14.472 Public Finance II
VI.c: Takeup and Self-Targeting

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Incomplete take-up is widespread

- Well documented that take-up of social transfer programs is incomplete
- Currie (2006) review of takeup of various programs e.g.
  - 6-14% for SCHIP
  - ~75% for EITC
- Main explanations offered for limited take-up:
  - Informational barriers to takeup (eligibility, benefits, application process)
  - Transaction costs associated with enrollment
  - Stigma associated with participation (could be a form of transaction cost)
- Optimization?
  - optimizing models: take-up if expected benefits > expected cost
  - non-optimizing models
Some key questions

Positive / descriptive
- What are key barriers to take-up?
  - Relative roles of information, transaction costs and stigma
- Who is the marginal person deterred by barriers?

Normative implications: Is low take up bad?
- Welfare implications of increasing takeup levels
- Welfare implications of self-targeting
Self-targeting models
- Nichols and Zeckhauser vs Mullainathan and Shafir
- Alatas et al. (2016)

Evidence on barriers to take up and self-targeting
- Informational barriers: Bhargava and Manoli (2015) EITC experiment
- Transaction cost barriers:
  - Alatas et al. (2016) self-targeting experiment in Indonesia
  - Deshpande and Li (2017) on disability insurance
  - Bettinger et al. (2012) FAFSA Experiment

Welfare consequences: Fink and Noto (2018)

Some methodological themes:
- A relatively large number of RCTs in this space (any thoughts on why?)
- Illustration of compelling event study methodology (Deshpandi and Li 2017)
Is increased take-up a goal?

- Policy makers and advocates talk about goal of increasing takeup
- Private welfare gain from increased takeup depends critically on whether individuals are making optimal decisions
  - If so, no first order welfare gain from increasing takeup by reducing barriers (envelope theorem)
  - But if individuals are (sub-optimally) unaware / inattentive / failing to apply, could have first order welfare gain
- Social welfare: Incomplete takeup may actually be a desired (constrained) optimum
  - With imperfect information about individual’s type, takeup barriers may improve self-targeting efficiency of redistributive program (or they may not)
  - This is what the self-targeting literature is about
- Private takeup decisions impose a negative fiscal externality on government, creating wedge between private and social optimum
  - Public administrative costs, decreased tax revenue on earnings etc.

Want to redistribute based on an unobserved characteristic (e.g. ability).

- If demand for specific goods is correlated with unobserved characteristic, can transfer more efficiently by sacrificing productive efficiency.
  - Exploit single crossing feature: people of different ability have different marginal utility (disutility) from specific goods.

Previous example: in kind vs cash transfers.

Now consider: pure deadweight costs - "ordeals"
NZ (1982) implies may be optimal to have “ordeals” in transfer programs: i.e. pure deadweight cost e.g.
- Tedious administrative procedures
- Stigma

May enhance target efficiency if benefits from transfers vary across potential recipients
- Suppose intended get 100 utils from transfer
- Suppose imposters get 10 utils
- Then ordeal that imposes an 11 util loss in order to qualify for the transfer would be an effective screening device

Example: make people fill out lots of forms / wait in long lines to apply
- Pure deadweight loss / ordeal
- Nevertheless, may be a good screen for those whose marginal utility of receipt is low
An alternative take on ordeals

- Bertrand, Mullainthan and Shafir (AEA P&P 2004)
  - Hassle costs (e.g. 36 page food stamp application with confusing question) deter the low ability people you want to transfer to

- Key question: Is marginal person deterred given current program rules someone who looks like we wouldn't want to redistribute to them (N-Z) or someone we would like to (BMS)
  - Use unused observables to see how they change as change screen? (e.g. education, etc)

- Mullainathan and Shafir (2013) "Scarcity"
  - Ordeals screen out those with limited "bandwidth" / consume cognitive resources
  - Poverty as a bandwidth tax: poor face many concerns and have to "tunnel" attention on a few
"Self Targeting: Evidence from a Field Experiment in Indonesia"

