

Lecture 2- Expected Utility Theory and Prospect Theory

Expected utility theory= normative theory that tells us how ideally rational decisions should be made

Prospect theory= positive theory, describes how decisions are made in real life settings (more realistic view of how we make decisions)

Expected utility theory

Problem is that we need to know the utility function → in this example it was given but we won't always be given it

Determining the utility function

- Determine some points on the **utility function** and interpolate
- If the first units of some good are associated with a steep increase in utility, the more you have of a good gives a less marginal utility

The certainty equivalent (CE) of a lottery is the certain outcome that has the same (expected) utility as the lottery so that the decision maker is indifferent between the lottery and the certain consequence

- Offer different gambles to the decision maker determine utility function

- Expected value of the gamble is 0.5, CE needs to give the same utility to the decision maker as the expected value of the gamble for them to be indifferent between the 2

Risk attitude

- The risk premium $RP(a)$ of a lottery a is the difference between the expected value of the lottery and the certainty equivalent of this lottery:
- =Expected value of the lottery minus the certainty equivalent
- $RP(a) = EV(a) - CE(a) = 70 - 62 = 8$
- Need to give risk premium of at least \$8 to play the lottery, or, to avoid playing the lottery he would be willing to give up \$8

Decision maker is **risk averse** → has a positive risk premium i.e. to be willing to play a gamble he needs to receive a gamble, or, willing to give up some money or utility to achieve a certain outcome (known as concave)

Decision maker is **risk neutral** → requires a risk premium of zero → utility function that's linear

Decision maker is **risk prone** → decision maker is willing to give up money to take on risk, upward sloping graph

Prospect theory

- More realistic view of how decisions are made
- Main question it tries to answer: how do we evaluate risky prospects (lotteries)?
- Challenges expected utility theory
- =A behavioural model that shows how people decide between alternatives that involve risk and uncertainty (e.g. % likelihood of gains or losses). It demonstrates that people think in

terms of expected utility relative to a reference point (e.g. current wealth) rather than absolute outcomes

- **Value function:**

Reference point

- Decisions are made based on the reference point, which can change with time and depend on the situation
- Common reference points, status quo, 0, risk free rate, expected risk premium, a goal (i.e. not achieving a goal is a loss)

Loss aversion

- People's tendency to prefer avoiding losses to acquiring equivalent gain
- Losses loom larger than gains
- Pain of a loss is greater than the pleasure of an equal gain

- Why does the historical performance of a stock affect your decision whether to sell at a gain or hold onto it with the chance of receiving a higher gain

Break even effect

- Losers become more willing to take on risk to break even
- People tend to use risk seeking behaviours in order to make up a loss
- On Deal or No Deal, 56% of participants reject any given "deal"

Weighting function

- Overweighting of small probabilities → put higher weighted decisions on winning the lottery, fear of low risk events (e.g. plane crash)
- Underweighting large probabilities → almost guarantee is not enough