Self-Targeting in U.S. Transfer Programs

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Motivation

- Millions of Americans are eligible for means-tested transfers but don't claim them
  - Take-up rates: 65% for SNAP, 60% for Medicaid, 50% for SSI, …
  - Key distinction between welfare states (U.S. versus Europe)
  - Relevant now: 7 million Medicaid-eligible Americans set to lose their benefits with the end of pandemic-era automatic enrollment, because of non-take-up
- Policy alternative to status quo: send help automatically, not upon application
  - Social benefit of this alternative: eliminate ordeal costs for recipients
  - Social cost: eliminate "self-targeting" via incomplete take-up among the eligible
- **This paper:** measure and evaluate this trade-off in eight U.S. transfer programs
  1. *Measurement:* How self-targeted is transfer take-up with respect to need?
  2. *Welfare:* Does the social value of self-targeting exceed the social cost of ordeals?

Motivation

Theory: Should transfer programs be voluntary or automatic?

- Advantageous self-targeting = necessary condition for voluntary transfers
- Classic PF viewpoint: ordeals $\rightarrow$ self-targeting (Nichols & Zeckhauser 1982)
- Counterpoint: ordeals can perversely screen out neediest (Currie & Gahvari 2008)

Empirics: Do ordeals induce advantageous self-targeting on average?

- Mixed literature on ordeals measuring selection on the margin →
- Needed for voluntary vs. automatic: selection on average among the eligible
- Why? Automatic transfer also redistributes to voluntary regime's "never-takers"

This Paper

1. **How much self-targeting in U.S. transfer programs?**
   - Self-targeting is **advantageous** on consumption & lifetime income across 8 transfers
   - Example: Average SNAP recipient consumes $11,000 less per year ($\downarrow$ 19 percentiles) than average eligible nonrecipient with the same income
   - Automatic versus voluntary: Lowest-consumption HHs receive 50%–75% more under status quo than under budget-neutral automatic program

2. **Should transfers be voluntary or automatic?**
   - Derive sufficient-statistics formulas for nonlinear tax/transfer with self-targeting
   - Social benefit of self-targeting (model-based measure): 6 cents per transfer dollar
   - Social benefit exceeds social cost on average, but nuanced heterogeneity by program

$\rightarrow$ **Conclusion:** self-targeting provides a compelling case for voluntary transfers

Data and Measurement

- **Sample:** PSID 1997–2019, heads of household & partners (age 18 to 65)
- **Current Income / Lifetime Income / Consumption**:
  - Equivalize for household size & composition (Citro & Michael 1995)
  - Impute consumption flow from home and car ownership (Meyer & Sullivan 2023)
  - Estimate lifetime income from incomplete panels (Haider & Solon 2006) →
- **Transfers:** Receipt for 8 consolidated programs ($830B expenditure in 2019)

SNAP	Housing Assistance	TANF	LIHEAP
Medicaid	SSI	WIC	School Meals

Eligibility: new, detailed imputation code from state-by-year transfer rules

Empirical Definition of Self-Targeting

A transfer is **advantageously self-targeting** on an outcome C_i if

$$\underbrace{E\left[C_i \mid D_i = E_i = 1, \boldsymbol{X}_i\right]}_{\text{recipient average}} \quad < \quad \underbrace{E\left[C_i \mid D_i = 0, E_i = 1, \boldsymbol{X}_i\right]}_{\text{eligible nonrecipient average}}$$

Emerges from "correlation test" framework (Chiappori & Salanié 2000):

$$\text{Consumption:} \quad C_i = \boldsymbol{X}_i\boldsymbol{\delta} + \alpha D_i + \beta E_i + \nu_i$$

$$\text{Take-Up:} \quad D_i = \begin{cases} \boldsymbol{X}_i\boldsymbol{\gamma} + \varepsilon_i & \text{if } E_i = 1 \\ 0 & \text{if } E_i = 0 \end{cases}$$

$$\text{Self-targeting condition:} \quad \text{corr}(\nu_i, \varepsilon_i) < 0$$

Fact 1: Transfer Receipt Falls in Consumption Given Income

Transfer Dollars Per Capita		Income Quintile 1	2	3	4	5	Avg.
Consumption Quintile	1						
	2						
	3						
	4						
	5						
	Avg.						

Fact 1: Transfer Receipt Falls in Consumption Given Income

Transfer Dollars Per Capita		Income Quintile 1	2	3	4	5	Avg.
Consumption Quintile	1	3,647	1,353	600	397	155	2,440
	2						
	3						
	4						
	5						
	Avg.						

Fact 1: Transfer Receipt Falls in Consumption Given Income

Transfer Dollars Per Capita		Income Quintile 1	2	3	4	5	Avg.
Consumption Quintile	1	3,647	1,353	600	397	155	2,440
	2	1,745					666
	3	920					303
	4	572					153
	5	557					101
	Avg.	2,435	844	266	92	27	

Fact 1: Transfer Receipt Falls in Consumption Given Income

Transfer Dollars Per Capita		Income Quintile 1	2	3	4	5	Avg.
Consumption Quintile	1	3,647	1,353	600	397	155	2,440
	2	1,745	719	296	134	80	666
	3	920	563	217	102	33	303
	4	572	403	168	60	33	153
	5	557	273	133	58	18	101
	Avg.	2,435	844	266	92	27	

Lifetime Income

Fact 2: Selection on Consumption Driven by Take-Up, Not Eligibility

SNAP Eligibility Rate		Income Quintile					
		1	2	3	4	5	Avg.
Consumption Quintile	1						
	2						
	3						
	4						
	5						
	Avg.						

SNAP Take-Up Rate		Income Quintile					
		1	2	3	4	5	Avg.
Consumption Quintile	1						
	2						
	3						
	4						
	5						
	Avg.						

