

13 Security II (FMS)

- (a) Consider a gamble in which you have even chances of winning or losing \$100. Your expected gain or loss will be \$0 and you should therefore be indifferent to gambling or not gambling. Explain Bernoulli’s idea, at the foundation of Expected Utility Theory, that instead says you will be risk-averse. [4 marks]
- (b) Kahneman’s 2002 Nobel Prize Lecture features the following two problems:

Problem 2

Would you accept this gamble?
50% chance to win \$150
50% chance to lose \$100
Would your choice change if your overall wealth were lower by \$100?

Problem 3

Which would you choose?
lose \$100 with certainty
or
50% chance to win \$50
50% chance to lose \$200
Would your choice change if your overall wealth were higher by \$100?

Explain all the important points made by these problems, including why they are related. Show how they demonstrate “Bernoulli’s error”, in the context of Prospect Theory being a critique of Expected Utility Theory. [8 marks]

- (c) Sketch the main graph of Prospect Theory and describe its most significant features, with reference to the two problems in (b). [4 marks]
- (d) Explain what is meant by “tragedy of the commons” and how the concept relates to password usability. [2 marks]
- (e) Explain what is meant by “compliance budget” and how the concept relates to password usability. [2 marks]