14.472 Course Review

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Guiding Principles Part 1: Why Any Public Finance?

1. Private market failures (1st welfare theorem)

2. Individual decision “failures"

3. Redistribution (2nd welfare theorem)
4. Others?

Guiding Principles Part 1: Why Any Public Finance?

1. Private market failures (1st welfare theorem)
   - Asymmetric information (AS & MH)
   - Externalities
   - Market power
   - Incomplete markets
   - Intertemporal smoothing of aggregate risk
2. Individual decision “failures"
   - Internalities
   - Paternalism
3. Redistribution (2nd welfare theorem)
4. Others?

Guiding Principles Part 2: Which Empirical Methods to Use?

Whatever gets you to the importance-credibility frontier!

1. RCT (RAND)
2. Natural experiment (Oregon HIE)
3. Quasi-experimental (Medicare donut hole)
4. Observational identification strategies (job loss event study)
5. Observational correlations (LTCI take-up and realized outcomes)
6. Single-variable descriptive statistics (uncompensated care)

Guiding Principles Part 3: Why Do I Need a Model?

1. **RCT**: What are the reduced form objects we want from a SNAP info intervention?
2. **Quasi-experimental**: Why do I care that health insurance demand curves slope down and $Cov(WTP, MC) > 0$?
3. **Observational**: Is all hope lost if I can't find an instrument?
4. **All of the above**: How can I learn about the impact of alternative policies?

Outline

Beginning of Course: Diagnosing (Insurance) Markets

1. **Intro**: why social insurance?
2. **Asymmetric info theory**: what is AS and MH?
3. **Asymmetric info empirics**: how to detect?
4. **Adverse selection welfare**: how “bad" in existing markets?
5. **Adverse selection welfare**: how “bad" in missing markets?
6. **Behavioral welfare**: how “bad" with “biases"?

Middle of Course: Optimal (Insurance) Provision

7. **Baily-Chetty theory**: optimally balance benefits and costs
8. **Value of insurance empirics**: measure benefits as WTP
9. **Moral hazard empirics**: measure costs as fiscal externality

End of Course: The Why's and How's of Redistribution

10. **Redistribution frameworks**: what are we aiming for?
11. **Choice of instrument**: govt intervention can take many forms
12. **Tagging theory**: disguised optimal tax insights
13. **Tagging empirics**:how to interpret incomplete take-up?
14. **In-kind transfers**: why might they be desirable

Outline

Envelope Theorem Verbal Intuition

Starting from the optimum, behavioral responses to marginal changes do not have a first-order impact on welfare

- Caveats:
  - Agent may not be optimizing (due to internalities or externalities)
  - Direct effects may have first-order impact
  - Changes may not be marginal

Envelope Theorem Math

Setup:

$$\max_x u(x, \theta) = v(\theta)$$

FOC:

$$\frac{\partial u(x, \theta)}{\partial x} = 0 \Rightarrow x^*(\theta) \Rightarrow v(\theta) = u(x^*(\theta), \theta)$$

Envelope theorem:

$$\begin{aligned}
\frac{\mathrm{d}v(\theta)}{\mathrm{d}\theta} &= \frac{\mathrm{d}u(x^*(\theta), \theta)}{\mathrm{d}\theta} \\
&= \underbrace{\frac{\partial u(x^*(\theta), \theta)}{\partial x}}_{\text{=0 by FOC}} \frac{\partial x^*(\theta)}{\partial \theta} + \frac{\partial u(x^*(\theta), \theta)}{\partial \theta} \\
&= \frac{\partial u(x^*(\theta), \theta)}{\partial \theta}
\end{aligned}$$

Envelope Theorem Applications Throughout Course

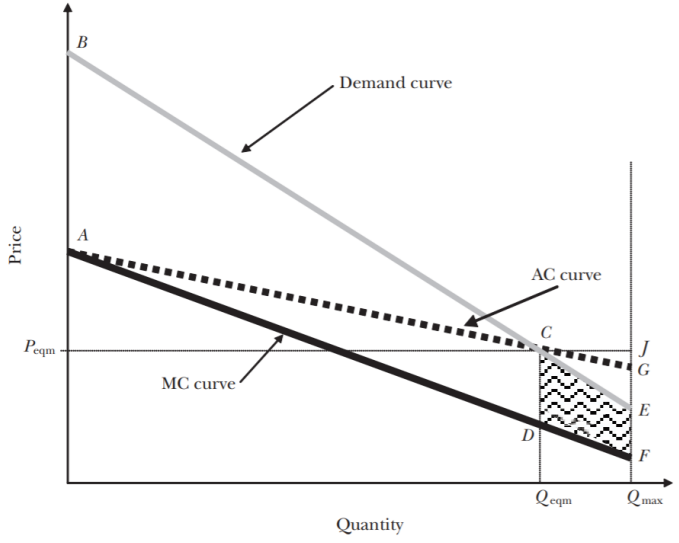
- What you can ignore in the MVPF numerator
- Moral hazard responses valued less than full cost
- Behavioral internalities
- Fiscal externalities
- In-kind redistribution

