

Principles of Economics I: Microeconomics Final [1/16/2009]

Part I. Multiple Choice (15 questions, 30%)

1. Joe wants to start his own business. The business he wants to start will require that he purchase a factory that costs \$400,000. Joe currently has \$500,000 in the bank earning 3 percent interest per year. Suppose Joe purchases the factory using \$200,000 of his own money and \$200,000 borrowed from a bank at an interest rate of 6 percent. What is Joe's annual opportunity cost of purchasing the factory?
 - A. \$3,000
 - B. \$6,000
 - C. \$15,000
 - D. \$18,000

2. Suppose a firm in a competitive market reduces its output by 20 percent. As a result, the price of its output is likely to
 - A. increase.
 - B. remain unchanged.
 - C. decrease by less than 20 percent.
 - D. None of the above is correct.

3. Suppose you bought a ticket to a football game for \$30, and that you place a \$35 value on seeing the game. If you lose the ticket, then what is the maximum price you should pay for another ticket?
 - A. \$5
 - B. \$30
 - C. \$35
 - D. \$65

4. When a certain monopoly sets its price at \$8 it sells 64 units. When the monopoly sets its price at \$10 it sells 60 units. The marginal revenue for the firm over this range is
 - A. \$2.
 - B. \$8.
 - C. \$22
 - D. \$88.

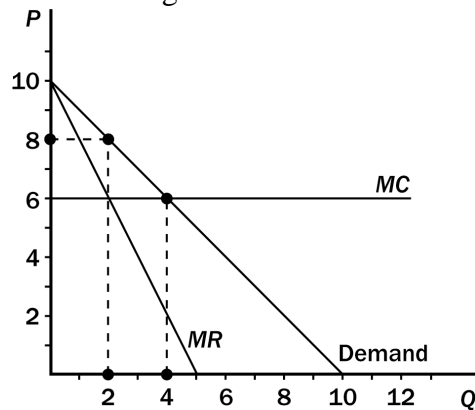
5. Consider a small town that has two grocery stores from which residents can choose to buy a gallon of milk. The store owners each must make a decision to set a high milk price or a low milk price. The payoff table, showing profit per week, is provided below. The profit in each cell is shown as (Store 1, Store 2).

		Store 2	
		Low Price	High Price
Store 1	Low Price	(500, 500)	(800, 100)
	High Price	(100, 800)	(650, 650)

What is the Nash Equilibrium of this price-setting game?

- A. Grocery store 1: Low price ; Grocery store 2: Low price
- B. Grocery store 1: Low price ; Grocery store 2: High price
- C. Grocery store 1: High price ; Grocery store 2: How price
- D. Grocery store 1: High price ; Grocery store 2: High price

6 · Consider the diagram below which shows the market demand curve for a particular product. Suppose this market is served by two duopolists who each face the marginal cost curve shown in the diagram. The marginal revenue curve that a monopolist would face in this market is also shown. Which of the following statements is true?



- A. The total output in this market will likely be 2 units when the market is served by a duopoly.
 - B. The price in this market will likely be \$6 when the market is served by a duopoly.
 - C. The total revenue to each firm will likely be more than \$16 when the market is served by a duopoly.
 - D. The total output in this market will likely be less than 4 units when the market is served by a duopoly.
- 7 · When a profit-maximizing firm in a monopolistically competitive market charges a price higher than marginal cost,
- A. the firm must be earning a positive economic profit.
 - B. the firm may be incurring economic losses
 - C. there is a deadweight loss to society, but it is exactly offset by the benefit of excess capacity.
 - D. new firms will necessarily wish to enter the market in the long run.
- 8 · Which of the following best describes the idea of excess capacity in monopolistic competition?
- A. Firms produce more output than is socially desirable.
 - B. The output produced by a typical firm is less than what would occur at the minimum point on its ATC curve.
 - C. Due to product differentiation, firms choose output levels where $P > ATC$.
 - D. Firms keep some surplus output on hand in case there is a shift in the demand for their product.