Fact 2: Selection on Consumption Driven by Take-Up, Not Eligibility

SNAP Eligibility Rate

		Income Quintile 1	2	3	4	5	Avg.
Consumption Quintile	1	83.8	23.7	0.4	0.8	0.0	51.9
	2						
	3						
	4						
	5						
	Avg.	76.3	18.1	0.4	0.3	0.1	

SNAP Take-Up Rate

		Income Quintile 1	2	3	4	5	Avg.
Consumption Quintile	1						
	2						
	3						
	4						
	5						
	Avg.						

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SNAP Eligibility Rate

		Income Quintile 1	2	3	4	5	Avg.
Consumption Quintile	1	83.8	23.7	0.4	0.8	0.0	51.9
	2	75.5					19.0
	3	67.5					10.5
	4	61.3					7.2
	5	60.7					6.5
	Avg.	76.3	18.1	0.4	0.3	0.1	

SNAP Take-Up Rate

		Income Quintile 1	2	3	4	5	Avg.
Consumption Quintile	1						
	2						
	3						
	4						
	5						
	Avg.	37.5	27.2	.	.	.	

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	4	61.3					7.2
	5	60.7					6.5
	Avg.	76.3	18.1	0.4	0.3	0.1	

SNAP Take-Up Rate

		Income Quintile 1	2	3	4	5	Avg.
Consumption Quintile	1	52.2	39.3	.	.	.	50.2
	2	26.8					25.9
	3	14.9					14.5
	4	8.3					8.1
	5	8.1					8.1
	Avg.	37.5	27.2	.	.	.	

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SNAP Eligibility Rate

		Income Quintile					
		1	2	3	4	5	Avg.
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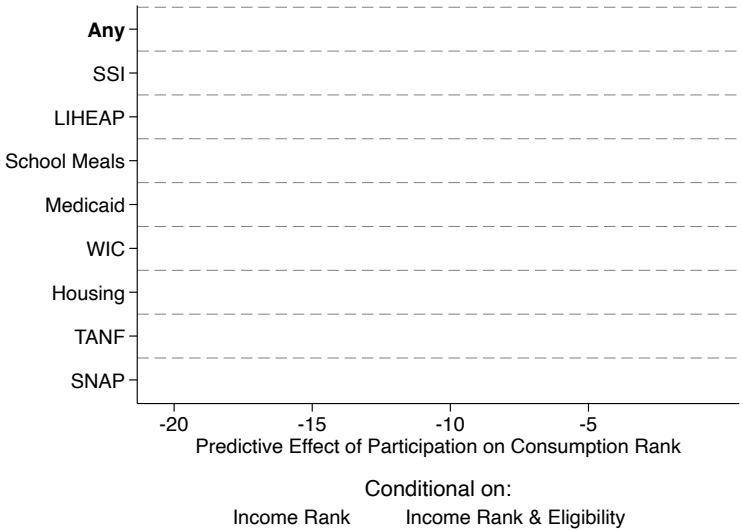
	2	75.5	15.8	0.4	0.2	0.0	19.0
	3	67.5	14.0	0.4	0.2	0.1	10.5
	4	61.3	13.9	0.4	0.3	0.1	7.2
	5	60.7	17.6	0.5	0.3	0.0	6.5
	Avg.	76.3	18.1	0.4	0.3	0.1	

SNAP Take-Up Rate

		Income Quintile					
		1	2	3	4	5	Avg.
Consumption Quintile	1	52.2	39.3	.	.	.	50.2
	2	26.8	23.7	.	.	.	25.9
	3	14.9	14.4	.	.	.	14.5
	4	8.3	8.2	.	.	.	8.1
	5	8.1	8.6	.	.	.	8.1
	Avg.	37.5	27.2	.	.	.	

