

Business Decision Making

Course No. 20115

Final Exam

February 10, 2010

The total time for this exam is 60 minutes. The exam consists of three problems. Each problem is composed for approximately 20 minutes answering time. Accordingly, each problem offers the possibility of obtaining 20 points. The importance of the sub-questions is indicated by the points that you can achieve. The maximum number of points that you can achieve in the exam is 60.

Admitted Aids: Non-programmable pocket calculator; dictionary without handwritten notes.

Problem 1:

The owner of a small business is unhappy with the service she has been receiving from her bank and has decided to move her account to a rival bank. Her decision on which bank to choose will be based not only on the estimated annual bank *charges* (in €) which each bank will levy, but also on the following benefit attributes, for which she has also assessed the swing weights (numbers in parentheses):

- the *proximity* of the local branch (20),
- whether the local branch has a small business *adviser* (50),
- the maximum automatic *loan* allowed (100),
- whether an *internet* banking facility is offered (80).

The alternative banks are listed below, together with their estimated annual costs and the scores the business owner has allocated for each of the benefit attributes.

Bank	Charges	Proximity	Adviser	Loan	Internet
Central	3000	0	100	40	0
Northern	5000	100	100	80	0
Direct	2000	70	0	100	100
Royal	1000	30	0	0	100
Marks	4000	90	100	20	0

- Contrasting annual charges with the overall benefits of each bank, which are the efficient choices? Illustrate your answer graphically. **(10)**
- If the business owner were willing to pay an extra 2000 € for Royal to have an adviser as good as at Marks, which bank should she choose, assuming that her preferences over bank benefits and low costs are characterized by negatively sloped, convex indifference curves? Explain your answer! **(10)**

Problem 2:

In the placing process for construction orders it is uncertain how many orders the Rabbit Corporation will receive. The maximum possible amount is 2600, whereas, in the worst case, only 100 orders are obtained. The Rabbit Corporation is indifferent between a 50-50 lottery, where either 100 or 2600 orders come in, and a sure number of 1000 orders. For other lotteries Rabbit's management finds its preferences characterized by the following relations:

$$\begin{aligned} \{(1700, 0.5), (2600, 0.5)\} &\sim \{(2050, 1)\}, \\ \{(400, 0.4), (1000, 0.6)\} &\sim \{(720, 1)\}, \\ \{(100, 0.5), (1000, 0.5)\} &\sim \{(400, 1)\}, \\ \{(1000, 0.6), (2600, 0.4)\} &\sim \{(1500, 1)\}. \end{aligned}$$

- a) Assume the corporation's preferences to be characterized by a von-Neumann-Morgenstern utility function. Sketch the utility function under the assumption that it has a plausible continuous form. State the calculations on which the sketched utility function is build on. What attitude towards risk does the shape of the utility function indicate? **(12)**
- b) Two alternative strategies are suggested by the operating manager. With strategy **a** the forecasted amount of orders is 400 with probability 1/5, and 100 and 2600, each with probability 2/5. With strategy **b**, 100 orders will occur with probability 1/5, 800 with probability 1/2, and 2050 with probability 3/10. Which of the two strategies should the Rabbit Corporation choose in order to maximize its expected utility? **(8)**

Problem 3:

After experiencing five years of market failures, the big international game developer NagaTronics, which originated from the merger of two market leaders, has decided to split up again into the two original firms Nagasumi and JeuTronics. The two new managements agreed to divide the seven developed but yet unmarketed products of NagaTronics "fairly" between the two firms. The two firms' individual estimates (in units of 10,000 €) of the net present values of the seven products are given in the following table.

	Nagasumi	JeuTronics
Product	10,000 €	10,000 €
1	500	300
2	200	50
3	400	300
4	100	50
5	300	100
6	200	50
7	300	150

- a) Analyze the outcome of a fair division according to the "market procedure". **(8)**
- b) Analyze the outcome of a fair division according to the procedure "Adjusted Winner". **(8)**
- c) Discuss the advantages/disadvantages of the two procedures. Which do you think is more appropriate for the given problem? **(4)**