- 9 · Which of the following best illustrates the concept of "derived demand?"
- A. An increase in the wages of auto workers will lead to an increase in the demand for robots in automobile factories.
 - B. An automobile producer's decision to supply more cars will lead to an increase in the demand for automobile production workers.
 - C. An automobile producer's decision to supply more minivans results from a decrease in the demand for station wagons.
 - D. An increase in the price of gasoline will lead to an increase in the demand for small cars.
- 10 · Consider the labor market for health care workers, which is in equilibrium. Because of the aging population in the United States, the output price for health care services has increased. Holding all else equal, what effect does this have on the labor market for health care employees?
- A. The equilibrium wage increases, and the equilibrium quantity of labor increases.
 - B. The equilibrium wage increases, and the equilibrium quantity of labor decreases.
 - C. The equilibrium wage decreases, and the equilibrium quantity of labor increases.
 - D. The equilibrium wage decreases, and the equilibrium quantity of labor decreases.
- 11 · Which of the following examples best illustrates a compensating wage differential?
- A. Sara and Tom are each 30 years old. Tom earns more than Sara because he has 8 years of work experience, whereas Sara only has 4.
 - B. Sara earns more than Tom because she has a bachelor's degree, whereas Tom has an associate's degree.
 - C. Sara earns more than Tom because Sara is an electrical engineer, whereas Tom is a fast-food worker.
 - D. None of the above is correct.
- 12 · A college degree makes a person more productive according to
- A. both the human-capital and the signaling theories of education.
 - B. the human-capital but not the signaling theory of education.
 - C. the signaling but not the human-capital theory of education.
 - D. neither the human-capital nor the signaling theory of education.
- 13 · Why is a plumber never likely to be as rich as a movie star?
- A. Compensating differential creates a higher wage in the movie business.
 - B. There haven't been any significant technological advances in the plumbing industry.
 - C. Productivity levels are low in the plumbing industry due to low worker morale.
 - D. A plumber can provide his services to only a limited number of customers.
- 14 · Employers can try to overcome the moral-hazard problem involving their employees by
- A. paying their employees more often.
 - B. paying their employees below-equilibrium wages since the employees will likely shirk some of their responsibilities.
 - C. better monitoring their employees' work efforts.
 - D. requiring their employees to take a pre-employment work effort test.

15、Screening occurs when

- A. an informed party acts to reveal his private information.
- B. an informed party acts to conceal his private information.
- C. an uninformed party acts to induce the informed party to reveal private information.
- D. one informed party acts to prevent another informed party from revealing private information.

Part II. Economics in the News

A. (20%) Foreign Labor Market for High Skill Workers

Suppose highly educated workers from country Daiwan can participate in two labor markets: the domestic market and the foreign worker market in BeeKok. Foreign workers who work at BeeKok are covered by a binding minimum wage law, but domestic workers are not.

1. (4%) Draw a diagram for each of these markets. Is the binding minimum wage higher or lower than the equilibrium wage of the domestic market? Is there a shortage or surplus in the foreign worker market in BeeKok?
2. (2%) If you were a Daiwan worker, what is the maximum you are willing to pay to get a chance to work in BeeKok? Indicate with segments on your graphs.
3. (4%) Suppose there is a quota of foreign workers, and there is only one middleman company who can apply for Daiwan workers to work in BeeKok, how much would this company be charging the workers who want to apply? How much would the Daiwan workers be actually earning (net pay)?
4. (6%) Suppose the BeeKok government lowers the minimum wage for foreign workers in BeeKok. Indicate on your graphs how
 - i. actual wages earned (net pay) in both markets,
 - ii. the number of Daiwan workers in BeeKok,
 - iii. the amount charged by the monopoly middleman company, would change.Would the shortage or surplus in BeeKok's foreign worker market increase or decrease? Who will be happy about this policy? Will anyone be unhappy with this policy? Explain. (Note: You would have to take into account how the decreased minimum wage in the foreign worker market would affect the domestic market.)
5. (2%) How much would the middleman company charge if the minimum wage drops to zero (non-binding)?
6. (2%) The BeeKok government wants to increase the welfare of foreign Daiwanese workers in BeeKok. Would you suggest raising or lowering the minimum wage? Why?

