Failures of Utility Maximization

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Failures of Utility Maximization

- Choice difficulty
- Too much choice
- Asymmetric dominance/compromise effects
- Leaving money on the table
- Endowment effect
- Status quo bias
- Faming effects
- Preference reversals
- Random Choice

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Choice Difficulty

- Basic Idea: People may dislike making difficult comparisons
- May behave in such a way as to avoid having to make such comparisons

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Example: Tversky and Shafir (1992)

- 80 Subjects
- Each subject filled out a questionnaire
- Paid $1.50 for doing so
- Two treatments:

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- Two treatments:

25%

75%

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Example: Tversky and Shafir (1992)

- 80 Subjects
- Each subject filled out a questionnaire
- Paid $1.50 for doing so
- Two treatments:

25%
53%

75%

47%

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Example: Tversky and Shafir (1992)

- Clear violation of IIA
  - If money was chosen in the 'big' choice set, should also should have been chosen in the smaller choice set
- Interpretation: Stay with the money in order to avoid the 'difficult choice' between the different types of pen
- Taken as an example of 'decision avoidance'

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Too Much Choice

- Example: Iyengar and Lepper [2000]
- Set up a display of jams in a local supermarket
- Two treatments:
  - Limited choice – 6 Jams
  - Extensive choice – 24 Jams
- Record what proportion of people stopped at each display
- And proportion of people bought jam conditional on stopping

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Iyengar and Lepper [2000]

- Slightly more people stopped to look at the display in the extensive choice treatment:
  - 60% Extensive choice treatment
  - 40% Limited choice treatment
- Far more people chose to buy jam, conditional on stopping, in the Limited choice treatment
  - 3% Extensive choice treatment
  - 31% Limited choice treatment

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Iyengar and Lepper [2000]

- Again: Clear Violation of IIA
  - If 'don't buy' was chosen in the 24 jam set, should also have been chosen in the 6 jam set
- Interpretation:
  - Large choice sets are 'demotivating'
  - People do not want the effort of making a decision
  - Therefore 'opt out' of making a choice altogether

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Huber, Payne and Puto [1982]

- Subjects were asked to choose between two types of beer.
  - $1.80 per six pack, and had a quality rating of 50.
  - $2.60 per 6 pack, but had a quality rating of 70.
- 43% of people chose the first option and 57% chose the second.
- Third option was added that was dominated by the first option
  - $1.80 and a quality rating of 40
- Increase the proportion of people choosing this option to 63%

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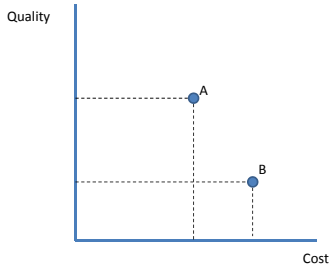
Asymmetric Dominance Effect



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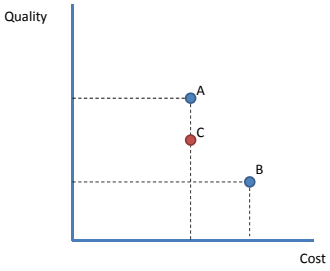
Asymmetric Dominance Effect



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Asymmetric Dominance Effect

- Clear violation of IIA
  - A chosen from {A,B,C}
  - Still available from {A,B}
  - Should still be chosen from that set
  - Proportion of people choosing A should not be higher in {A,B,C} than it is from A

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Simonsen [1989]

- Subjects were offered a choice between two types of calculator battery.
  - Lifespan of 12 hrs and a 2% probability of corrosion.
  - Lifespan of 14 hrs and a 4% probability of corrosion.
- 43% chose the second battery.
  - Subjects were then told about a third option,
  - 16 hr life expectancy and a 6% probability of corrosion
- Under this condition, 60% of people chose the 14 hr/4% battery.