Randomized evaluation across 400 Indonesian villages of different methods of enrolling in a large conditional cash transfer program

- Targets poorest 5% of population that also meet certain demographic requirements (e.g. pregnant woman or young kid in household)
- Cash assistance of about 4-13% of average yearly consumption
  - Requirements of school attendance, pre-postnatal checkup, and completed vaccinations
Self targeting Experiment

- Government problem: determine who is eligible
  - Status quo: automatically screen for eligibility and enroll based on easy to observe assets (size of house, materials of roof etc)
  - "Proxy means test" (Imperfect proxy)

- Experimental alternative to status quo
  - Self-targeting: households have to apply to program
    - Note: Same asset tests applied. Key difference is active applying (self-targeting) vs automatic screening
  - Within self-targeting villages, also randomly vary application costs
    - Distance: Where application site is located relative to village center (max is 1/2 day’s time, which is trivial compared to benefits)

- Researchers conduct their own detailed baseline consumption survey ("truth")
Proxy means test an imperfect proxy for consumption

Figure 1. Probability of Obtaining Benefits vs. Log Per Capita Consumption and PMT score

(A) Probability of Obtaining Benefits vs. Log Per Capita Consumption

Shows predicted probability of receiving benefit conditional on apply (from probit model of benefit receipt on log per capita consumption)
Uncertainty about benefit receipt even conditional on proxy

(b) Probability of Obtaining Benefits vs. PMT score

Shows predicted probability of receiving benefit conditional on apply versus predicted consumption based on Proxy Means Test (PMT)
Information-based screening model

- Government program that delivers benefit \( b \) if deemed eligible
- Government wants to target transfers based on consumption \( (y) \)
- Issue 1: Government only observes a part of consumption \( y^o \), where
  \[
  y = y^o + y^u
  \]
  and observes \( y^o \)
  - \( y^o \) is the proxy means test
- Issue 2: Imperfect and costly measurement technology for \( y^o \)
  - Costly government survey / verification process to measure \( y^o \)
  - \( y^o \) measured with error - conditional on applying, probability of being deemed eligible is \( \mu(y^o) \) with \( \mu'(y^o) \leq 0 \)
    - see preceding figure: uncertainty about benefit receipt conditional on proxy \( (y^o) \)
- Note: government faces two problems:
  - Costly verification process (fiscal externality on government from individual applying)
  - Unobservables (would like to target on \( y \), not \( y^0 \)
Individual’s problem

- Individuals:
  - know $y$
  - cost to individual of applying $c(l, y)$ - $l$ is distance to application site

- Two types of individuals
  - Sophisticated: know that eligibility is determined by $\mu(y^o)$ - i.e. depends only on observable consumption
  - Unsophisticated: do not know what government observes; but see empirical probability of someone receiving program conditional on applying $\lambda(y)$

- Individuals apply if expected benefit exceeds expected cost
  - Note that sophisticated calculates expected benefit based on $y^o$, unsophisticated based on $y$
Government options: automatic screening vs. self-targeting

- **Automatic screening:**
  - Government incurs cost of measuring $y^o$ for everyone and decides eligibility

- **Self-targeting:** people must apply before government will measure $y^o$ and decide eligibility

- **Two theoretical advantages to self-targeting:**
  - Sophisticated individuals won’t apply if $y^o$ is high - reduces fiscal externality on government
  - Unsophisticated individuals won’t apply if $y$ is high - reduces fiscal externality and also improves selection on unobservable $y^u$
Self-targeting improves targeting

Figure 4.

