14.472 Course Review

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December 10, 2021
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 $\text{Cov}(WTP, MC) > 0$?
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

Lecture Recap

Common Theme #1: Envelope Theorem
Common Theme #2: Welfare
Common Theme #3: Asymmetric Information
Common Theme #4: Insurance
Common Theme #5: Peter’s Potpourri
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”?
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

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Common Theme #1: Envelope Theorem

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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:

\[
\frac{dv(\theta)}{d\theta} = \frac{du(x^*(\theta), \theta)}{d\theta}
= \frac{\partial u(x^*(\theta), \theta)}{\partial x} \frac{dx^*(\theta)}{d\theta} + \frac{\partial u(x^*(\theta), \theta)}{\partial \theta}
= 0 \text{ by FOC}
\]

\[
= \frac{\partial u(x^*(\theta), \theta)}{\partial \theta}
\]
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
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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
1. *Sufficient statistics*: Several WTP for UI approaches use \( \text{response size} \times \text{response costliness} \).

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
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"
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Obvious Asymmetric Information

- We had a bunch of lectures with titles about adverse selection and moral hazard
- Violation of the 1st 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
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• 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

A. Before Information Revealed

\[ W_{\text{Ex-Ante}} = D_{\text{Ex-Ante}} - E[m] = 0.50 \]

B. After Information Revealed

No lost surplus from foregone trades

\[ s^{CE} = 1 \]

\[ s^{CE} = 0 \]
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?
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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