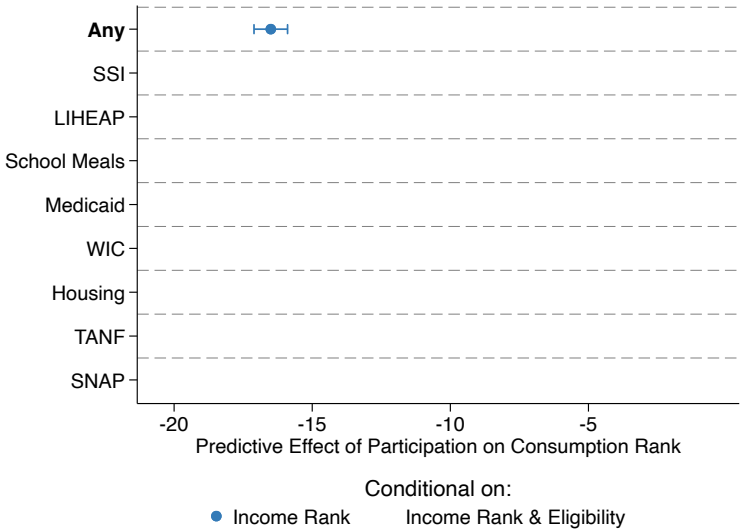
Receipt Rate

Fact 3: Self-Targeting Is Advantageous Across U.S. Transfer Programs



Lifetime Income + Controls

Fact 3: Self-Targeting Is Advantageous Across U.S. Transfer Programs



$$C_{it} = \beta D_{it} + f(Y_{it}) + u_{it}$$

- C_{it} : consumption
- D_{it} : transfer receipt
- Y_{it} : income

Lifetime Income | + Controls

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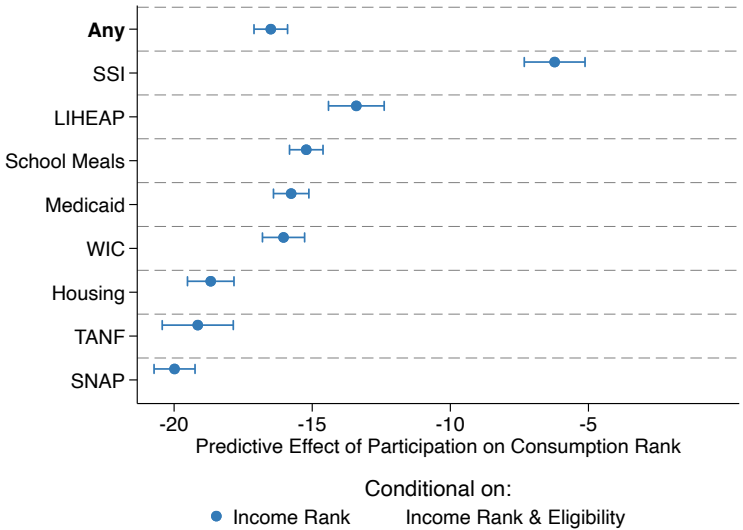

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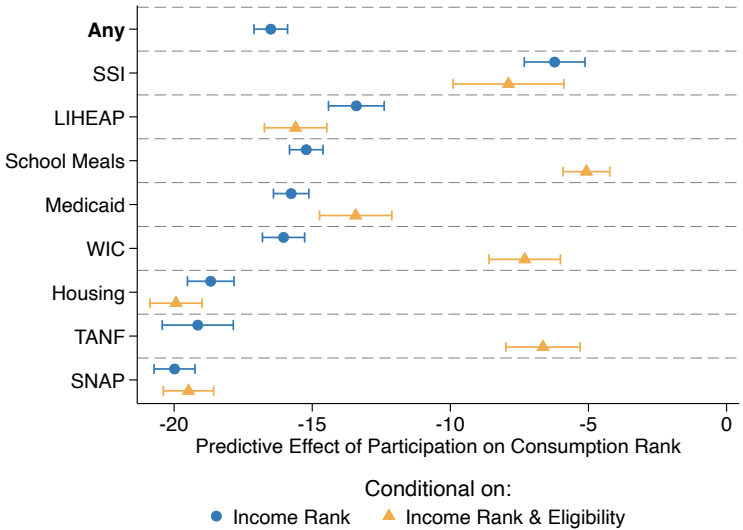


Full population:

$$C_{it} = \beta D_{it} + f(Y_{it}) + u_{it}$$

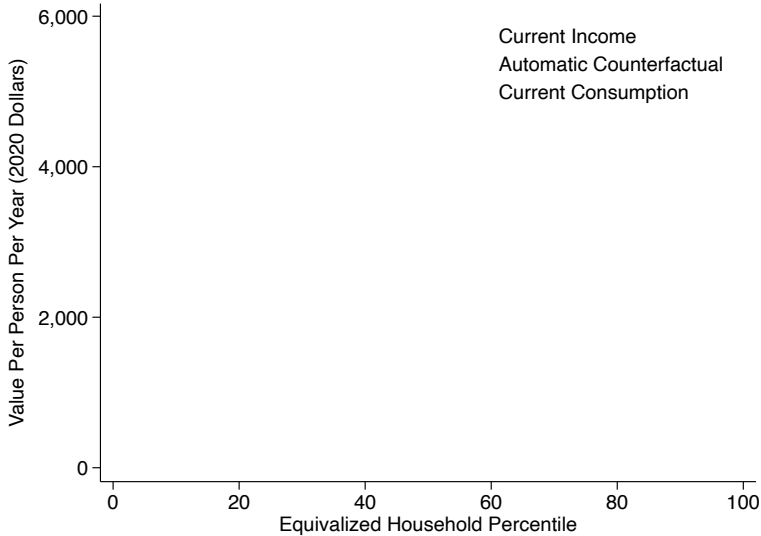
Among eligibles only:

