Reference Point Effects

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Behavioral Economics G6943
Autumn 2019

Reference Dependent Preferences

- The standard model assumes that utility comes from the *final outcome* they receive
- People make choices based on these utilities
- However, there is evidence that utility may be affected by *reference points*
- How do you feel about your stipend?
- Would you answer differently if
  - You were expecting to receive \$90,000
  - You were expecting to receive \$10,000
- For most people the answer is yes, and this can affect their choices

Reference Dependent Preferences

- In this lecture we will provide examples of some important types of reference point effects
- In the next lectures we will
  - Introduce models which include reference dependence
  - Discuss where reference points come from
  - Provide some applications
- We will not examine the broader class of *context dependent preferences*
  - Mike will deal with that in his class
- Useful reference
  - "Reference Dependent Preferences" [2018] Chapter in Handbook of Behavioral Econiomics by O'Donoghue and Sprenger

Reference Point Effects

- Reference point effects
  - 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

Caveat 1

- 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?

Caveat 2

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

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

Endowment Effect

Dean and Ortoleva [2014]

- 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.

Endowment Effect

Dean and Ortoleva [2014]

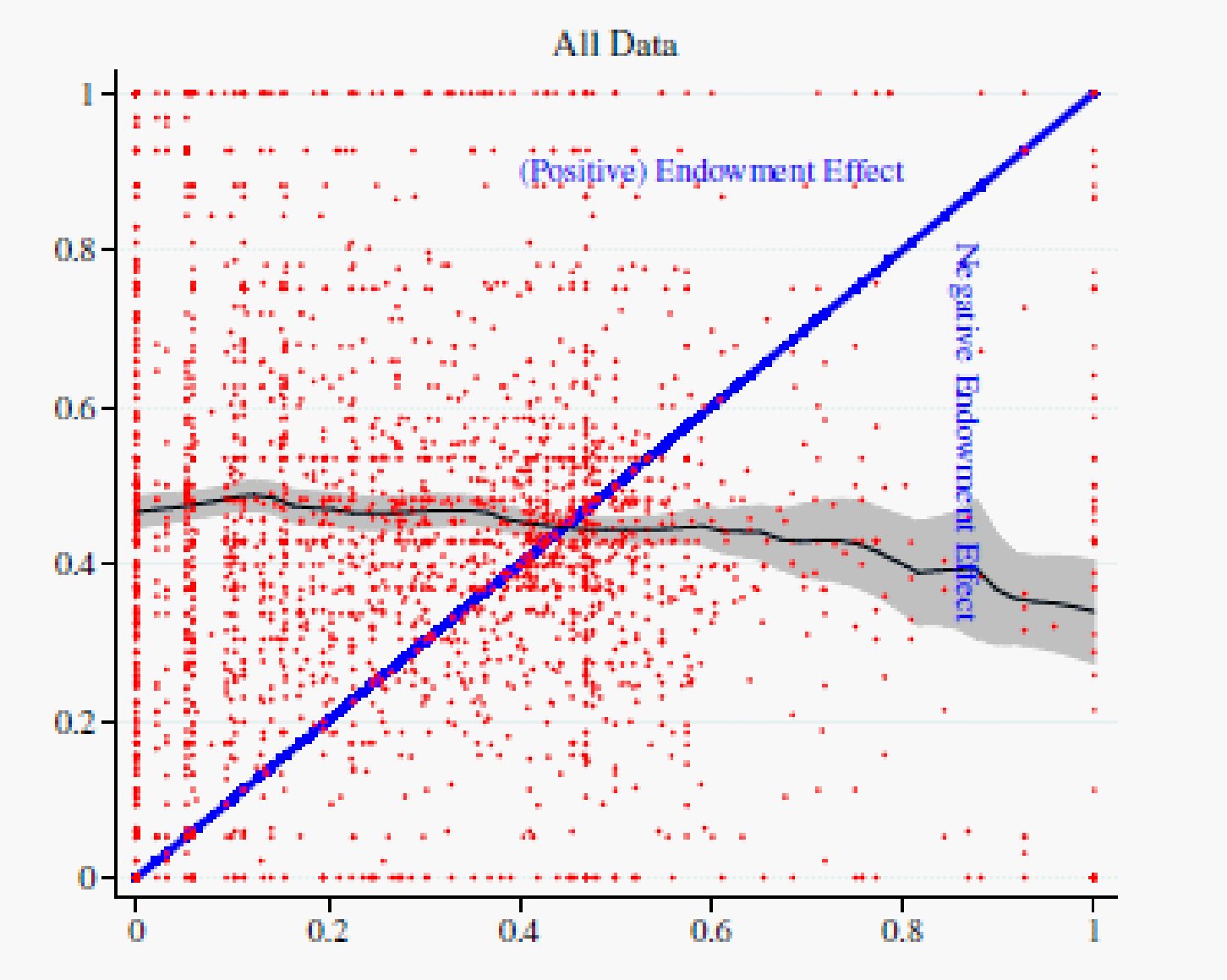
- Willingness to pay/Willingness to accept gap for a 50% \$10, 50% \$0 lottery
  - Willingness to Pay: \$3.76
  - Willingness to Accept: \$4.59

