Section 6: Behavioral Welfare Economics

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Outline

Motivating Examples

Estimating Behavioral Welfare Effects: Choices Under Frames

Estimating Behavioral Welfare Effects: Specifying Frictions

Behavioral Brainteaser

A flood happens. Alfred the aloof, anarchic altruist cannot ever learn about it. He hates paying taxes but would be happy to if he knew it went to flood victims.

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Does a tax on Alfred to compensate flood victims make him better off?

Normative Ambiguity in Behavioral Welfare Analysis

- The tax's welfare impact is philosophically unclear even if we *know* Alfred's preferences
- In empirical work, have to *infer* preferences from choices and then map to welfare

A Taxonomy of "Mistakes"

$$\max_{a \in A} u(g(a)) \tag{1}$$

where A is the set of possible actions, $g : A \to Y$ maps actions to outcomes, and $u : Y \to \mathbb{R}$ is the choice-generating utility function

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Source	A $g(\cdot)$	max	$u(\cdot)$
Interpretation	Information Friction	Optimization Friction	Paternalism

"Why do you always have to be so paternalistic?"

Categorizing Behavioral Biases in the Above Framework

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- Misunderstanding of what deductibles, copays, and premiums are

- Present-bias in preventative health investments

- Choice overload due to many insurance plans

- Switching costs in plan choice

Microfounding Information and Optimization Frictions

- Handel and Schwarzstein (2018) JEP
  - Also related to Gabaix (2014) QJE "sparse-max operator"
- Emphasize the role of uncertainty in the optimal action
- Agent can gather and process info to reduce uncertainty ("attend to info")
- "Correct" behavior: trade off value of attending to info b against cost c

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1. Frictions
    - c is large
    - $\approx$ optimization frictions from before
2. Mental gaps
    - Person attends to data using $\hat{b} \neq b$ or $\hat{c} \neq c$
    - $\approx$ information frictions from before

Technical Aside: Decision Theory

Environment of Uncertainty

- State space S

- Prior $P \in \Delta(S)$

- Actions $a \in A$

- State-dependent utility $u : S \times A \to \mathbb{R}$

- Acquiring information amounts to a partition Π of S

$$V_{P,A,u}(\Pi) = \sum_{E \in \Pi} \underbrace{\max_{a \in A}}_{\text{Choose better...}} \left[\sum_{s \in S} u(a, s) \underbrace{P(s|E)}_{\text{...based on your best guess...}} \right] \underbrace{P(E)}_{\text{...from the info}} \quad (3)$$

Information Acquisition Problem: $\max_\Pi V_{P,A,u}(\Pi) - c(\Pi)$

Using Structure to Identify Mechanisms

1. Data rationalization

2. Parameter rationalization

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   - Argue patterns cannot be rationalized with a standard model
   - (Ideally then get parsimonious model that rationalizes data and nests standard model!)
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2. Parameter rationalization
   - Argue a standard model's results are implausible
   - $2,000 "switching costs" in Handel (2013)

Does Friction as Decision vs. Experience Cost Matter?

- Sometimes no

- Often yes

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- Sometimes no
  - If behavior responds the same way, can predict counterfactual allocations
- Often yes
  - Responses to different policy instruments may depend on specific mechanisms
  - Even holding behavior fixed, welfare effects depend on whether the cost is "normative" (Goldin and Reck 2018 AER P&P)

Estimating Welfare Effects of Policies

1. Rational actor approach

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2. Behavioral approach
   - Choices are affected by both underlying preferences and "other stuff"
   - Counterfactuals need a positive model of behavior to predict allocation and a normative model of behavior to measure welfare

Outline

Bernheim and Rangel (2009) QJE

- Defer to individual choice as much as possible
- Researcher discretion in identifying **when** you can trust choice

Bernheim Rangel Notation

- Allow for features that affect choices but not welfare
  - "Frames" d (e.g. salience, default option, etc)

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  - *Standard model*: agent chooses $x \in X$
  - *Behavioral model*: agent chooses from "generalized choice set" $G = (X, f)$
- Do standard welfare analysis in each choice environment
  - Denote choice in G as $C(X, f)$
  - $C(X, f) = C(X, f') \ \forall f, f'$
    $\Rightarrow$ no evidence of "mistake" absent paternalism
  - $C(X, f) \neq C(X, f')$ for some X, f, f'
    $\Rightarrow$ choice-inconsistency (but so far don't know which is a "mistake")

Bernheim and Rangel Application: Compensating Variation

(Transfer necessary to compensate change in choice set from X to X' given frame f)

Partial ID: If estimates differ by d, cannot reject welfare effects

$\in [\min_{f \in F} CV(X, X', f), \max_{f \in F} CV(X, X', f)]$

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- *Easy to take a stand*: choice among list of risky options X and list ordering f
  (Beauchamp et al (2019) Exp. Econ.)