Outline

Welfare as Consumer and Producer Surplus

- EFC (2010) uses “supply" and demand curve price theory for selection markets
- Welfare is WTP (MC) relative to price paid (received)
  - Efficient allocation maximizes producer + consumer surplus
  - Some agents may privately prefer socially inefficient allocations

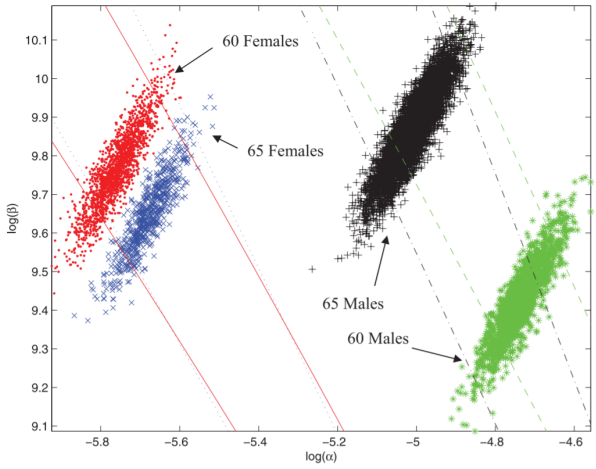
Graphical Example of Welfare as Consumer and Producer Surplus



Welfare with Revealed Preference

1. *Sufficient statistics*: Several WTP for UI approaches use `response size` x `response costliness`
2. *Structural estimation*: Shimer and Werning (2007) calibration with workers optimally searching and savings given assumed risk preferences and borrowing technology

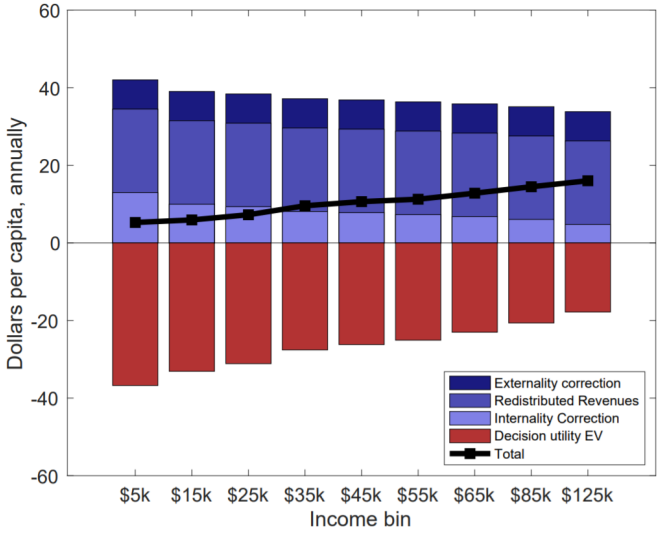
Graphical Example of Welfare through Underlying Preferences from Choices



Welfare Without Revealed Preference

1. Behavioral approach #1: Specify gap between decision and realized utility
   - Ideally bring model-free evidence like dominated plan choice due to inertia
2. Behavioral approach #2: Specify *when* decision utility = realized utility
   - Likely end with range of estimates
3. Behavioral approach #3: “Accounting” exercise adding up benefits and “paternalistic” value of them

Graphical Example of Behavioral Welfare's Additional Internality Part



Welfare as a Trippy Philosophical Thought Experiment

- Economists are very comfortable running with utilitarianism
  - Individual components aggregate up to a social welfare function
- Many people are not
  - Rights, horizontal equity treatment, etc.

Welfare as It Relates to Estimable Elasticities

“Derive estimable objects sufficient for welfare given a model"

- Baily-Chetty derives $MB = MC$ at optimum for UI
- MVPF expresses redistribution “bang for your buck"

Outline

Obvious Asymmetric Information

- We had a bunch of lectures with titles about adverse selection and moral hazard
- Violation of the 1^{st} welfare theorem due to incomplete markets

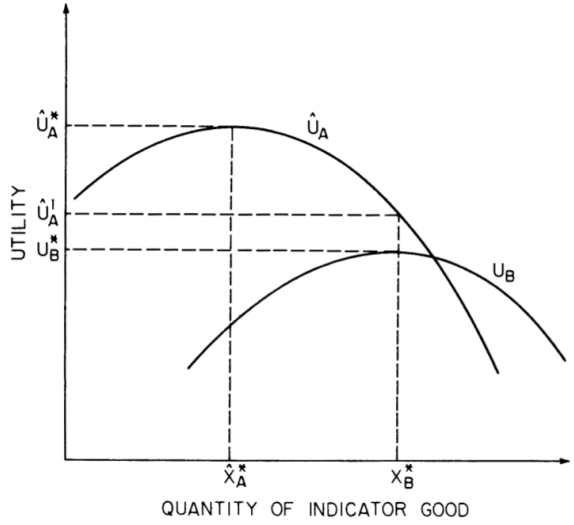
Asymmetric Information in Redistribution

