼是考台電，興趣不在台電的話，考金融業是次佳選擇。電力及燃氣供應業的總薪資中位數超乎預期地高，達 119.6 萬元，很難想像這行業有一半人的年薪超過百萬元。官員指出，電力及燃氣供應業中絕大多數是台電員工。…(omitted)

1. (2%) Explain why results describes in the above news is not from a "sample" but the entire population?
2. (4%) Why would people with graduate degrees earn higher wages? List at least two possible reasons.
3. (5%) How does the governmental official debunk "degrees are useless"? Do you agree or disagree with this argument? Explain.
4. (8%) Why would people in big companies command higher wages? List at least three possible reasons and discuss which you think is more likely the case in Taiwan.
5. (6%) Why would people in the "electricity supply" industry command higher wages? List at least two possible reasons and discuss which you think is more likely the case in Taiwan.
6. (5%) Explain how immigration of workers affects labor supply, labor demand, the marginal product of labor, and the equilibrium wage of Taiwan. Do you think the country is better off with or without immigrants?
7. (5%) If by any chance a deadly disease spread in Taiwan, what kind of impact will be received by Taiwanese workers? What will happen to its workers' wage as well as the income received by land owners and capital?

Part B (35%): Excerpts from "Pacific trade pact takes off with tariffs cut in six nations", Reuters (2018/12/29)[2]

…"The Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) provides New Zealand with trade agreements for the first time with three significant economies: Japan, Canada and Mexico," Trade Minister David Parker said in a statement. "The CPTPP has the potential to deliver an estimated NZ$222 million ($149.01 million) of tariff savings to New Zealand exporters annually once it is fully in force."

The pact came into effect on Sunday for Australia, New Zealand, Canada, Japan, Mexico and Singapore, with Vietnam to follow on 14 January, Australia's Department of Foreign Affairs and Trade said on its website. Brunei, Chile, Malaysia and Peru will begin 60 days after they complete their ratification process. Investment bank HSBC said in a press release that 90 percent of tariffs on goods in the first six countries were removed on Sunday in the first round of cuts.

Australia is looking forward to favorable conditions for its agricultural exports including wheat, prompting U.S. competitors to warn they will need help to compete. "Japan is generally a market where we seek to maintain our strong 53 percent market share, but today we face an imminent collapse," U.S. Wheat Associates President Vince Peterson told a public hearing in Washington on Dec. 10. "In very real terms, as of April 1, 2019, U.S. wheat will face a 40 cent per bushel, or $14 per metric ton, resale price disadvantage to Australia and Canada," Peterson said, according to a transcript on the U.S. Wheat Associates website.

1. (9%) Draw a supply and demand diagram to analyze the effect of CPTPP on the wheat market in Japan. How does equilibrium price and quantity, consumer surplus, producer surplus, and total surplus change?
2. (9%) Draw a supply and demand diagram to analyze the effect of CPTPP on the wheat market in Austrialia. How does equilibrium price and quantity, consumer surplus, producer surplus, and total surplus change?
3. (9%) Draw a supply and demand diagram to analyze the effect of CPTPP on the wheat market in the US. How does equilibrium price and quantity, consumer surplus, producer surplus, and total surplus change?
4. (4%) What is the effect of CPTPP to US wheat producers described in the news? Do you think there is a similar effect on Taiwanese farmers? Why or why not?
5. (4%) Why do you think Taiwan has not joined CPTPP? Explain your reasoning.

Part C (38%): Excerpts from "Kery 買 Tesla 昂貴電動車的祕技：開 Uber," by 癮科技 (2018/12/26)[3]

Model S 特斯拉拿來當 Uber 專用車值得嗎？Uber 駕駛 Kery 表示不需要再額外支付每月將近 2 萬元的油錢、充電的時候可以休息又有歸屬感、開起來順手坐的也舒適，雖然要支付高額貸款，但生活品質不減反增，甚至開自己的夢想車工作，這對 Kery 來說是再划算不過的事，精打細算下也可以過舒服的生活。想坐特斯拉除了試乘以外，你也可以搭 Uber 碰碰運氣，癮科技在呼叫 Uber 時幸運的叫到一台特斯拉 Model S ，透明車頂、舒適皮椅、沒有大聲的引擎轉速聲，讓人一坐到車上就覺得好尊榮阿，但是為何會想開一台百萬特斯拉當 Uber 接送客人呢？這次特別請 Model S 的 Uber 車主 Kery 進行訪談，訪談過程中 Kery 表示很滿意現在的工作環境，除此之外太太也非常支持這個決定，也覺得生活水平因此而提升。

For ride-sharing services such as Uber and Lyft in Daiwan, first consider only working class consumers who care only about getting to the destination on time.

