

Assignment 2

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Abstract

This document shows a homework assignment for the seminar Economics and Psychology of Risk and Time.

Exercise 1

Calculate the certainty equivalent of the prospect $(0.2, 40; 0.6, 50; 0.2, 30)$, under:

a) Expected utility theory with the utility function

$$u(x) = \frac{x}{10}$$

with total wealth=0.

b) Rank dependent utility with the utility function

$$u(x) = \frac{x}{10}$$

and

$$w(p) = p^2$$

with total wealth=0.

Answer Exercise 1a

The expected value of the prospect is $EV = 0.2 \cdot 40 + 0.6 \cdot 50 + 0.2 \cdot 30 = 44$ and the utility given the formula

$$U(x) = \sum p * u$$

is 4.4.

The certainty equivalent (CE) is calculated by determining the value of x for which an individual is indifferent of receiving the prospect or a certain amount. In this case, since utility is given by

$$U(x) = \frac{x}{10}$$

the CE is calculated as follows:

$$U(x) = \frac{x}{10} = 4.4$$

$$x = 4.4 * 10 = 44 = CE$$

Answer Exercise 1b

The rank dependent utility calculated using $U(x) = \sum \pi * u$ and $w(p) = p^2$ is as follows:

$$0.2^2 * 4 + (0.8^2 - 0.2^2) * 5 + (1 - 0.8^2) * 3 = 4.24.$$

Given that the utility is calculated as $u(x) = 0.1 * x$, so the amount for which an individual would be indifferent between the prospect or a certain amount would be

$$CE = \frac{4.24}{0.1} = 42.2$$

Graph

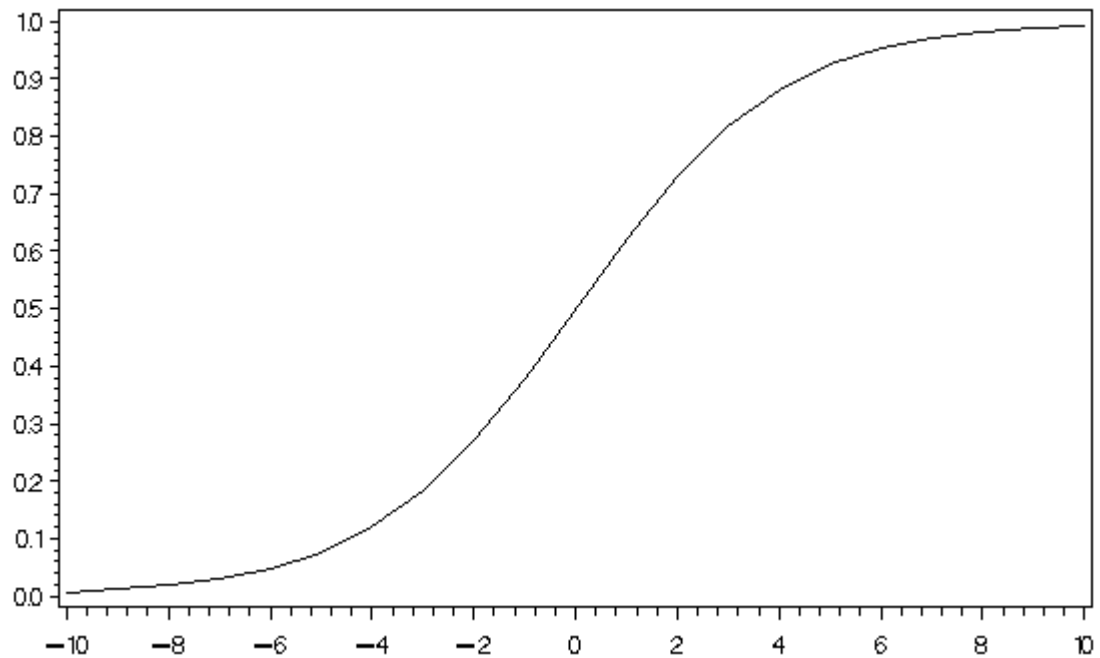


Figure 1: Regression