Experimental Comparison of Self-Targeting and Automatic Screening Treatments

Panel A shows the CDFs of log per capita consumption of beneficiaries in the self-targeting and automatic screening treatments. Kolmogorov-Smirnov test of equality yields a p-value of 0.10. Panel B presents non-parametric Fan regressions of benefit receipt on log per capita consumption in the two treatments. Bootstrapped pointwise 95 percent confidence intervals, clustered at the village level, are shown in dashes.
Self-targeting (applying) on observables

Figure 3. Show Up Rates Versus Observable and Unobservable Components of Log Per Capita Consumption

(A) Show Up as a Function of Observable Consumption ($y^o_i$)

Notes: Figures provide non-parametric Fan regressions of the probability of applying for PKH against the observable and unobservable components of baseline log per capita consumption in the 200 self-targeting villages. The scales for the x-axis are both in logs, so are comparable. Bootstrapped pointwise 95 percent confidence intervals, clustered at the village level, are shown in dashes.
Figure 3. Show Up Rates Versus Observable and Unobservable Components of Log Per Capita Consumption

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Summary of results

- Self targeting screens out higher consumption individuals relative to automatic screening
  - Savings on fiscal externality
  - Better selection on unobservables (unsophisticated self selection on \( y \), not \( y^o \))
- But marginal increases in application costs (via distance) do not further improve targeting (see paper). Why?
  - Long tail of people with low probability of passing screen = where mass of people are
  - So large mass of people w very small probability of receipt get weeded out by small application cost
Why additional application costs do not improve targeting

![Chart showing log per capita consumption distribution with different targeting methods: Automatic Screening, Self-Targeting, Poverty Line, and Log Consumption Distribution.](chart.png)
Possible US applications

- Medicare added to DI (w 2 yr wait period) in 1972
  - This increases “value” of DI. But is the marginal value of health insurance higher for the truly disabled or not? (Depends in part on access to health insurance through other means).
  - Similarly what about reducing two year waiting period
  - Gray (in progress): Adding prescription drug coverage to Medicare

- Food stamps: electronic benefit transfer

- Distance to social service office - Deshpande and Li (2017)
Deshpande and Li (2017)

- "Who is screened out? Application Costs and Targeting of Disability Programs"
- Natural experiment: timing of closing of 125 out of 1230 Social Security field offices between 2000 and 2014
  - apply for SSDI and SSI in field office (or over phone or on line)
  - field offices process applications
- Study how closings affect level (and characteristics) of application and enrollment
- Will discuss
  - Empirical methods: very nice illustration of implementation and exposition of "event study" methodology.
    - Useful template
  - Substantive results
Empirical strategy

- Examine outcomes in zips that experienced a closing
  - "The obvious concern with this empirical strategy is that SSA may be closing offices in areas where disability applications are already falling or where composition of disability applicants is already changing" (page 13)

- Therefore compare outcomes in areas that experienced a closing at a given time relative to areas that experience a closing at a future time
  - "The identifying assumption is that the exact timing of the closing is uncorrelated with changes in the number and type of disability applicants" (page 13)
  - i.e. requires that "timing of closings, rather than the closings themselves, be as good as random" (page 3)

- Exploit timing of closing of offices between 2000 and 2014
Figure 2: Timing of Field Office Closings

Source: Authors’ calculations based on Social Security Administration data.
Empirical strategy (con’t)

- Does not compare changes in outcomes in closing zips to "never closing" zips because of concerns about comparability (see Table 1)
  - Of course level differences not a concern per se (identifying assumption is about counterfactual trends not levels) and therefore show robustness to using unaffected zips as control

- Instead compares changes in outcomes in a closing zip to a "closing in the future" zip
  - For each of 125 closings, create separate dataset of zips that experience current closing (treated) and zips that experience closing more than two years hence (controls)
  - Append all data sets

- Side comment - three types of event studies people are doing:
  - Among treated, using only variation in timing of treatment
  - Add control group of never treated to above
  - Use future treateds as control (seems to limit pre period comparison?)
Nice to start as close to raw data as can (as little "regression massaging" as possible)