$$C_{it} = \beta D_{it} + f(Y_{it}) + u_{it}$$

- C_{it} : consumption
- D_{it} : transfer receipt
- Y_{it} : income

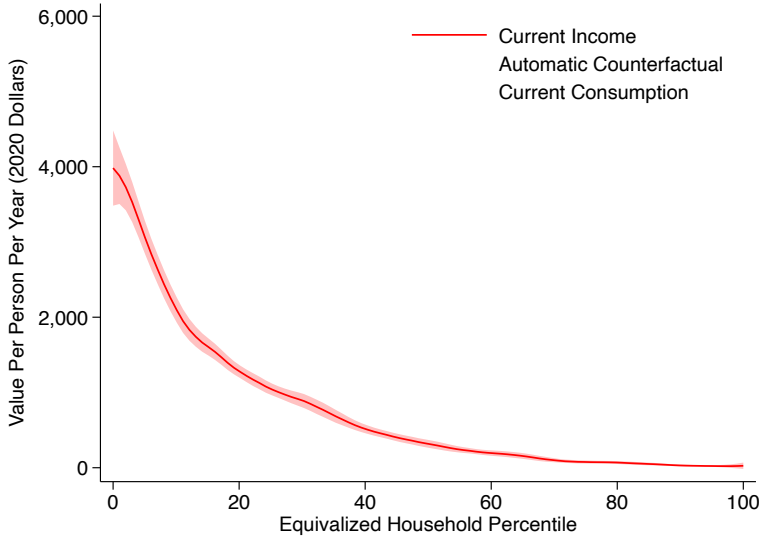
Lifetime Income | + Controls

Fact 4: Self-Targeting Raises Transfer Progressivity in Consumption



By Program | Eligible Non-Receipt | + Lifetime Income

Fact 4: Self-Targeting Raises Transfer Progressivity in Consumption



By Program | Eligible Non-Receipt | + Lifetime Income

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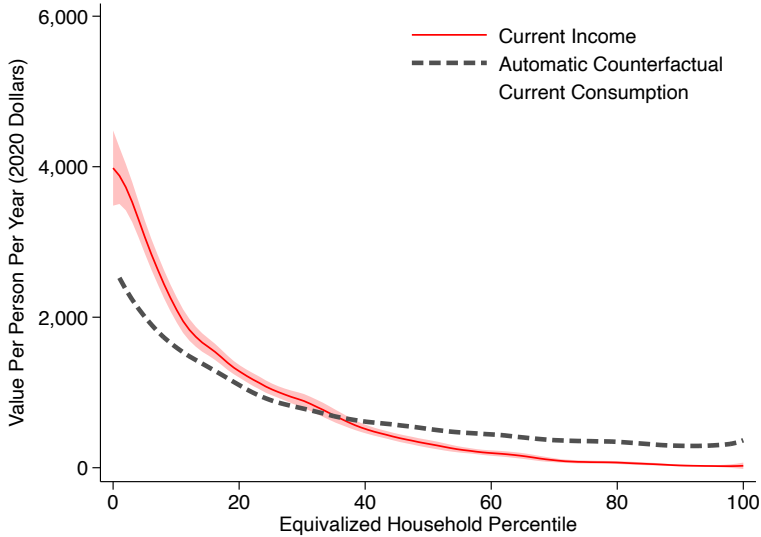

By Program | Eligible Non-Receipt | + Lifetime Income

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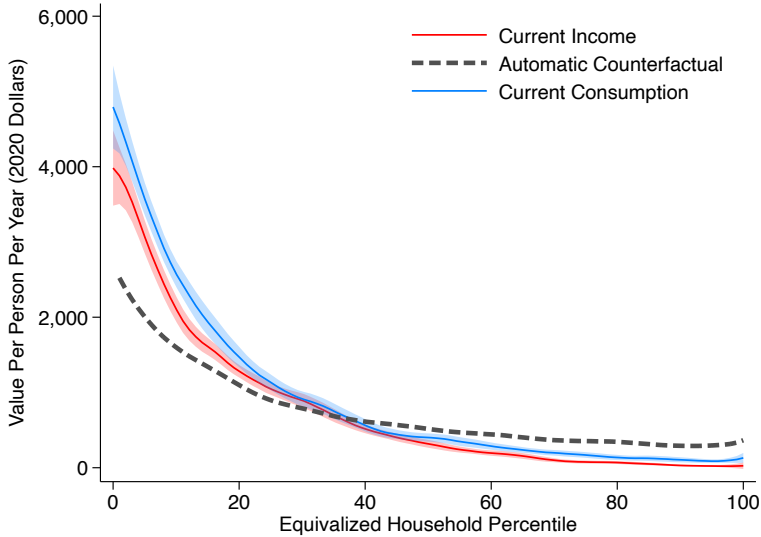


By Program | Eligible Non-Receipt | + Lifetime Income

Sensitivity to Mismeasurement

Key threat: survey data quality → address with thorough sensitivity analysis

- **Transfer receipt:** misreporting corrections raise self-targeting (Mittag 2019) →
- **Eligibility:** Is self-targeting actually unobservable eligibility rules? Probably not
  - Results are robust to reclassifying simulated-ineligible recipients as eligible →
  - Find self-targeting even in demographic cells with near-complete eligibility
- **Consumption:** Advantageous self-targeting of transfers holds for…
  - Ownership of consumer durable goods (Meyer & Sullivan 2012)
  - "Well-measured" consumption sub-categories (Meyer & Sullivan 2023)

Welfare Analysis: Motivating Example

Reform: cut \$1 from a voluntary transfer & split fiscal savings via an automatic transfer

- 100 people: 50 get voluntary transfer (\$$B$); 49 inframarginal takers, 1 marginal
- Welfare weights: α_{AT} for inframarginals $\geq \alpha_C$ for indifferent $\geq \alpha_{NT}$ for non-takers

$$\Delta W = \underbrace{49 \times \alpha_{AT} \times \left(\frac{49+B}{100} - 1 \right)}_{\text{Welfare impact on inframarginal takers}} + \underbrace{50 \times \alpha_{NT} \times \frac{49+B}{100}}_{\text{Welfare impact on inframarginal non-takers}}$$

$$+ \underbrace{1 \times \alpha_C \times \frac{49+B}{100}}_{\text{Welfare impact on marginals}}$$

$\rightarrow$ Welfare is reduced if $\alpha_{AT} \gg \alpha_{NT}$ (self-targeting benefit) and B is small (ordeal cost)

$\rightarrow$ Intuition carries through into optimal nonlinear tax/transfer model →

