

PROSPECT THEORY



THE FINAL EPISODE

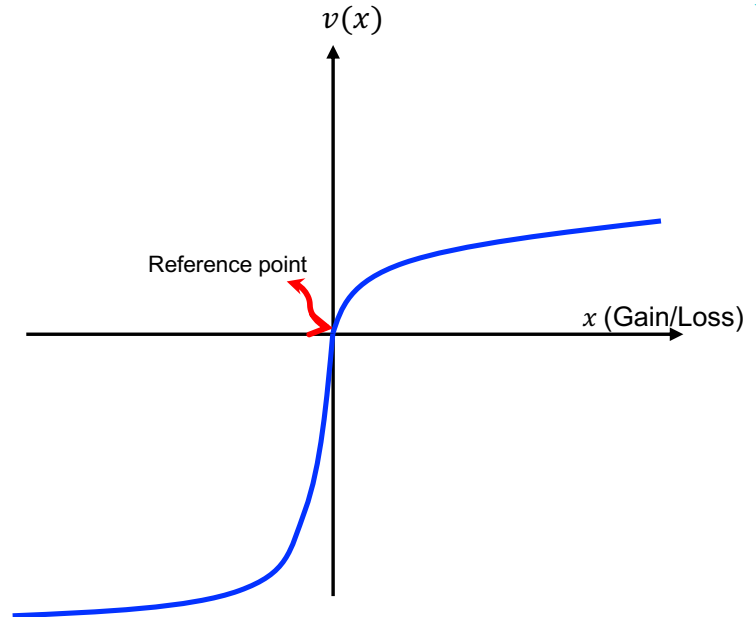
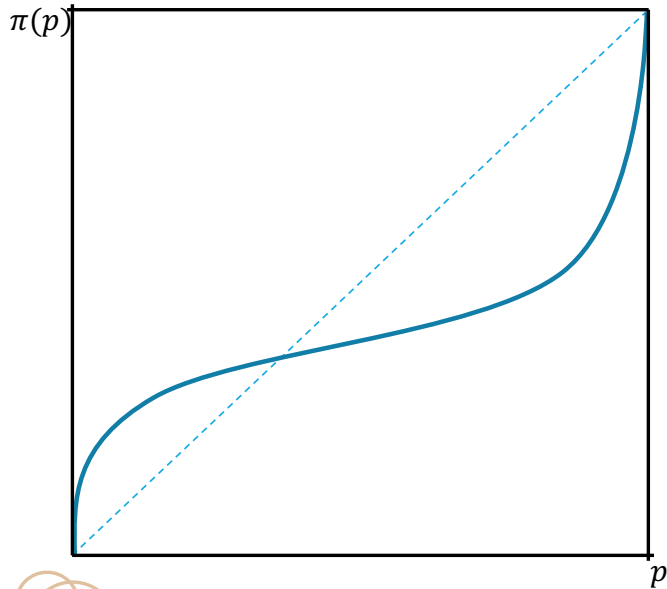
EE 434 Behavioral Finance, SEM1/2021

Sunsiree Kosindesha

The background features a complex geometric design. On the left, a blue trapezoidal shape is partially covered by a pattern of horizontal and vertical lines. A green triangle is in the top right corner. In the bottom right, there is a pattern of vertical lines. In the top right, there are two overlapping orange circles and some blue lines. The main text is centered in a white area.

Fourfold patterns of choices under risk

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



The core achievement of prospect theory

The fourfold pattern of choice under risk:



	GAINS risk-averse	LOSSES risk-seeking
HIGH PROBABILITY <i>Underw of large prob</i> Reinforcing forces <i>VC) Kπ(C)</i> PWF (CP)	<i>bet</i> 95% chance to win \$10,000 Risk averse + Underweighting 95% Fear of disappointment RISK-AVERSE BEHAVIOR Accept unfavorable settlement Ex: refusing low-risk high return business opportunity <i>reject the bet</i>	<i>bet</i> 95% chance to lose \$10,000 Risk seeking + Underweighting 95% Hope to avoid loss RISK-SEEKING BEHAVIOR Reject favorable settlement Ex: taking desperate gambles for a small hope of avoiding large loss <i>accept the bet</i>
LOW PROBABILITY <i>Overw of small prob</i> Competing forces Influence of PWF wins. <i>(from observations)</i>	<i>bet</i> 5% chance to win \$10,000 Risk averse + Overweighting 5% Hope of large gain RISK-SEEKING BEHAVIOR Reject favorable settlement Ex: buying lottery tickets <i>risk seeking wins + take the bet</i>	<i>bet</i> 5% chance to lose \$10,000 Risk seeking + Overweighting 5% Fear of large loss RISK-AVERSE BEHAVIOR Accept unfavorable settlement Ex: buying insurance policies <i>risk averse wins reject the bet</i>

Choices are:
 risk averse if less-risky option is preferred;
 risk seeking if more-risky option is preferred.

$$(\$5000, 0.001) \succ (\$5, 1)$$

The fourfold pattern of choice under risk:

- ❖ For intermediate/large probabilities, we have risk-averse behavior over gains and risk-loving behavior over losses.
- ❖ For small probabilities, we have risk-loving behavior over gains and risk-averse behavior over losses.



**Narrow framing vs.
Broad framing**

Decision (i)

❖ Choose between

A. sure gain of \$240

risk aversion gain domain

B. 40% chance to gain \$1,000 and 60% chance to gain nothing

didn't choose
medium prob.

C

Decision (ii)

❖ Choose between

didn't choose

C. sure loss of \$750

*loss domain - medium
risk seeking - large prob.*

D. 50% chance to lose \$1,000 and 40% chance to lose nothing

*what we chose
A & D*

vs.

*what we didn't
B & C*

60% $\$240 - \1000
 $\Rightarrow -\$760$
40% $\Rightarrow \$240$
 $\$240 - \0

60% $-\$750 + \0
 $\Rightarrow -\$750$
smaller loss
larger gain
 $\Rightarrow \$250$
40% $-\$750 + \1000

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Decision (iii)

❖ Choose between

A & D is inferior to B & C

A&D. 40% chance to win \$240 and 60% chance to lose \$760

B&C. 40% chance to win \$250 and 60% chance to lose \$750

Narrow framing is costly.

- ❑ Majority of respondents chose:
 - ❑ A. in decision (i)
 - ❑ D. in decision (ii).
- ❑ AD is dominated by BC.

It is costly to be risk averse for gains and risk seeking for losses.

Narrow framing vs. Broad framing

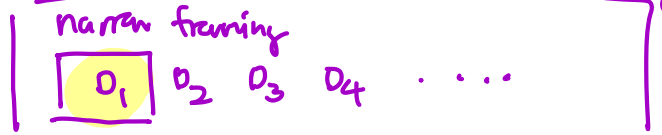
- Narrow framing: a sequence of two simple decisions, considered separately
 - Think about A vs. B
 - Think about C vs. D
- Broad framing: a single comprehensive decision, with four options
 - Think about A, B, C, D together: AC, AD, BC, BD

Narrow framing vs. Broad framing

- A rational agent will engage in broad framing.
- A rational agent will use mental efforts to enforce consistency.
- Econs will be coherent in their choices.
- Humans are naturally narrow framers.
- We are susceptible to WYSIATI (What You See Is All There Is). That is, we use the information we have as if it is the only information.
- We are averse to using mental effort.

Inducing to use broad framing

✓ "To think like a trader" helps with loss aversion and endowment effect



✓ "Treat this problem as one of many monetary decisions, which will sum together to produce a portfolio"

✓ Broad framing blunt the emotional reaction to losses



DANKE!

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