ECON10004: Introductory Microeconomics // Assignment—2 (15%)

Due date: Wednesday 04-October by 6.00pm (.pdf file)
1000 words limit (does not include diagrams)

Submission:

- you must submit your assignment via the LMS subject page before 6.00 pm, Wednesday 04-October, as a single .pdf file;

- the subject has a "no-extension policy"; thus, late submissions will *not* be accepted;

- to double check that you uploaded the correct file and to confirm your submission's timestamp, you may want to either view or download it; for step-by-step instructions, please check out the "*view a submitted assignment*" subsection at https://lms.unimelb.edu.au/students/student-guides/assignments

- after you have submitted your assignment, please remember to also keep a local copy.

Logistics:

- there is a maximum limit of 1000 words (not including equations, diagrams, or the text of the problem itself);

- all problems are compulsory, and must be solved in the order in which they appear;

- all answers must be clearly labelled (e.g., write "*c)*" before your third answer); you may (but don't have to) copy the question before providing your answer to it

- answers must be *fully typed*; diagrams may still be hand drawn, but please be sure to insert them in the right place in the file, as only one file may be submitted;

- please be aware of the University policy on plagiarism and collusion https://academicintegrity.unimelb.edu.au/#plagiarism-and-collusion

- a maximum of 100 points are awarded according to the quality of the answers

  Note: Quality answers are succinct and legible; points may be deducted for exceeding the word limit, or for not submitting a typed assignment. At the same time, quality answers will show any relevant intermediary equations and steps that are required to derive a result.

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I. Consider the following simplified scenario. Suppose that the Australian Football League (for short, *AFL*) has exclusive rights to organize the AFL Grand Final, which determines the winners of the season. The AFL decides that the next Grand Final will be hosted at the Melbourne Cricket Ground stadium (MCG). The contractual agreements are such that the AFL has no fixed costs for organizing the game, but it must pay a marginal cost *MC* of *\$40* per seat to the owners of the MCG. Suppose that two types of tickets will be sold for the game: *concession* and *full fare*. Based on any official document that attests to their age, children and pensioners qualify to purchase concession tickets that offer a discounted price; everyone else pays the full fare. The demand for full-fare tickets is $Q_F(P) = 160 - 2P$. The demand for concession tickets is $Q_C(P) = 140 - 2P$.

1. The market for full fare tickets (F) **(35 points)**

a) Calculate the inverse demand, write the profit maximizing condition, compute the profit maximizing price P_F^M and the number of tickets Q_F^M that the *AFL* will choose to sell at full fare, as well as its profit π_F^M. (5 points)

b) Use a diagram to illustrate the marginal revenue *MR*, the producer surplus PS_F that the *AFL* enjoys, the consumer surplus of the full fare paying customers CS_F, and the deadweight loss DWL_F in this market. Then, compute CS_F and DWL_F. (6 points)

c) *Tax per unit (TU)*: The government decides to tax the *AFL* at *\$2* per ticket sold. Find the new optimal price P_{TU}^M and quantity Q_{TU}^M that the *AFL* chooses and compute its profit π_{TU}^M. Compute the government's tax revenue TR_{TU}. (9 points)

d) *Lump sum tax (LS)*: Instead of a tax per unit, the government imposes a lump tax of \$75 on the AFL. Find the new optimal price P_{LS}^M and quantity Q_{LS}^M that the *AFL* chooses and compute its profit π_{LS}^M in this case. (9 points)

e) Suppose that the government is looking to tax the *AFL* to raise revenue for building new sport facilities for kids and hires you to advise which one of the taxes above – a tax per unit or a lump sum – to implement. Which one of the two taxes would you recommend? Justify and explain why. (6 points)

2. The market for concession tickets (C) **(20 points)**

f) Calculate the inverse demand, write the profit maximizing condition, compute the profit maximizing price P_C^M and the number of concession tickets Q_C^M that the AFL will choose to sell, as well as its profit π_C^M. (5 points)

g) Use a diagram to illustrate the marginal revenue MR, the producer surplus PS_C that the *AFL* enjoys, the consumer surplus for concession tickets customers CS_C, and the deadweight loss DWL_C in this market. Then, compute CS_C and DWL_C. (6 points)

h) Suppose that the government wants to encourage children and pensioners to attend sport events. To do so, it is willing to give the AFL a subsidy of *s* per concession ticket sold, but the government wishes to calibrate this subsidy such that the AFL will sell the same number of concession tickets as in perfect competition. Assuming that the government knows the demand and the costs that the AFL has, compute how much the subsidy *s* should be. (9 points)

3. Combined/merged market (M) **(30 points)**

i) Suppose that the *AFL* becomes unable to verify the age of its customers; thus, the formerly distinct full fare and concessional ticket markets must be combined/merged in one single market. First, write the equation of the combined demand and show it using a diagram. Then show and calculate the profit maximizing price P_M^M and number of tickets Q_M^M that the *AFL* will choose to sell, as well as its profit π_M^M. (15 points)

j) How is each category of customers (i.e., full fare vs. concessional ticket customers) affected by the market merger? Do customers in each category benefit, or are they harmed by the merger? Justify and explain your answer. (6 points)

k) Given the choice, would a profit maximizing *AFL* prefer to operate distinct full fare and concession ticket markets, or just one single merged market? Justify your answer. (4 points)

l) If the government (seeking to maximize social welfare) could mandate which type of market *AFL* should operate, should it opt for requiring distinct full fare and concession ticket markets, or just one single merged market? Justify your answer. (5 points)

II. Suppose you work as a chief executive officer (CEO) for an airline. One of your airline's wide-body aircrafts is operated with a two-class configuration that has: 500 *economy* seats and 200 *business* seats. **(15 points)**

On the route that this wide-body aircraft is operated, the airline's marginal cost per passenger (pax) is $1,000 in *economy* and $1,500 in *business.*

The airline's internal data shows that the willingness to pay (WTP) of leisure pax for travelling in *economy* is $2,000, while their WTP for travelling in *business* is $2,500; meanwhile, the WTP of the business pax for travelling in *economy* is $4,500, while their WTP for travelling in *business* is $10,000. Finally, the airline charges different prices for *economy* and *business*, and there are more pax with WTP's as specified above than there are seats in each class.

Because the maximum certified capacity for this wide-body aircraft is 500 seats in *economy*, the airline cannot further increase the number of seats in this class. However, if the airline would deliberately further degrade its service in *economy* (by e.g., offering less tasty food, slowing down the check-in process, and so on), thus effectively transforming *economy* into *misery*, internal estimates show that the WTP of the leisure pax for travelling in *misery*-class would be $1,800, while the WTP of the business pax to travel in *misery* would be $3,000.

The following table summarizes the information.

No. of seats/pax	WTP & MC / type of pax	Misery	Economy	Business
500	Leisure pax WTP	$1,800	$2,000	$2,500
200	Business pax WTP	$3,000	$4,500	$10,000
	Marginal cost per pax	$1,000	$1,000	$1,500

m) Your sole objective as CEO is to maximize the profit for the airline. Under this assumption, would you as the CEO prefer to deliberately damage your service in economy? That is, would you prefer to update your offering from [*economy* and *business*] to [*misery* and *business*]? Justify your answer.