Myopic Loss Aversion

December 9, 2019

Samuelson (1963)

"a few years ago I offered some lunch colleagues to bet each $200 to $100 that the side of a coin they specified would not appear at the first toss. One distinguished scholar - who lays no claim to advanced mathematical skills - gave me the following answer:

I won't bet because I would feel the $100 loss more than the $200 gain. But I'll take you on if you promise to let me make 100 such bets."

Standard "behavioral" explanation

- Keep things simple and consider two instead of 100 lotteries

  Assume:

$$u(x) = \begin{cases} x & \text{if } x \geq 0 \\ \lambda x & \text{if } x < 0 \end{cases}$$

- Can find $\lambda \in (1, \infty)$ such that one lottery is rejected but two lotteries are accepted

- **Explanation:** People are loss averse and loss aversion has less of an impact when decisions are **broadly framed**

Gneezy and Potters (1997)

- Basic task: subject given 200 cents, decides how much to invest in a risky lottery
  - Probability 2/3 of losing the bet
  - Probability 1/3 of winning 2.5 times the amount bet
- You keep whatever out of 200 you do not invest

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- You keep whatever out of 200 you do not invest
- **Narrow treatment:** You make the investment decision one at a time, 9 times in a row
- **Broad treatment:** You make three investment decisions at a time, 3 times in a row
- **Predictions:** More willingness to take risks in the broad treatment

Results

TABLE I
AVERAGE PERCENTAGE OF ENDOWMENT BET (PART 1)

	Treatment H[a]	Treatment L[a]	Mann-Whitney z[b]
Rounds 1–3	52.0 (30.2)	66.7 (29.5)	−2.08 [0.018]
Rounds 4–6	44.8 (30.0)	63.7 (30.3)	−2.78 [0.003]
Rounds 7–9	54.7 (28.9)	71.9 (29.4)	−2.51 [0.006]
Rounds 1–9	50.5 (26.7)	67.4 (27.3)	−2.86 [0.002]

a. # obs. = 41 (42) for treatment H (L). Standard deviations are in parentheses.
b. One-tailed significance levels (p-values) are in brackets.

Interpretation: Victory of the loss aversion model! People take more risks when decisions are broadly framed because loss aversion has less of an impact.

Observation

- The risky option is attractive in both treatments of Samuelson's choice experiment
- ...and in both treatments of Gneezy and Potters
- ...and in both treatments of other studies of "myopic loss aversion"

New experiment (mine)

- Basic task: Choice between a fixed lottery (0 with 50%, 30 pesos with 50%) and a certain amount $c \in \{10, 13, 15, 16, 19\}$
  - c low $\Rightarrow$ lottery attractive (as in Samuelson and Gneezy and Potters)
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- **Narrow framing:** One lottery vs. one sure amount c
- **Broad treatment:** Three lotteries (coin flipped three times) vs. $3 \times c$

Predictions

- **Loss averse preferences** $\Rightarrow$ DM takes more risks in the broad treatment for all values of c

  (this is the standard "myopic loss aversion" prediction..)

- **Intuition:**
  - When the lottery is unattractive, the DM takes the safe option in the narrow and broad treatments
  - When the lottery is attractive, the argument is the same as for Samuelson's thought experiment

Results (Study 1)

(a) Study 1 (E.V. of lottery = 15 pesos):

s	10	13	16	19
Treatment H1	**17%**	**24%**	45%	60%
	(23/138)	**(33/138)**	(62/138)	(83/138)
		$\vee$		$\wedge$
Treatment L1	7%	7%	**49%**	**78%**
	(3/41)	(3/41)	**(20/41)**	**(32/41)**

Results (Study 2)

(b) Study 2 (E.V. of lottery = 30 pesos):

s	20	30	40
Treatment H2	**18%**	47%	79%
	(35/200)	(93/200)	(157/200)
	$\vee$		$\wedge$
Treatment L2	7%	43%	**87%**
	(14/200)	(85/200)	**(173/200)**

Results (Both studies)

(c) Both studies:

	Attractive lottery	Unattractive lottery
Treatments H1 and H2	**19%**	63%
	(91/476)	(302/476)
	$\vee$	$\wedge$
Treatments L1 and L2	7%	**78%**
	(20/282)	**(225/282)**

Both differences significant with $P < 0.001$

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- Assume there is an element of randomness in choice
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- Assume there is an element of randomness in choice
- You typically choose the attractive option but sometimes make a mistake and choose the unattractive one
- **The element of randomness will have less of an influence when the stakes are higher**
- And stakes are higher when decisions are broadly framed