Figure 4: Raw Plots of Number of Applications in Control and Treatment ZIPs

Notes: Figure plots raw (non-regression-adjusted) counts of applications in control and treatment ZIPs relative to the quarter of the closing. Sample is ZIP codes whose nearest office closes after 2000 and that have an average of at least three disability applications per quarter in the year before the closing. Treatment ZIPs are ZIPs whose nearest office closes for a given closing, while control ZIPs are ZIPs whose nearest office closes in a future closing.
Main estimating equation:

\[ Y_{isct} = \alpha_i + \gamma_{st} + \sum_{\tau} \lambda D^\tau_{ct} + \sum_{\tau} \delta_{\tau}(Treated_{ic} \times D^\tau_{ct}) + \epsilon_{isct} \]

- \( Y_{isct} \) is outcome for zip \( i \) in state \( s \) for closing \( c \) in quarter \( t \)
- control for zip fixed effects (\( \alpha_i \)) and calendar quarter by state fixed effects (\( \gamma_{st} \))

Main results are presented as graphical plots of \( \delta_{\tau} \)

- \( Treated_{ic} \) is indicator for whether Zip \( i \) is closing ZIP for closing \( c \)
- \( D^\tau_{ct} \) are indicates if quarter \( t \) is \( \tau \) quarters after or before the quarter of closing

For table estimates, report \( \beta \) from a more parsimonious pre-post regression:

\[ Y_{isct} = \alpha_i + \gamma_{st} + \sum_{\tau} \lambda D^\tau_{ct} + \beta(Treated_{ic} \times Post_{ct}) + \kappa(Treated_{ic} \times Zero_{ct}) + \epsilon_{isct} \]
Comment on estimating equations

- Display event study figures based on regression with flexible (non-parametric) time pattern; summarize for tables with a more parsimonious regression

- This is a very nice expositional style
  - Figures let you see (close to) "raw data"
    - Assess identifying assumption visually (via pre period patterns)
    - Assess timing of any impact relative to event
  - But more parsimonious specification useful for summarizing in tables
    - More flexible specification in figures can / should guide the parsimonious specification
Key Outcomes

- Counts of applicants or enrollees
- Characteristics of applicants or enrollees
  - Run application and enrollment regressions by type
  - Or put average characteristics of applicants or enrollees on LHS
    - Putting characteristics of endogeneous selected group on LHS a la cost curve test of EFC 2010
    - See Gruber, Levine and Staiger (QJE 1999) "Abortion Legalization and Child Living Circumstances: Who is the marginal child?"
Closings Decrease Applications and Enrollment

Figure 4: Raw Plots of Number of Applications in Control and Treatment ZIPs

-12 -8 -4 0 4 8
Avg number of applications in ZIP

Quarter relative to closing
Control Treatment
Number of applications

Notes: Figure plots raw (non-regression-adjusted) counts of applications in control and treatment ZIPs relative to the quarter of the closing. Sample is ZIP codes whose nearest office closes after 2000 and that have an average of at least three disability applications per quarter in the year before the closing. Treatment ZIPs are ZIPs whose nearest office closes for a given closing, while control ZIPs are ZIPs whose nearest office closes in a future closing.

Figure 5: Effect of Closings on Number of Disability Applications and Allowances

-12 -8 -4 0 4 8
Reduced form estimate

Quarter relative to closing
Applicants Recipients
Number of applicants and recipients (log)

Notes: Figure plots estimates of $\delta_\tau$ coefficients from equation (1), where the dependent variable is the log number of disability applications (solid series) or the log number of disability recipients (dashed series). Shaded region is 95 percent confidence interval for disability applications (solid series). Sample is ZIP codes whose nearest office closes after 2000 and that have an average of at least three disability applications per quarter in the year before the closing. Regressions are weighted by application volume in the year before the closing.
Applications and enrollment decline more for lower SES (education, pre-application earnings etc)

Applications decline most among moderate (vs low or high) severity groups

- Severity can only be assessed through application process
- Low severity will be rejected, high severity accepted, moderate can appeal
Summary of results