B. (24%) Oil Prices and the Cartel of Oil

Read the following article:

經濟凍壤油價 減產也難止跌

自由時報 2008 年 12 月 8 日 · 編譯陳柏誠 / 特稿

今年上半年，能源分析師都在討論國際油價會漲到多高，不過現在都在問油價到底會跌多慘。紐約油價於十二月五日跌到每桶四十·八一美元，創下二〇〇四年十二月以來新低，不到今年七月改寫歷史新高時的三分之一。

油價崩跌主因，是全球經濟展望轉壞。原油需求在中國等地仍在成長，不過多數地區已在下降。美國過去幾年對原油的胃口已有停滯的現象，近期則大幅下滑。不少

人預估明年全球原油需求將下降，甚至今年就會減少，這是原油需求自一九九三年以來第一度出現下滑。一些在油價上升時開始運轉的新油田及煉油廠，在原油需求萎縮之際，仍將繼續增加原油供應。

石油輸出國家組織（OPEC）減產的速度，似乎趕不上市場的壞消息。今年十月該組織同意，自十一月起每日減產一五〇萬桶，將全球供應減少大約二%。不過因為油輪需要一個月以上的時間，才會駛達目的地，此一減產措施才剛要開始產生效果。而且OPEC會員國似乎沒有完全遵守減產規定。

沙烏地阿拉伯國王最近表示，每桶七十五美元的油價，為一合理價格，OPEC其他會員國熱烈附和。經濟學人表示，油價崩跌讓許多會員國陷入可怕的財政困境之中，這也意味該組織在十二月十七日集會時，將決定進一步減產。不過沙烏地阿拉伯不會想要單獨承擔所有成本，因此將堅持伊朗和委內瑞拉等大型原油生產國不只要同意減產，還要貫徹減產的措施。（下略）

Answer These Questions:

1. (4%) Why did oil prices drop significantly in the past few months? Is it a shift in the supply, demand, or both? Assume OPEC is a cartel with a fixed quota set at the original monopoly quantity. Draw a diagram to show how this affected oil price and quantity.
2. (6%) What is the effect of OPEC reducing production on the oil market? How do you think OPEC would set their new level of production? Indicate this and its effect on equilibrium oil price and quantity on the diagram above (or on a new diagram).
3. (4%) Why would the effect of OPEC's production reduction be delayed? Name at least two possible reasons listed in the article above.
4. (4%) Why would Saudi Arabia want to ask Iran and Venezuela to not only agree on a reduction, but also enforce such a reduction? In particular, explain how one country could free ride other country's reduction in oil production and earn more profit by not reducing its own production.
5. (6%) Write down the payoff table for the game played by Saudi Arabia and "the other countries in OPEC," in which each of the players decide to either exactly follow the reduction proposal (follow), or do not exactly follow it (cheat). Find the Nash equilibrium of the game. Do players follow or cheat in equilibrium? (Hint: You may make up your own numbers, but them be consistent with the situation described above.)

C. (30%) Airline Pricing for Cross-Strait Routes

1. (2%) How much gallons of fuel does the Boeing 777-300ER aircraft need to stay in the air for one minute? You may use the following information regarding B777 (taken from Wiki):¹ B777-300ER's fuel tank capacity is 47,890gallons; largest distance per flight is 5500 miles at a speed of 500 mph.
2. (1%) According to Taiwan CPC's website,² as of 2008/7/1, Taiwan CPC sold 1 gallon of fuel for US\$4.12. What is the fuel cost for flying 1 minute? Report your answers in NT dollars assuming the exchange rate is US\$1 = NT\$33.

¹ See the Wikipedia entry: <http://zh.wikipedia.org/wiki/%E6%B3%A2%E9%9F%B3777>

² See: http://www.cpc.com.tw/big5_BD/tmtd/ListPrice/ShowHisToryPrice_04.asp?pno=156

3. (4%) Consider the airline company EUA air (not to be confused with EVA air), providing service from Taipei (TPE) to Shanghai (PVG) using the Boeing 777-300ER. There are two routes: the old route stopping by Hong Kong (HKG), and a new direct route. Suppose for each **one-way** flight, the total cost is $TC = FC + VC(q)$, including a fixed cost FC and a variable cost $VC(q) = cq$ where q is flight time, and c is the unit cost for fuel calculated above. Read the following article and calculated the total cost for the old route (via Hong Kong) and the new route (direct flight) when the fuel prices is \$4.12. Report your answers in NT dollars assuming the exchange rate is US\$1 = NT\$33.
NOTE: For simplicity, you may assume that EUA has the same cost structure as China Airlines when they both flew the old route. I.e. $VC(240) = TC * 50\%$.