Explanation

Example:

- Assume you are risk-neutral (only care about the expected value)
- 250 rubles vs. a 50% chance of 300 rubles $\Rightarrow$ choose sure most of the time, but sometimes make a mistake
- 750 rubles vs. 50% chance of 300 rubles three times $\Rightarrow$ **stakes are tripled** $\Rightarrow$ make mistake less often $\Rightarrow$ choose sure amount more often

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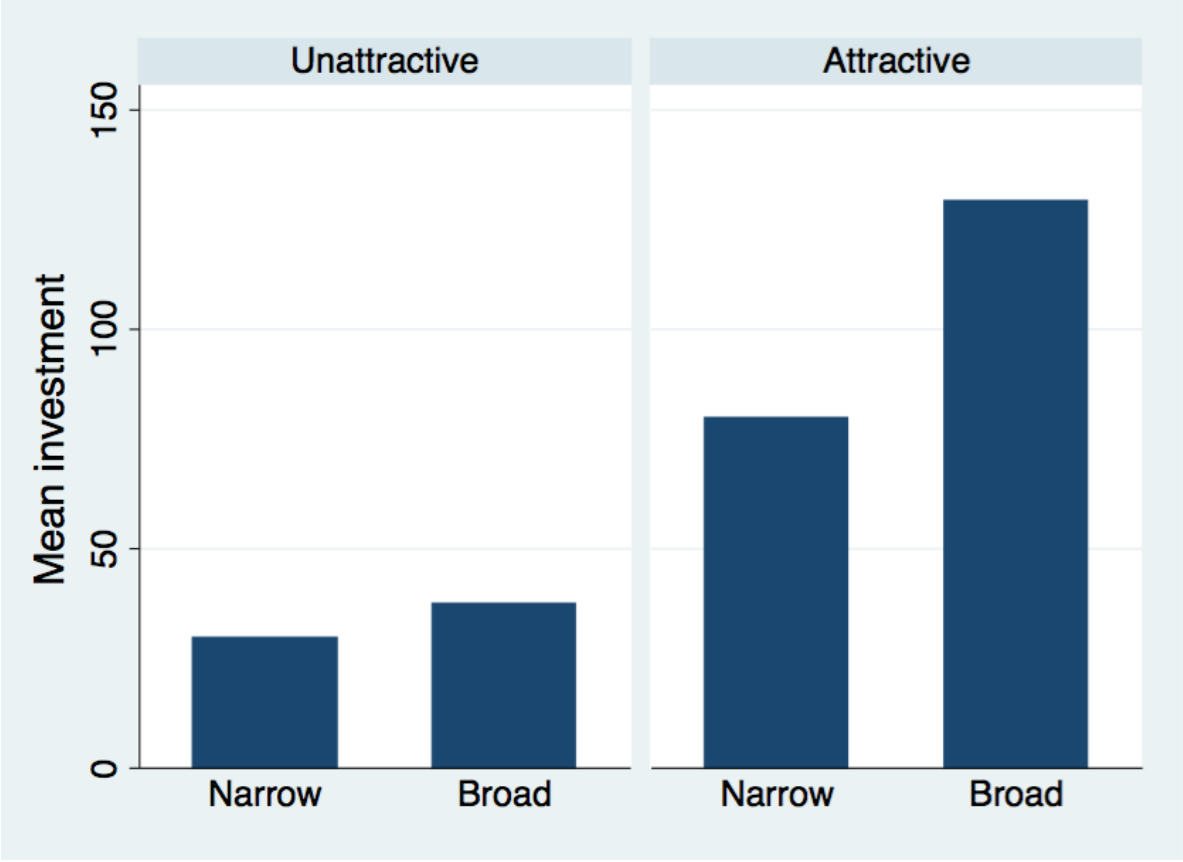
- This logic predicts the "crossing-over" pattern of results in the previous slides!
- When lottery is attractive, less mistakes with broad framing means more risky choices with broad framing
- When lottery is unattractive, less mistakes with broad framing means more safe choices with broad framing

Classroom experiment

- Treatment 1: Same as GP, narrow
- Treatment 2: Same as GP, broad
- Treatment 3: Same as GP, narrow, except with unattractive lottery
  - 1/6 probability of investment being successful
- Treatment 4: Same as GP, broad, except with unattractive lottery
- **Question:** What is the effect of broad vs. narrow framing in the Gneezy and Potters setup when the lottery is unattractive???

Results



- Replicated Gneezy and Potters (1997)
- Didn't find the crossing over effect of my other experiments
- Possible reasons?