Econ 219B
Psychology and Economics: Applications
(Lecture 8)

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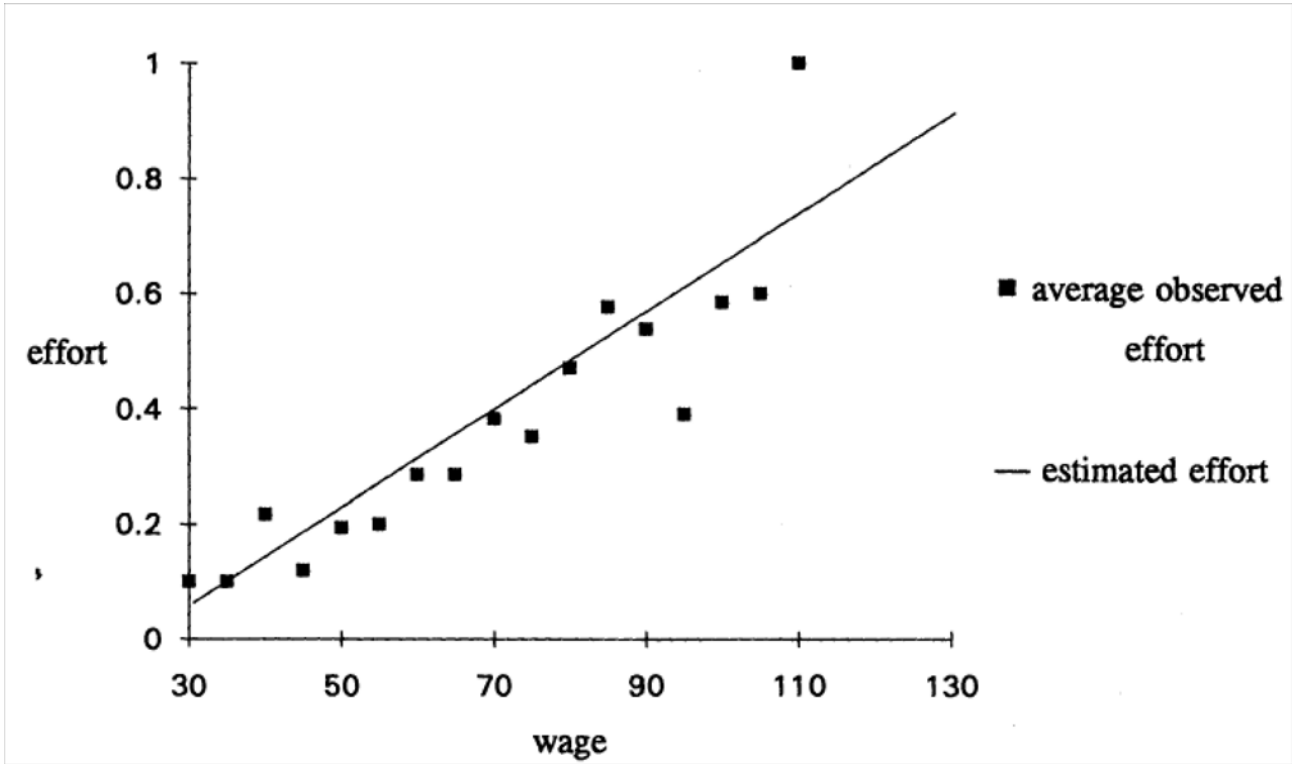
Outline

1. Workplace: Gift Exchange
2. Charitable Giving: Gift Exchange
3. Social Preferences Wave III: Social Pressure and Signalling
4. Social Pressure I
5. Social Pressure II: Charitable Giving

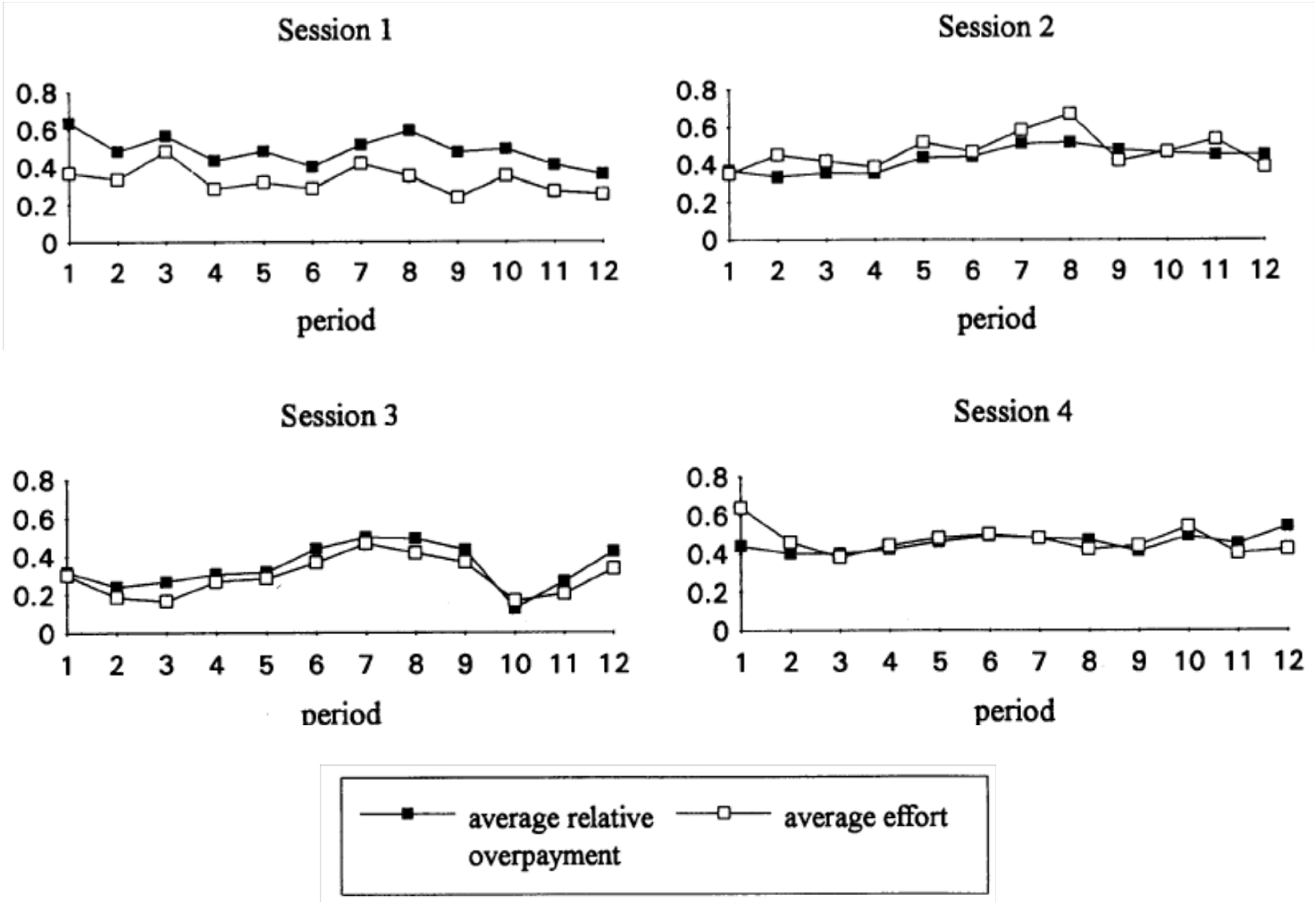
1 Workplace: Gift Exchange

- Laboratory evidence: **Fehr-Kirchsteiger-Riedl (QJE, 1993).**
  - 5 firms bidding for 9 workers
  - Workers are first paid $w \in \{0, 5, 10, ...\}$ and then exert effort $e \in [.1, 1]$
  - Firm payoff is $(126 - w)\, e$
  - Worker payoff is $w - 26 - c(e)$, with $c(e)$ convex (but small)
- Standard model: $w^* = 30$ (to satisfy IR), $e^*(w) = .1$ for all w

- Findings: effort e increasing in w and $Ew = 72$



- These findings are stable over time

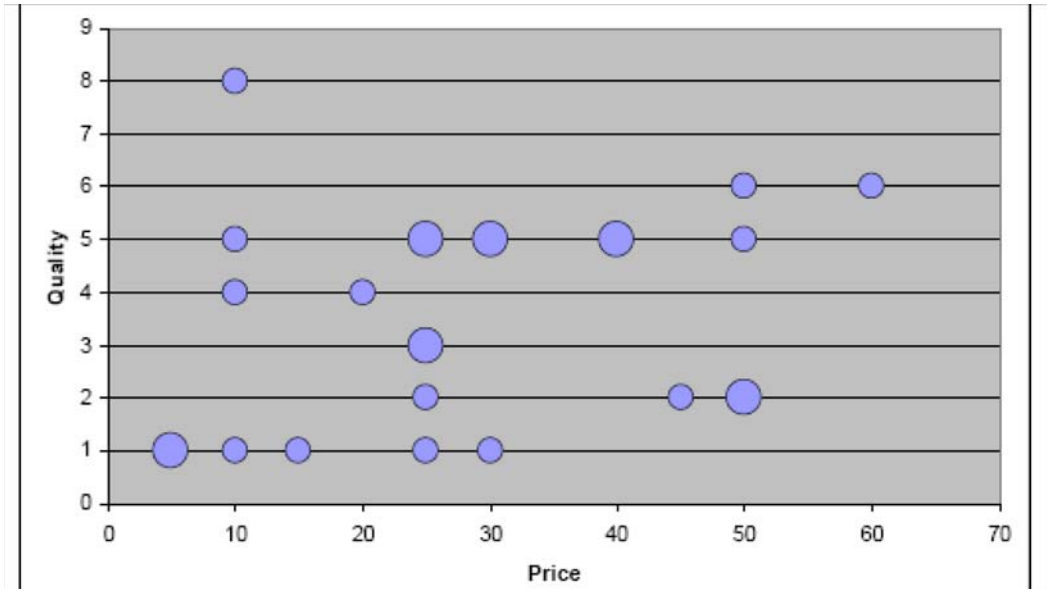

Session 1
0.8
0.6
0.4
0.2
0
1 2 3 4 5 6 7 8 9 10 11 12
period
Session 2
0.8
0.6
0.4
0.2
0
1 2 3 4 5 6 7 8 9 10 11 12
period
Session 3
0.8
0.6
0.4
0.2
0
1 2 3 4 5 6 7 8 9 10 11 12
period
Session 4
0.8
0.6
0.4
0.2
0
1 2 3 4 5 6 7 8 9 10 11 12
period
average relative overpayment
average effort

- Which model explains this behavior?
- Fehr-Schmidt (1999) propose: *Inequity aversion* ($\rho > 0 > \sigma$)
  - Initially, firm is ahead in payoffs
  - Assume firm pays minimum wage
    - Firm still ahead in payoffs
    - Worker does not care for firm given $\sigma < 0$
    - –> Worker does not want to exert effort to benefit the firm
  - Assume now firm pays generous wage towards worker
    - Firm is *now* behind in payoffs
    - Worker now cares for firm given $\rho > 0$
    - —> Worker exerts effort to decrease (advantageous) inequality
  - The higher the wage, the larger the transfer given mechanism above