- Compelling evidence of role of "transaction costs" in deterring applications and enrollment
  - Closings produce an 11% decline in applications and 13% decline in enrollment

- Heterogeneous response: Closings disproportionately affect low SES and lower severity conditions

- What is "mechanism" for decreased applications?
  - Closings increase travel time to nearest open field office by about 40 percent (10 minutes by drive; 36 minutes by public transit)
  - Also find evidence of congestion effect (i.e. increased walk-in time in neighboring offices)
  - Applicant time costs would have to be implausibly large to explain decline in applications
  - Perhaps update about overall costs of applying; perhaps "irrational"?
Moving beyond hassles - what about Information Barriers?

- Thus far have examined roles of hassles (application costs) on takeup and targeting
  - Conditional cash transfer in Indonesia (Alatas et al.)
  - DI in US (Deshpande and Li)
- What about role of limited information
  - Costs involved in learning about eligibility and application rules (optimally may choose not to seek)
  - "Psychological frictions" - confusion, complexity, inattention
"Why are Benefits Left on the Table?"

Randomized experiment on incomplete take-up of EITC

25% incomplete take-up
- 6.7 million non-claimants per year
- Forgo on average > one month’s income

Randomized experiment designed to assess various informational barriers to take-up

Modify the information content and complexity of IRS reminder notices to 35,000 tax filers in CA who failed to claim their EITC despite presumed eligibility (and receipt of initial reminder)
Complexity Interventions.—The first set of interventions, as depicted in Figure 4, indicates the stark effect of informational complexity on response. The complexity notice decreased response by 0.06 ($p < 0.01$), or 27 percent, relative to the 0.23 response of the control mailing, and the effect magnitude, in absolute terms, did not differ significantly across dependent status. The lengthened worksheet lowered response by 0.04 ($p < 0.01$) or 17 percent. The effect of worksheet complexity appears to be driven largely by those without dependents possibly because the treatment worksheet for this population is substantially “stronger” (due to the additional section of questions) than the same intervention for those with dependents. A separate estimate of the interaction of the two conditions reveals that the joint presence of both complexity elements reduced response by 0.09 ($p < 0.01$).

**Figure 4. Response and Marginal Effects by Experimental Intervention**

*Notes:* This figure depicts the response rates, and marginal treatment effects, associated with experimental interventions using estimates reported in column 1 of Table 4. The “Control mailing” refers to the simple notice and simple worksheet and reflects response averaged across the envelope and indemnity treatments.
Take-up is sensitive to "frequency, salience and simplicity with which information is provided"

Second mailing - just months after first - increases takeup by 14 percentage points!

Nature of mailing has effects

- Simplification (e.g. visually more appealing notice or shorter worksheet) raises enrollment from 0.14 to 0.23
  - Poorest individuals most deterred by complexity (Figure 6)

- Stigma treatments have little effect.
  - Because they do not affect stigma or because stigma not important?
Interpret results as evidence of low awareness of eligibility and benefits
  
  Survey in which participants reviewed experimental interventions and then beliefs assessed suggest interventions shaped behavior by influencing beliefs (about eligibility and benefit size) and increasing attention paid to forms

Difficult to rationalize with a traditional / rational model of takeup in which eligible individuals balance accurately perceived expectations of benefits and costs
  
  Large impact of second notice
  Large impact of reducing complexity or changing salience
  Survey evidence suggested interventions increase awareness and reduce confusion

Conclude there are "psychological frictions" and more work is needed to model and understand them
Bettinger et al. (2012) "The Role of Application Assistance and Information in College Decisions: Results from the H&R Block FAFSA Experiment"

- Randomized experiment on low-income individuals receiving tax preparation assistance
- Examining takeup of FAFSA (Free Application for Federal Student Aid)

**Experimental design:**

- Some individuals offered personalized aid estimates and immediate assistance filing forms
- Others just offered personalized aid estimates
- Controls (status quo)

**Outcomes:** Completing FAFSA; applying for financial aid, attending college; receiving aid at college
Summary of results

- Information + Assistance has real effects
  - Increased aid applications, college enrollment, receipt of aid, and college persistence
- Information by itself has no effect
Lack of effect of "information only" treatment

- Compare to EITC experiment.
  - Hassles may be greater w FAFSA so fewer people on margin
  - Outcome is different (getting a refund vs going to college)

- How did information treatment affect beliefs (about eligibility? expected benefits?)

