PROSPECT THEORY IN CHOICE AND PRICING TASKS

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Overview

Prospect “theory” “predicts” the

fourfold pattern (FFP) of risk attitudes: (1) risk-seeking over low-probability gains, (2) risk-aversion over low-probability losses, (3) risk-aversion over high-probability gains, and (4) risk-seeking over high-probability losses

Short summary of the paper:

- we gave them a simple choice between a gamble and an expected value; standard expected utility theory with risk aversion worked pretty well
- we gave them some wildly complicated choice problem involving all sorts of gambles and the “Becker-DeGroot-Marschak” preference mechanism (a lottery over lotteries) and they got all confused and exhibited the FFP

Table 5: Choice-subjects in the Choice Task, Risk Attitudes by Prospect and Round.

	Low probability (p=0.1)						High probability (p=0.8)					
	Gain (+$20)			Loss (-$20)			Gain (+$20)			Loss (-$20)		
	Round			Round			Round			Round		
Risk attitude:	1	2	3	1	2	3	1	2	3	1	2	3
Averse	50	44	42	31	36	34	44	45	45	59	56	58
Seeking	50	56	58	69	64	66	56	55	55	41	44	42

Note: 64 subjects, percentages in cells.

Table 3: Price-subjects in the Price Task, Risk Attitudes by Prospect and Round.

	Low probability (p=0.1)						High probability (p=0.8)					
	Gain (+$20)			Loss (-$20)			Gain (+$20)			Loss (-$20)		
	Round			Round			Round			Round		
Risk attitude:	1	2	3	1	2	3	1	2	3	1	2	3
Averse	19	16	16	69	66	63	88	78	75	13	22	22
Neutral	34	34	34	22	25	25	3	6	9	6	6	6
Seeking	47	50	50	9	9	13	9	16	16	81	72	72

Note: 32 subjects, percentages in cells.

Notice that the reported price data is generally consistent with the idea that if the certainty equivalent of the gamble *g* is *p* then the certainty equivalent of *–g* is *–p* (although of course expected utility theory says $Eu(g) \approx Eg + CVg; Eu(-g) \approx -Eg + CVg$

Prospect			Mean reported price			Median reported price		
Description		Expected value	Price	p-value, Wilcoxon test	Mean risk attitude	Price	p-value, sign test	Median risk attitude
Gain +$20	1. p=0.1	$2	4.9	0.007	Seeking	2.0	0.078	Neutral
	2. p=0.4	$8	8.1	0.500	Neutral	7.0	0.170	Averse
	3. p=0.8	$16	12.2	0.000	Averse	12.0	0.000	Averse
Loss -$20	4. p=0.1	-$2	-5.7	0.000	Averse	-4.5	0.000	Averse
	5. p=0.4	-$8	-9.6	0.021	Averse	-9.0	0.064	Averse
	6. p=0.8	-$16	-12.6	0.000	Seeking	-13.0	0.000	Seeking

Notes: 32 subjects, first-round decisions. The Wilcoxon test assumes the price distribution is symmetric and tests the hypothesis that the mean and median of the distribution equal the expected value. The sign test does not assume symmetry and tests the hypothesis that the median of the distribution equals the expected value.

observations

- they only got to play once
- willingness to pay versus willingness to be paid
- simple explanation: when in doubt buy low, sell high
- could this have something to do with the FFP?