Designing Optimal Defaults

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- ...and it destroys our existing welfare framework.
- This paper examines this problem for the case of default options.
  - Retirement savings (Madrian and Shea, 2001; Choi et al 2004; Carroll et al 2009; Chetty et al 2014; Bernheim Fradkin Popov 2016)
  - Privacy controls (Johnson et al 2002; Acquisti et al 2013)
  - Health (Chapman et al. 2010)
  - Student loan repayment

The Classical View

- Classic revealed preference theory equates choice with welfare

$$c_i(X, S) = \arg\max_{x \in S} u_i(x) \tag{1}$$

$$w_i = u_i(c_i(x, S)) \tag{2}$$

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- then default effects are observed
  - *rationalization*: modify (1) (add to $S, u(.)$)
  - Psychological costs, transaction costs, switching costs, etc.
  - Can always be done for any behavioral observation?

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  - Can always be done for any behavioral observation?
  - But then does (2) still hold?

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$$v_i(x(d), d) = u_i(x(d)) - \gamma_i 1\{x(d) \neq d\} \tag{3}$$

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- Yes: need a new rationalization for every behavioral finding
- But maybe the old normative model was correct?
- Leads to controversy over default policies
- Related problems for other behavioral phenomena

This Paper

- Introduce a simple model of optimal defaults
  - *Parameterize* normative ambiguity
- Show that it nests several positive models
- Characterize welfare effects of default policies
  - Building towards sufficient statistics...
- Data?
- Lessons for other policy problems?

Part 1

A Simple Model of Defaults and Welfare

Setup

- Behavior $x_i(d)$ given by:

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- Note: assuming a varily simple as-if cost function, could in princple be relaxed.

Part 2

Relationship to Positive Theory

Positive Theories: Classic Rationality

- $\rho_i = 1$ for all i.

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- The end.
- ...but you could argue that part of γ_i's are psychological costs, maybe should be discarded? $\implies \rho_i \leq 1$.

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- Long-run ($\beta = 1$) view of welfare: $\rho_i = \beta_i$.

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- Long-run ($\beta = 1$) view of welfare: $\rho_i = \beta_i$.
- Short-run view of welfare: $\rho_i = 1$.
- Note: with the right varation, δ_i, β_i are identified, but the "right" view of welfare is still unknown.

Positive Theories: Anchoring/Status Quo

- Give extra utility ω_i to default option:

$$v_i(x, d) = u_i(x) + \omega_i 1\{x_i \neq d\}$$

  - Assumes no spillovers to "near-default" choices
  - Consistent with aggregate evidence on 401k ▸ illustration
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- Then $\gamma_i \equiv -\omega_i$
- Many think $\rho_i = 0$, one could argue otherwise (was default deliberately chosen?)

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  - A planner-doer model (Fudenberg and Levine, 2006)
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  - Contradicted by aggregate data on 401k.
- Rationally chosen with less than full information??
  - ρ depends on how accurate beliefs are?
  - Some $\rho_i > 1$?

Takeaways

- This simple framework nests many postive models
- Models differ by ρ_i's
- Could easily combine some of these models.
- $\implies$ At least any value $\rho \in [0, 1]$ is plausible, maybe even $\rho > 1$.

Part 3

Characterizing Optimal Policy

Binary Case

- Consider a fixed binary menu $S = \{0, 1\}$
- Monotonicity: $\gamma_i \geq 0$ for all i implies $(x_i(0), x_i(1)) \neq (1, 0)$
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Proposition:

$$W(1) - W(0) = E[\rho_i \gamma_i | 1, 1] p_{11} - E[\rho_i \gamma_i | 0, 0] p_{00} + E[\Delta u_i | 0, 1] p_{01}$$

Binary Case

Proposition: Suppose

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Then $p_{11} > p_{00} \iff W(1) \geq W(0)$

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- Size of $W(1) - W(0)$ *does* depend on ρ

Building Toward the General Case

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- Let $x_i^* = \arg\max_{x \in S} u_i(x)$
- Identification:

$$a_i(d) = 1 \implies x_i = x_i^*$$

  - Falsifiable for any i with ideal dataset

When Might ρ_i Matter For Policy?

Case 1: Active choices:

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- Then $d = x_i^*$ is plainly the optimal default, regardless of ρ.

Some intuition

Normative ambiguity appears to occur when

- γ_i is large,
- the space of possible defaults (S) is rich, and/or
- optimal choices (x_i^*) are more heterogeneous.

Effect of a Change in the Default

Consider two defaults: (d_0, d_1). Define:

- Always active (AA): $a_i(d_0) = a_i(d_1) = 1$

$$u_i(x^*) - \max\{u_i(d_0), u_i(d_1)\} \geq \gamma_i$$

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The Welfare Effect of a Default Change

Proposition:

$$\begin{aligned} W(d_1) - W(d_0) &= E[u_i(x^*) - u_i(d_0) - \rho\gamma_i | BA] p_{BA} \\ &- E[u_i(x^*) - u_i(d_1) - \rho\gamma_i | BP] p_{BP} \\ &+ E[u_i(d_1) - u_i(d_0) | AP] p_{AP} \end{aligned}$$

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Welfare Effect of a *Marginal* Default Change

- Suppose $S = [a, b] \subseteq \mathbb{R}$
- Using TSA the previous proposition becomes:

$$\Delta W \approx \Delta d \{ E[(1-\rho_i)\gamma_i | BA] p_{BA} - E[(1-\rho_i)\gamma_i | BP] p_{BP} \\ + E\left[\left.\frac{du}{dx}\right|_{x=d} | AP \right] p_{AP} \}$$

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- Follows from $u_i(x_i^*) - u_i(d) \equiv \gamma_i$ if BA, BP

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- Can prove a similar proposition to before with $\left.\frac{du_i}{dx}\right|_{x=d}$ symmetric, single-peaked, independent of ρ_i, γ_i.