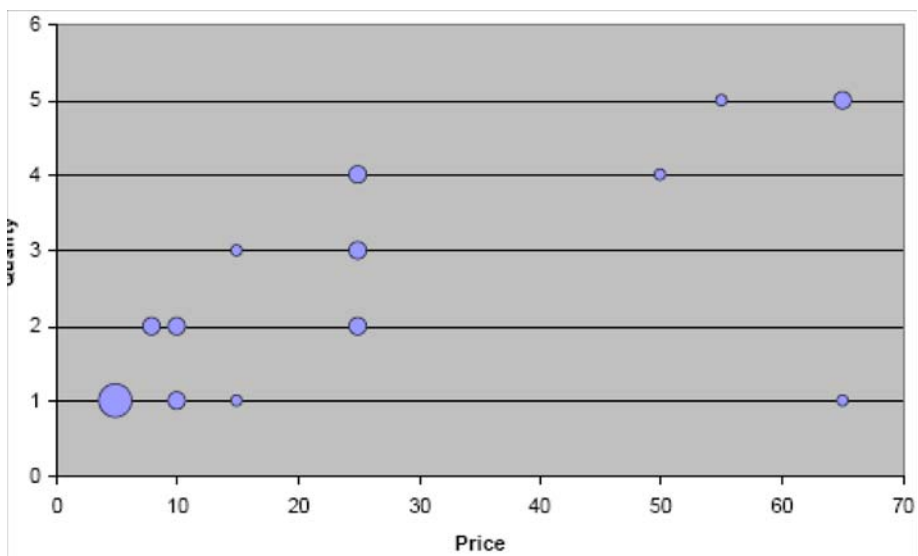
- Alternative model: *Reciprocity*
  - Worker cares about firm with weight α
  - Altruism weight is a function of how nicely workers has been treated
  - Positive gift increases α
  - —> Worker puts more effort because he cares more about firm
  - The higher the wage, the larger the transfer given mechanism above

- **List (JPE, 2006).** Test of social preferences from sellers to buyers
  - Context: sports card fairs –> Buyers buying a particular (unrated) card from dealers
  - Compare effect of laboratory versus field setting going step-by-step
  - Useful exercise to extrapolate lab -> field
- *Treatment I-R.* Clever dual version to the **Fehr-Kirchsteiger-Riedl (1993)** payoffs
  - Laboratory setting, abstract words
  - Buyer pay $p \in \{5, 10, ...\}$ and dealer sells card of quality $q \in [.1, 1]$
  - Buyer payoff is $(80 - p)\, q$
  - Dealer payoff is $p - c(q)$, with $c(q)$ convex (but small)
- Standard model: $p^* = 5$ (to satisfy IR), $q^*(p) = 0.1$ for all p

- Effect: Substantial reciprocity
  - Buyers offer prices $p > 0$
  - Dealers respond with increasing quality to higher prices

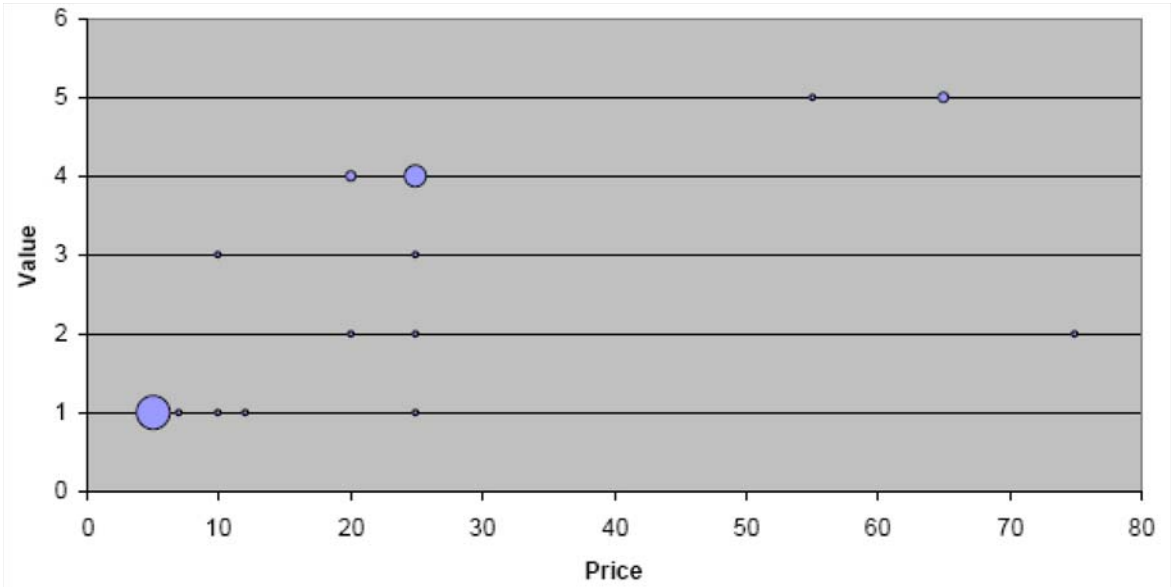


- *Treatment I-RF.* Similar result (with more instances of $p = 5$) when payoffs changed to
  - Buyer payoff is $v(q) - p$
  - Dealer payoff is $p - c(q)$, with $c(q)$ convex (but small)
  - $v(q)$ estimated value of card to buyer, $c(q)$ estimate cost of card to dealer

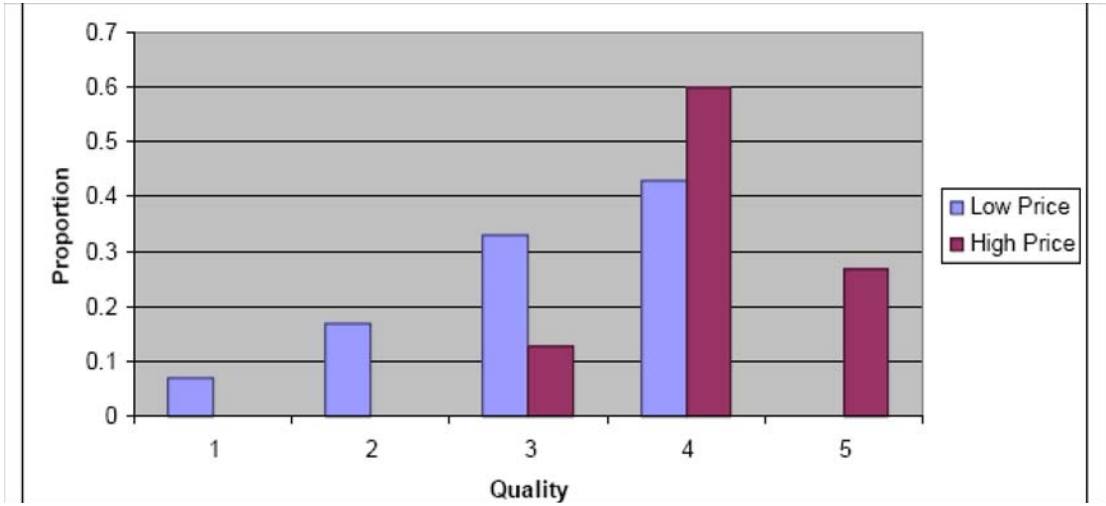


- *Treatment II-C.* Same as Treatment I-RF, except that use context (C) of Sports Card

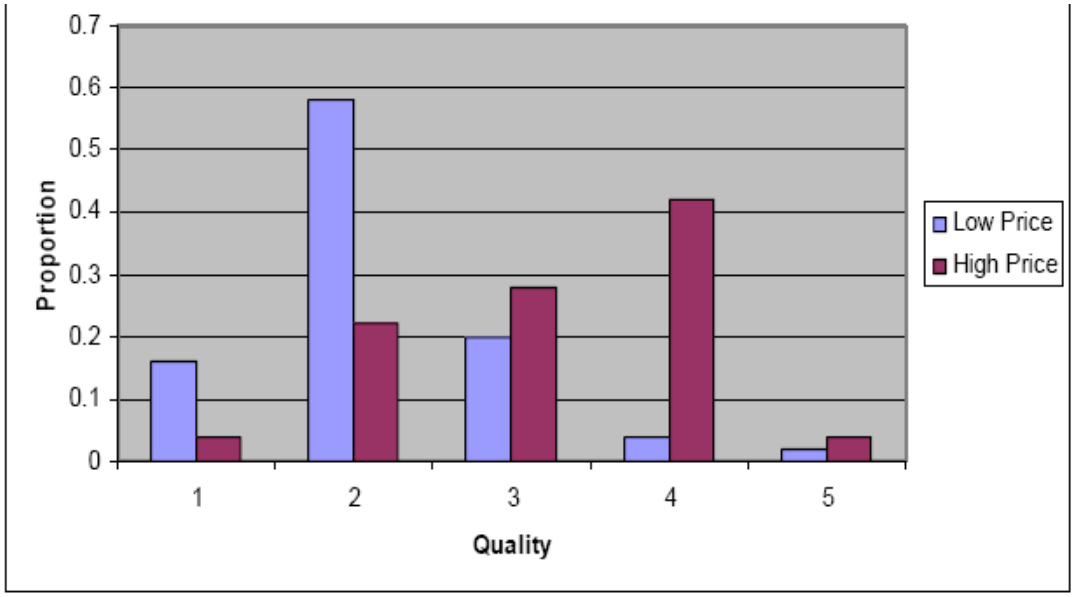
- Relatively similar results



- *Treatment II-M* –> Laboratory, real payoff (for dealer) but...
  - takes place with face-to-face purchasing
  - Group 1: Buyer offers $20 for card of quality PSA 9
  - Group 2: Buyer offers $65 for card of quality PSA 10
  - Substantial "gift exchange"



- *Treatment III* –> In field setting, for real payoffs (for dealer)
  - Group 1: Buyer offers $20 for card of quality PSA 9
  - Group 2: Buyer offers $65 for card of quality PSA 10
  - Lower quality provided, though still "gift exchange"



- "Gift exchange" behavior depends on who the dealer is
  - Local dealer (frequent interaction): Strong "gift exchange"
  - Non-Local dealer (frequent interaction): No "gift exchange"
- This appears to be just repeated game behavior
- *Treatment IV.* –> Test a ticket market before (*IV-NG*) and after (*IV-AG* and *IV-G*) introduction of certification
  - No "gift exchange" in absence of certification (*IV-NG*)
  - "gift exchange" only for local dealers
- Result: in market setting no gift exchange at play: do norms matter?