1. (4%) Is ride-sharing service in this market a homogeneous product? Why or why not? What market structure described in the textbook does this ride-sharing market closest resemble?
2. (6%) How do firms in this market determine prices and quantity? Assume there are many firms in the market and/or anti-trust laws that rule out price-fixing and other collusive practices. Is the market outcome efficient? Why or why not?
3. (6%) How do firms in this market determine prices and quantity if there are only a few firms (like the case of Uber and Lyft) and there is no anti-trust law that rules out price-fixing or other collusive practices? Is the market outcome efficient? Why or why not?

4. (4%) Comparing your answers of the two above questions, does it matter whether there are many or few firms? Why or why not? What about anti-trust laws?

Next, consider a mixture of working-class consumers with bourgeois and literate-youth customers who care not only about getting to the destination on time, but also other things such as class, safety and comfort.

5. (4%) Is ride-sharing service in this market a homogeneous product? Why or why not? What market structure described in the textbook does this ride-sharing market closest resemble?
6. (2%) How does driving a Tesla affect the demand curve faced by Kerry's Uber service? Explain.
7. (4%) How does Kerry determine prices and quantity? Note that Kerry receives not only the fixed fee determined by Uber, but also tip from customers. Hence, prices are adjustable, not dictated by Uber.
8. (4%) Does your answer above depend on the number of Uber/Lyft drivers? Why or why not?
9. (4%) Is the long-run market outcome efficient? Explain.

Part D (29 + bonus 49%): The Presidential Election of National iDaiwan University

Consider the presidential election of National iDaiwan University, not to be confused with National Taiwan University, which consists of five candidates: Walter, May, Ray, Chung, and Hsien. The recruiting committee consists of 21 voters, and their preferences are listed below:

Voter Type	# of voters	1st choice	2nd choice	3rd choice	4th choice	5th choice
Type X	7	Chung	Hsien	Ray	Walter	May
Type Y	7	May	Walter	Ray	Chung	Hsien
Type Z	7	Walter	May	Ray	Hsien	Chung

The second-phase voting rule was as follows: "There are two rounds of voting. In round 1, each voter has to cast at least 2 votes, in which the two top candidates advance to round 2. In round 2, each voter casts only 1 vote and whoever has more votes is the winner." Ties are broken by holding run-offs among tied candidates.

1. (10%) Who will win in each of the possible one-on-one races of round 2? Circle your answers.

1-on-1 race:	Hsien	Ray	May	Walter
Chung	C / H	C / R	C / M	C / W
Hsien	-	H / R	H / M	H / W
Ray	-	-	R / M	R / W
May	-	-	-	M / W

2. (4%) Anticipating the above results of round 2, who would win if everyone votes sincerely, i.e. according to their true preferences, in round 1 to cast only two votes? Who would be the final winner?
3. (5%) How would your above answers change if Type Y voters vote for their first and last choice, while others still vote sincerely in round 1? Did this Type Y voters gain by deviating from sincere voting? Why or why not?
4. (3%) Anticipating the above results of round 2, is sincere voting in round 1 a Nash equilibrium? Explain.
5. (5%) What if Type Y and Z voters vote for their first and last, while Type X voters vote sincerely in round 1? Who would win in round 1? Who would be the final winner? Did Type Z voters gain by deviating from sincere voting (knowing that Type Y voters are deviating)? Why or why not?
6. (2%) Explain why this is not surprising according to Kenneth Arrow.

Below are bonus questions that are beyond the scope of an introductory economics class. However, you may want to attempt them for bonus points (and if you still have time in the exam).

Consider the follow new set of preferences for the committee:

Voter Type	# of voters	1st choice	2nd choice	3rd choice	4th choice	5th choice
Type X	6	Chung	Hsien	Ray	Walter	May
Type Y	7	May	Walter	Chung	Hsien	Ray
Type Z	8	Walter	May	Ray	Hsien	Chung

7. (bonus 10%) Who will win in each of the possible one-on-one races of round 2? Circle your answers.