Welfare Analysis: Quantification

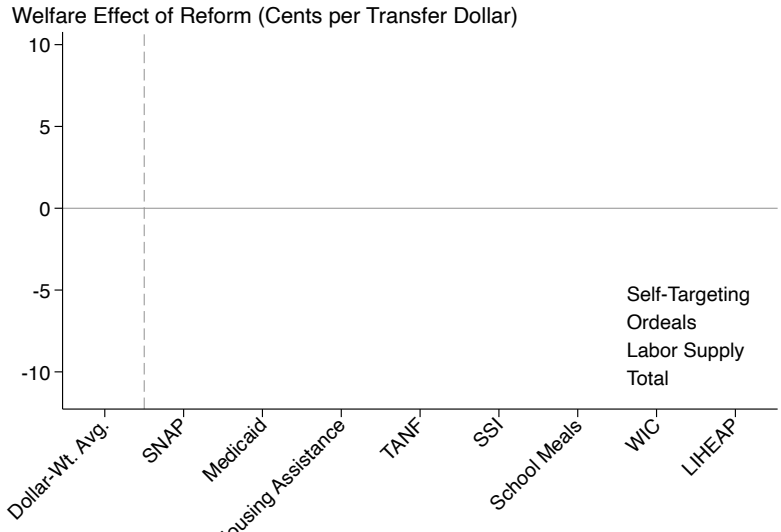
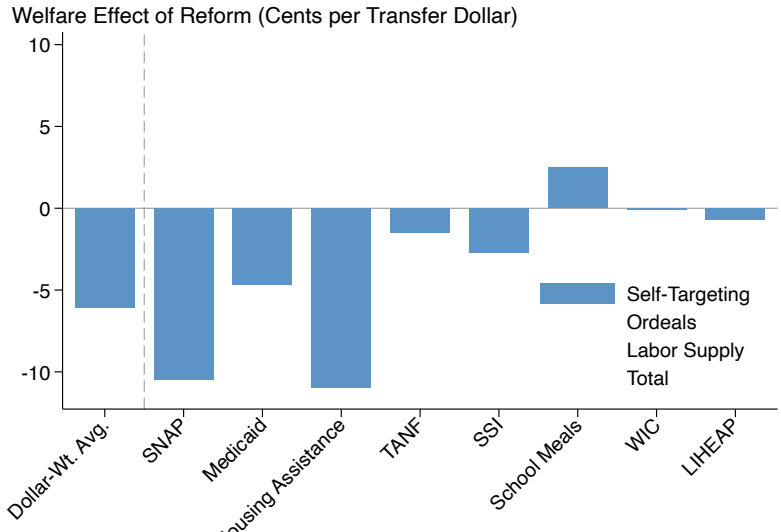


Table | Sensitivity

Welfare Analysis: Quantification



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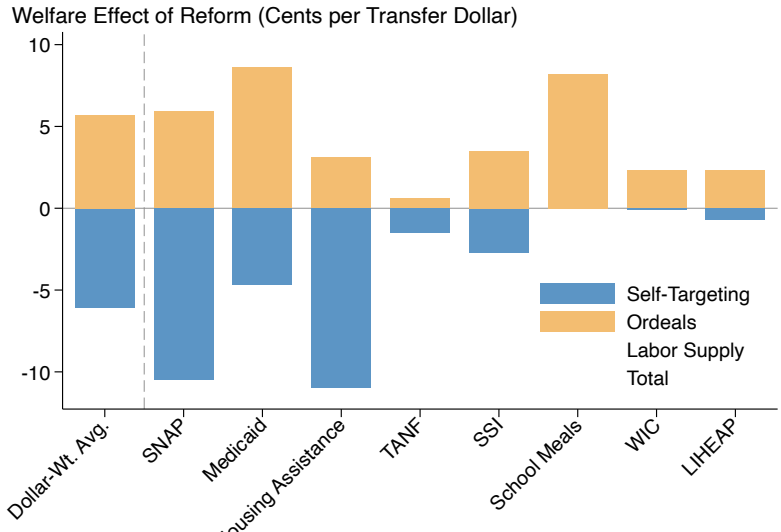

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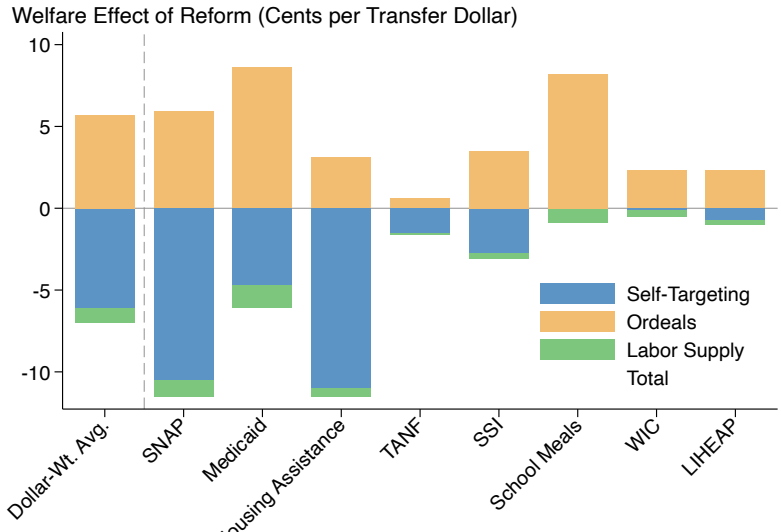
Welfare Analysis: Quantification



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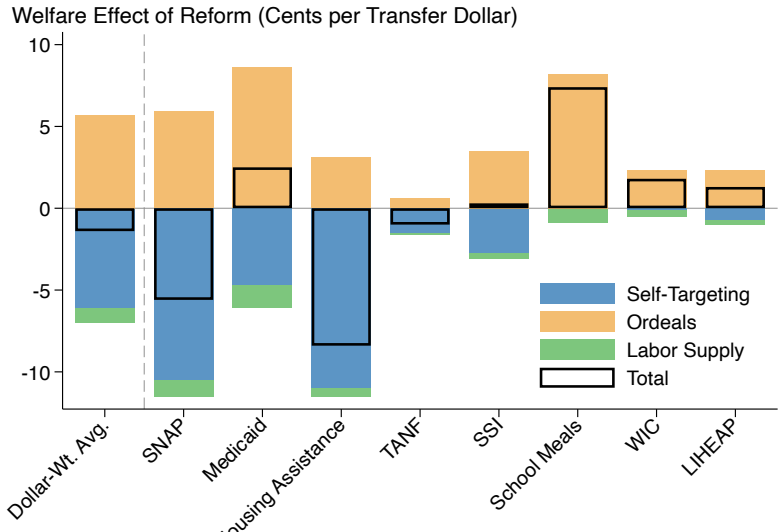

Table | Sensitivity

Conclusion

This paper: Should transfer programs be voluntary or automatic?