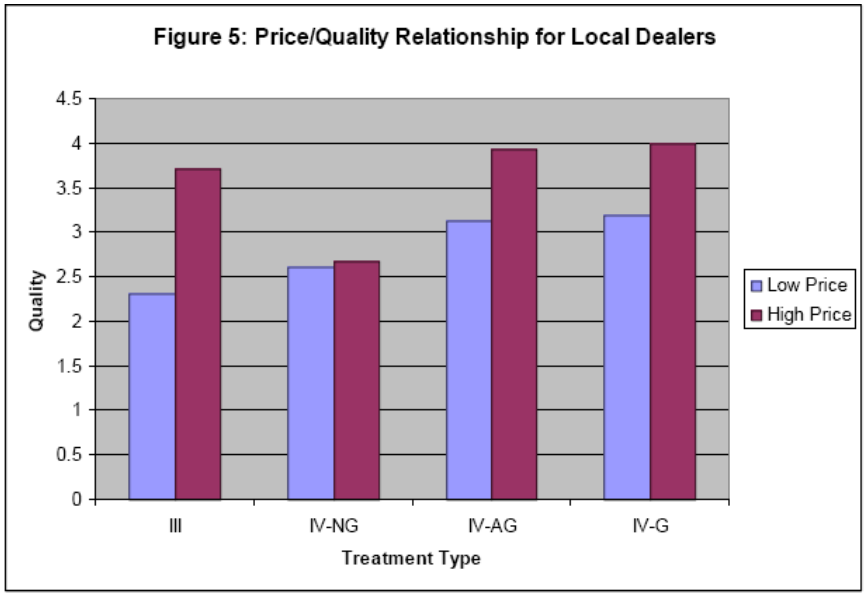


Figure 5: Price/Quality Relationship for Local Dealers
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Quality
III
IV-NG
IV-AG
IV-G
Treatment Type
Low Price
High Price

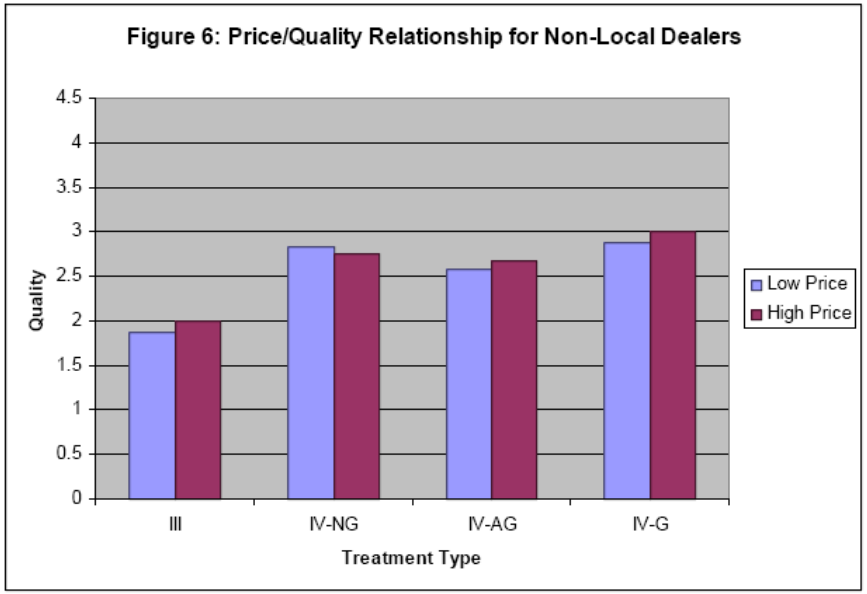
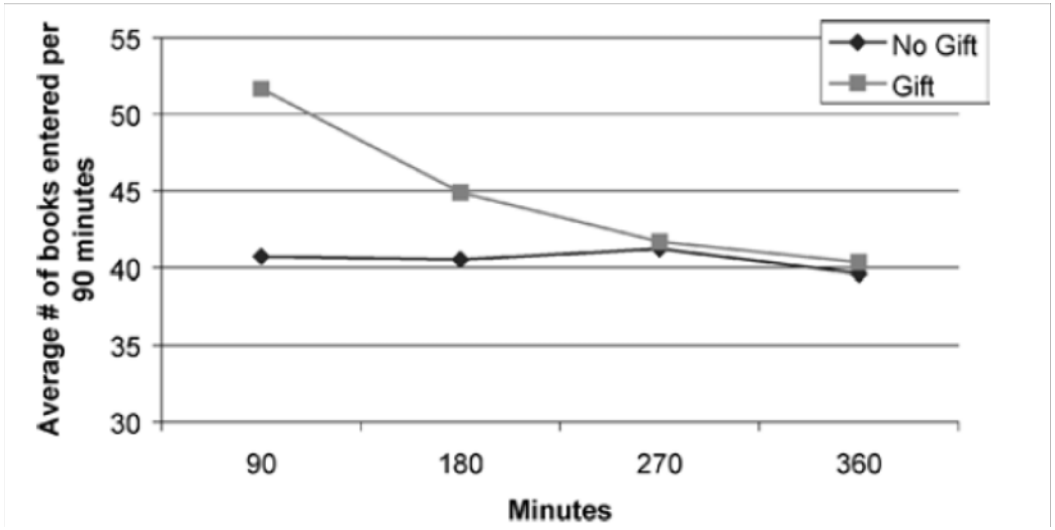
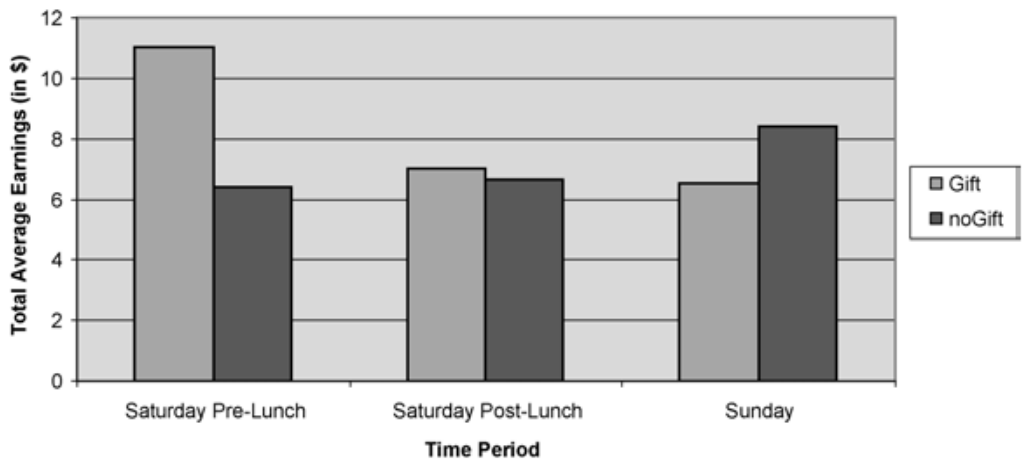


Figure 6: Price/Quality Relationship for Non-Local Dealers
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Quality
III
IV-NG
IV-AG
IV-G
Treatment Type
Low Price
High Price

- Evidence of gift exchange in a field workplace?
- **Gneezy-List (EMA, 2006)** –> Evidence from labor markets
- *Field experiment 1.* Students hired for one-time six-hour (typing) library job for \$12/hour
  - No Gift group paid \$12 ($N = 10$)
  - Gift group paid \$20 ($N = 9$)



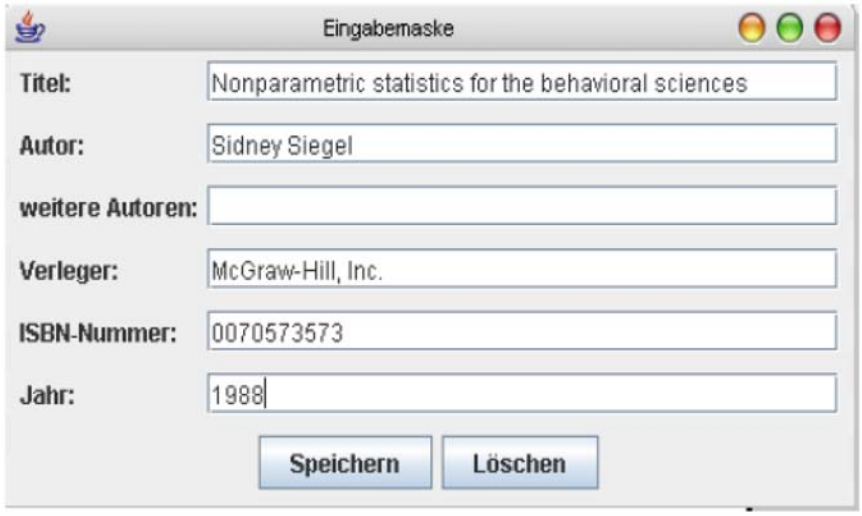
- *Field experiment 2.* Door-to-Door fund-raising in NC for one-time weekend for \$10/hour
  - Control group paid \$10 ($N = 10$)
  - Treatment group paid \$20 ($N = 13$)



- Note: Group coming back on Sunday is subset only (4+9)
- Evidence of reciprocity, though short-lived

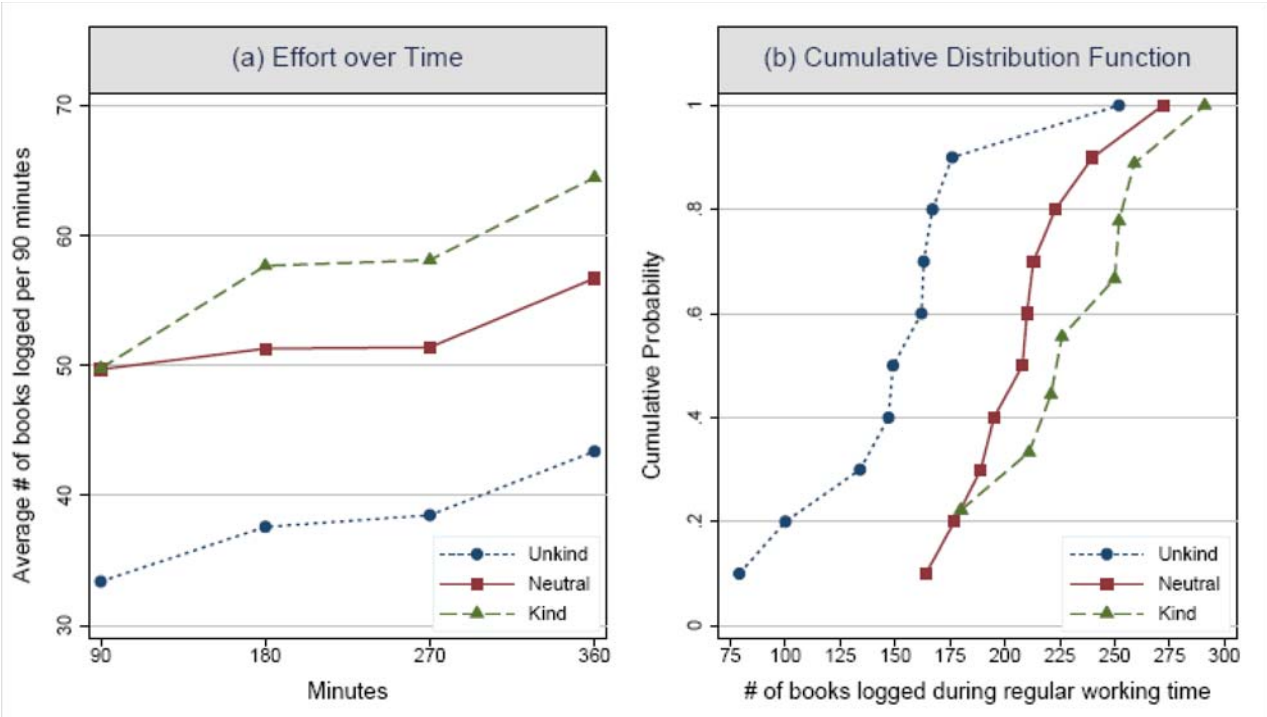
- Laboratory evidence: negative reciprocity stronger than positive reciprocity
- Test for positive versus negative reciprocity in the field?
- **Kube-Marechal-Puppe (JEEA 2013).**
- Field Experiment: Hire job applicants to catalog books for 6 hours