兩岸平日包機票價 降 42%才合理 聯合新聞網 2008/12/01 記者吳孟庭/台北報導

江陳會協議兩岸平日直航包機，將於 12 月 15 日開放，不過消基會批雖省時，卻不一定省錢，以復興、長榮、東方航空為例，現行周末包機價格竟比轉機還貴，油價降後也沒調整票價，即使華航票價也只比轉機香港少 7% 左右，消基會呼籲主管機關應檢討現行周末包機價格，並調降 57% 的油品成本。...(中略)

過去桃園飛上海透過香港轉機飛行時間約 240 分鐘，而現在只要 144 分鐘，飛行時間省下 40%。由於華航曾表示油料成本占航空公司營運總成本的五成，因此消基會幫消費者換算下來，周末包機價格應該要比港澳轉機價格低兩成。

4. (5%) Like EVA airlines, EUA's B777-300ER has 42 first class seats, 63 business class seats, and 211 economy class seats.³ Since first class seats sell three times the prices of economy, and business class seats sell two times the price, how many equivalent "seats" can EUA sell per flight? What is the **one-way** average cost (in NT\$) per "seat" for the old and new route?
5. (2%) Suppose the ticket price for a **round trip** between Taipei and Shanghai is NT\$25,000. What is the profit (in NT\$) per "seat" (for a round trip) if EUA flies the new route? What if EUA flies the old route?
6. (4%) According to the following paragraph, how much did oil prices change recently? What would be the new unit cost for fuel c ? Calculated the **one-way** total cost (in NT\$) for the old route (via Hong Kong) and the new route (direct flight) based on this new fuel price.

NOTE: For simplicity, you can use this information: As of 2009/1/1, Taiwan CPC sold 1 gallon of fuel for US\$1.60.

消基會質疑航空公司，油價跌卻不見周末包機票價跌。台灣首班兩岸周末包機於今年 7 月 4 日啓航至今，油價已跌至 3 年來新低，從今年 7 月 1 日西德州原油每桶 140.99 美元跌至 11 月 26 日每桶 54.43 元，跌幅達 61%；同樣若油料成本 5 成，周末包機票價應可調降 30%，不過卻未見調降。

7. (4%) Based on the new fuel price, what is the **one-way** average cost (in NT\$) per "seat" (for a round trip) for the old and new route? What is the profit (in NT\$) per "seat" when EUA flies the two routes?

³ See: http://www.evaair.com/NR/rdonlyres/D28BDB99-0386-42B6-BC05-5C541D7E5A1B/0/B777_300.jpg

8. (2%) Do your answers agree with the following paragraphs? Why or why not?

謝天仁說，新航線票價怎麼定，首先要先檢討現行周末包機不合理價格；油品部分應先反映油價下跌調降 61%的油品成本，再依未來平日包機航程比現行周末包機航程減少，再調降 57%的油品成本，總計可調降 84%油品價格。...(中略)

以油品成本佔總成本五成，票面價格至少有 42%的調降空間。以「台北-上海」一年年票單程經濟艙周末包機價格來說，應可調降約 8100 至 1 萬 500 元；90 天來回票則可調降約 6400 至 7100 元；30 天來回票應可調降約 5100 至 6000 元。

9. (2%) Read the following paragraph. What are possible reasons why airlines like EUA would not lower their ticket prices even after they switched to the (cheaper) new route? (Hint: Would you prefer a direct flight?)

不過消基會調查發現，在「90 天旅遊票及包機專案票-來回經濟艙價格」，「復興航空」周末包機還比香港轉機票價貴 15%；在「30 天促銷票及包機專案票-來回經濟艙價格」，「長榮航空」周末包機比香港轉機票價貴 10%；在「1 年年票-單程經濟艙價格」，「復興航空」及「東方航空」都比透過香港轉機票價貴，最貴達兩成；其餘的即使低於轉機價，也不足兩成的降幅。

10. (4%) What is the marginal cost of boarding another passenger when the plane is full? What is the marginal cost if the plane is not full? How would this change your answers to the previous questions? (Hint: Consider what market structure is the airline market, and how firms determine their price and quantity in that market structure.)

