Lecture 6: Behavioral Public Economics

Johannes Spinnewijn

London School of Economics

Lecture Notes for Ec426
Outline

- Beyond Revealed Preferences
- Positive Behavioral Public Economics
- Behavioral Frictions in a Market Equilibrium
Beyond Revealed Preferences

- Neo-classical approach to public economics: choices reveal preferences!
- No reason to distinguish between a model of choice and a model of well-being
- This changes in a world with humans (rather than ‘homo economicus’) who are subject to bounded rationality, biased beliefs, frictions,...
- *Behavioral public economics* introduces insights from behavioral economics into the analysis and design of public policies.
Behavioral Welfare Economics: Two Approaches

- **Approach #1**: Build a positive model of deviations from rationality
  - Ex: hyperbolic discounting, bounded rationality, reference dependence
  - Then calculate optimal policy within such models

- **Approach #2**: Choice-based welfare analysis (Bernheim and Rangel 2009)
  - Do not specify a positive model to rationalize behavior
  - Instead map directly from observed choices to statements about welfare
Behavioral Welfare Economics: Two Approaches

- Consider three different health plans with different copays: L, M, H and corresponding variation in premiums
- We have data from two environments:
  1. On red paper, H > M > L
  2. On blue paper, M > H > L

- Approach 1: build a model of why color affects choice and use it to predict which choice reveals “true” experienced utility
- Approach 2: Yields bounds on optimal policy
  - L cannot be optimal given available data irrespective of positive
  - Optimal copay bounded between M and H
Approach 2 requires no theory of choice to make welfare statements (~ RP paradigm). Hence, it avoids paternalism, but may be inconclusive.

Compromises:
- Choice environment: tighten bounds by identifying conditions which are not welfare-relevant
- Policy environment:
  - Nudges: cheap interventions which help individuals making the "right" choices
  - Libertarian Paternalism: focus on soft policies (e.g., default options) which do not affect rational individuals
Positive Behavioral Public Economics

Revisit our welfare/policy analysis in the presence of biases/frictions;

- Agent’s behavior $\hat{x}(p)$ maximizes $\hat{U}(x, p)$ rather than $U(x, p)$. The latter ‘determines’ welfare.

- Optimal policy maximizes

$$W(p) = U(\hat{x}(p), p) + \lambda B(\hat{x}(p), p).$$

- The marginal impact of a policy change equals

$$\frac{dW}{dp} = \frac{\partial U}{\partial p} + \hat{x}'(p) + \lambda \left[ \frac{\partial B}{\partial x} + \frac{\partial B}{\partial x} \hat{x}'(p) \right]$$
Positive Behavioral Public Economics

Three important changes due to agent’s biases/frictions:

1. Impact of policy & behavior on \( U \) rather than on \( \hat{U} \)
2. Welfare impact evaluated for \( \hat{x}(p) \) rather than \( x(p) \)
3. Behavioral response captured by \( \hat{x}'(p) \) rather than \( x'(p) \)
Illustration: Biased Beliefs in the Baily Model

Source: Spinnewijn (2014)
Illustration: Biased Beliefs in the Baily Model

Mueller and Spinnewijn (in progress)
Illustration: Biased Beliefs in the Baily Model

- Spinnewijn (2014): agents maximize their "perceived" expected utility, while their welfare depends on their "true" expected utility.

Impact of a change in UI benefits:

1. Should be evaluated using \( \pi \) rather than \( \hat{\pi} \): optimistic job seekers \((\hat{\pi} > \pi)\) underestimate the value of UI benefits.
2. Welfare impact is different given \( \hat{x}(p) \) rather than \( x(p) \):
   - envelope result no longer holds; e.g., inducing more search implies a first-order change in "true" expected utility
   - consumption smoothing benefits will be different; e.g., optimists may save too little for unemployment and thus benefit more from UI
   - second effect is captured by Baily formula, first effect is not!
3. Biased beliefs change behavioral response to policy: this may call for alternative policies as well (e.g., providing information)
Identifying Behavioral Biases/Frictions

Two approaches in empirical literature on insurance demand:

1. Evidence of failures of rational model
   - consistency of choices across contexts (Barseghyan et al AER 2011, Einav et al AER 2012)
   - consistency of choices within contexts (Abaluck and Gruber AER 2011)
   - "comparison frictions" - Kling et al (QJE 2012)

2. The challenge (and the frontier): using the data to identify the behavioral model
   - survey evidence to identify information frictions (Handel and Kolstad AER 2015)
   - dominated choices / switching costs (Handel AER 2013)
   - probability weighting (Barseghyan et al AER 2013)
Identifying Behavioral Biases/Frictions

Other evidence for biases/frictions in response to public policy:

- Chetty, Kroft & Looney (2009): taxpayers are more responsive to salient taxes included in the posted price
- Kleven & Waseem (2013): tax notches (jumps in average tax rates) - individuals lose money by earning more
- Chetty, Friedman & Saez (2013): information frictions across neighbourhoods affects response to Earned Income Tax Credit

Challenge is to integrate this into welfare analysis

Pragmatic view (Chetty’s Ely lecture, 2015): evidence helps predicting behavioral responses and designing new policies for specific goals
Biases in Market Equilibrium

- Old arguments that behavioral biases are unimportant in market equilibrium:
  - "competitive forces prevent firms from exploiting biased individuals"
  - "if costs of biases are high, individuals will eventually learn"

- New argument: biases may interact with other inefficiencies in market equilibrium

- Unclear whether relaxing biases improves welfare when accounting for market responses
Illustration: Demand Frictions & Adverse Selection

- Handel & Kolstad (AER 2015): choice between two employed-provided health plans:
  - plan 1: fully comprehensive health plan (PPO)
  - plan 2: high-deductible health plan (HDHP)
  - exact same providers network / treatments

- Hypothesis: many people think the financially comprehensive plan has better doctors/treatments

- Survey evidence:
  - less than 50% of people in each plan know that medical care access is identical
  - those who (mistakenly) believe that PPO has better doctors are more likely to choose PPO

- Structural analysis indicates that those who (mistakenly) believe this, value PPO’s by an additional $2,362 on average
Augmented Structural Model

- Structural model with reduced-form friction dummies:
  - \( Z_f \) is a dummy for getting question on HDHP wrong (e.g., response that network is smaller)
  - \( 1_{j_t=j_{t-1}} \) is a dummy for sticking to a plan
- Consumer \( k \) chooses plan \( j \in J \) to maximize expected utility:

\[
\max_{j \in J} U_{kjt} = \int_0^\infty u_k(m_j, OOP) f_{kjt}(OOP) \, dOOP
\]

\[
u_k(m_j, OOP) = -\frac{1}{\gamma_k(X_k^A)} e^{-\gamma_k(X_k^A)(m_j - OOP)}
\]

\[
m_j = W_{kt} - P_{kjt} + \eta 1_{j_t=j_{t-1}} + \Sigma Z_f \beta_f 1_{HDHP} + \epsilon_{kjt}
\]

- \( \beta \) captures shift in valuation for HDHP by uninformed consumer relative to similar, but informed consumer
Friction-Reducing Policies

Trade-off:

- Better matches: informed people make better decisions
  - unambiguously *increases* welfare at given prices

- Increase risk-based selection: more risky people select into insurance
  - unambiguously *decreases* welfare through increased prices

- Change insurance demand: increases or decreases depending on friction value $\varepsilon$
  - ambiguous affect on welfare

$\Rightarrow$ formalized in Handel, Kolstad and Spinnewijn (’15). Counter-factual analysis using Handel&Kolstad estimates.
Demand with Information Frictions

- Equilibrium coverage is high. Frictions large and heterogeneous. Surplus small and homogenous.
As frictions are reduced, demand curve shifts in and flattens. Cost curves become steeper. Equilibrium coverage decreases.
Demand without Information Frictions

- With frictions eliminated, market almost fully unravels.
Cost Curves with/without Information Frictions

- As frictions are reduced, cost-based selection increases.
- Cost-curves become steeper $\Rightarrow$ equilibrium coverage ↓