

Topic 11. A Brief Introduction to Behavioural Finance

ECON30024 Economics of Financial Markets

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Outline

1. A brief overview
2. Prospect theory

Reading: Kahneman and Tversky (Econometrica, 1979), “Prospect Theory: An Analysis of Decision under Risk”;

Joo and Durri (2015), “Comprehensive Review of Literature on Behavioural Finance”

1. A Brief Overview

- What is behavioral finance?
 - Behavioural finance is a subfield of behavioural economics.
 - It studies how emotional, cognitive, and psychological factors influence the behavior of investors and financial practitioners, and the subsequent effects on the markets.
- Classical or mainstream financial theories presume:
 - investors are fully rational.
 - investors consider all the available information before making investment decisions;
 - investors always pursue self-interest.

- Behavioural finance is based on the notion of “**bounded rationality**”:

Basic human nature like emotions, limited mental capacity, limited knowledge etc. act as boundaries of rational thinking and make people bounded rational.

- Investors are treated as “normal” not “rational”.
- Investors have cognitive limitations.
- Investors have limits to their self-control.
- Investors are influenced by such limitations and can make wrong decisions.

- Motivation for the development of behavioural finance
 - Studies have confirmed that human beings are bounded rational in their decision making.
 - Behavioural finance might help explain financial market phenomena that classical theories fail to explain, such as
 - asset market anomalies
 - excess volatility in asset prices
 - financial bubbles
 - the equity premium puzzle

- Some common biases revealed by behavioural finance studies
 - Loss aversion
 - Herd mentality bias
 - Overconfidence bias
 - Confirmation bias: people tend to accept information that confirms their already-held belief.
 - Familiarity bias: people tend to invest in what they know.
 - Anchoring bias: people tend to rely too much on pre-existing information or the first information they find when making decisions.

- Refer to Joo and Durri (2015) for a literature review on behavioural finance.
 - There is no unified theory of behavioural finance yet.
 - The emphasis has been on identifying anomalies that can be explained by various psychological traits in individuals or groups.
 - Behavioural finance acts as a supplement and not as a replacement to classical finance theories.
- Next, we briefly introduce one of the most established theories in the behavioural finance literature – the **prospect theory**.

2. The Prospect Theory

- The prospect theory was first developed by Kahneman and Tversky (1979).
 - This paper presents a critique of expected utility theory, and develops an alternative theory, **prospect theory**.

2.1 Some counter-examples to expected utility theory

- KT conduct a series of laboratory experiments to collect responses to several hypothetical choice problems.
- The responses suggest that people's preferences systematically violate the assumptions underlying expected utility theory.

- First group of hypothetical choice problems
 - Denote $(x, p; y, q)$ as a **prospect**: receive x with prob. p , y with prob. q , and nothing with probability $1 - p - q$.
 - Problem 3: choose between the following two prospects:

A: (4000,0.8) or B: (3000)
 - Problem 4: Choose C: (4000, 0.2) or D: (3000,0.25)
 - A majority of respondents chose B and C, not compatible with expected utility theory (?)
 - These results suggest that people overweight gains that are considered certain, relative to gains which are merely probable. KT label this as **certainty effect**.

- Second group of hypothetical choice problems: reverse the signs of outcomes in the first group questions.

- Problem 3': choose between:

A: $(-4000, 0.8)$ or B: (-3000)

- Problem 4': Choose between

C: $(-4000, 0.2)$ or D: $(-3000, 0.25)$

- A majority of respondents chose A and D, a reverse of the previous preference order.
 - Such responses reflect **loss aversion**.
- These results suggest that preferences exhibit risk aversion for positive prospects and risk seeking for negative ones.

- Third group of hypothetical choice problems:
 - Problem 11: In addition to whatever you own, you have been given 1000. You are now asked to choose between

A: (1,000, .50), or B: (500)

Problem 12: In addition to whatever you own, you have been given 2,000. You are now asked to choose between

C: (-1,000, .50), or D: (-500)

- A majority of respondents chose B and C, consistent with loss aversion.
- However, when viewed in terms of terminal wealth, the two problems are identical. So under expected utility theory, the same choice should be chosen.