- *Hard to take a stand*: retirement contributions X and default options f
  (Goldin and Reck Forthcoming JPE)

Creative Strategies of Creating a Welfare-Relevant Domain

1. Debiasing (i.e. present information to consumer)
   - Alcott and Taubisnky 2015 AER energy efficient lightbulb demand
   - Post-information treatment demand curve
   - Concern:

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   - "What would you like to do next cycle? What do you expect to do?"
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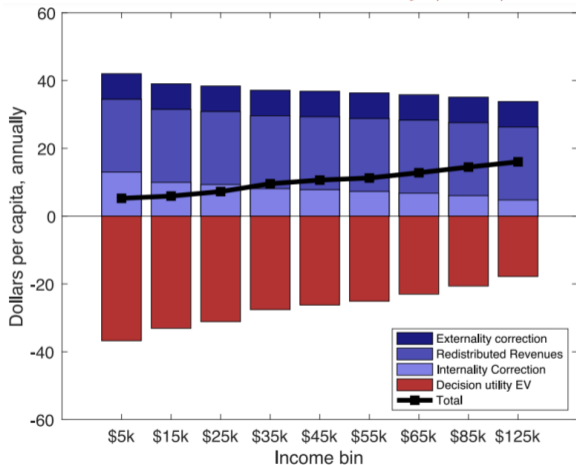
Application Behavioral Welfare Calculation

FIGURE IX

Welfare Consequences of Optimal Sugar-Sweetened Beverage Tax

- Decision utility EV - Redistributed revenues $\leftarrow$ Standard tax DWL

- Externality correction $\leftarrow$ Private choices affect social welfare

- Internality correction $\leftarrow$ Private choices don't maximize private welfare

Motivating Examples

Estimating Behavioral Welfare Effects: Choices Under Frames

Estimating Behavioral Welfare Effects: Specifying Frictions

Main Idea

- Researcher discretion in identifying **what** matters for welfare
- Fully specify preferences and technology
    - $\underbrace{b(x, f)}_{\text{Behavioral friction}} = \underbrace{v(x)}_{\text{Experience utility}} - \underbrace{u(x, f)}_{\text{Decision utility}}$
    - Modeling $b(x, f)$ and $u(x, f)$ allows you to recover features of $v(x)$
    - Compare/contrast with Bernheim and Rangel
- Ideally bring descriptive evidence to justify whether model captures key features

Application: Handel and Kolstad (2015) AER

- Aptly titled "Health Insurance for Humans"
- Main idea: Fusion of Cohen and Einav (2007), Abaluck and Gruber (2011), Handel (2013), and survey data

Setting Overview

- Insurance choice between comprehensive and HDHP over several years
- **Multiple choice survey**
  - What would you ask?
    - *Intellectual history*: HK argued with the HR department to ask "structural" preferences/beliefs questions and ended up compromising with simple "reduced form" questions
- Most people choose comprehensive plan even when it appears to be suboptimal to the econometrician in a standard model

Why Do Most People Choose the Comprehensive Plan?

1. Preferences
   - Risk aversion
   - Nonfinancial attributes (e.g. time spent managing claims)
2. Beliefs
   - (Lack of) info on plan features
   - (Lack of) info on own health

"Reduced Form" Demand-Side Estimation

Should be very familiar from Handel (2013)

- CARA preferences over consumption x for type k with demographics $\mathbf{X}_k$:

$$u_k(x) = -\frac{1}{\gamma_k(\mathbf{X}_k)} e^{-\gamma_k(\mathbf{X}_k)x}$$

- Full model for consumption under plan j with health state s for type k:

$$x_k = \underbrace{W_k - P_{kj} - s}_{\text{Standard wealth}} + \underbrace{\eta(\mathbf{X}_k)}_{\text{Switching cost}} 1_{jt \neq jt-1} + \underbrace{\mathbf{Z_k}}_{\text{Friction from survey}} \beta 1_{HDHP} + \epsilon_{kj}$$

- Identification:
    1. Predictive cost model $\Rightarrow$ standard wealth component
    2. New employees $\Rightarrow$ switching costs
    3. Survey categorization $\Rightarrow$ type shifters

Main Idea of Counterfactuals

- Show that estimate of risk aversion depends a lot on whether you incorporate realistic frictions

- The risk aversion parameter is used in counterfactual analysis to show welfare effects of forcing people into HDHP depend a lot on what you estimated it to be

- Having not read the paper, any reactions to this?

My View on Handel and Kolstad

- Kind of frustrating that "behavioral" things are shown to matter for choice but are incorporated into counterfactuals only through their effect on risk aversion as an input
- Linking survey data to choice models is a fruitful avenue
  - Rational decision application: Being able to see set of considered alternatives vastly improves estimates of substitution behavior in IO
  - Above point is analogous to seeing school applications in school choice literature
  - See theoretical work by Charles Manski and empirical work by Basit Zafar
  - See Hendren (2017) AER on job loss

My View on Bernheim and Rangel

- Useful to carefully think about what the scope of consumers concerns can be
- Potential avenue for research to be able to say more from choice data without imposing too much structure on decision processes

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- Potential avenue for research to be able to say more from choice data without imposing too much structure on decision processes

- One such application: Goldin and Reck (2020) JPE
  - LATE-type framing: think of frames as instruments, welfare-relevance of choice as endogenous, and the choice itself as an outcome
  - LATE-type results: Show that you can uncover characteristics and choices of "compliers" (i.e. those who make biased choice under one frame but consistent under another)
    - Intuition: Rather than uncovering effect of one endogenous variable on another, remove variation in observed choice due to frames to isolate variation due to preferences

Taking Stock

- Many possible sources of mistakes in standard choice model
- Bernheim and Rangel advocate using frames to elicit preferences using choices in welfare-relevant and non-welfare-relevant domains
- Contrasts with not ever deferring to choice and including a fudge factor in people's preferences