

# Context Dependent Preferences

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Behavioral Economics G6943  
Autumn 2018

# Context Dependent Preferences

- So far, we have assumed that utility comes from the *final outcome* they receive
- People make choices based on these utilities
- However, there is evidence that choices may be affected by *context* in a way that is incommensurate with this model
- We will consider two (possibly related) classes of phenomena
  - Reference point effects
  - Choice set effects
- In this lecture we will review the evidence for such effects
  - Some of this is revision from previous lecture

# Reference Dependent Preferences

- Reference dependent preferences
  - Keep set of available options the same
  - Change the 'reference point'
  - $\Rightarrow$  Change choices
- Clearly a violation of 'standard model' of utility maximization
- Has lead to a huge body of empirical and theoretical literature
- Which we will do a brief tour of in this lecture

- Reference dependence is (most likely) an umbrella term
  - Covers many different phenomena
  - With many different causes (?)
- For example
  - Transaction costs
  - Loss aversion
  - Perceptual coding

can all lead to reference dependence in choice

- It is likely that all three have a role to play
- Can make it hard to interpret both theory and models
  - Should two different example or reference dependence be treated as examples of the same phenomenon?
  - Should one model be able to explain all the empirical examples of reference dependence?

- You may, at this stage, be thinking ‘what is a reference point’?
- Good question!
- There are many possibilities
  - What you currently have
  - What you get if you do nothing
  - What you expect
- Different notions of reference point may be more applicable to different models of reference dependence
- To begin with, we will assume that we know what the reference point is
- Come back to this issue later

# Three Examples of Reference Dependent Behavior

- ① The Endowment Effect
- ② Status Quo Bias
- ③ Reference Points in Risky Choice

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# Endowment Effect

Kahneman, Knetsch 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
- Trade occurred at that market price using Becker-DeGroot-Marschak procedure



# Endowment Effect

Kahneman, Knetsch 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
- Subject's preferences seem to be affected by whether or not their reference point was owning the mug

- Buying and selling a lottery

*This lottery is yours to keep (if this is one of the questions that is selected at the end of the experiment). However, you will be offered the opportunity to exchange this lottery for certain amounts of money (for example \$5)*

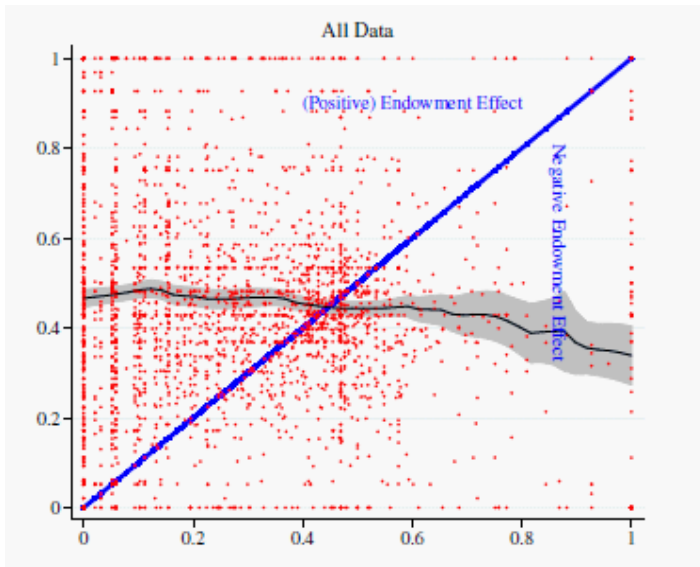
*...you will be offered the opportunity to buy a lottery ticket. That is, you will be offered the opportunity to use some of this additional \$10 in order to buy a lottery ticket. If you choose to do so (and that question is selected as one that will be rewarded), then you will pay the specified cost for the lottery, and you would keep the remaining amount of money and the lottery.*

- Willingness to pay/Willingness to accept gap for a 50% \$10, 50% \$0 lottery
  - Willingness to Pay: \$3.76
  - Willingness to Accept: \$4.59