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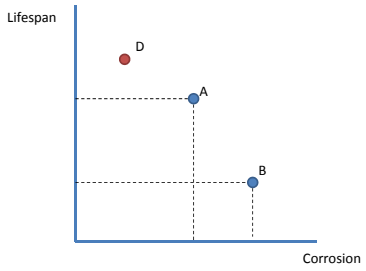
Compromise Effect



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Compromise Effect

- Also a clear violation of IIA
- And a very common on
- Even occurs in frogs!
  - Lea, Amanda M and Michael J Ryan, "Irrationality in mate choice revealed by tungara frogs," Science, 2015, 349 (6251), 964–966.

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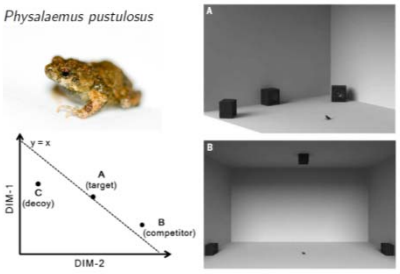
Compromise Effect



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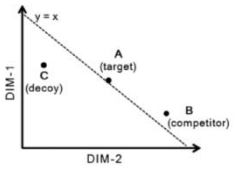
Compromise Effect



Menu	*A*	*B*	*C*
$\{A, B\}$	.37	.63	–
$\{B, C\}$	–	.69	.31
$\{A, C\}$	.84	–	.16
$\{A, B, C\}$	.55	.28	.17
$\{A, B, \emptyset\}$	.61	.39	–

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Leaving Money on the Table

Which of the following would you choose?

4	2
3	13
20	11
15	8
8	10

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Leaving Money on the Table

Which of the following would you choose?

4+6+10-11-23+9	2+3+6-11-14+9+10
3+9-17-99+102-6+15	6+18-19-55+70
20-27+7-19+2+3-5	11+2-5+7-8-9+10
15-5-5+6+16+17-20-9	8+9+10-11+8+2+6-32
8+8+9-13-9-6+7	10-9+17-23+10+2+15

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Caplin, Dean and Martin [2011]

- 22 Subjects, 657 choices
- 6 treatments
  - 2 complexity levels: 3 or 7 operations
  - 3 choice set sizes: 10, 20, 40 options

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Caplin, Dean and Martin [2011]

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Caplin, Dean and Martin [2011]

Failure rate

	Complexity	
Set size	3	7
10	7%	24%
20	22%	56%
40	29%	65%

Average Loss ($)

	Complexity	
Set size	3	7
10	0.41	1.69
20	1.10	4.00
40	2.30	7.12

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Caplin, Dean and Martin [2011]

- Violation of Rationality IF we assume that more money is preferred to less
- Interpretation: It takes effort to understand the objects in a choice set
- Subjects may not exercise the effort to fully understand all the available options
- For example, may only consider a subset of available options
- This may be the rational thing to do

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Endowment Effect

- Kahneman, Knetch and Thaler [1990]
  - 44 subjects
  - 22 Subjects given mugs
  - The other 22 subjects given nothing
  - Subjects who owned mugs asked to announce the price at which they would be prepared to sell mug
  - Subjects who did not own mug announced price at which they are prepared to buy mug
  - Experimenter figured out 'market price' at which supply of mugs equals demand

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Endowment Effect

- Kahneman, Knetch and Thaler [1990]
- Prediction: As mugs are distributed randomly, we should expect half the mugs (11) to get traded
  - Consider the group of 'mug lovers' (i.e. those that have valuation above the median), of which there are 22
  - Half of these should have mugs, and half should not
  - The 11 mug haters that have mugs should trade with the 11 mug lovers that do not
- In 4 sessions, the number of trades was 4,1,2 and 2
- Median seller valued mug at $5.25
- Median buyer valued mug at $2.75
  - Willingness to pay/willingness to accept gap