Figure 2: Screenshot: Computer Application



- Announced Wage: '*Presumably*' 15 Euros/hour
  - Control ($n = 10$). 15 Euros/hour
  - Treatment 1 (Negative Reciprocity, $n = 10$). 10 Euros/hour (No one quits)
  - Treatment 2 (Positive Reciprocity, $n = 9$). 20 Euros/hour
- Offer to work one additional hour for 15 Euros/hour

- Result 1: Substantial effect of pay cut
- Result 2: Smaller effect of pay increase
- Result 3: No decrease over time

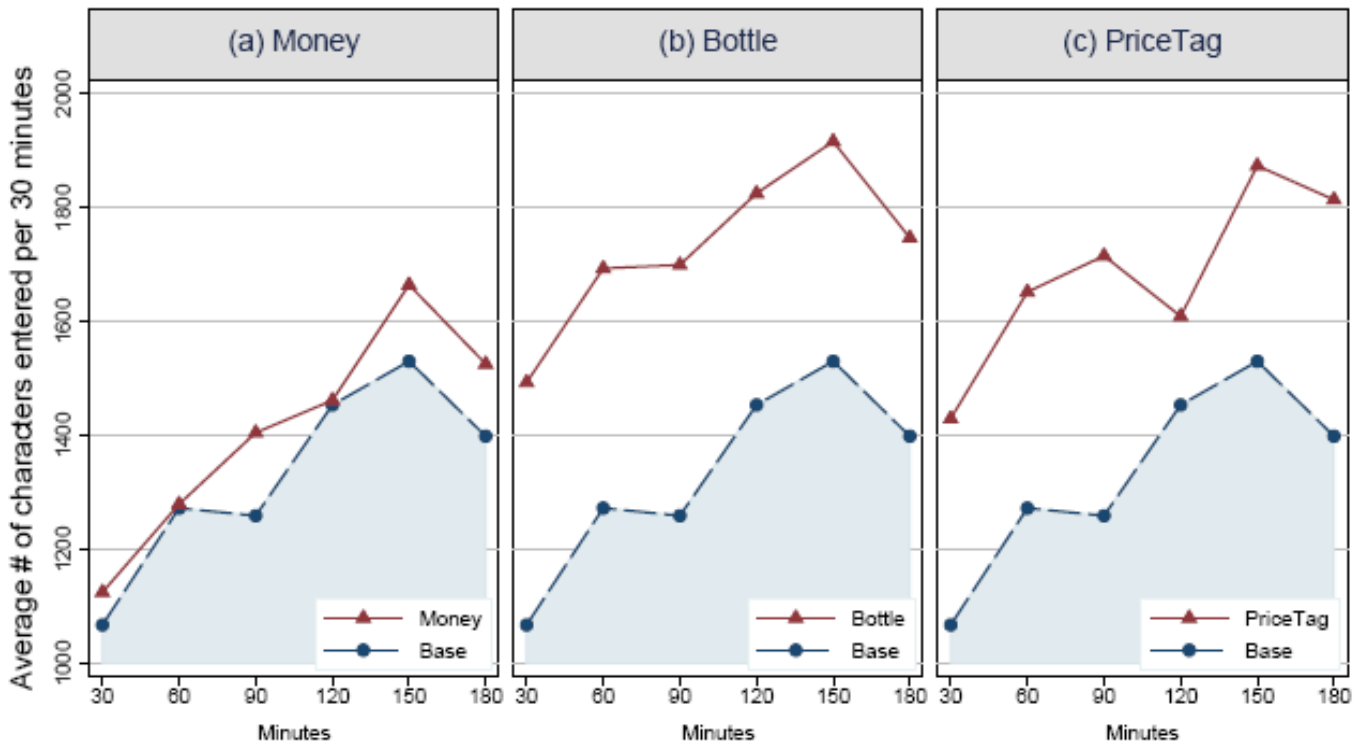


- Finding consistent with experimental results:
  - Positive reciprocity weaker than negative reciprocity
- Important other result:
  - No negative effect on quality of effort (no. of books incorrectly classified)
  - All treatments have near perfect coding
  - Hence, negative reciprocity does not extend to sabotage
- Final result: No. of subjects that accept to do one more hour for 15 Euro:
  - 3 in Control, 2 in Pos. Rec., 7 in Neg. Rec.
  - Positive Reciprocity does not extend to volunteering for one more hour

- **Kube-Marechal-Puppe (AER 2011).**
- Field Experiment 2: Hire job applicants to catalog books for 6 hours
- Announced Wage: 12 Euros/hour for 3 hours=36
  - Control ($n = 17$). 36 Euros
  - Treatment 1 (Positive Reciprocity, Cash, $n = 16$). $36 + 7 = 43$ Euros
  - Treatment 2 (Positive Reciprocity, Gift, $n = 15$). 36 Euros plus Gift of Thermos
  - Treatment 3 – Same as Tr. 2, but Price Tag for Thermos

- What is the effect of cash versus in-kind gift?

- Result 1: Small effect of 20% pay increase
- Result 2: Large effect of Thermos –> High elasticity, can pay for itself
- Result 3: No decrease over time



- Explanation 1. Thermos perceived more valuable
  - –> But Treatment 3 with price tag does not support this
  - Additional Experiment:
    * At end of (unrelated) lab experiment, ask choice for 7 Euro or Thermos
    * 159 out of 172 subjects prefer 7 Euro
- Explanation 2. Subjects perceive the thermos gift as more kind, and respond with more effort
- Tentative conclusions from gift exchange experiments:
  1. Gift exchange works in lab largely as in field
  2. Negative reciprocity stronger than positive reciprocity (as in lab)
  3. Effect is sensitive to perception of gift

- BUT: Think harder about these conclusions using **models**
- **Conclusion 1.** Gift exchange works in lab as in field
- Fehr, Kirchsteiger, and Riedl (QJE, 1993) - Two main model-based explanations:
  - *Inequity Aversion* (Fehr and Schmidt, 1999): Worker puts effort because firm had fallen behind in payoffs by putting effort
  - *Reciprocity* (Rabin, 1993; Dufwenberg and Kirchsteiger, 2003): Worker is nice towards firm because firm showed nice intentions
- Model for Gneezy and List (2006) and follow-up work?
  - Inequity aversion does *not* predict gift exchange in the field (Card, DellaVigna, and Malmendier, JEP 2011)

- Firm is very likely to have substantial income M, more than worker
- When firm transfers gift to employee, firm is still ahead on payoffs
- –> No predicted effort response
- Intuition: Firm does not fall behind the worker just because of a pay increase

- Hence, gift exchange in the field, when occurs, is due to reciprocity, not inequity aversion

- **Conclusion 2.** Negative reciprocity stronger than positive reciprocity
  - Is that really implied?
- Pure-altruism model of utility maximization of worker in gift exchange experiment

$$\max_{e} u(e) = w - c(e) + \alpha\,[ve - w]$$

  - e is effort, measurable
  - w is fixed payment (could be a gift)
  - $c\,(e)$ is cost of effort
  - α is altruism coefficient
  - v is return to the firm for unit of effort
- Would like to estimate α, and how it changes when a gift is given

- Utility

$$\max_{e} u(e) = w - c(e) + \alpha \left[ve - w\right]$$

- First-order condition:

$$-c'\left(e^{*}\right) + \alpha v = 0$$

- Can we estimate α?

- Two key unobservables:

  – Value of work v: What is the value of one library book coded?

  – Cost of effort $c\left(e\right)$: How hard it is to work more on the margin?

- Second issue confounds conclusion on reciprocity

  – Positive reciprocity may be stronger than negative, but marginal cost of effort steeply increasing –> Find stronger response to negative gift

- **DellaVigna, List, Malmendier, and Rao (in progress)**
  - Address Issue 1 by informing of value of work to employer
  - Address Issue 2 by estimating cost of effort function with piece rate variation
  - Only then introduce gift treatments
- Introduce piece rate in design. Utility

$$\max_{e} u(e) = w + pe - c(e) + \alpha\left[ve - pe - w\right]$$

- First-order condition:

$$p - c'\left(e^*\right) + \alpha\left[v - p\right] = 0$$

  - Notice

$$\frac{\partial e^*}{\partial p} = -\frac{1-\alpha}{-c''\left(e\right)}$$

and

$$\frac{\partial e^*}{\partial v} = -\frac{\alpha}{-c''(e)}$$

- Hence, can estimate α given

$$\frac{\partial e^*}{\partial v} \Big/ \frac{\partial e^*}{\partial p} = \frac{\alpha}{1-\alpha}$$

