

CHAPTER 2: TOPICS IN CONSUMER THEORY

Exercise 1

The consumer buys bundle x^0 at prices p^0 and bundle x^1 at prices p^1 . State whether the following choices satisfy the Weak Axiom of Revealed Preferences (WARP): $p^0 = (1,3)$, $x^0 = (4,2)$, $p^1 = (3,5)$, $x^1 = (3,1)$.

Exercise 2

An expected utility maximizer with wealth w may invest B , $B < w$, in an asset that has a rate of return $a > 0$ with probability p and a rate of return $b < 0$ with probability $1 - p$ (investing B , with probability p he receives $(1 + a)B$; with probability $1-p$ he receives $(1 + b)B$). Show that if the expected rate of return is 0, the agent will invest $B = 0$ if he is risk averse.

Exercise 3

Filipe plays soccer with a second league team. If he does not suffer any injury by the end of the season, he will get a professional contract with his team, which is worth 10000 euros. If he is injured, he will get a contract as a fitness trainer, which is only worth 100 euros. The probability of suffering an injury is 10%. He is likely to get through the season unscathed with a 90% probability. Assume that Filipe's von Neuman-Morgenstern utility function is $u(x) = \sqrt{x}$.

- How high is the expected value of this gamble?
- Is Filipe risk averse, risk neutral, or risk lover?
- How high is the expected utility of the gamble described above?
- Assuming that Filipe could buy insurance at price p that would pay him 9900 euro in the case of an accident, how high could the maximal value of p be for Filipe to still afford the insurance?
- How high is the certainty equivalent for the above gamble? How high is the risk premium?

Exercise 4

A risk-averse individual with initial wealth w_0 and vNM utility function $u(\cdot)$ must decide

whether and for how much to insure his car. The probability that he will have an accident and incur a dollar loss of L in damages is $\alpha \in (0, 1)$. Let p denote the rate at which each euro of insurance can be purchased (i.e., when x units of insurance are purchased, the agent pays px) and assume that insurance is available at an actuarially fair price (i.e., one that yields insurance companies zero expected profits). How much insurance, x , should he purchase?