

Modeling with Behavioral Consumers: New Evidence, New Tools

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** Used to go without saying, but alas... I do not speak for Dartmouth, and the Dartmouth Administration definitely does not speak

Plan for today

Drawing mostly on a big new project with Stango and Yoong...

1. Why important to take behavioral biases in consumer decision making seriously
 - Do behavioral factors matter, in the wide repeat play, high stakes, etc.?
2. How to do so
 - E.g., what should the “Behavioral” in a (Behavioral IO) model look like?

Topical motivation: From payday...

Topical motivation: Say we want to evaluate a policy for the payday loan market

- Or better yet, conduct welfare analysis to diagnose whether and how intervention needed in the first place

Q1. Should we consider behavioral factors?

- Many behavioral factors could influence decision making, and in turn lender and intermediary strategies in equilibrium
- Are behavioral factors important enough to consider?
- (Which ones?)
 - present-biased discounting; over-optimism and its sources; loss aversion; gambler's fallacies; exponential growth bias, etc.?

Q1. Should we consider behavioral factors? Yes

For the skeptics:

- Behavioral biases are not anomalous
 - Closer to ubiquitous (Shiller and Thaler; Stango, Young, and Zinman 2017a/b)
- Their influence does not disappear as stakes rise
 - Linked to consequential decisions (Bella Vigna 2009; SYZ 2017a/b)
- Consumers will not necessarily learn to deal with their biases
 - Learning slow, even glacial (Ali QJE; Rabin and Thaler 2002)

Q1. Should we consider behavioral factors? Yes

For the believers:

- Intuitive policy approaches can make things worse
 - Competitive responses, limited enforcement, etc.
 - (Stango and Zinman 2011 RFS; Zinman 2014 JLS; Grubb & coauthors)

Broader motivation: From payday to everyday

Q2. How should we model behavioral consumers?

- Model approach and specification
- How do we build workhorse behavioral models?
 - My last four slides (and next four papers...)
 - But first...

Why and how deal with behavioral consumers?

The Multiple Behavioral Factors Project (SYZ 2017 a/b/...)

- Collect data on multiple behavioral factors (1-7sh), per person, in a large representative sample (RAND's American Life Panel)
 - Time-inconsistent discounting, loss aversion, Exponential Growth Bias, overconfidence (3 varieties), limited prospective memory, Gambler's Fallacies, etc.
- Using "direct elicitation"
 - Analogy to intelligence and personality testing
 - We streamline standard lab methods to lower costs
- In tandem with behavioral factor data, also collect data on
 - Standard/classical decision factors: cognitive skills, classical preferences, demographics (e.g., lifecycle factors)
 - Choices and outcomes: household finance; others

The Multiple Behavioral Factors Project: What we deliver

New tools for measuring behavioral influences on decision making:

New evidence re: how to model behavioral consumers

Approach 1. Silo: One bias at a time.

- Criticized for creating proliferation (e.g., Fudenberg 2006)
- But... valid and useful, if biases are separable
 - E.g., say I have reason to believe over-optimism about repayment is important feature of payday borrower decision making
 - Can I ignore any influence of present bias? Other biases?
- Are behavioral biases separable? Little empirical evidence... until now
- Findings in SYZ (2017a) suggest yes
 - Single behavioral factors are conditionally correlated with financial decisions and outcomes, in the pattern predicted by silo theories
 - Conditioning on other biases does not change the results!

New evidence re: how to model behavioral consumers

Approach 2. Reduce to behavioral sufficient statistics

- Happens; e.g., silent about which behavioral factor(s) matter
 - An “emergent” vs. a “fundamental” model
- Powerful, portable (Chetty ARE and AER, Elliott & Taubinsky AER)
 - Not yet used in Behavioral IO (?)
- Relies on assumptions that had yet to be (in)validated empirically
- Findings in SYZ (2017b) encouraging, for the most part
 - Positive within-consumer correlation among biases? Yes.
 - Consumer-level bias: we construct sufficient stats by aggregating across biases, within consumer
 - Nonnegative, positive for some, and not necessarily zero in the aggregate? Yes.
 - Conditionally correlated with outcomes? Yes.
 - But... cross-person heterogeneity in behavioral summary stats complicates identification of the average marginal bias distribution that is key for welfare analysis

New evidence re: how to model behavioral consumers

Approach 3. Grand unification of behavioral factors

- Is there something fundamental about human decision making that produces many/all behavioral biases, and their links to real decisions?
- Not crazy to think this could be the case
 - Countless cognitive skills \rightarrow “G” \rightarrow “Intelligence”
 - Countless descriptors of human traits “Big Five” personality traits
 - SYZ (2017b): Behavioral biases are indeed correlated with ρ (also Dean and Ortleva)
 - SYZ (2017b): Behavioral biases do seem to have a common factor underlying them
- But... glass may be half empty
 - So far SYZ (2017b) finding that behavioral common factor has ≈ 0 power (predictive, fit) for outcomes, once you condition on everything else (especially cognitive skills)
 - I.e. more idiosyncratic variation in behavioral biases may be what’s important and distinct from classical factor
 - But still more work to do with Structural Equation Modeling, measurement error corrections

Going forward: Evidence-based modeling

- Consider a setting where a researcher or policymaker has priors about behavioral bias(es) B that are