- We vary piece rate p as well as return v

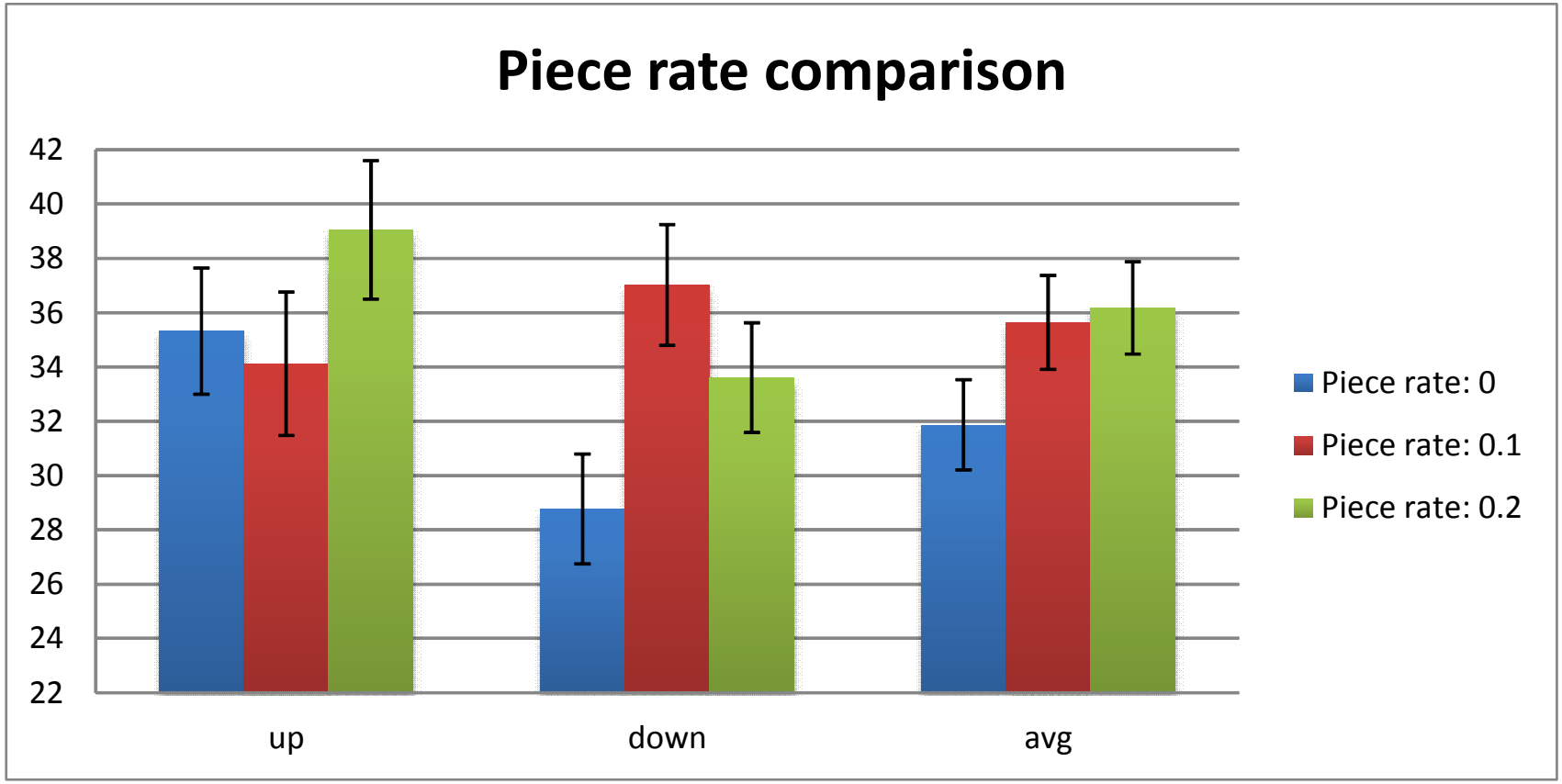
- Logistics:
  - Recruit for a one-time, 5-hour job
  - Task is to fold letters, stuff into appropriate envelope, and attach mailing address
  - Task is simple, but not implausible for a temp worker
  - Workers are working for a charity which pays them X per envelope
  - Workers are told the (expected) return Y to the charity
  - Example: "The envelopes filled in this session will be used in a letter campaign of Breakthrough. As mentioned before, Breakthrough will be paying for your work. The pay is $0.20 per envelope completed, as noted on your schedule. A number of such campaigns have been run by charities similar to Breakthrough, and historically, these charities

have gotten roughly \$0.30 per mailer with such campaigns. Taking account of Breakthrough per-envelope payment for your help today, it expects to get roughly \$0.10 for each additional envelope that you prepare during this session."

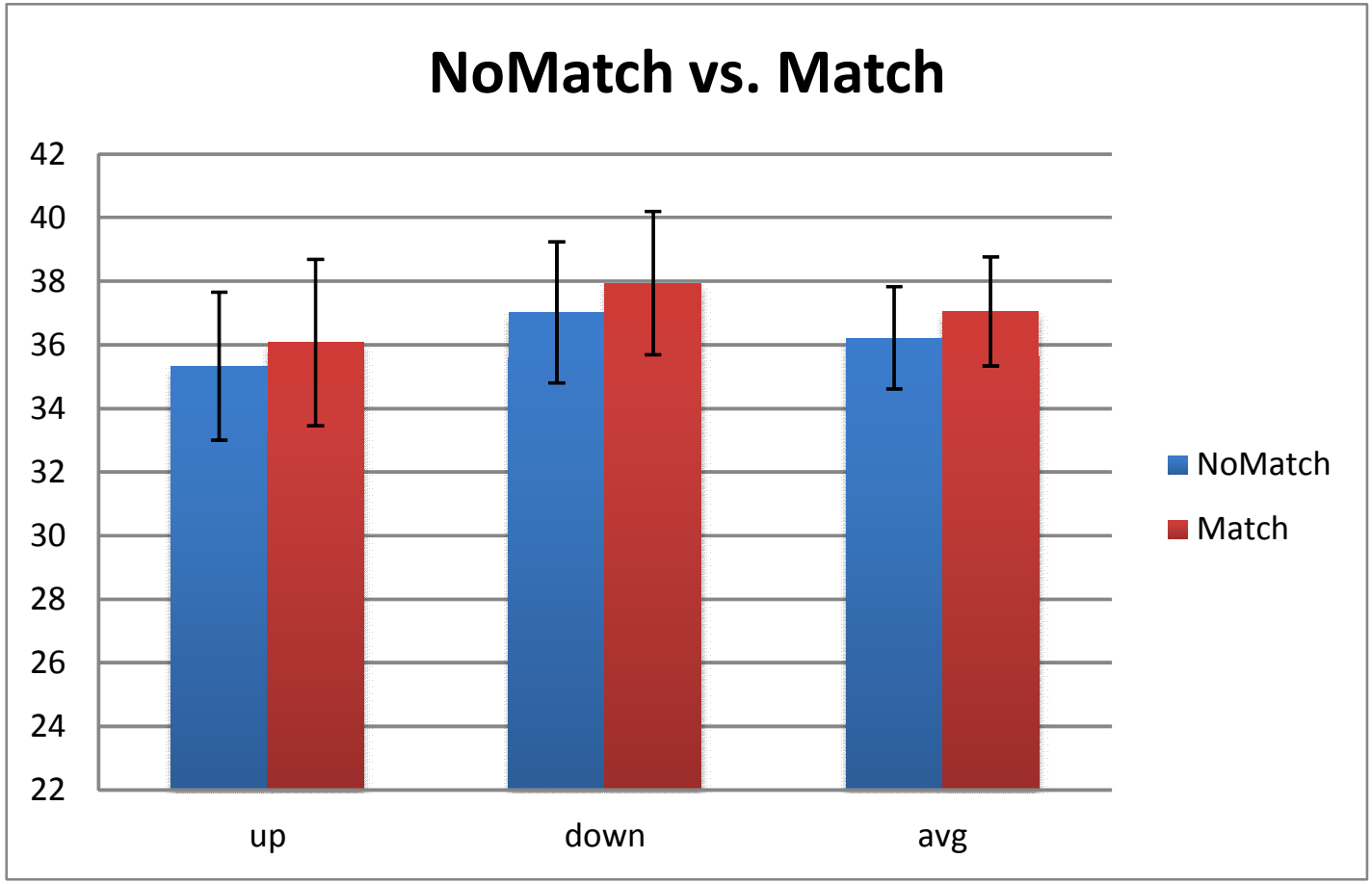
- To estimate cost of effort, we vary the piece rate within person
  - Ten 20-minute periods of folding envelopes with 5 min breaks
  - We vary the piece rate X (0 cents vs. 10 cents vs. 20 cents)
  - We vary the return to charity Y (30 cents vs. 60 cents)
  - We introduce training sessions where output is discarded
  - Subjects work for three different charities (and a firm)
- In last 2 periods, we introduce a gift

- Control group – paid $7 flat pay as before
- Positive gift – paid $14
- Negative gift – paid $3
- Gift sessions are observed both with high and low return to firm
- This design allows us to estimate all parameters

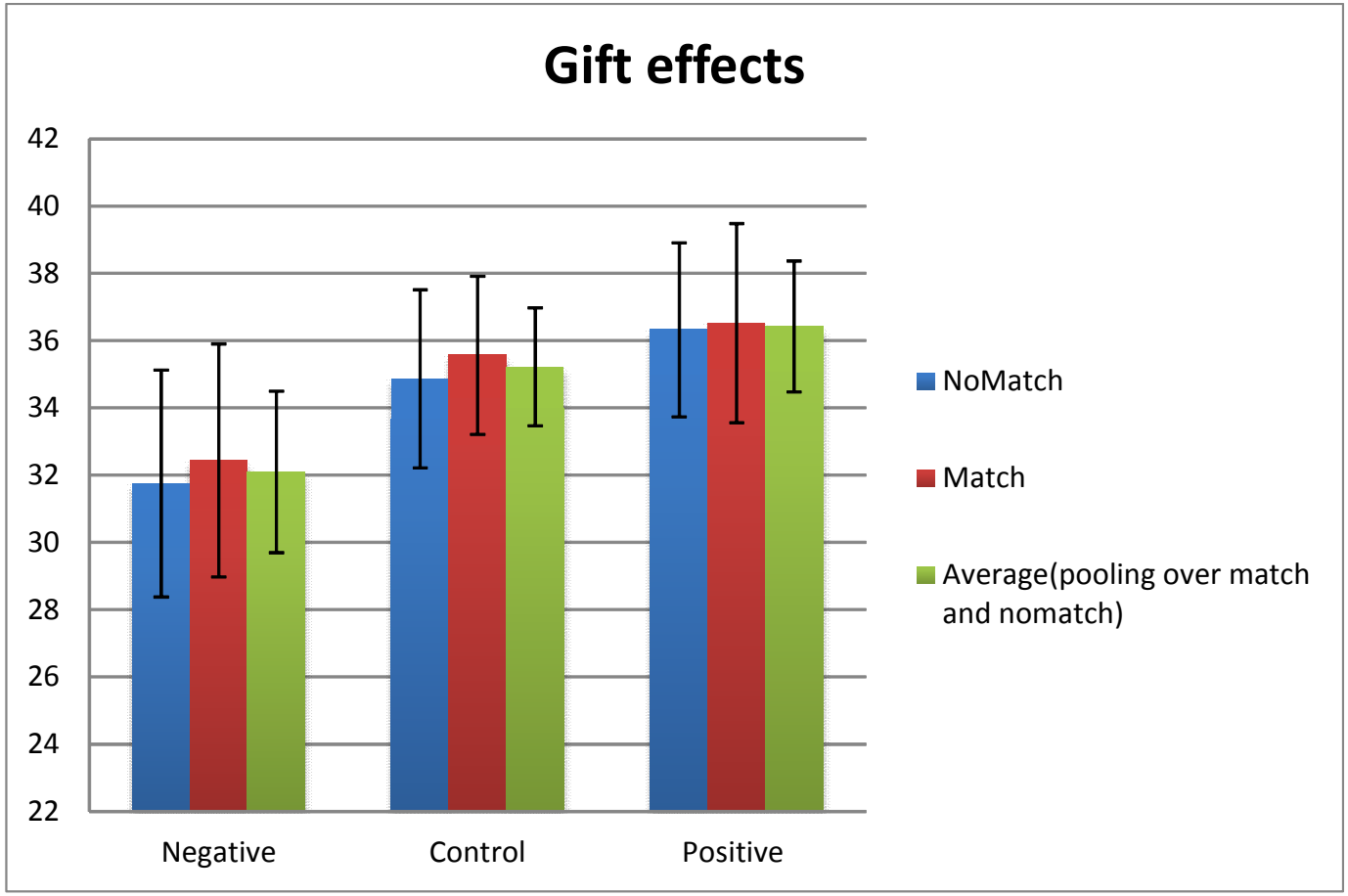
- Finding 1. Significant response to piece rate