- Controversy!
  - Plott and Zeiler [2005] claim that if you control for subject misconceptions then the gap disappears
    - Practice rounds and proper incentivization
  - Isoni, Loomes and Sugden [2011] show that the effect remains for lotteries (but not for mugs) in the PZ data

# What is the Relationship between WTA and WTP?

Chapman et al. [2018]



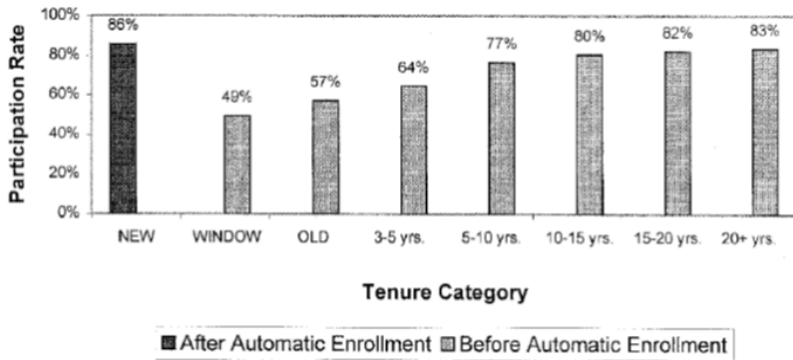
# Three Examples of Reference Dependent Preferences

- 1 The Endowment Effect
- 2 Status Quo Bias
- 3 Reference Points in Risky Choice

- Observe behavior of workers in a firm that offer 401k plans
- Workers enrolled under 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

# Status Quo Bias

Madrian and Shea [2001]





- Those in the opt in plan significantly more likely to take up 401k
- More likely than some under the old regime with a tenure of 20+ years
- Also, those who were not automatically enrolled but chose to take up the plan more likely to select the 'default' option
- These 'default effects' are at the heart of many 'Nudges'
  - Savings behavior
  - Organ donation
  - Cancer treatment

- Experimental Design: Setting the Status Quo
- Subjects make decisions in two stages
  - First stage: choose between 'target' lottery and two 'dummy' lotteries
  - Second stage: can either
    - Keep lotteries selected in first stage
    - Switch to one of the alternatives presented

# Stage 1 Choice



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Please choose one of the lotteries below:

|                       | 20%  | 40% | 60% | 80% | 100% |
|-----------------------|------|-----|-----|-----|------|
| <input type="radio"/> | \$15 |     | \$0 |     |      |
| <input type="radio"/> | \$2  |     |     |     | \$0  |
| <input type="radio"/> | \$10 | \$0 |     |     |      |

Continue

# Stage 2 Choice

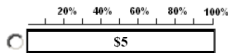
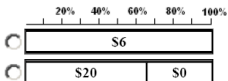


NEW YORK UNIVERSITY

You chose the following lottery:



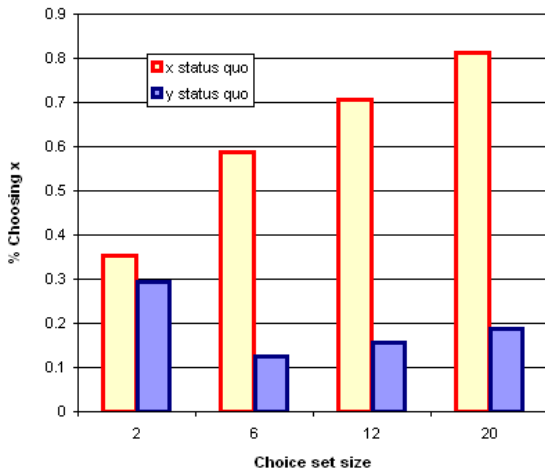
Click the 'Keep current selection' button to keep your selected lottery, or click on one of the lotteries below, then press 'Change to selected lottery' to switch:



Keep current selection

# Status Quo Bias

Dean 2009



# Three Examples of Reference Dependent Preferences

- ① The Endowment Effect
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- ③ Reference Points in Risky Choice

# The Rare Disease Problem

- The US is expecting an outbreak of a rare disease that is expected to kill 600 people.
- Two alternative programs are considered
  - Program A: 200 people will be saved
  - Program B:  $\frac{1}{3}$  chance that 600 people will be saved,  $\frac{2}{3}$  chance that no-one will be saved
- Or: Two alternative programs are considered
  - Program C: 400 people will die
  - Program D:  $\frac{1}{3}$  chance that nobody will die,  $\frac{2}{3}$  chance that 600 people will die

# The Rare Disease Problem

- The US is expecting an outbreak of a rare disease that is expected to kill 600 people.
- Two alternative programs are considered
  - Program A: 200 people will be saved - **72%**
  - Program B: 1/3 chance that 600 people will be saved, 2/3 chance that no-one will be saved - **28%**
- Or: Two alternative programs are considered
  - Program C: 400 people will die – **22%**
  - Program D: 1/3 chance that nobody will die, 2/3 chance that 600 people will die - **78%**



# Reference Points in Risky Choice

- People tend to be very risk averse for lotteries that contain both gains and losses

*Imagine that you have the opportunity to play a gamble that offers a 50% chance to win \$2000 and a 50% chance to lose \$500. Would you play the gamble?*

- Redelmeier and Tversky (1992)
  - Only 45% of subjects played the gamble
- Loss of \$500 viewed as more important than gain of \$2000
- Is this a sign of 'reference dependence' ?
  - Not necessarily
  - Could be risk aversion/probability weighting
  - Though would have to be very large
  - Gain of \$2000 does not offset loss of \$500

# Reference Points in Risky Choice

- A better experiment: Manipulate the reference point
- Two groups:
- Group 1: Given 3500 'Agoras': Choose between
  - An additional 500 Agoras with certainty
  - 50% chance of additional 1500 Agoras and 50% chance of losing 500 Agoras
- Group 2: Given nothing up front: Choose between
  - 4000 Agoras with certainty
  - 50% chance of 5000 Agoras and 50% chance of 3000 Agoras
- Notice that these give the same probabilities over final outcomes
  - Group 1 chose risky option 38% of the time
  - Group 2 chose risky option 54% of the time

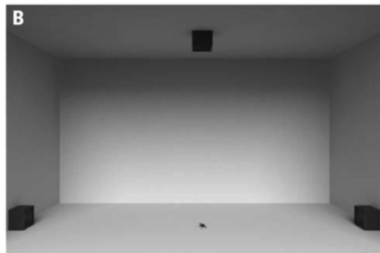
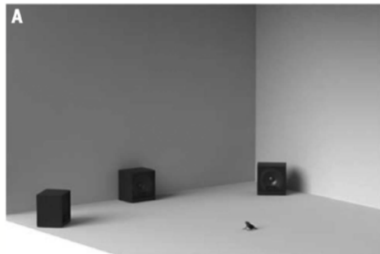
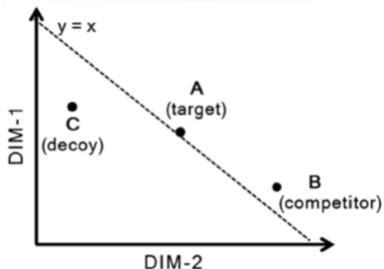
# Reference Points in Risky Choice

- Most structural estimates of risk preferences favor a specification which allows for increased risk aversion for gains and losses
- See for example "Heterogeneity in Risky Choice Behavior in a Broad Population"
  - Von Gaudecker et al, AER 2011
- Summary: The stylized facts are:
  - People tend to be more risk averse in the gain domain than in the loss domain
  - People tend to be more risk averse for lotteries which involve both gains and losses than they should be