D. (16%) Governmental Employees Responding to Incentives

Read the following article:

日工作兩小時 公務員超混：中縣府調查員工摸魚指數 將調整業務懲處
2008 年 12 月 23 日蘋果日報

【洪紹欽、秦蕙媛／台中報導】天冷、就業市場更冷，台中縣政府最近一項調查卻發現，有三成受調查縣府內公務員每天實際工作時數低於四小時，其中又有半數每天僅工作二小時，薪水卻分毫不減。中縣府表示，將調整這些偷懶摸魚員工的業務內容，做為懲處；學者認為此調查立意良好，但評量指標宜更多元化。

學者：增評量指標

台中縣政府屢遭批評行政效率不彰，《遠見》、T V B S 等調查縣市首長施政滿意度，台中縣長黃仲生都敬陪末座。黃仲生日前痛陳部分府內公務員怠惰、延宕公文，本月初要求所屬公務員刷掌紋簽到，並預計半年內考核兩千名公務員處理公文時效及品質。

中縣府日前抽查縣府內六十名公務員，以被考核者一個月的承辦公文量，並要求說明個案承辦及出差時間，再依實際處理業務總時數除以上班總天數，分析績效。縣府計畫處長黃能堂昨說：「六十人中，竟有九人一天工作時數低於四小時、另有九人甚至僅工作兩個小時。」縣府員工則強調「每件公文辦公時間及決策都不一樣，非按件計算可量化。」

對中縣府作法，國立中興大學國家政策暨公共事務研究所所長袁鶴齡說：「肯定縣府用心，但應增加評量指標。」中正大學政治系教授蔡榮祥也建議：「應增加質化指標，進行橫向比較，避免好的擺爛、不好的鑽漏洞。」...(下略)

Answer the following questions:

1. (3%) According to this article, do you think governmental employees work harder than workers of private companies? Why or why not? Why do you think the government can “afford” this difference?
2. (2%) Taichung County government had to ask its employees to obtain the amount of time needed to process each case. Given the possible consequences, how would government employees respond to such inquiry in the future?
3. (3%) What are the possible cures scholars suggest in the article? Can you think of possible problems these cures may create?

Read this follow-up article:

裁不良公務員 擬建機制

2009年01月03日蘋果日報

【王家俊／台北報導】馬英九總統在元旦祝辭呼籲公務員勿抱殘守缺，考試院銓敘部長張哲琛昨呼應指出，將參考日本、新加坡等國外考銓制度，建立公務人員淘汰機制，在獎懲分明下，提高行政績效。

但有公務員反嗆：「經濟不景氣，政府只會找基層開刀，抱馬總統的大腿！」

張哲琛說，政府團隊中，有人認真，有些鬼混，依《公務人員考績法》規定，年終考績列為丁等或連續兩年丙等，將予以免職，但以現況而言，列丙、丁者，幾乎等於零，為提高行政績效，應建立公務人員淘汰機制，但不會硬性規定比例。

張哲琛並說，將修訂《公務人員考績法》，增訂明確績效考核標準，建立獎懲分明制度，提出激勵措施，不光對公務員個人，也對行政團隊提出績效要求，例如：要求某個科、司或局處等行政單位達到績效目標，比照民間企業與先進國家標準。

「奉承會更厲害」

對於銓敘部構想，一名科長級官員昨說，淘汰不良公務員立意良好，「但若評比項目不具體，恐怕很難讓人信服。」一名黃姓警務人員說，考績是長官打，根本難以客觀，「若無法建立互評等公平機制，未來阿諛奉承會更厲害。」

Answer the following questions:

4. (2%) The goal of a private company is to make profit for its owner. Does the government have a similar goal that could be evaluated objectively? Why or why not?
5. (4%) What would happen if we require the government to fire at least 5% “non-performing” employees every year? Why do you think few governmental employees are fired in the current system (where nobody is fired)?
6. (2%) In the final paragraph, a police officer suggests one should implement a “mutual evaluation system” which he thinks is “fair.” What potential problem would a “mutual evaluation system” induce? Can you think of a better mechanism?