Optimal tax theory: redistribution with unobservable types faces IC constraints

- Violation of the 1st welfare theorem due lack of type-specific lump-sum transfers
- Others will “masquerade" if you try to favor one type too much
- **Corollary**: Anything that helps reveal types (and relaxes binding IC constraint) has 1st order welfare gain

(See recitation on “Optimal Taxation")

Graphical Example of Redistribution by Relaxing IC Constraints



Outline

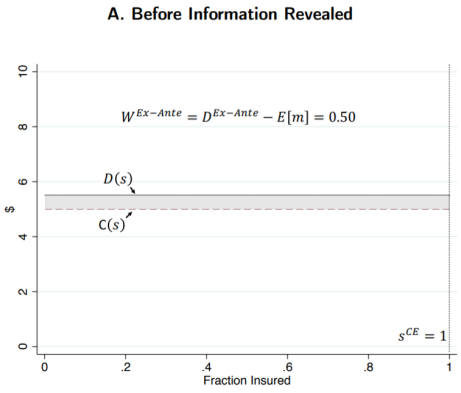
Obvious Insurance

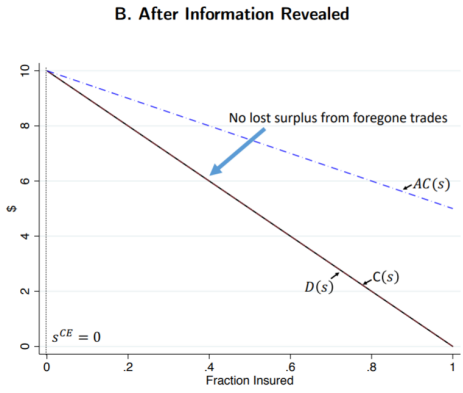
- Many of the applications were on ~~insurance~~ ~~health insurance~~ Medicare/Medicaid
  (There used to be even more health insurance in past years!)

Insurance and Redistribution

- Insurance's "free lunch" comes from redistributing resources across states of world
- Redistribution across realized types provides ex ante insurance behind the veil of ignorance
- Insurance products are an object of value that can be targeted through in-kind transfers

Graphical Example of Larger Ex Ante Value of Insurance





Baily-Chetty as a Framework for Optimal Insurance

Binary loss setup with unobservable effort causing distortion:

1. Solve planner's problem w/o agent optimization for 1st best govt policy
2. Solve agent's problem given govt policy
3. Solve planner's problem given agent optimization for 2nd best govt policy

- What simplifying assumptions does it make? Can these be easily relaxed?
- What other insurance settings can this apply to? What is the interpretation of parameters there?

Outline

History of UI in the US

- *Pre-Great Depression*: Union contracts at industry-level
- *Post-Great Depression*: Mandate–excluding largely Black/female industries–with experience rating and progressive net benefits
- *Today*: Taxes $\approx$ lump sum and benefits $\approx$ taxes by group across business cycle

Consumption-Smoothing

- *Basic theory*: Friedman PIH as benchmark
- *Reduced form objects of interest*: MPC out of large vs. small, anticipated vs. unexpected income shocks
- *Quantify whether model matches data*: Specify income process, risk preferences, time preferences, and borrowing/saving technology

Racial Inequality

- *Positive analysis*: Disparate treatment vs. disparate impact
- *Normative analysis*: Indirect tag on $u'(c)$ vs. Direct tag on reparations

UI Externalities

Effect of UI on tightness is ambiguous:

1. *Labor demand shift in tightness vs. employment space*:
   - Present in standard DMP model
   - Own search creates externality on firm vacancy posting

   $\uparrow$ UI $\Rightarrow \uparrow$ wages $\Rightarrow \downarrow$ vacancies $\Rightarrow \epsilon_{macro} > \epsilon_{micro}$
2. *Downward sloping labor demand in tightness vs. employment space*:
   - Not present in standard DMP model
   - Can be motivated by "rat race" effect with job rationing
   - Own search creates externality on other workers

   UI $\Rightarrow \downarrow$ agg. search $\Rightarrow \uparrow$ Pr(match) $\Rightarrow \epsilon_{macro} < \epsilon_{micro}$

Effect of tightness on welfare depends on other parameters

- LMS (2018) estimate tightness is inefficiently high (low) in booms (recessions)

Effect of UI on welfare is effect of UI on tightness x effect of tightness of welfare

UI Internalities

- *Motivating facts*: Sensitivity of consumption and search effort to unemployment/UI onset and expiry
- *Standard model extensions*: Present-bias, reference-dependence, myopia