

THE UNIVERSITY OF MELBOURNE
MELBOURNE BUSINESS SCHOOL

MANAGERIAL ECONOMICS
Term 1 1999
First Mid-Term Solutions

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Part A: Multiple Choice Questions

Answer all of the following 10 questions by circling the right choice.

1. The game of business, in the context of profit maximising enterprises
 - (a) is necessarily zero-sum. To win, others must lose.
 - (b) is about maximising the total value created.
 - (c) is about maximising your share of the total value created.**
 - (d) is about market share and competitive strategy.

2. An average consumer's willingness-to-pay for a Windows-based personal computer is higher when there:
 - (a) is more software available for Windows based computers.
 - (b) are more windows-based computers in the workplace.
 - (c) are more Windows-trained users.
 - (d) All of the above.**

3. Gerry works 40 hours a week, managing Gerry's Bar, without drawing a salary. He could earn \$600 a week doing the same work for Jean. Gerry's Bar owes its bank \$100,000 and Gerry has invested \$100,000 of his own money. If Gerry's accounting profits are \$1,000 per week after accounting for the interest on his bank debt of \$200 per week, his economic profits are
 - (a) \$0 per week.
 - (b) \$100 per week.
 - (c) \$200 per week.**
 - (d) \$400 per week.

4. If two banks are considering using the same ATM machines in a new geographic market where they have independent revenues of \$260m and \$280m respectively when working together, or \$300m and \$320m when working separately, and the cost of the ATM network is \$170m, then using the principle of added value, and assuming they are equally good at negotiating,
 - (a) firm A should pay \$65m and firm B should pay \$105m.
 - (b) firm A should pay \$105m and firm B should pay \$65m.
 - (c) firm A should pay \$85m and firm B should pay \$85m.**
 - (d) firm A should pay \$90m and firm B should pay \$80m.

5. The possibility of gains from trade and specialisation arise when,
- (a) individuals cannot produce their own goods.
 - (b) individual firms leverage their competitive advantage.
 - (c) there exist businesses that facilitate trade.
 - (d) doing so enhances the total value created.**
6. Suppose we change the example in class such that the cattle rancher can produce either 1 pound of potatoes or $\frac{1}{2}$ a pound of meat, while the farmer could produce 2 pounds of potatoes or $\frac{1}{2}$ of a pound of meat,
- (a) the cattle rancher has the comparative advantage in producing both meat and potatoes
 - (b) the farmer has the comparative advantage in producing both meat and potatoes.
 - (c) the farmer has the comparative advantage in producing potatoes.**
 - (d) the cattle rancher has the comparative advantage in producing potatoes.
7. A monopolist
- (a) can charge whatever price it likes.
 - (b) will restrict supply until the added value of the buyers is zero.
 - (c) will restrict supply to limit the added value of buyers but not necessarily to zero.**
 - (d) will supply as much as buyers want because it is the only supplier.
8. After the Managerial Economics exam today you will really enjoy the first beer you have. In fact, you would pay as much as \$20 for it. Suppose you can buy a beer from the 1888 Club for \$1.50 or the Carlton Inn for \$2.00, and you can costlessly switch pubs (and a beer is a beer!). What is your willingness to pay for a beer from the 1888 club?
- (a) \$1.50
 - (b) \$2**
 - (c) \$18
 - (d) \$20
9. A piece of art is being auctioned using an ascending bid mechanism. There are two potential buyers. One values the item at \$500 while the other values it at \$300. The buyer's surplus earned by the eventual purchaser is:
- (a) zero.
 - (b) About \$500.
 - (c) About \$300.
 - (d) About \$200.**

10. A firm should always make rather than buy if
- (a) the input supplier is making profits.
 - (b) there is uncertainty in the supply of inputs.
 - (c) the opportunity cost of making is lower than the price paid to the outside supplier.**
 - (d) the supplier is a competitor.

Part B: Short Answer Questions

Answer 2 out of the following 3 questions . **DO NOT ANSWER ALL 3!** Answer in the space provided under each question.

Question 1. (10 marks)

Consider a market with two sellers and two buyers. Each seller is offering to sell one unit of a product. The first seller can make its product available at a cost of \$3. The second seller can make its product available at a cost of \$7. Each buyer is interested in acquiring one unit of the product, but no more. The first buyer has a Willingness-to-Pay for either product of \$12 and the second buyer has a Willingness-to-Pay for either product of \$5.

- (a) (2) What value can be created in this market?

Similar to what we saw with monopolistic markets (with insufficient supply), calculating the size of the pie here isn't quite trivial . The tricky part is deciding who transacts with whom? There are two possibilities: 1) Seller one and Buyer one transact, and seller two and buyer two transact (well, maybe the latter don't); 2) seller one and buyer two transact and seller two and buyer one transact.

In case (1) the pie is buyer one's WTP (\$12) minus seller one's Cost (\$3), or \$9. Plus: Nothing! Buyer two's WTP (\$5) lies below seller two's Cost (\$7), so no value can be created by these two transacting.

In case (2), the pie is $\$(12-7) + (5-3) = \7 . It seems intuitive that the first, larger pie is the right one. There's a more precise reason why this is the right pairing of players. Look at the situation in case (2) from the perspective of seller one and buyer one. If seller one is selling to buyer two, then the best (highest) price it can get is \$5. If buyer one is buying from seller two, then the best (lowest) price it can get is \$7. BOTH seller one and buyer one would prefer to deal with each other at a price between \$5 and \$7. The situation in case (2) can't hold up. So seller one and buyer one are going to transact (seller two and buyer two can't).

- (b) (2) What is the Added Value of each seller? What is the Added Value of each buyer?