- Fundamental question for the design of social safety nets
- Renewed interest amid post-pandemic pullback of transfers in U.S.
- Core trade-off: Social benefit of self-targeting versus social cost of ordeals

Our answer: Benefits of self-targeting likely exceed ordeal costs

- Measurement: Document advantageous self-targeting in eight U.S. transfers
- Welfare: Quantify trade-off using sufficient-statistics approach

Thank you!

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Measuring Lifetime Income

1. Estimate individual-FE Poisson model of income, initializing $\lambda_a = 1$ for all a:
$$\mathrm{E}[y_{it} \mid X_{it}] = \exp(\alpha_i \lambda_a + X'_{it}\beta_a),$$
2. Empirical Bayes shrinkage of α_i following Morris (1983), yielding $\widehat{\alpha}_i^*$
3. Outer loop step. Re-estimate the Poisson model, treating individual FEs as data:
$$\mathrm{E}[y_{it} \mid X_{it}] = \exp(\widehat{\alpha}_i^* \lambda_a + X'_{it}\beta_a).$$
Iterate on (1)/(2)/(3) until convergence of $\{\widehat{\alpha}_i^*, \widehat{\lambda}_a, \widehat{\beta}_a\}$.
4. Balance the panel via imputation of X_{it} and construct predicted incomes:
$$\widehat{y}_{it} = \exp(\widehat{\alpha}_i^* \widehat{\lambda}_a + X'_{it}\widehat{\beta}_a)$$
5. Construct ranks: Lifetime ranks are within birth-year cohort, current ranks are across cohorts within year. Lifetime concept of household income follows each individual through the sequence of households during their adult life.

→

Related Literature

- **Effects of ordeals & information interventions on transfer take-up**

  Empirics: Bhargava & Manoli 2015, Alatas et al. 2016, Ganong & Liebman 2018, Deshpande & Li 2019, Finkelstein & Notowidigdo 2019, Gray 2019, Lieber & Lockwood 2019, Homonoff & Somerville 2021, Unrath 2021, Arbogast et al. 2022, Shepard & Wagner 2022, Wu & Meyer 2022, Ericson et al. 2023

  Theory: Akerlof 1978, Nichols & Zeckhauser 1982, Blackorby & Donaldson 1988, Besley & Coate 1992, Munro 1992, Kleven & Kopczuk 2011

  → Contribution: measure self-targeting & interpret via model of optimal redistrib.

- **Incidence of taxes & transfers: consumption & lifetime perspectives**

  Poterba 1989/1991, Fullerton & Lim Rogers 1993, Blundell et al. 2015, Bengtsson et al. 2016, Roantree & Shaw 2018, Brewer et al. 2020, Levell et al. 2021, Auerbach et al. 2023

  → Contribution: first systematic analysis for U.S. transfer programs

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Welfare Analysis: Quantification

	(1) Self-Targeting	(2) Upper Bound on Ordeals	(3) Labor-Supply Effects	(4) Total
Dollar-Weighted Avg.	-6.1	5.7	-0.9	-1.4
SNAP	-10.5	5.9	-1.0	-5.6
Medicaid	-4.7	8.6	-1.4	2.5
Housing Assistance	-11.0	3.1	-0.5	-8.4
TANF	-1.5	0.6	-0.1	-1.0
SSI	-2.7	3.5	-0.4	0.3
School Meals	2.5	5.7	-0.9	7.4
WIC	-0.1	2.3	-0.4	1.8
LIHEAP	-0.7	2.3	-0.3	1.3

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Welfare Analysis: Sensitivity

	(1) Self-Targeting	(2) Upper Bound on Ordeals	(3) Labor-Supply Effects	(4) Total
Baseline	-6.1	5.7	-0.9	-1.4
Halve SWF curvature	-2.3	5.7	-0.9	2.5
Double SWF curvature	-10.6	5.7	-0.9	-5.8
SWF over lifetime income	-5.8	5.7	-0.9	-1.0
Halve take-up elasticity	-6.1	2.8	-0.9	-4.2
Double take-up elasticity	-6.1	11.4	-0.9	4.3
Halve elasticity of taxable income	-6.1	5.7	-0.4	-0.9
Double lasticity of taxable income	-6.1	5.7	-1.8	-2.2

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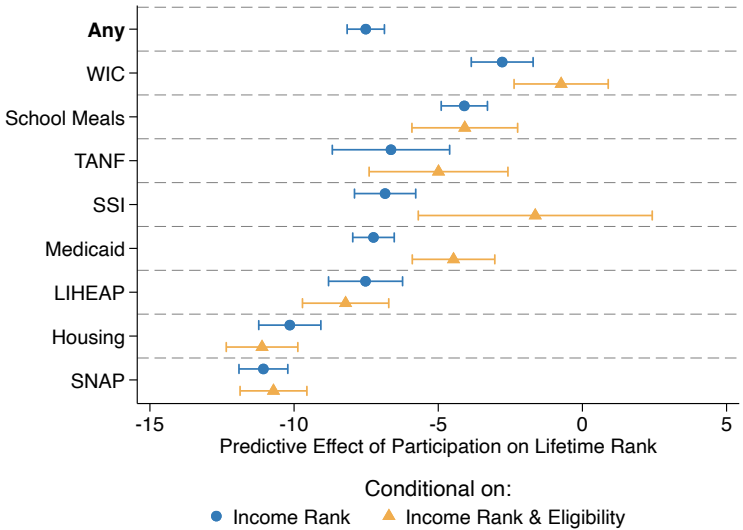
Fact 3: Self-Targeting Is Advantageous Across U.S. Transfer Programs