Unfortunately, cannot say much about targeting as study population relatively homogeneous to begin with

- College persistence results could be suggestive
SNAP (Food stamp) takeup particularly low among elderly (~40% compared to 80% overall)

Non-profit (Benefits Data Trust) tries to increase takeup
- Gets information from state on people not enrolled in SNAP (SNAP enrollment data) but likely eligible (enrolled in Medicaid)
- Contacts these individuals to inform them of their potential eligibility and offer to assist them with document collection and application

RCT on ~30,000 elderly not enrolled in SNAP but likely eligible
- Information only: informs of likely eligibility
- Information plus assistance: also provides help with application
- Control group: status quo
Goals

- **Descriptive:**
  - Barriers to takeup - i.e. role of information vs hassles.
    - How much does takeup respond to each intervention?
  - Targeting properties of these different barriers
    - Characteristics of marginal individuals induced to apply / enroll
  - **Normative:** Welfare impacts of interventions and of their targeting properties
Figure A1: Standard Outreach Materials: Information Plus Assistance

Letter

[Image of Pennsylvania Department of Human Services letter]

Dear Sample A. Sample,

Good news! You may qualify for help paying for groceries through the Supplemental Nutrition Assistance Program (SNAP).

We want to help you apply for SNAP!
We are working closely with the PA Benefits Center to help you get SNAP. Thousands of older Pennsylvanians already get an average of $119 a month to buy healthy food.

Please call the PA Benefits Center today. It could save you hundreds of dollars each year.

Sincerely,

Ted Dallas
Secretary of the Pennsylvania Dept. of Human Services

Beneficiary ID:

Apply now!
Call us at 1-800-528-9594
Monday - Friday, 9:00 AM - 5:00 PM
The call is free. Our friendly staff will help you.

Postcard

[Image of Pennsylvania Department of Human Services postcard]

Dear Pennsylvania Resident,

We haven't heard from you!
Our records show you may qualify to receive help paying for groceries through the Supplemental Nutrition Assistance Program (SNAP).

Don't miss this opportunity! We are working with the PA Benefits Center to make sure you get the help you deserve.

- Thousands of older Pennsylvanians already get an average of $119 a month to buy healthy food.
- It is FREE to apply for SNAP.
- You may be able to apply using a simple fast track application.

Apply for SNAP now!
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Call the PA Benefits Center today. It won't take long and could save you hundreds of dollars each year.

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Envelope

[Image of Pennsylvania Department of Human Services envelope]
Figure A1: Standard Outreach Materials: Information Plus Assistance

Letter

Dear Sample A. Sample,

Good news! You may qualify for help paying for groceries through the Supplemental Nutrition Assistance Program (SNAP).

We want to help you apply for SNAP!

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Please call the PA Benefits Center today. It could save you hundreds of dollars each year.

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Secretary of the Pennsylvania Dept. of Human Services

Envelope
Figure A3: Experimental Design

Study Population
(N = 31,188)
Age 60+, on Medicaid and not on SNAP

Control
(N = 10,630)
No intervention

Info & Assistance Treatment
(N = 10,629)
Mail information on SNAP eligibility and provide application assistance over the phone

Info Only Treatment
(N = 10,629)
Mail information on SNAP eligibility.

Control
(N = 10,630)
No intervention

Info & Assistance Treatment
(N = 10,629)
Mail information on SNAP eligibility and provide application assistance over the phone

Info Only Treatment
(N = 10,629)
Mail information on SNAP eligibility.