- Finding 2. Very small impact of match

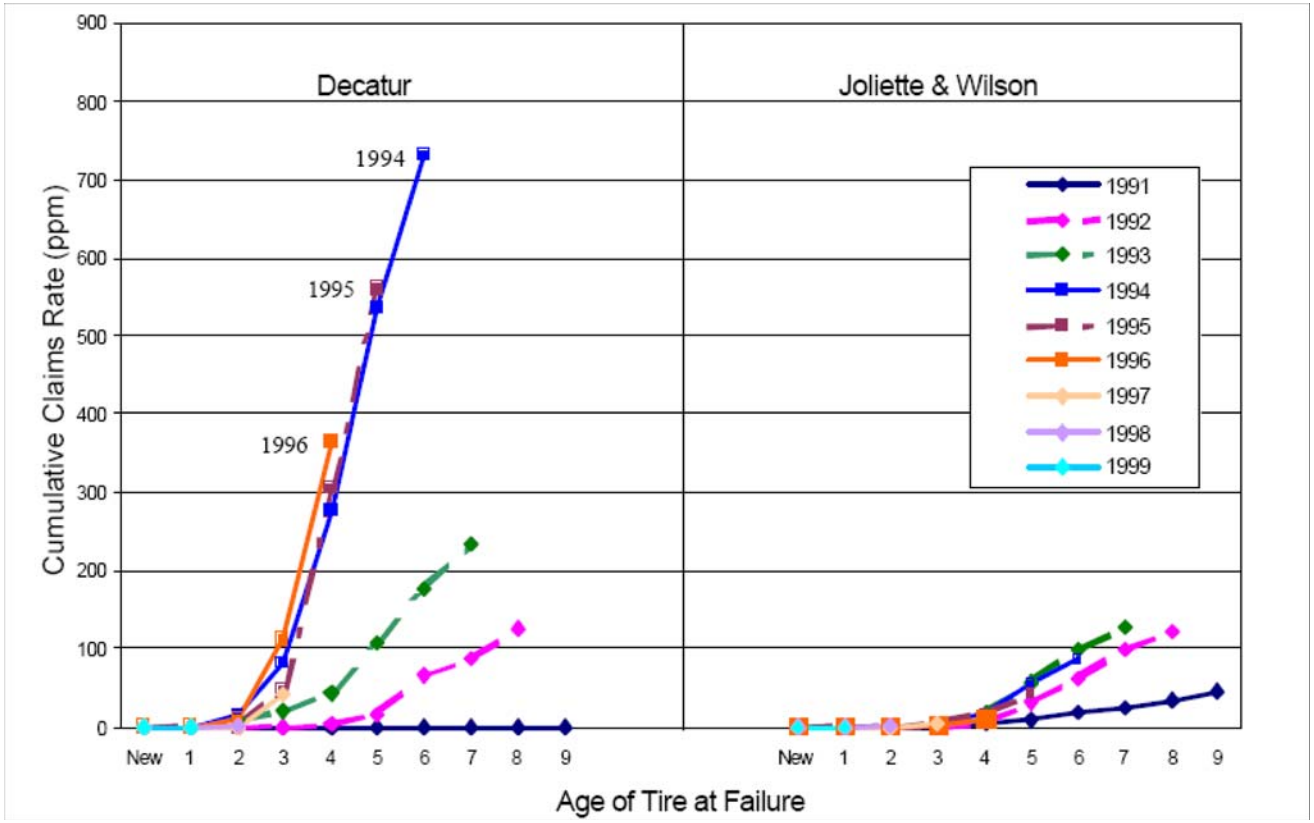


- Finding 3. Larger impact of negative gift, still imprecise



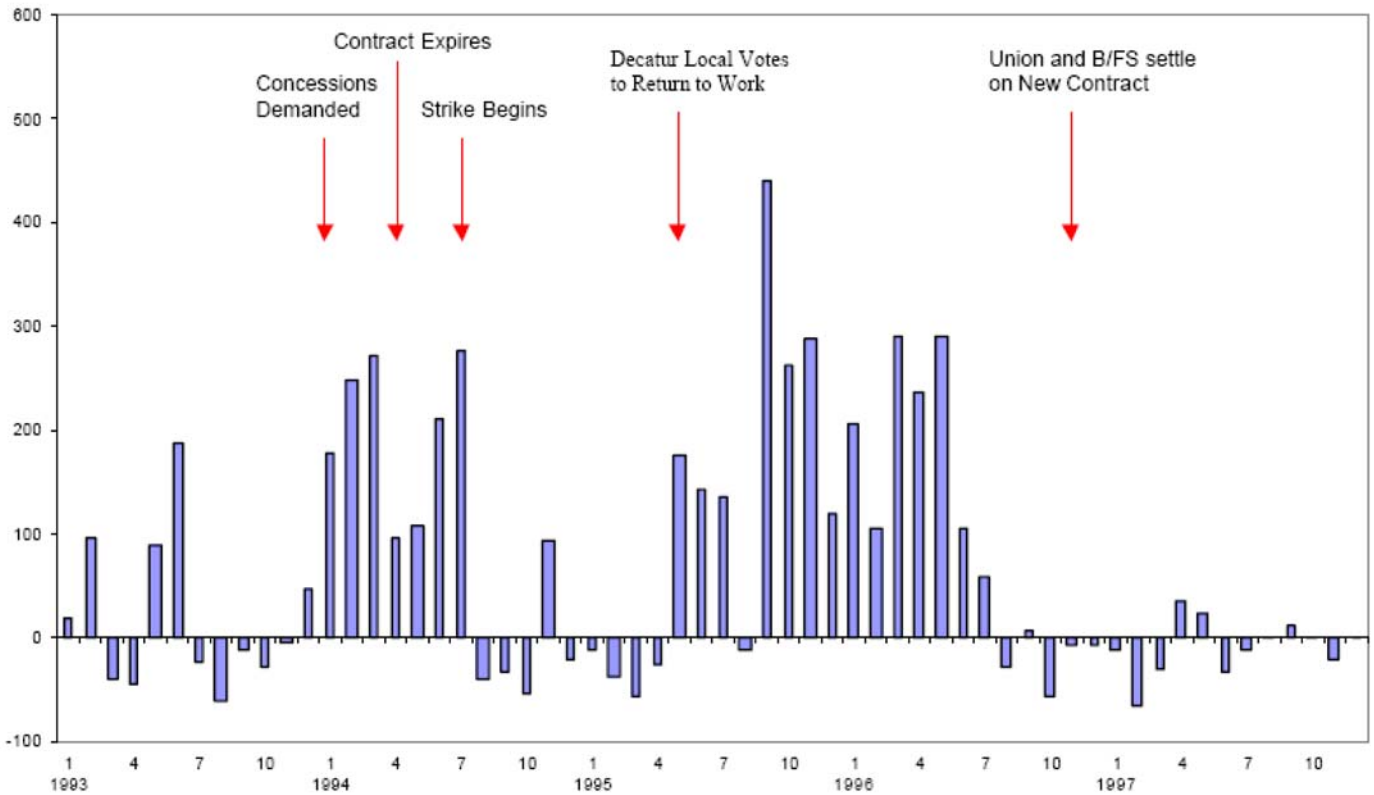
- Is there evidence in a workplace of negative reciprocity towards unkind employer leading to sabotage?
- **Krueger-Mas (JPE, 2004).**
- Setting:
  - Unionized Bridgestone-Firestone plant
  - Workers went on strike in July 1994
  - Replaced by replacement workers
  - Union workers gradually reintegrated in the plant in May 1995 after the union, running out of funds, accepted the demands of the company
  - Agreement not reached until December 1996

- Do workers sabotage production at firm?
  - Examine claims per million tires produced in plants affected
  - Compare to plant not affected by strike (Joliette&Wilson)



- Ten-fold increase in number of claims
- Similar pattern for accidents with fatalities
- Possible explanations:
  - Lower quality of replacement workers
  - Boycotting / negative reciprocity by unionized workers
- Examine the timing of the claims

Figure 8: Difference in the Number of Complaints per million Tires Produced by Month: Decatur Plant minus Joliette and Wilson Plants.



Source: Authors' calculations based on NHTSA complaints data. Records with missing data are excluded.

- Two time periods with peak of claims:
  - Beginning of Negotiation Period
  - Overlap between Replacement and Union Workers
- Quality not lower during period with replacement workers
- Quality crisis due to Boycotts by union workers
- Claims back to normal after new contract settled
- Suggestive of extreme importance of good employer-worker relations

2 Charitable Giving: Gift Exchange

- **Falk (EMA, 2008)** — field experiment in fund-raising
  - 9,846 solicitation letters in Zurich (Switzerland) for Christmas
  - Target: Schools for street children in Dhaka (Bangladesh)
  - 1/3 no gift, 1/3 small gift 1/3 large gift
  - Gift consists in postcards drawn by kids
  - Do gifts trigger higher generosity?