2.2 Theory

- In view of the experimental results, KT propose an alternative theory of individual decision making under risk, called prospect theory.
- The value of a prospect $(x, p; y, q)$ is expressed as

$$V(x, p; y, q) = \pi(p)v(x) + \pi(q)v(y).$$

- The function π assigns a **decision weight** $\pi(p)$ as a function of the probability of the outcome.
- The function v , assigns to each outcome x a subjective value of $v(x)$.

- The value function v is
 - (i) defined on deviations from the reference point;
 - (ii) generally concave for gains and commonly convex for losses;
 - (iii) steeper for losses than for gains.

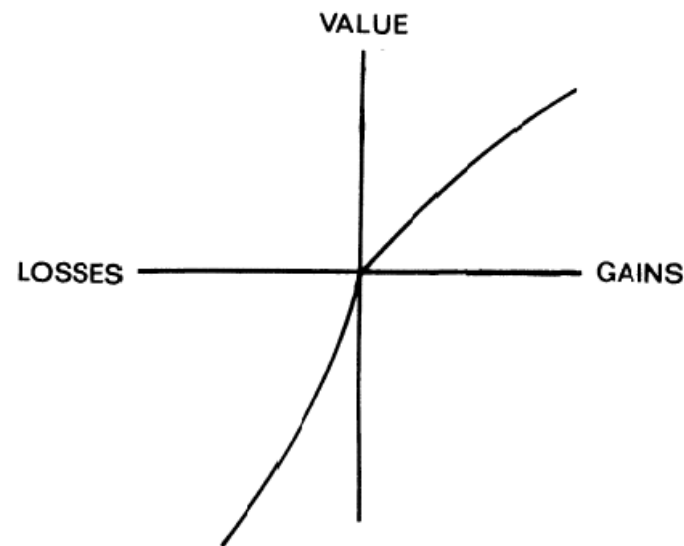


FIGURE 3.—A hypothetical value function.

- The weighting function π
 - π relates decision weights to stated probabilities.
 - Naturally, π is an increasing function of p , with $\pi(0) = 0$ and $\pi(1) = 1$.
 - Figure 4 presents a hypothetical weighting function which satisfies the properties KT propose.

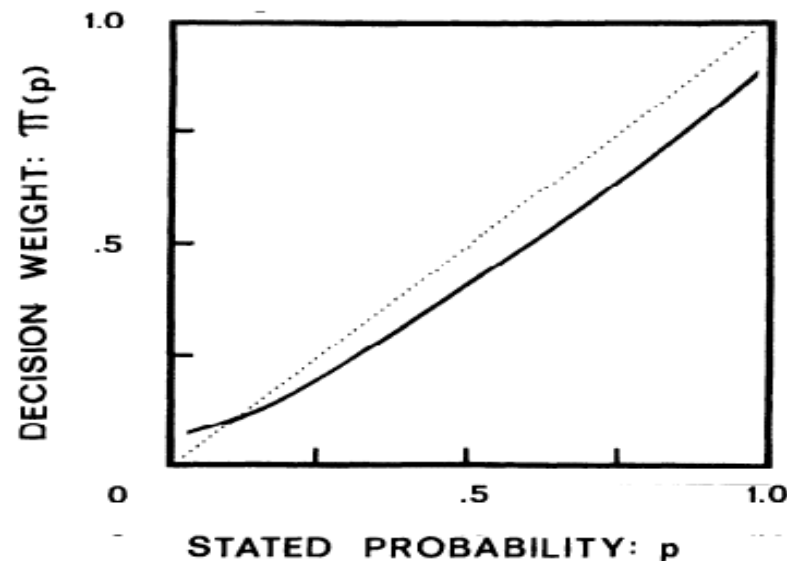


FIGURE 4.—A hypothetical weighting function.

- This formulation generalises the expected utility form by assuming that
 - values are attached to changes rather than to final states,
 - decision weights do not coincide with stated probabilities.

Review questions

1. What is behavioural finance?
2. What is the major difference in the assumptions for behavioural finance and for classical financial theories?
3. Understand the general motivation for the development of behavioural finance.
4. Name a few common biases in investors' decision making as identified in behavioural finance studies.
5. Understand why responses to the experiments in KT are not compatible with expected utility theory.
6. What are the major differences between prospect theory and expected utility theory?