NOVA SCHOOL OF BUSINESS AND ECONOMICS

Microeconomics
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Class #10: Choice under uncertainty.

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Classes: 40, 41

Question 1

Consider a consumer whose preferences are summarized by the utility function $U(c_1, c_2) = \ln c_1 + \ln c_2$, where c_1 and c_2 denote consumed quantities in period 1 and 2, respectively. Assume that the prices of consumption in each period are constant at 1. In period 1 the consumer receives 100€ that can be use in consumption or to make savings at interest rate $r = 0$. The consumer cannot borrow money. In period 2 the consumer will receive a random income.

(a) Suppose that in period 2 the consumer will receive 34€. Derive the optimal consumption in each one of the periods.

(b) Suppose that in period 2 the consumer will receive 100€ or 0€ with equal probability of 50%. Formalize the consumer's problem.

(c) What is the optimal consumption choice in each period? What is the expected utility?

Question 2

Consider a person whose preferences are summarized by the utility function $U(w) = \ln w$, where w denotes the wealth that this person has. This person might incur a loss L with probability π (bad state of nature) or no loss with probability $1 - \pi$ (good state of nature). Suppose there is an insurance in the market that covers the loss of wealth for unitary price p. Hence, to insure K units of wealth the person has to pay pK.

(a) What is the person's wealth in the bad and good states of nature if he insures K units of wealth?

(b) Formalize the person's problem and find the condition that determines the optimal choice of insurance.

(c) Suppose that the insurance market is perfectly competitive. Determine the price of insurance, p, in equilibrium. What is the optimal insurance policy (coverage level) for this person?

Question 3

Albert has preferences that are summarized by the utility function $U(w) = c^{0,5}$, where c is his income. He owns a car of value w€ and there is a probability π of the car being stolen. How much is Albert willing to pay to be fully insured against car thefts?