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Endowment Effect

- Violation of rationality in the sense that value of object changes with ownership
  - E.g. If seller, choose {mug} from {mug, $4}
  - If buyer, choose {$4} from {mug, $4}
- Interpretation: Subjects place extra valuation on an object simply because they own it
- Often assumed to be related to 'Loss Aversion'
  - Losses loom larger than gains

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Status Quo Bias

- Idea: more likely to choose an object because it is the 'status quo'
- What is a 'status quo'?
  - Something that you have chosen before
  - The way things currently are (status quo bias)
  - What happens if you do nothing (inertia/omission effect)

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Example: Madrian and Shea [2001]

- Observe behavior of workers in firms that offer 401k plans
  - Tax free pension savings
  - Generally considered to be a Good Thing
- Two types of plan:
  - Opt in: if no action is taken when joining firm , then do not take part in the plan
  - Opt out: if no action is taken when joining firm, then are automatically enrolled in scheme
- Compare uptake in different plans

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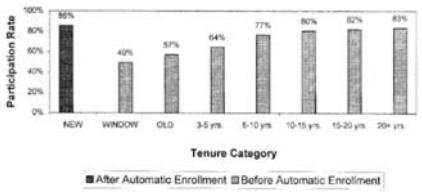
Madrian and Shea [2001]



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Madrian and Shea [2001]

- Interpretation: Violation of rationality, as choice over {enroll, not enroll} is dependent on initial position
- Status quo bias: stick with what you are initially given
- Possible explanations:
  - Inertia
  - Suggestion
  - Loss Aversion

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Framing Effects

- Framing effects refer to changes in the choices people make based on 'inconsequential' changes in the options
- We describe these as violations of rationality because we think really of these are the same object
  - Under one frame x is chosen from A
  - Under another y is chosen from A
- Depends on the definition of 'inconsequential'

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Bushong et al. [2010]

- Students presented with a series of snack foods,
- Selling price for each of these goods elicited Three conditions that varied in how the snack foods were described.
  1. Written description.
  2. Picture of snack food
  3. Open container of the snack food.
- Average bidding prices were not significantly different in the first two treatments, but were much higher in the third ($1.16 vs $0.71)

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Bertrand et al. [2010]

- Evidence that people's choices are manipulable through 'gimmicks'
  - At least to some extent
- This is probably unsurprising
  - Think about advertizing
- Unfortunately, we are long on examples, short on unifying theories

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Lichtenstein and Slovic [1971]

- Task involves two lotteries
  - Lottery a – 20% $100, 80% $0
  - Lottery b – 90% $22, 10% $0
- Two tasks
  - (1) Choose between a and b
  - (2) Elicit a value for a and b using BDM mechanism
- Preference reversal: choose b over a, but value a higher than b

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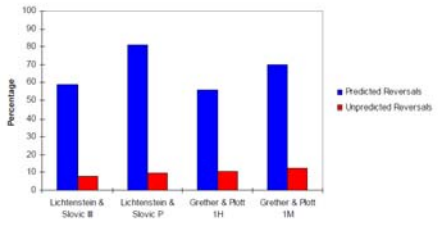
Lichtenstein and Slovic [1971]



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Lichtenstein and Slovic [1971]

- Violation of rationality assuming more money is better than less
- Interpretation: response mode affects people's valuation
- People are not very good at putting monetary value on things…

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Random Choice

- If a decision maker is maximizing a stable utility function they should always choose the same thing from any choice set

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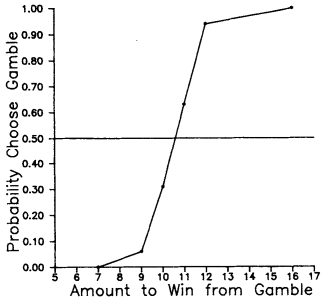
Nogee [1951]



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Random Choice

- As the quality of the lottery is increased, the probability of choosing it increases
- But it increases smoothly, not discretely as the utility maximization model would suggest
- Reminiscent of perceptual experiments
  - Which of two weights is heavier?

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