1 Prospect theory

- ✓Developed by Kahneman & Tversky (1979)
- ✓Defines a relative “value function”
  - – Gains and losses, not absolute value
  - – Gains and losses have different value functions

2 Value function

3 Prospect theory and the framing effect

- ✓Because the value function for losses is steeper, losses “loom larger” than gains
- ✓Framing the problem as a loss changes the value function

4 Relative to a reference point

- ✓Gains and losses are relative to a *reference point*
  - – Decision making changes as the reference point is changed.
  - – This reference point is variously called:
    - Reference point
    - Status quo
    - Aspiration level

5 Justification

- ✓Our perceptual apparatus is attuned to *change* or *difference*, not absolute value.
- ✓This is the major difference between prospect theory and expected utility theories.

6 Loss aversion

- ✓Because losses loom large, people behave as if:
  - – “Losing it matters more than gaining it would have mattered if they didn’t have it.”
- ✓Thus, sellers value their commodities more highly than buyers do.
- ✓So, give someone something free (e.g., a 3 month subscription) and they will value it more highly - they don’t want to lose it.

7 Theory also changes the way that probabilities are handled

- ✓In expected utility theories, an objective 50% is psychologically equivalent to a 50% judgment.
- ✓Objective probabilities are translated into psychological “decision weights”

8 Decision weights

- ✓In prospect theory, decision weight is not a linear function of the real probability
- ✓People overweight small probabilities and underweight moderate and large probabilities
- ✓One possible equation:

9 Decision weight function

10 Small probabilities

- ✓ At the low end of the spectrum, the curve is steep.
- ✓ People are very sensitive to the difference between "impossible" and "possible"

11 Moderate probabilities

- ✓ In the middle, the curve is too flat.
- ✓ People are under-influenced by changes in moderate probabilities.

12 Decision weight function

13 High probabilities

- ✓ Curve is again too steep.
- ✓ People are very sensitive to the difference between "certain" and "not certain"

14 Data

- ✓ The overweighting of low probabilities and underweighting of moderate ones is easily observed.
- ✓ Classic example: Frequency judgment of various diseases.

15 Empirical weights

16 Affect rich vs. Affect poor - Altering gamma (γ)

17 Decision weight translation explains the Allais paradox

- ✓ People prefer to eliminate a small probability (which was overweighted) than to slightly reduce a moderate probability (which was underweighted)

18 Decision weights explain the "certainty effect"

- ✓ Reminder, people prefer an option that reduces the probability from .01 to .00 than from .02 to .01.
- ✓ People prefer a 100% chance of getting $100 over a 95% chance of getting $120.
  - Even though expected value of second option is higher (.95*$120 = $114).

19 They also explain the pseudocertainty effect

- ✓ You can manipulate choice through the psychological representation of the certainty effect

20 Example of pseudocertainty effect

- ✓ An insurance policy that protects against fire and flood can be presented as one that provides 100% protection against fire and none against flood or a 50% protection against both
  - The first policy is generally preferred.

21 Another example: Slovic, Fischhoff, & Lichtenstein (1982)

- ✓ Two forms of vaccination questionnaires about a disease that afflicts 20% of people
  - Probabilistic protection
    - Would you receive a vaccination that protects half of the people receiving it?
      - » 40% said "yes"
  - "Certain" protection

- Would you receive a vaccination that gives complete protection against one strain (afflicting 10% of people) but none against the other (afflicting 10% of people)?
    - » 57% said “yes”

22 Related marketing example

✓“Buy one get one free”

✓The free one seems more attractive than half-off of both.

✓(related because this doesn’t involve “certainty”)

23 Aversion to stock market volatility

✓In the long run, stocks significantly outperform bonds and other conservative investments

✓So, why do people prefer conservative investments for long-term retirement accounts?

24 Rationales for conservative investing

✓1. Risk-aversive in the face of gain.

✓2. The ups-and-downs of stocks

- The gains feel good
- But, the losses loom larger.

25 Evaluation

✓Prospect theory is much better than expected utility theory.

✓It is the best comprehensive description of the decision making process.

✓But...

26 It is not complete

✓There are phenomena that it does not predict or explain

- E.g., see Preference Reversals in Chapter 8.

✓It assumes some level of sophistication by the decision maker

✓It is not a theory of judgment (e.g., of likelihood, causation, randomness).

✓It is underspecified for complex decision making.