Endowment Effect

- 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

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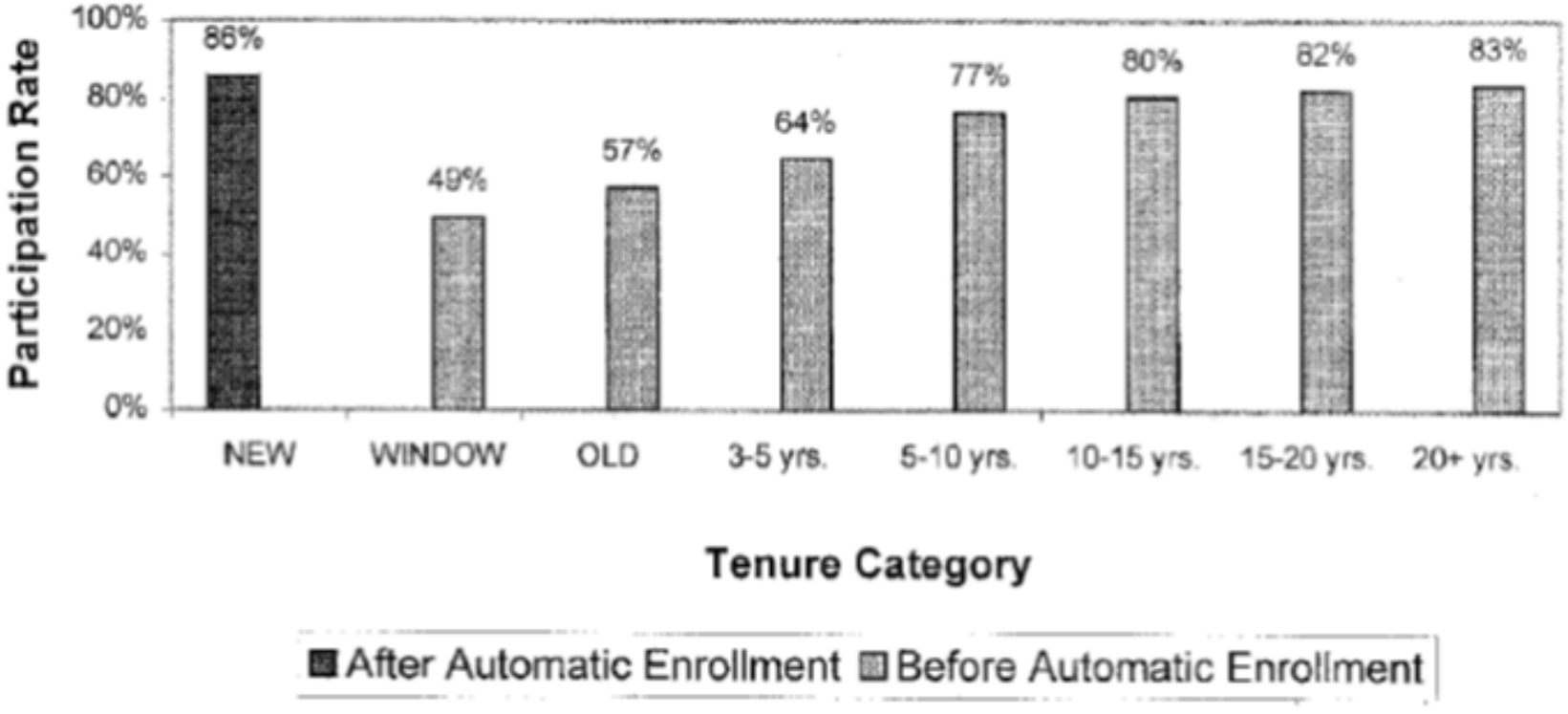
Status Quo Bias

Madrian and Shea [2001]

- 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]



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 no 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

Status Quo Bias

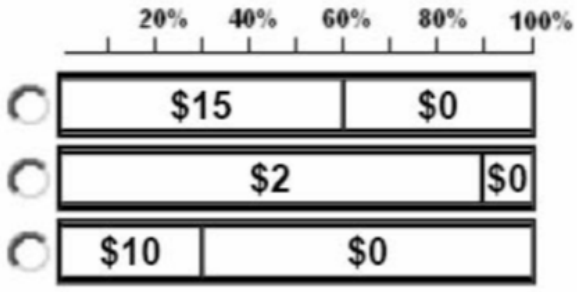
Dean 2009

- 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

NEW YORK UNIVERSITY

Please choose one of the lotteries below:

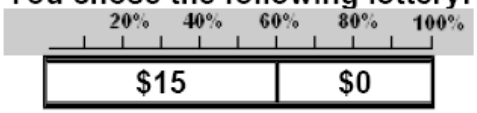


Continue

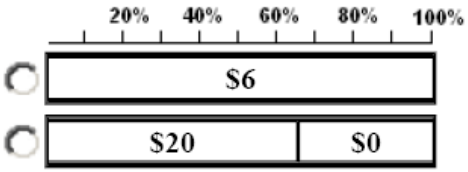
Stage 2 Choice

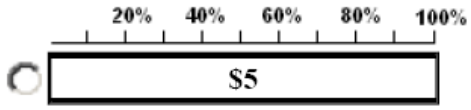
NEW YORK UNIVERSITY

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:

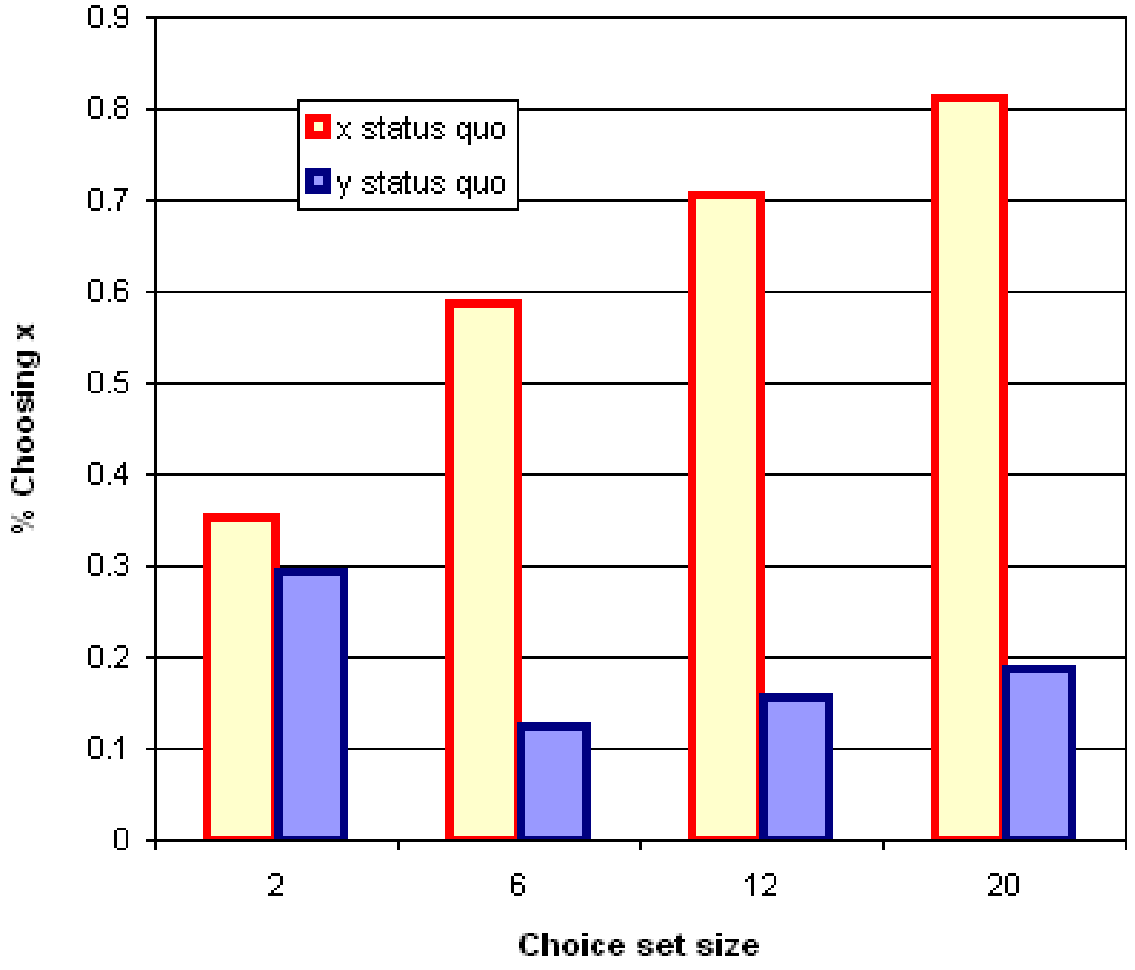




Keep current selection

Status Quo Bias

Dean 2009



Three Examples of Reference Dependent Preferences

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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: 1/3 chance that 600 people will be saved, 2/3 chance that no-one will be saved
- Or: Two alternative programs are considered
  - Program C: 400 people will die
  - Program D: 1/3 chance that nobody will die, 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 sturctural 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
- Although "Loss Attitude in the US population" paints a different picture
    - Chapmen at al. NBER 2019
    - Find 50% of people are loss tolerant in representative sample
    - Argue that many previous studies have been run on student samples

Reference Points in Risky Choice

- This caveat notwithstanding, the the stylized fact 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