1-on-1 race:	Hsien	Ray	May	Walter
Chung	C / H	C / R	C / M	C / W
Hsien	-	H / R	H / M	H / W
Ray	-	-	R / M	R / W
May	-	-	-	M / W

8. (bonus 4%) Anticipating the above results of round 2, who would win if everyone votes sincerely in round 1 to approve at least half of the candidates? Who would be the final winner?
9. (bonus 5%) How would your above answers change if one of the Type Y voters strategically vote for their first and last two choices, while all other voters still vote sincerely in round 1? Did this Type Y voter gain by deviating from sincere voting? Why or why not?
10. (bonus 2%) Anticipating the above results of round 2, is sincere voting in round 1 a Nash equilibrium? Explain.
11. (bonus 5%) What if two Type Z voters also strategically vote for their first and last two choices, knowing that one Type Y voter is voting for their first and last two choices and all other voters still vote sincerely in round 1? Who would win in round 1? Who would be the final winner? Did these two Type Z voters gain by deviating from sincere voting? Why or why not?
12. (bonus 5%) Given the behavior in the previous question, what if two other Type Y voters (who voted sincerely) now decide to strategically vote for their first and fourth choice, knowing that one Type Y voter and two Type Z voters are voting for their first and last two choices and all other voters still vote sincerely in round 1? Who would win in round 1? Who would be the final winner? Did these two Type Y voters gain by deviating from sincere voting? Why or why not?
13. (bonus 5%) Given the behavior in the previous question, what if two other Type Z voters (who voted sincerely) now decide to vote strategically in round 1---one for their first and last two choices and the other for their first and last choice? Assume they believe that one Type Y voter and two Type Z voters are voting for their first and last two choices, two Type Y voters are voting for their first and fourth choice, and all other voters still vote sincerely in round 1? Who would win in round 1? Who would be the final winner? Did these two Type Z voters gain by deviating from sincere voting? Why or why not?
14. (bonus 5%) Given the behavior in the previous question, consider the following collusive agreement between one Type X and one Type Y voter for round 1: Type X voter votes for May instead of Ray in exchange for Type Y voter to vote for Ray instead of Walter. Who would win in round 1? Who would be the final winner? Is this agreement beneficial for Type Y voters? Why or why not?
15. (bonus 5%) Would the Type X voter find it beneficial to adhere to the agreement or renegade and still vote for Ray? What would be the outcome in the case of renegading?
16. (bonus 3%) Which of the above scenarios might match the outcome described in the news?

Excerpts from "台大校長遴選 2 關 3 輪投票 不是小學生選班長" (聯合報, 1/31/2018)[4]

…本屆共產生 8 位候選人，包括：中研院副院長周美吟、中研院前副院長王汎森、台大副校長張慶瑞、台大文學院前院長陳弱水、台大電機系教授吳瑞北、國發會前主委管中閔、清大副校長吳誠文、台大電資學院院長陳銘憲。…

★第一關：校務會議「推薦投票」(一輪投票): 校務會議代表逐一就八位候選人圈選「推薦」或「不推薦」。依據辦法，獲全體校務會議代表三分之一以上(58 票)推薦票數，為校務會議「推薦校長候選人」。推薦投票類似篩選制，只要通過篩選門檻 58 票，就成為推薦候選人。開票及計票規則是，每位候選人開出 58 票時就停止計票。結果王汎森、吳誠文、吳瑞北三人，一直到開完所有票未達 58 票，因此這三人的得票數完全公開；另五位的票沒有開完。

★第二關：校長遴選委員投票(兩輪投票): 21 位遴選委員進行兩輪投票，第一輪每人需圈選 2 至 5 票，否則就算廢票。由得票最高前 2 個順位候選人，進入第二輪投票。結果，第一輪投票管中閔最高票，張慶瑞和陳銘憲併列次高票。遴委就張陳二人再投票，陳銘憲勝出。第二輪投票結果，管中閔獲 12 票、陳銘憲獲 9 票，遴選委員會宣布管當選。

Appendix for Part A: Translation of "主計總處透露高薪密碼：考研究所、進大公司、考台電"

(omitted)…The Directorate-General of Budget, Accounting and Statistics (DGBAS) recently released the "2017 median and distribution statistics of the total annual salary of employees in the industrial and service industries." The official said that this is a statistic, not a survey sample, and is closer to reality. This statistic takes the comprehensive income tax information of the Ministry of Finance, and compares it with monthly salary reported for labor insurance, labor pension and health insurance. More than 7 million employees, including foreign workers and some part-time workers, are documented. The target variable is total wages, which includes the fixed monthly salary, overtime pay, year-end bonus, performance bonus and full-time bonus, but does not include employer contributions to the labor and health insurance and labor pension. The DGBAS ranks these total wages of employees from low to high, and the figure in the middle is the "median." The median in 2017 is NT$ 470,000, that is, more than 3 million employees earn more than this amount, while exactly the same amount earn less.

