

### Chapter 1 Exercises

3. (엑셀 이용 권장 Spreadsheet recommended) Your county is considering building a public swimming pool. Analysts have estimated the present values of the following effects over the expected useful life of the pool:

	PV (million dollars)
State grant:	2.2
Construction and maintenance costs:	12.5
Personnel costs:	8.2
Revenue from county residents:	8.6
Revenue from non-residents:	2.2
Use value benefit to county residents:	16.6
Use value benefit to non-residents:	3.1
Scrap value:	0.8

The state grant is only available for this purpose. Also, the construction and maintenance will have to be done by an out-of-county firm.

- Assuming national-level standing, what are the social net benefits of the project?
- Assuming county-level standing, what are the social net benefits of the project?
- How would a guardian in the county budget office calculate net benefits?
- How would a spender in the county recreation department calculate net benefits?

### Chapter 2 Exercises

2. Let's explore the concept of willingness to pay with a thought experiment. Imagine a specific sporting, entertainment, or cultural event that you would very much like to attend—perhaps a World Cup match, the seventh game of the World Series, a Garth Brooks concert, or Kathleen Battle performance.

- What is the most you would be willing to pay for a ticket to the event?
- Imagine that you won a ticket to the event in a lottery. What is the minimum amount of money that you would be willing to accept to give up the ticket?
- Imagine that you had an income 50 percent higher than it is now, but that you didn't win a ticket to the event. What is the most you would be willing to pay for a ticket?
- Do you know anyone who would sufficiently dislike the event that they would not use a free ticket unless they were paid to do so?
- Do your answers suggest any possible generalizations about willingness to pay?

4. Three mutually exclusive projects are being considered for a remote river valley: Project R, a recreational facility, has estimated benefits of \$10 million and costs of \$8 million;

project F, a forest preserve with some recreational facilities, has estimated benefits of \$13 million and costs of \$10 million; project W, a wilderness area with restricted public access, has estimated benefits of \$5 million and costs of \$1 million. In addition, a road could be built for a cost of \$4 million that would increase the benefits of project R by \$8 million, increase the benefits of project F by \$5 million, and reduce the benefits of project W by \$1 million. Even in the absence of any of the other projects, the road has estimated benefits of \$2 million.

- a. Calculate the benefit-cost ratio and net benefits for each possible alternative to the status quo. Note that there are seven possible alternatives to the status quo: R, F, and W, both with and without the road, and the road alone.
- b. If only one of the seven alternatives can be selected, which should be selected according to the CBA decision rule?

6. Because of a recent wave of jewellery store robberies, a city increases police surveillance of jewellery stores. The increased surveillance costs the city an extra \$500,000 per year, but as a result, the amount of jewellery that is stolen falls. Specifically, without the increase in surveillance, jewellery with a retail value of \$1 million would have been stolen. This stolen jewellery would have been fenced by the jewellery thieves for \$600,000. What is the net social benefit resulting from the police surveillance program?

7. (엑셀 이용 권장) Excessive and improper use of antibiotics is contributing to the resistance of many diseases to existing antibiotics. Consider a regulatory program in the United States that would monitor antibiotic prescribing by physicians. Analysts estimate the direct costs of enforcement to be \$40 million, the time costs to doctors and health professionals to be \$220 million, and the convenience costs to patients to be \$180 million (all annually). The annual benefits of the program are estimated to be \$350 million in avoided resistance costs in the United States, \$70 million in health benefits in the United States from better compliance with prescriptions, and \$280 million in avoided resistance costs in the rest of the world. Does the program have positive net benefits from the national perspective? If not, what fraction of benefits accruing in the rest of the world would have to be counted for the program to have positive net benefits?