Standard 
Follow-Up Postcard
Application Assistance

Marketing Follow-Up Postcard
Application Assistance

Standard, No Postcard
(N = 2,658)

Standard, No Postcard
(N = 2,658)

Marketing Follow-Up Postcard
Application Assistance

Standard Follow-Up Postcard
Application Assistance

Marketing Follow-Up Postcard
Application Assistance

Framing Follow-Up Postcard

Notes: Figure shows experimental design. Grey arms are the ones included in the main analyses.
Table 2: Behavioral Responses to “Information Only” and “Information Plus Assistance”

<table>
<thead>
<tr>
<th></th>
<th>Control (1)</th>
<th>Information Only (2)</th>
<th>Information Plus Assistance (3)</th>
<th>P Value of Difference (Column 2 vs 3) (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNAP Enrollees</td>
<td>0.058</td>
<td>0.105</td>
<td>0.176</td>
<td>[0.000]</td>
</tr>
<tr>
<td>SNAP Applicants</td>
<td>0.077</td>
<td>0.147</td>
<td>0.238</td>
<td>[0.000]</td>
</tr>
<tr>
<td>SNAP Rejections among Applicants</td>
<td>0.233</td>
<td>0.266</td>
<td>0.255</td>
<td>[0.119]</td>
</tr>
<tr>
<td>Callers</td>
<td>0.000</td>
<td>0.267</td>
<td>0.301</td>
<td>[0.000]</td>
</tr>
<tr>
<td>Adjusted Callers</td>
<td>0.000</td>
<td>0.289</td>
<td>0.301</td>
<td>[0.000]</td>
</tr>
<tr>
<td>SNAP Applicants among Non-Callers</td>
<td>0.077</td>
<td>0.086</td>
<td>0.081</td>
<td>[0.063]</td>
</tr>
<tr>
<td>SNAP Applicants among Callers</td>
<td>0.000</td>
<td>0.313</td>
<td>0.602</td>
<td>[0.000]</td>
</tr>
<tr>
<td>SNAP Enrollees among Non-Callers</td>
<td>0.058</td>
<td>0.061</td>
<td>0.059</td>
<td>[0.442]</td>
</tr>
<tr>
<td>SNAP Enrollees among Callers</td>
<td>0.000</td>
<td>0.226</td>
<td>0.450</td>
<td>[0.000]</td>
</tr>
<tr>
<td>Observations (N)</td>
<td>10,630</td>
<td>5,314</td>
<td>10,629</td>
<td></td>
</tr>
</tbody>
</table>
NOTE: Figure shows, by month, the (cumulative) estimated treatment effects on enrollment (relative to the control) for the Information Only arm and the Information Plus Assistance arm. 95 percent confidence intervals on these estimates are shown in the dashed light gray lines.
"Information only" increases enrollment less but may be more cost-effective

- 9-month enrollment: 6% (control), 11% (info only); 18% (info plus assistance)
- Applications increase proportionally - no change in approval rate
- Cost per additional enrollee: ~$20 (info only); $60 (info + assistance)

Reminder postcard

- Info only without reminder postcard has about 20% lower applications and enrollment
- Suggestive of inattention?
Targeting results

- Both interventions decrease targeting in a similar manner:
- Marginal applicants and enrollees are "less needy" than average enrollees
  - Lower benefits (progressive benefit formula)
  - Better health
- Note: do not observe "ground truth" (i.e. what social planner would like to target on):
  - Marginal utility of consumption?
  - Compare to Alatas et al.
Normative implications

- Goal: Framework for welfare analysis of impact of interventions on:
  - Take up
  - Targeting
- Hopefully useful for understanding our results and more broadly for other applications
Model set-up