Comparing the median of each industry leads to three secrets for a higher pay. The first secret is "a graduate degree." People complain that getting a college degree in Taiwan is too easy these days and such degree is useless. Officials say that this impression is entirely wrong in the workplace. The median salary of employees with a college degree is NT$ 515,000, much higher than the median salary of employees with high school education, which is NT$ 419,000. However, this college level salary is considerably lower than the median salary of employees with a graduate degree, which is NT$ 874,000. Judging from the difference of more than NT$ 300,000 a year, the investment of attending graduate school is quite worthwhile.

The second secret to high pay is "taking a job at a large company", especially those with more than 500 employees. According to the statistics, in companies with more than 500 employees, the median salary is NT$ 659,000, significantly higher than that of NT$ 510,000 in companies with 100~299 employees and that of NT$ 526,000 in company with 300~499 employees. Meanwhile, the median salary is less than NY$ 420,000 in companies with less than 100 employees.

The third secret is “TaiPower.” If you are not interested in TaiPower, the financial industry is the second best. The median salary of the “electricity and gas supply industry” was higher than expected, reaching NT$ 1.196 million. It is unbelievable that half of the people in an industry earn more than one million NT dollars a year, but officials point out that the majority of workers in electricity and gas supply are hired by TaiPower…

Appendix for Part C (%): Excerpts of “Kery 買 Tesla 昂貴電動車的祕技：開 Uber,” by 癮科技 (2018/12/26)

Is driving the Model S Tesla for Uber worth it? Uber driver Kery says that he does not need to pay an extra NT$20,000 for gas each month. He can also rest when charging, and have a sense of belonging. It drives smoothly and comfortably. Despite the high loans, it is worth it for Kery since his quality of life has improved, and he drives his dream car to work. With careful calculation, he can live a comfortable life. If you want to ride a Tesla, in addition to taking a test ride, you can also try your luck on Uber. Cool3c was lucky to uber a Tesla Model S with a sun roof, leather chair, and a quite engine, which makes one feel special and honored when sitting in the car. But why would you want to drive a million dollar Tesla for Uber? In this interview, we interview Kery, the Uber owner of Model S. Kery expressed his satisfaction with current working conditions, and his wife also strongly supported his decision. They felt that their quality of life improved.

Appendix for Part D: Translation of “台大校長遴選 2 關 3 輪投票 不是小學生選班長” (聯合報, 1/31/2018)

A total of eight candidates ran this year, including: Vice President of the Academia Sinica, Mei-Yin Chou, former Vice President of the Academia Sinica, Fan-Sen Wang, Vice President of the National Taiwan University, Ching-Ray Chang, former Dean of the Taiwan University College of Literature, Jo-Shui Chen, and Professor of the Department of Electrical Engineering of the National Taiwan University, Ruey-Beei Wu, the former chairman of the National Development Committee, Chung-ming Kuan, Vice President of Tsinghua University, Cheng-Wen Wu, and Dean of the National Taiwan University of Electrical Engineering and Computer Science, Ming-Syan Chen….

★The First Stage: University Senate "Recommendation" (one round of voting): Senators vote to "recommend" or "not recommend" each of the eight candidates one-by-one. Candidates who receive more than one-third (58 votes) of the votes are “recommended candidates for President.” This recommendation voting is a screening device, so as long as you pass the threshold of 58 votes, you become a recommended candidate. Vote counting stops once a candidate receives 58 votes. As a result, Fan-Sen Wang, Cheng-Wen Wu, and Ruey-Beei Wu could not reach 58 votes even when all ballots were counted. Therefore, the votes for the three were completely counted; votes for the other five candidates were not counted entirely.

★The second Stage: The presidential Recruiting committee vote (two rounds of voting): 21 committee members vote in two rounds. In round 1, each voter has to cast at least 2 votes, in which the two top candidates advance to round 2. In fact, Chung-ming Kuan got the most votes in round 1. Ching-Ray Chang and Ming-Syan Chen tied for the second place. The committee voted between Chang and Chen again, and Ming-Syan Chen won. In the second round, Chung-ming Kuan received 12 votes while Ming-Syan Chen received 9 votes. The committee declared Chung-ming Kuan the winner.

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[1] https://udn.com/news/story/7269/3565782

[2] https://www.reuters.com/article/us-trade-tpp/pacific-trade-pact-takes-off-with-tariffs-cut-in-six-nations-idUSKCN1OT00C

[3] https://www.cool3c.info/article/140027

[4] https://udn.com/news/story/7266/2959886