

Tutorial 7. *Choice under Uncertainty (cont'd).*

Problem 1. Ana's utility function is $U = \sqrt{w}$, where w is her wealth. She owns a bakery that will be worth 69 or 0 dollars next year with equal probability.

- (a) Suppose her firm is the only asset she has. What is the lowest price P at which she will agree to sell her bakery? Demonstrate the solution on diagrams.
- (b) Redo part (a) assuming that she has 100 dollars safely stored under her mattress. Demonstrate on diagrams.
- (c) Compare and discuss your results in parts (a) and (b). What is the relationship between Ana's income and her risk aversion?

Problem 2. Albina owns a car worth 50,000 which can get stolen with probability 1%. She can purchase coverage of the amount $q \in [0; 50,000]$ at premium $\pi = 0.05$ dollars for each dollar covered. Her utility function is $U = \ln(w)$. Assume she has no other assets.

- (a) Set up her maximization problem.
- (b) How much insurance will she choose to buy?
- (c) How much profits does the insurance company earn on insuring Albina?
- (d) Does the fact that the insurance company earn profits mean that Albina is worse off? Explain what is happening.
- (e) How much insurance will she buy if insurance company charge an actuarially fair insurance rate?

Problem 3. A person with $U(w) = w^2$ is facing the following lottery: there are four tickets sold, of which only one wins the prize of \$100.

- (a) Calculate the expected value of the lottery.
- (b) Give the definition and calculate certainty equivalent.
- (c) Compare and discuss results in parts (a) and (b).