Full population:

$$L_{it} = \beta D_{it} + f(Y_{it}) + u_{it}$$

Among eligibles only:

$$L_{it} = \beta D_{it} + f(Y_{it}) + u_{it}$$

- L_{it} : lifetime income
- D_{it} : transfer receipt
- Y_{it} : current income

SNAP Receipt Rate

		Income Quintile					
		1	2	3	4	5	Avg.
Consumption Quintile	1	51.2	22.3	7.8	4.9	4.9	35.3
	2	23.7	9.6	2.7	1.1	0.5	8.4
	3	12.3	5.9	2.3	0.5	0.3	3.3
	4	6.3	3.4	1.4	0.2	0.2	1.3
	5	5.5	2.9	1.7	0.3	0.1	0.9
	Avg.	33.6	12.2	2.8	0.6	0.2	

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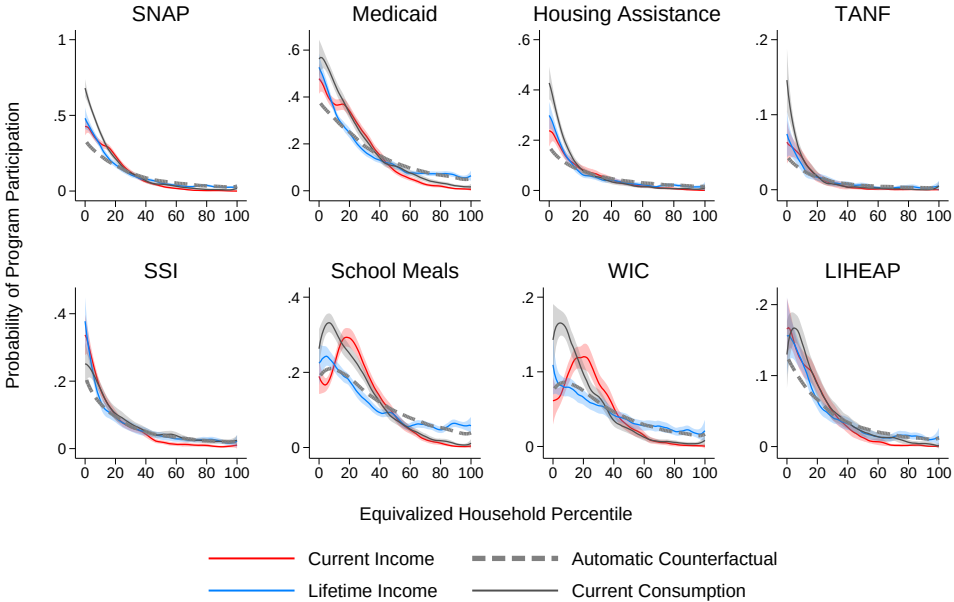
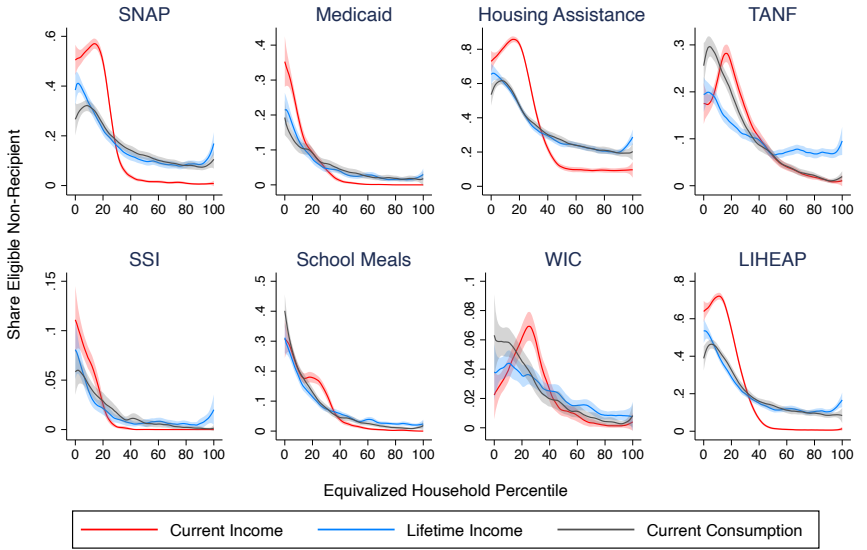

SNAP
Medicaid
Housing Assistance
TANF
SSI
School Meals
WIC
LIHEAP
Probability of Program Participation
Equivalized Household Percentile
Current Income
Lifetime Income
Automatic Counterfactual
Current Consumption

Fact 5: Eligible Non-Recipients Have High Consumption



Welfare Analysis: Model Setup

Households:

- Type vector $\theta = (w, \kappa)$: wage w, take-up cost κ. Distributed $\mu(w, \kappa)$
- Face tax schedule $T(z)$, voluntary transfer schedule $S(z)$
- Problem:

$$V(\theta) = \max_z \left\{ z - T(z) - v(z/w) + \int_0^{S(z)} (S(z) - \kappa)\mu(w, \kappa) d\kappa \right\}$$

Government problem:

$$\max_{T,S} \int_\Theta \alpha(\theta) V(\theta) d\mu(\theta) \quad \text{s.t.} \quad \int_\Theta [T(z(\theta)) - 1_S S(z(\theta))] = 0$$

Our focus: government's "allocation" problem between T and S, taking κ as given

- Useful envelope-theorem properties, unlike optimal ordeal (gov't sets κ)
- Aligned with our empirical exercise & cross-program focus

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Welfare Analysis: Sufficient Statistics Formula

Welfare impact of reallocating ds from voluntary to automatic transfer:

$$dW = \underbrace{ds \int_z M(z) \left(E_\kappa \left[\alpha(z,\kappa) \right] - E_{\kappa \leq S(z)} \left[\alpha(z,\kappa) \right] \right) h(z) dz}_{\text{lost social benefit from self-targeting}}$$

$$+ \underbrace{E_z[S(z)] m(z) E_{z,\kappa} \left[\alpha(z,\kappa) \right]}_{\text{social savings on ordeals}} + \text{labor supply effects}$$