- Individuals choose whether or not to apply for safety net program
  - Applications are rejected or approved
  - If approved can receive low or high benefits
    - Progressive benefit formula
- Two types of individuals (low and high income)
  - Type specific probability of acceptance and expected benefits if apply
  - Private cost of applying (heterogeneous and may vary w type)
- Fiscal externality from application
  - i.e. Public application processing
  - (In principle could include distortions to labor supply and hence lost income tax revenue etc.)
- Individuals may underestimate probability of acceptance
Utilitarian social welfare function: sum of total private welfare minus public costs (paying benefits and processing applications)

Modeling our treatments:
- Information only: reduces misperceptions
- Information plus assistance: reduces misperceptions and private application costs

Define: intervention improves targeting if it increases the share of enrolles who are high benefit
  - recall: progressive benefit formula

Assume interventions costless (easy to relax)
Results

- Apply if perceived expected benefit exceeds private cost
  - Fiscal externality from application drives wedge between private optimum and social optimum

- Neoclassical benchmark (no misperceptions)
- No private welfare effects for marginal applicants (envelope theorem)
  - Therefore targeting properties of interventions irrelevant for private welfare (opposite of "folk wisdom")

- Social welfare
  - Information only: reduces social welfare if it raises applications
  - Information plus assistance: impact on social welfare is ambiguous.
    - Trades off cost to government of marginal applicants with benefits from reduced private costs for inframarginal applicants
  - Improvement in targeting reduces social welfare due to progressive benefit formula (opposite of "folk wisdom")
    - More generally, relationship between targeting and social welfare depends on relationship between targeting and fiscal externality
Departure from neoclassical benchmark

- Assume under-estimate expected benefits

Marginal applicants now have positive expected private benefits (breaks envelope theorem)

Social Welfare impact ambiguous: private benefits vs public costs of increased applications

Targeting properties of intervention have no general relationship to its social welfare impact
Results (Con’t)

- Targeting properties of intervention have no general relationship to its social welfare impact.

- Private welfare gains for marginal enrollees depend on three type-specific factors:
  - Marginal utility of consumption (higher for less well off)
  - Expected benefit from enrolling (higher for less well off)
  - Magnitude of under-estimation (could have any relationship with type)

- Sufficient condition for interventions that improve targeting toward less well off individuals to be more likely to improve social welfare: under-estimation of expected benefits is (weakly) greater for targeted individuals.

- Intuition: Gross benefits vs. net benefits
  - Without misperceptions, interventions attract individuals with low net benefits from applying, but gross benefits could be large or small.
"Calibrating" model

- Results consistent with misperceptions
  - Impact of reminder postcard
  - Given empirical rejection rate of applications and resulting expected benefits from applying, and estimates of time cost of applying, absent misperception of acceptance rate need implausibly high non-time cost of applying to rationalize (e.g. $3,000)
  - Alternatively, if assume non-zero time cost, estimate substantial misperceptions for marginal individual (higher for low income / high benefit individuals by construction)
Using model to interpret results

- Given our estimates of misperceptions, we can calculate the MVPF of the interventions.
- Estimates suggest MVPF is high relative to other redistributive programs.
- Also that MVPF would be worse if targeting were worse.
  - but this is because the higher need individuals have higher misperceptions.
- Key point is that whether improved targeting improves social welfare depends not just on need (marginal utility of consumption) but also on misperception.
  - Implicit assumption in prior work that those in greater need had greater failures of rationality.
  - Needs empirical examination.
Areas for future work

- Attractive features of this area
  - Rich, interesting and inconclusive theory
  - Relative paucity of empirical evidence
  - Positive and normative questions

- Fertile ground for research
  - Impact of reducing barriers to takeup on takeup, screening, and welfare
    - Policy question: should we have auto enrollment?
  - Recertifications
  - Estimating optimal level of hassles

- Methodological comments
  - Feasibility of RCTs in this space
    - Letters are cheap (e.g. EITC)
    - Partners interested in improving or demonstrating their efficacy (BDT)
  - Yet implementing and expositing compelling quasi-experimental design in this space very valuable
    - Different margin, larger sample (important for power to examine heterogeneity of effects) etc