Consider seller one. What happens when it is not in the game? Does the \$9 of value disappear. No. Seller two takes its place, and \$5 of value is created (12-7). Seller one has added value of $9-5=\$4$.

The analysis for buyer one is similar. With buyer one out of the game, buyer two buys, creating \$2 of value (5-3). Buyer one's added value is then $9-2=\$7$.

Seller two and buyer two have zero added values. Taking either buyer two or seller two out of the game doesn't reduce the size of the pie (since they're not transacting).

- (c) (1) If the first seller were to capture that first seller's Added Value, what price would that mean the seller was receiving?

The first seller has added value of \$4. Since its cost is \$3, it will capture this added value if it receives a price of \$7.

- (d) (1) If the first buyer were to capture that first buyer's Added Value, what price would that mean the buyer was paying?

Similarly, the first buyer has added value of \$7. Since its Willingness-to-pay is \$12, it will capture this added value if it pays a price of \$5.

- (e) (1) What is the range of possible prices in the market?

The answer is already present in our previous calculations. Seller one will receive no more than \$7. Buyer one will pay a price of at least \$5. Thus the price must be in the \$5 to \$7 range.

- (f) (3) How is the situation in the question above different from the case of a bilateral monopoly?

The important point here is that the price that emerges lies between \$5 and \$7, NOT between \$3 and \$12. The present situation is very different from the bilateral monopoly we studied in class. Were seller one and buyer one involved in a bilateral monopoly, a price range from \$3 to \$12 would indeed have been the answer. The price here is more determinate, i.e., more narrowly specified by the market. The reason is that there is competition.

Seller two is competing with seller one. Since seller two has a cost of \$7, this guarantees that buyer one will not pay more than \$7. At the same time, buyer two is competing with buyer one. Since buyer two has a willingness-to-pay of \$5, this guarantees seller one a price of at least \$5.

In short, there is two-sided competition. In our discussion of monopolistic markets, we saw the effects of one-sided competition. Buyers competed with each other, thereby giving up value to the seller. Here, the same effect works on both sides of the market. There is also competition among sellers, which gives value up to the buyers.

Question 2. (10 marks)

Yesterday you were unexpectedly given a free ticket to a Rolling Stones concert scheduled for April 1st. The market price of this ticket is \$75, but the most you could sell it for is only \$50. Today you discover that Dire Straits will be giving a concert that same evening. Tickets for the Dire Straits concert are still available at \$75. Had you known before receiving your Stones ticket yesterday that Dire Straits would be coming, you definitely would have bought a ticket to see them, not the Rolling Stones.

True or False: From what we are told of your preferences, it follows that if you are a rational person, you should attend the Dire Straits concert. Explain carefully, detailing any assumptions.

Again, a seemingly trivial question, but in fact the reasoning requires a little care of application. The information we have is:

**WTP(Dire Straits) > WTP(Rolling Stones)
WTP(Dire Straits) > \$75
and that we can sell the Rolling Stones ticket for \$50.**

To answer we need to consider the decision facing the individual: Go watch Dire Straits or the Rolling Stones (we can rule out staying at home, since we were planning to watch the Stones before finding out about the Dire Straits option). A rational agent will choose that option that gives a bigger payoff, i.e. maximises their objective function (in this case maximises the value they capture). So my decision rule is:

go to the Dire Straits concert if and only if the value from that exceeds the value from going to a Rolling Stones concert. {Note this is not the same as just saying if my $WTP(\text{Dire Straits}) > WTP(\text{Rolling Stones})$ }.}

The value I capture is the difference between my WTP and the cost I incur. So, I should go to see Dire Straits if:

$WTP(\text{Dire Straits}) - \$25 > WTP(\text{Rolling Stones})$

Note: The role of assumptions I know that $WTP(\text{Rolling Stones}) > \50 since the option of selling the ticket existed earlier, but I chose not to do so (i.e. a revealed preference argument). If I believe that the existence of the Dire Straits option changes my $WTP(\text{Rolling Stones})$ this has to be justified and made explicit.

Question 3. (10 marks)

Consider the following cost-sharing problem. On consecutive days I had consulting appointments in Sydney and Brisbane, with clients A and B respectively. I decided I would fly from Melbourne to Sydney, have my meeting, and then go on to Brisbane, staying there overnight. The next day I would have my meeting in Brisbane and fly back to Melbourne.

How much should I charge A and B respectively for the costs of this consulting trip (assume my consulting fee (determined by my added value to the clients) is obviously not part of the calculation in the splitting of costs)? Explain carefully, detailing any assumptions.

Pertinent information:

- A return flight from Melbourne to Sydney on Qantas (business class, of course!) costs \$785.
- A return flight from Melbourne to Brisbane on Qantas (business class) costs \$1244.
- The total airfare for a Melbourne-Sydney-Brisbane-Melbourne trip (business class) is also \$1244.
- One night's accommodation at the Heritage Hotel in Brisbane is \$167.
- The appointment with A is in Sydney and B is in Brisbane.

Firstly, note that this was not a game between me and my clients. I extract what others consider to be my added value through my consulting fee, so this was explicitly a question of cost allocation decided by me for clients A and B.

If I were to make two separate trips the total costs would be airfares (as I could fly to Brisbane and back on the same day) of $\$1244 + \$785 = \$2029$

My total costs by combining the two consulting jobs (airfare and hotel accommodation) was $\$1244 + \$167 = \$1411$

Hence, the total cost savings are $\$2029 - \$1411 = \$618$.

In terms of added values, the principle is of recognising that the cost savings of \$618 are not possible without BOTH clients. Therefore, in dividing up the total costs I should take \$309 off their independent costs.

**i.e. Client A gets charged: $\$785 - \$309 = \$476$
Client B gets charged: $\$1244 - \$309 = \$935$**