- $S(z)$: value of voluntary transfer at income z
- $M(z)$: voluntary transfer receipt rate at income z $(m(z) = dM(z)/dS(z))$
- $h(z)$: density of income at z
- $\alpha(z,\kappa)$: social welfare weight at income z and idiosyncratic take-up cost κ

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Fact 1b: Transfers Fall in Lifetime Income Given Current Income

		Income Quintile					
		1	2	3	4	5	Avg.
Lifetime Income Quintile	1	3,346	1,243	498	253	28	2,208
	2	1,594	839	278	103	36	627
	3	1,272	664	230	88	36	349
	4	1,152	556	211	79	26	242
	5	1,344	522	189	66	23	239
	Avg.	2,435	844	266	92	27	

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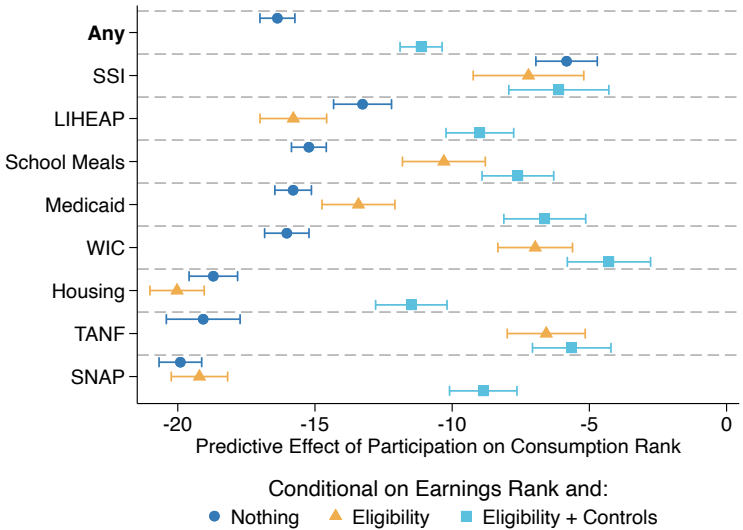
Fact 3: Self-Targeting Is Advantageous Across U.S. Transfer Programs



$$C_{it} = \beta D_{it} + f(Y_{it}) + u_{it}$$

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Misreporting Corrections Amplify Estimates of Self-Targeting

	Baseline		Adjusted for Misreporting	
	Consumption (1)	Lifetime Income (2)	Consumption (3)	Lifetime Income (4)
Panel A: SNAP [Mittag 2019]				
Receives Transfer	-17.6***	-11.1***	-26.4***	-14.3***
	(0.6)	(0.6)	(0.8)	(0.9)
Panel B: Medicaid [Davern et al. 2019]				
Receives Transfer	-14.4***	-7.0***	-23.4***	-12.2***
	(0.5)	(0.5)	(0.7)	(0.8)

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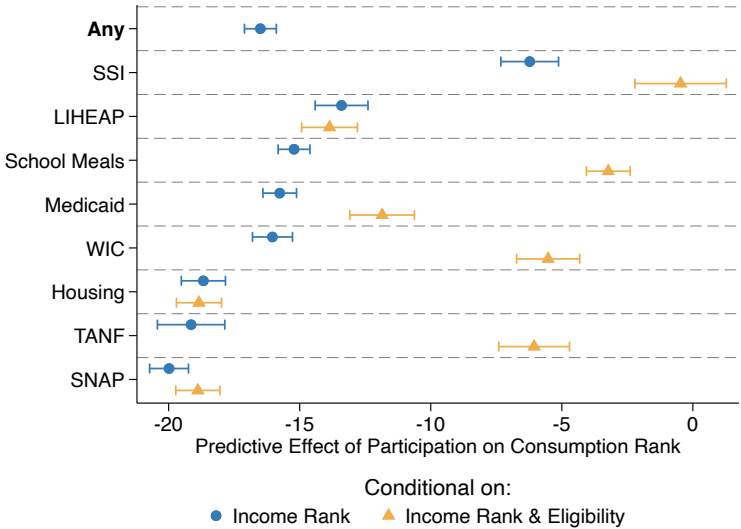
Reclassifying Simulated-Ineligible Recipients



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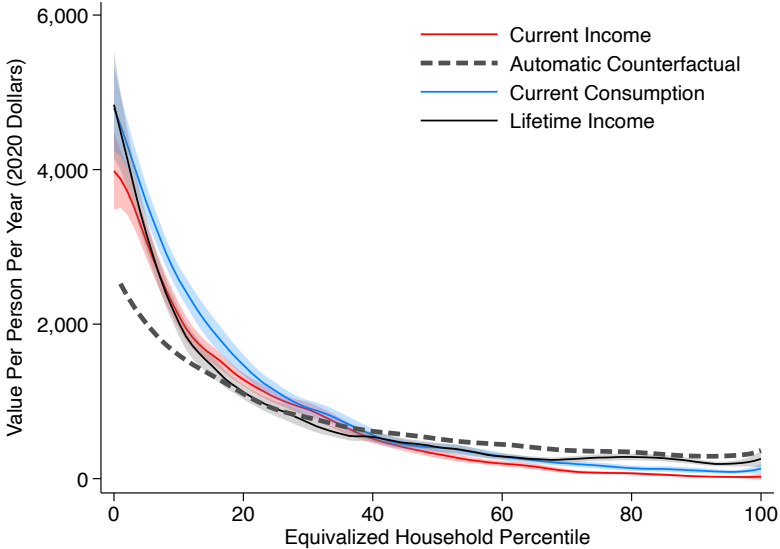
Fact 4: Self-Targeting Raises Transfer Progressivity in Consumption



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