Appendix: An example of the included postcards

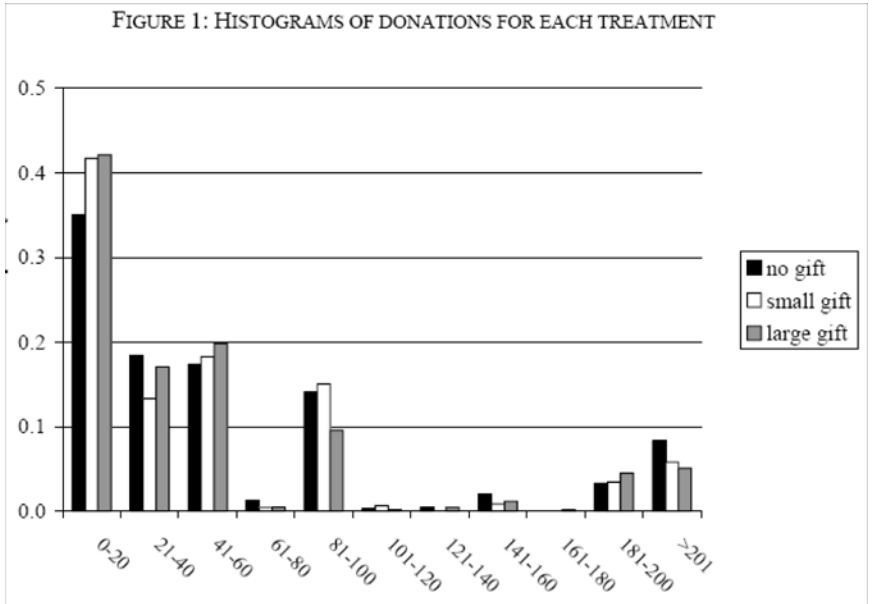
- Short-Run effect: Donations within 3 months

TABLE 1: DONATION PATTERNS IN ALL TREATMENT CONDITIONS

	No gift	Small gift	Large gift
Number of solicitation letters	3,262	3,237	3,347
Number of donations	397	465	691
Relative frequency of donations	0.12	0.14	0.21

- Large gift leads to doubling of donation probability
- Effect does not depend on previous donation pattern (donation in previous mailing)
- Note: High donation levels, not typical for US

- Small decrease in average donation, conditional on donation (Marginal donors adversely selected, as in 401(k) Active choice paper)

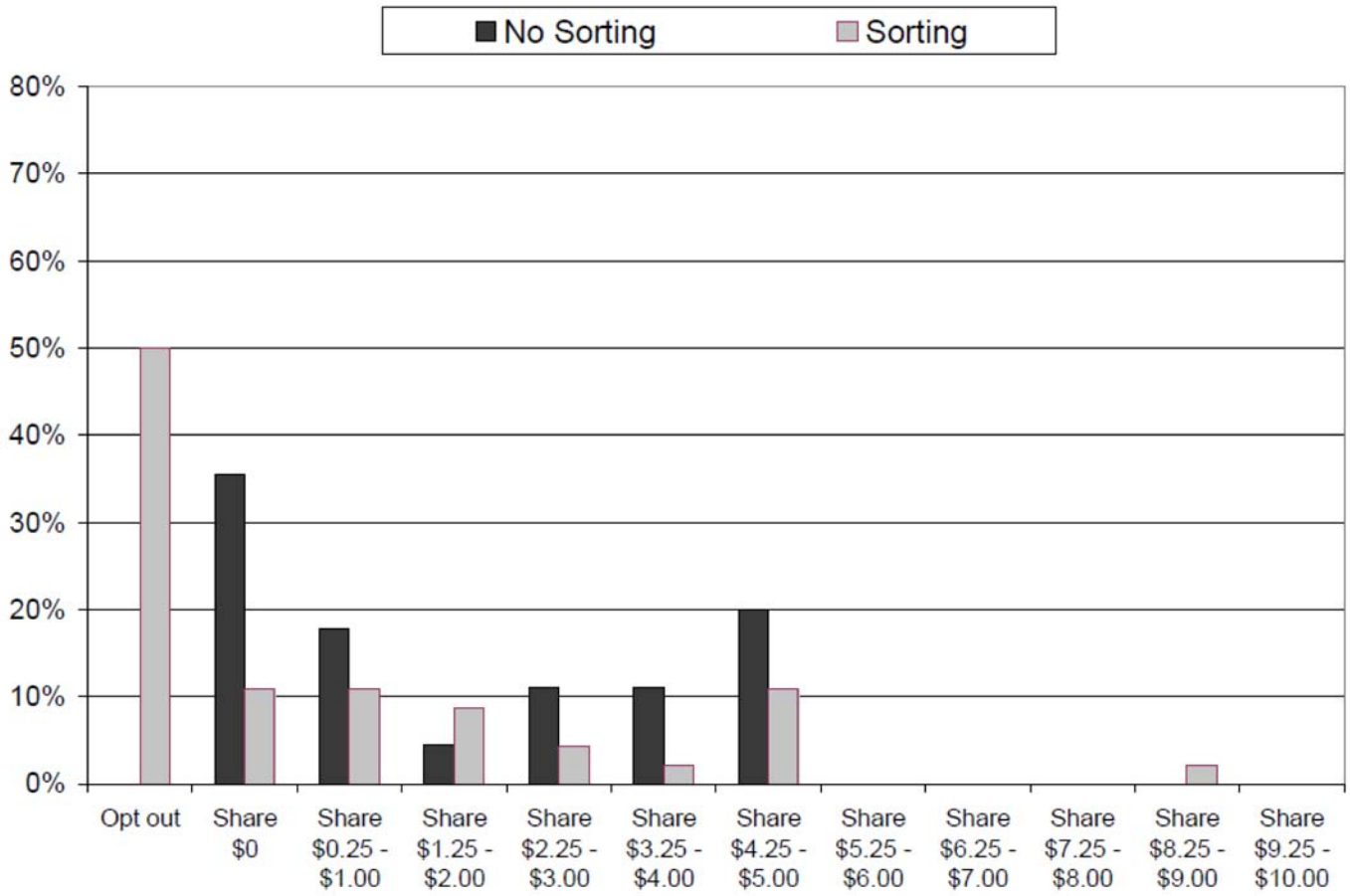


- Limited intertemporal substitution. February 2002 mailing with no gift. Percent donation is 9.6 (control), 8.9 (small gift), and 8.6 (large gift) (differences not significant)

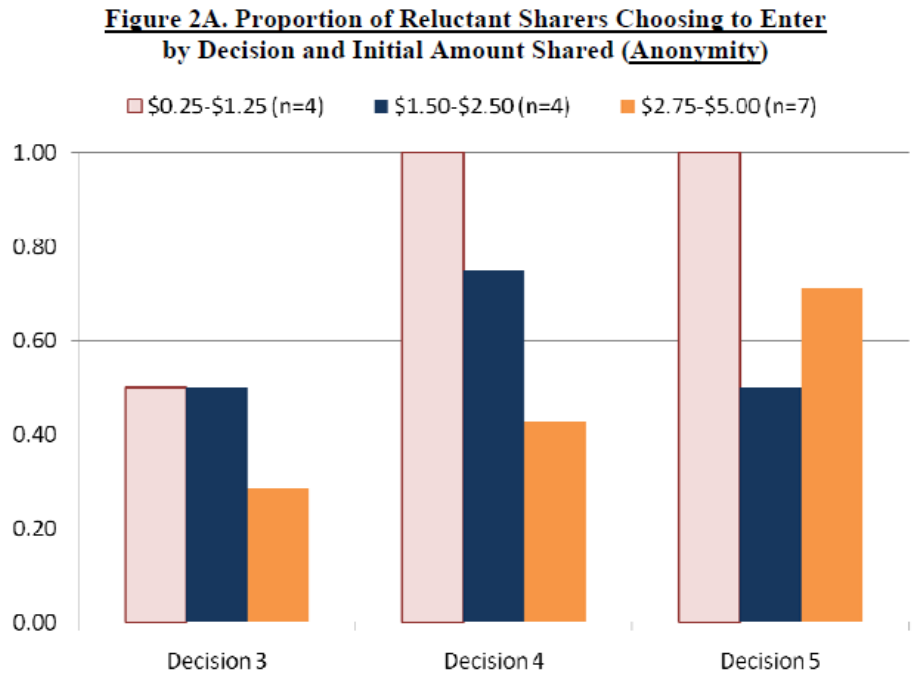
3 Social Preferences Wave III: Social Pressure and Signalling

- Last 15 years: Evidence to suggest that altruism/warm glow/inequity aversion/reciprocity only part of story
- Dictator games with sorting (**Dana, Cain, and Dawes, 2007**; **Lazear, Malmendier, and Weber, AEJ Applied 2012**):
  - Subject can play dictator game ($10 to share)
  - OR can sort out and have privately $10
- Predictions of models of altruism/warm glow/inequity aversion/reciprocity:
  - Individuals who offer 0 still would offer 0 or sort out
  - Individuals who give to other would stay in and give
- Results? From Lazear, Malmendier, and Weber (2012)

Figure 1A. Distributions of Amounts Shared
(Experiment 1, Berkeley)



- – More than half of positive givers sort out instead!
  - – Need to increase dictator game payout to $12 (Decision 5) to lure givers back



- Further evidence: Dictator games with moral wriggle room (Dana, Weber,

and Kuang, 2007)

- Avoid (free) information to justify not sharing

- Evidence from charitable giving
- **Landry et al. (QJE, 2006)**
  - Door-to-door fund-raising as opposed to mailer
  - Test different form of solicitation
    - Seed Money or not
    - Lottery or not
  - Examines also features of solicitor
- Main finding: Female attractiveness matters, male attractiveness does not

TABLE IV

DICHOTOMOUS CONTRIBUTION DECISION AND SOLICITOR CHARA

	Model A	Model B	Model C	Model D	Model E
Overall constant—VCM is baseline	0.27**	0.28**	0.25**	0.27**	0.26**
	(0.03)	(0.08)	(0.07)	(0.08)	(0.07)
VCM with seed money	−0.11**	−0.08	−0.07	−0.06	−0.07
	(0.04)	(0.06)	(0.05)	(0.05)	(0.05)
Single-prize lottery	0.20**	0.19**	0.20**	0.21**	0.19**
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Multiple-prize lottery	0.15**	0.18**	0.20**	0.21**	0.20**
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Solicitor beauty rating		0.07**			
		(0.03)			
Beauty—male solicitor			−0.02	−0.03	−0.04
			(0.04)	(0.04)	(0.04)
Beauty—female solicitor			0.12**	0.13**	0.12**
			(0.04)	(0.04)	(0.04)

- More affects giving than just pure altruism or warm glow

- **Model 1. Social Pressure (DellaVigna, List, and Malmendier, 2012)**
  - Pay a disutility cost $S > 0$ if do not give when asked
  - No disutility cost if can avoid to meet the solicitor or recipient
  - Give mostly *because asked*
- Can explain
  - Sort out in dictator game with sorting
  - Wanting to ignore information
  - Give small amount to charities, no crowd out of giving
  - Also: Give more in higher social pressure environments
- Key prediction specific to Social Pressure model:
  - *Altruism/Glow*: Agent seeks giving occasions to get warm glow
  - *Social Pressure*: Agents avoids giving occasions to avoid social pressure
- Drawback of model
  - Social Pressure cost is reduced form

- **Model 2. Signaling (Benabou and Tirole (2003)**
  - Individuals have an altruism weight α
  - Individuals 'forget' their altruism α
  - They infer it from their own behavior in a signaling game:
  - Behave generously to convince one self (and others)

4 Social Pressure

- Early experiments: *Milgram experiment* post-WWII
- Motivation: Do Germans yield to pressure more than others?
  - Subjects: Adult males in US
  - Recruitment: experiment on punishment and memory
  - Roles:
    - teacher (subjects)
    - learner (accomplice)
  - Teacher asks questions
  - Teacher administers shock for each wrong answer