CONJECTURES

When does *sign*(ΔW) depend on ρ_i's?

- when Δu_i has a highly assymmetric distribution, and
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Identifying distribution of $\gamma_i, u_i(.)$ (parameterized) is a tractable RP problem

- but no model can identify ρ.
- Components of γ might be separated empirically, e.g. present bias,
- but discarding some of them still requires normative judgement.

Part 4

Conclusions

Optimal Policy and Normative Ambiguity

- When ρ is irrelevant for policy
  - e.g. kinks in budget for 401(k) $\implies$ optimal default will tend to be at 0 or max employer match (Bernheim Fradkin Popov 2015).

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  - But we can still tell policymakers about the map from ρ's to optimal policy.
  - e.g. if you think $\rho = 0$, maximizing active choices looks great; if you think $\rho = 1$, maybe minimize opt-outs.

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Public economics employs two types of optimal policy analysis

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Can a similar distinction lead to a broad consensus about optimal defaults...about behavioral welfare ecoomics?

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  - Temptation: u vs $u + v$
  - Present bias: $\beta = 1$ and $\beta < 1$
  - Gain/loss framing? Others?

THANK YOU!

Questions/comments: dreck@umich.edu

Defaults with richer choice sets: Application

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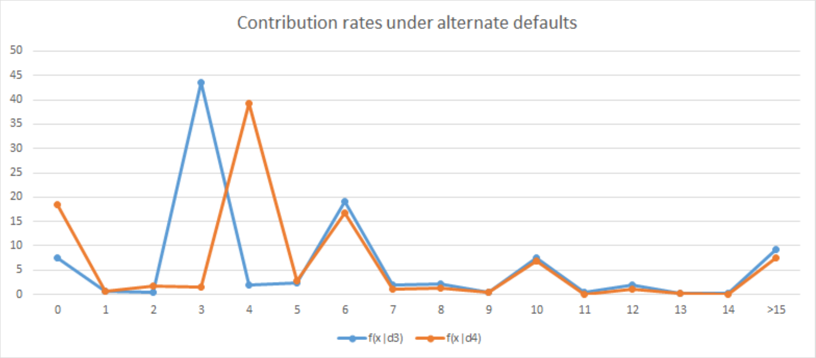
- Enrollment contributions of newly eligible workers before and after switch
- 15% max contribution
- Large kink at 6% from 1:1 employer match

back to next steps

Defaults with richer choice sets: Aggregate data

back to anchoring



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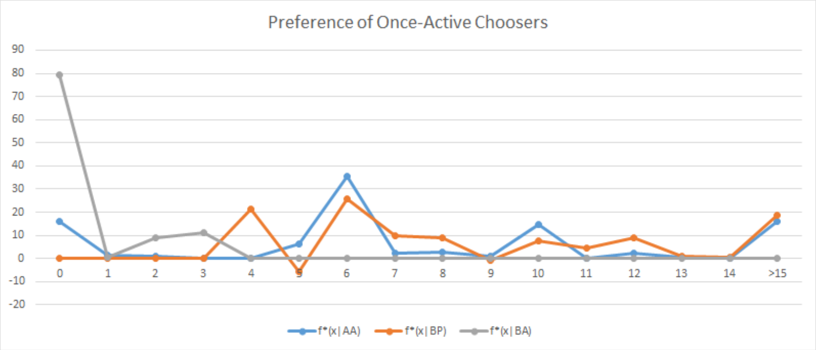
Defaults with richer choice sets: Identified distributions



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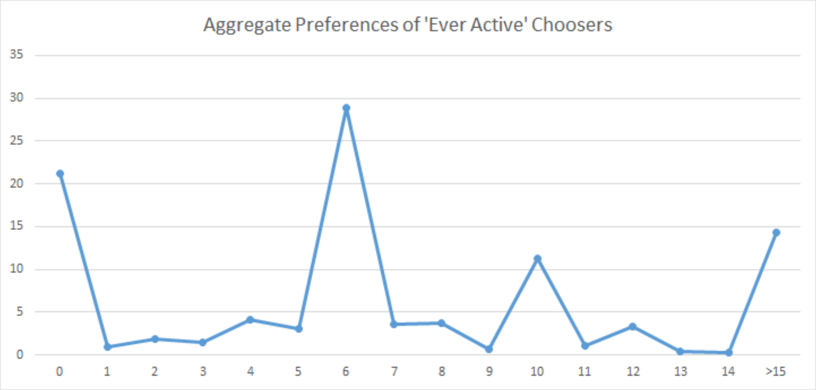

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