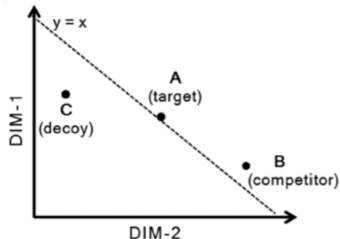
- Context effects could in principle mean many things
- Here we will focus on a particular type of context effect:
  - Changes in the choice set can affect the way choices are made
- Standard Model: Adding options to a choice set can only affect choice in a very specific way
  - Either a new option is chosen or it isn't
  - Independence of Irrelevant Alternatives
- Work from economics, neuroscience and psychology suggest a different channel
  - Change the *context* of choice
  - i.e. the distribution of values in a choice set
  - Adding option  $x$  can affect the relative evaluation of  $y$  and  $z$
  - Violation of IIA

# Example 1: Compromise Effects

*Physalaemus pustulosus*

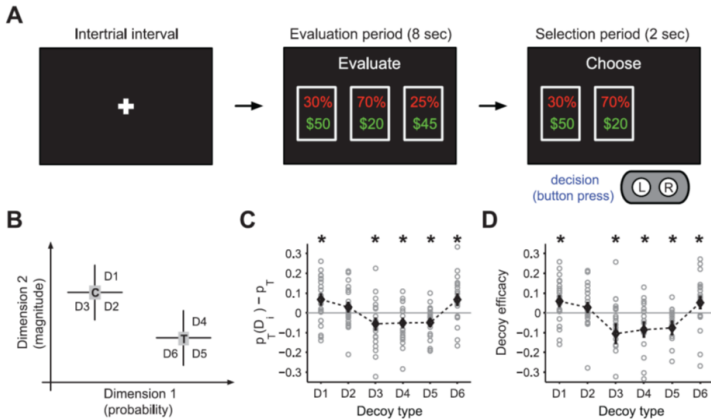


## Example 1: Compromise Effects



| 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 | —   |

## Example 2: Asymmetric Dominance Effects



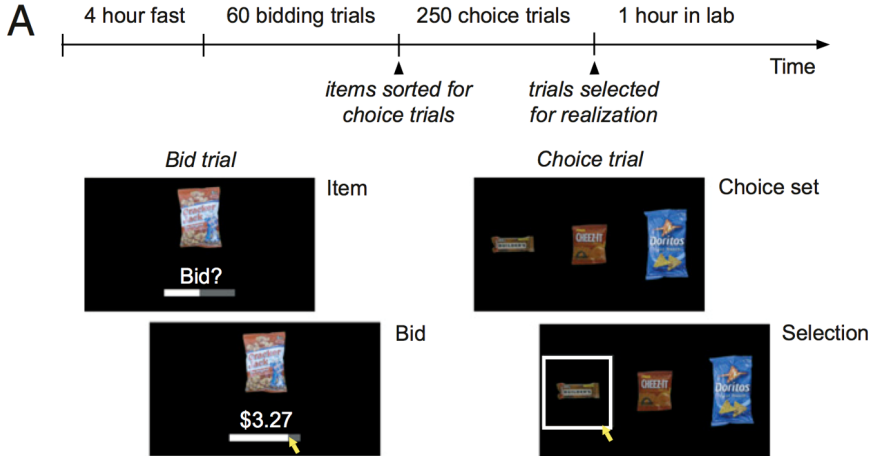
## Example 3: Stochastic Choice

- There is evidence from neuroscience that the probability of choosing between two items can be affected by the addition of a third item
  - Even if these items don't have well identified dimensions
- Basic idea
  - Choice between two target items can be affected by the presence of a third 'decoy' item
  - The bigger the value of the decoy the lower the efficiency



- Subjects (40) took part in two tasks involving snack foods
- ① Asked to *bid* on each of 30 different snack foods to elicit valuation
  - BDM procedure used to make things incentive compatible
- ② Asked to make a choice from three alternatives
  - Target, alternative and distractor
  - 'True' value of each alternative assumed to be derived from the bidding stage

# Experimental Evidence



# Experimental Evidence

