

PROSPECT THEORY

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Contents

- Introduction
- Comparison of expected utility theory and prospect theory
- Basic framework of prospect theory
- Value function
- Lottery tickets and Insurance
- Weighing function
- Related biases
- Application of prospect theory
- Criticism of Prospect theory
- Conclusion

INTRODUCTION

- Prospect theory was developed by Daniel Kahneman and Amos Tversky in 1979, in an attempt to describe the human behavior by incorporating observed human psychology aspects.
- Prospect theory sheds light on how people make decisions that involve risks. In standard finance we follow expected utility theory, but behavioural scientist after criticizing EUT defined prospect theory as it gives better explanation of irrational decisions taken by investors.

DIFFERENCE BETWEEN EXPECTED UTILITY THEORY AND PROSPECT THEORY

- The expected utility theory is based on the hypothesis that under uncertainty, the weighted average of all possible levels of utilities will represent the utility of an entity in the best way for a given point of time. Thus, the utility of an entity is derived from expected utility hypothesis.
- Prospect theory is recognized as an alternative to expected utility theory. Prospect theory is a positive theory, while expected utility theory is a normative theory.
- ***Assumptions of Prospect theory***
 - ▣ Universally, people do not want to avoid risk.
 - ▣ Individuals seem to be risk-averse related to gains and are risk seeking while incurring losses.
 - ▣ Choices do not always obey the invariance assumption. Same choices can be framed in different ways to produce dramatically different preferences.

BASIC FRAMEWORK OF PROSPECT THEORY

- There are the three key aspects of observed decision-making that provide a basis for prospect theory,
 - ▣ ***Key aspect 1: Depending on the nature of the prospect, people exhibit risk aversion or risk seeking attitude.***
 - ▣ ***Key aspect 2: People value their prospects of gains or losses in relation to a reference point. Generally, this reference point begins with status quo.***
 - ▣ ***Key aspect 3: People are averse to losses as losses loom larger than gains.***

VALUE FUNCTION

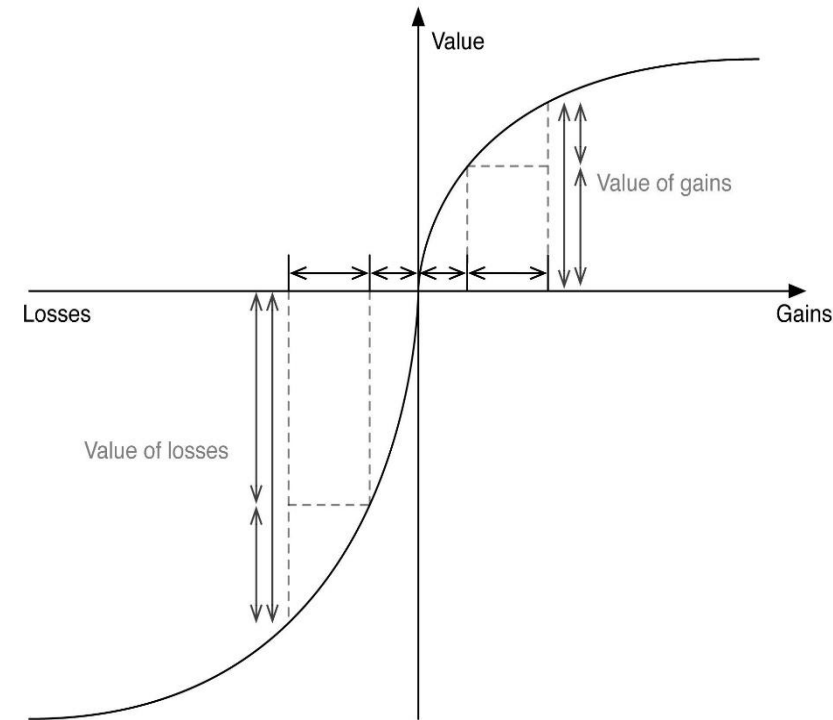
- Value function is similar to the utility function of traditional expected utility theory. The only difference between the two functions is the method of measurement. While the utility function measures the utility in terms of the level of wealth, value function derives the value from the gains and losses relative to a reference point.
- Prospect theory uses **decision weights** instead of probabilities. These weights are function of probabilities. $V(z)$ shows value of a wealth change where 'z' is used to show wealth level instead of 'w'.

VALUE FUNCTION (Cont.)

- Value of a prospect $V(P)$ for a prospect of $P(p_r, z_1, z_2)$ value is given as under:

$$V(p_r, z_1, z_2) = V(P) = \{\pi(p_r) * v(z_1)\} + \{\pi(1-p_r) * v(z_2)\}$$

Where, $\pi(p_r)$ is the decision weight associated with probability p_r .



WEIGHTING FUNCTION

- The theory of weighing function describes the decision processes in two stages:
 - ▣ Outcome of decisions are ranked according to a certain heuristic. A reference point is set and accordingly people decide which outcomes can be considered equivalent. Outcomes that lie below reference point are losses while the greater outcomes are gains. Framing effects are alleviated during editing phase. In the editing phase coding, combination, segregation, simplification and detection of dominance is carried out. It helps to segregate isolation effect coming from consecutive probabilities.
 - ▣ In the subsequent evaluation phase, value (utility) computation is done on the basis of potential outcomes and their respective probabilities, and then choose the alternative having a higher utility.

RELATED BIASES

- Prospect theory involves various biases to explain the prospects. These include,
 - ▣ **Framing**
 - ▣ **Loss Aversion**
 - ▣ **Regret Aversion**
 - ▣ **Mental Accounting**
 - ▣ **Disposition Effect**

APPLICATION OF PROSPECT THEORY

- The theory is used in measuring the utility under risk.
- To understand the concept of probability weighing for gains and losses.
- In studying the loss aversion tendency of investors.
- To explain the violation of some of the properties of Expected Utility Theory.
- It explains how investors take decisions.

CRITICISM OF PROSPECT THEORY

- Prospect theory follows that the probabilities can be objective defined using decision weights. But for identifying these objective probabilities it becomes difficult to know the value of these probabilities in various situations like in gambles.
- It is very difficult to assign probabilities and then some weights.

Thank You

- Chapter-5
LOSS AVERSION

Continued...