

ECON 339: Behavioral Economics

Take-Home Quiz 3

1. Consider a decision-maker Bill with current income \$0 and value-function

$$U(x) = \begin{cases} \sqrt{x} & \text{if } x \geq 0 \\ -2\sqrt{-x} & \text{if } x < 0, \end{cases}$$

where x represents possible payoffs from any possible gamble. Note that for losses, the negative inside the square root makes the loss into a positive number, and the leading negative sign ensures losses have negative utility (e.g., a \$5 loss has utility $U = -2\sqrt{-(-5)} = -2\sqrt{5}$).

- (a) (2 points) Considering only the value function over gains, is Bill risk-averse, risk-neutral, or risk-loving? Explain.
- (b) (2 points) Considering only the value function over losses, is Bill risk-averse, risk-neutral, or risk-loving? Explain.
- (c) (4 points) Does this value function exhibit loss aversion? Why or why not?
- (d) (4 points) Suppose Bill has the chance to enter a lottery that offers a 50% chance of winning \$100 and a 50% chance of winning nothing. If Bill does not enter the lottery, Bill will for sure gain \$36. **Question:** Would Bill choose to enter the lottery? Why or why not? Show any and all calculations.
- (e) (4 points) Does your answer change if Bill is instead choosing between a certain loss of \$36 and a lottery that has a 50% chance of losing \$100 and a 50% chance of losing nothing? If so, how and why?
- (f) Bill lives in a small town in upstate New York. His house has a 1% chance of flooding due to the nearby canal in any given year. Bill chooses to buy flood insurance, even though it is not required. Bill also buys a lottery ticket every year that also has a 1% chance of winning the jackpot in a given year. Assume the jackpot and the flood damage are equal amounts.
 - (a) (2 points) Does Bill's value function predict this behavior? Why or why not?
 - (b) (2 points) If not, how does prospect theory explain this behavior?