- Initial shock: 15V
- Increase amount up to 450V (not deadly, but very painful)
- Learner visible through glass (or audible)
- Learner visibly suffers and complains

- Results:
  - 62% subjects reach 450V
  - Subjects regret what they did ex post
  - When people asked to predict behavior, almost no one predicts escalation to 450V

- It's not the Germans (or Italians)! Most people yield to social pressure

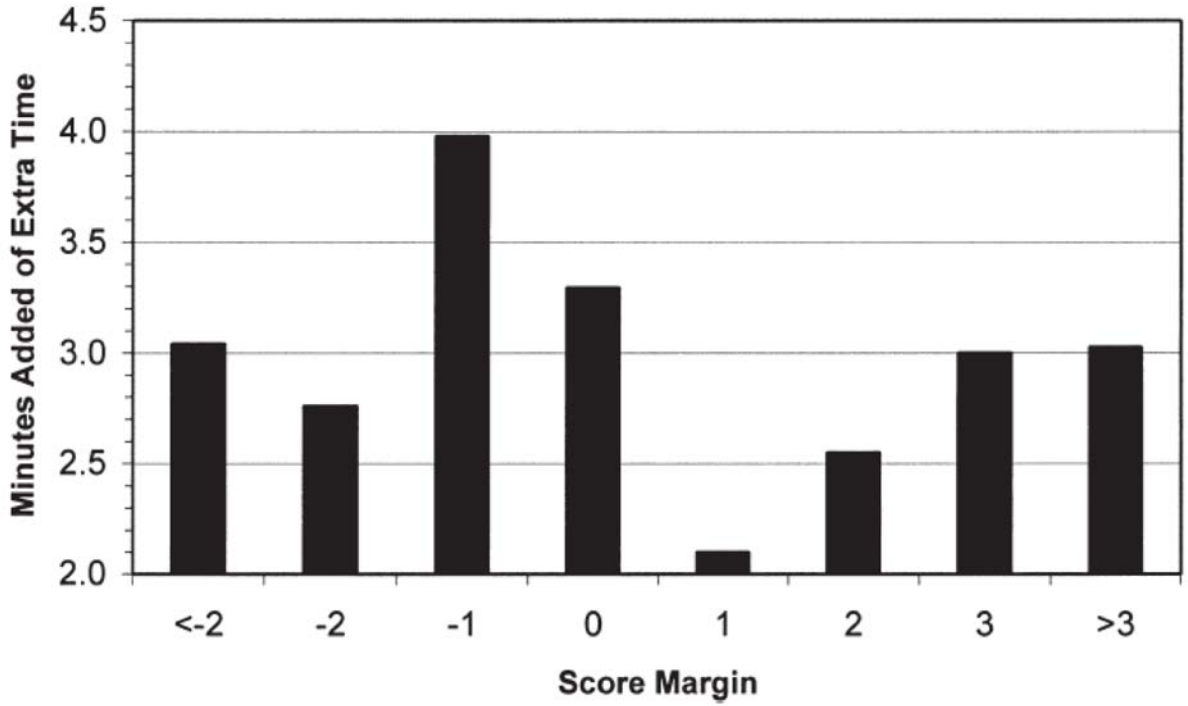
- Furthermore, naivete' — Do not anticipate giving in to social pressure
- Social Pressure likely to be important in organization and public events

- Second classical psychology experiment: **Asch (1951)**
  - Subjects are shown two large white cards with lines drawn on them
    - First card has three lines of substantially differing length on them
    - Second card has only one line.
  - Subjects are asked which of the lines in the first card is closest in length to the line in the second card
- Control treatment: subjects perform the task in isolation –> 98 percent accuracy
- High social-pressure treatment: subjects choose after 4 to 8 subjects (confederates) unanimously choose the wrong answer –> Over a third of subjects give wrong answer

- Social Pressure Interpretation:
  - Avoid disagreeing with unanimous judgment of the other participants
  - Result disappears if confederates are not unanimous
- Alternative interpretation: Social learning about the rules of the experiment
- Limitation: subjects not paid for accuracy

- An example of social pressure in a public event
- **Garicano, Palacios-Huerta, and Prendergast (REStat, 2006)**
  - Soccer games in Spanish league
  - Injury time at end of each game (0 to 5 min.)
  - Make up for interruptions of game
  - Injury time: last chance to change results for teams
- Social Pressure Hypothesis: Do referees provide more injury time when it benefits more the home team?
  - Yielding to social pressure of public
  - No social learning plausible
  - Note: referees professionals, are paid to be independent
- Results: Figure 1 – Clear pattern, very large effects

FIGURE 1.—INJURY TIME AWARDED BY SCORE MARGIN



Number of minutes awarded by referees as a function of the margin in favor of the home team at the end of the match. Score margin = (goals scored by home team) − (goals scored by visiting team). Note: 3.3% of the matches ended with score differences smaller than −2; 5.2%, with score differences greater than 3.

- Table 5. Response to incentives –> After 1994, 3 points for winning (1 for drawing, 0 for losing).

TABLE 5.—MARGINAL EFFECT OF INCENTIVES ON INJURY TIME

Statistic	[1]	[2]
Constant	3.50**	3.11**
	(0.14)	(0.32)
Score Difference	**−1.53****	**−1.56****
	(0.18)	**(0.18)**
Year Effect	0.81**	0.7**
	(0.18)	(0.21)
Year × Score Difference	**−0.58***	**−0.52***
	(0.23)	**(0.23)**
Yellow Cards		0.07**
		(0.02)

- Table 6. Response to social pressure: size of audience

TABLE 6.—EFFECT OF THE SIZE AND COMPOSITION OF THE CROWD ON REFEREE BI

Statistic	[1]	[2]
Constant	3.23**	2.94**
	(0.18)	(0.20)
Score Difference	**−0.93****	**−0.96****
	(0.20)	**(0.21)**
Year Effect	0.36**	0.33**
	(0.11)	(0.11)
Attendance	0.00	0.00
	(0.00)	(0.00)
Attendance × Score Difference	**−0.02****	**−0.02****
	(0.00)	**(0.00)**
Yellow Cards		0.07**
		(0.02)
Budget Home		

- P*eer effect* literature also points to social pressure
- **Falk-Ichino (JOLE, 2006):** effect of peer pressure on task performance
  - Recruit High-school students in Switzerland to perform one-time job for flat payment
  - Stuff letters into envelopes for 4 hours
  - Control group of 8 students did the task individually
  - Treatment group of 16 students worked in pairs (but each student was instructed to stuff the envelopes individually)
- Results:
  - Students in treatment group stuffed more envelopes (221 vs. 190)
  - Students in treatment group coordinated the effort within group: within-pair standard-deviation of output is significantly less than the (simulated) between-pairs standard deviation

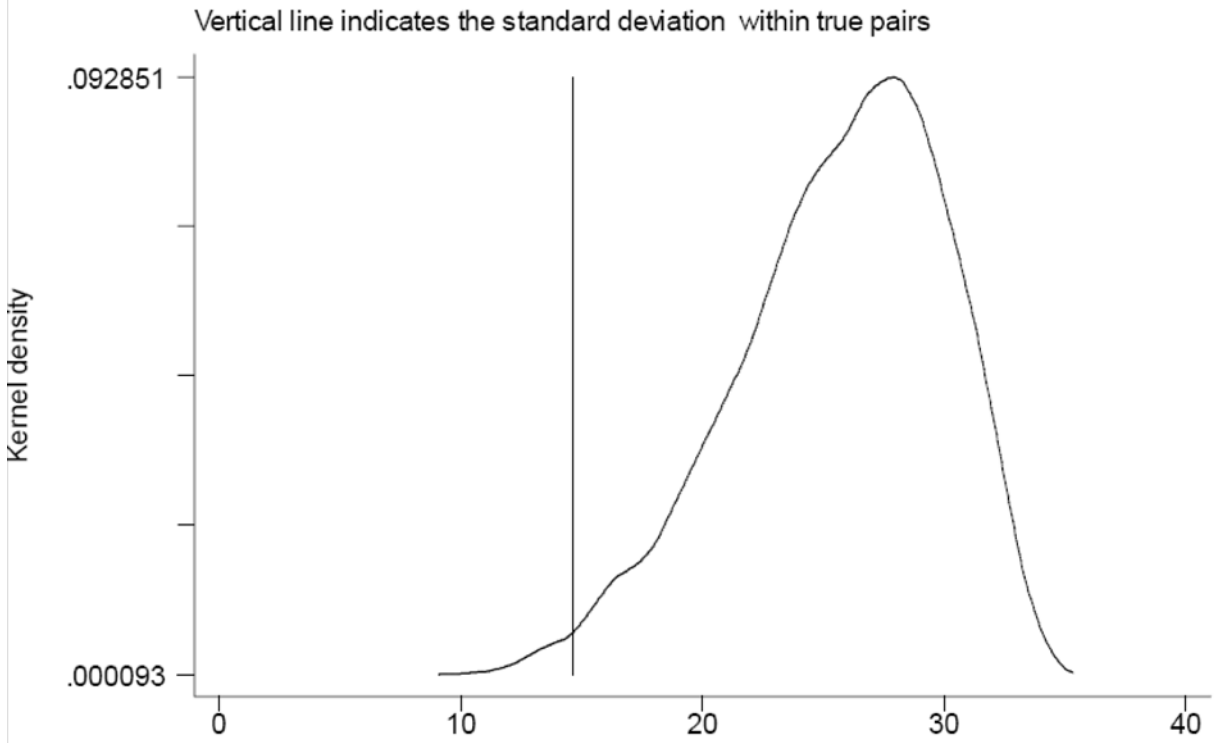


Fig. 3: St. dev. within true and hypothetical pairs in pair sample

- **Mas-Moretti (AER 2009).** Evidence of response to social pressure in the workplace
  - Workplace setting –> Large retail chain
  - Very accurate measure of productivity, scanning rate
  - Social Pressure: Are others observing the employer?
- Slides courtesy of Enrico

Introduction

- Over the course of a given day, the composition of the group of co-workers varies, because workers shifts do not perfectly overlap

- Scheduling is determined two weeks prior to a shift

=> <u>within-day</u> timing of entry and exit of workers is predetermined

- Empirically, entry and exit of good workers appear uncorrelated with demand shocks:

  - The entry of fast workers is not concentrated in the ten minutes prior to large increases in customer volume, as would be the case if managers could anticipate demand changes

  - The exit of fast workers is not concentrated in the ten minutes prior to large declines in customer volume

  - The mix of co-workers ten minutes into the future has no effect on individual productivity in the current period.

Data

- We observe all the transactions that take place for 2 years in 6 stores. For each transaction, we observe the number of items scanned, and the length of the transaction in seconds.
- We define individual productivity as the number of items scanned per second.
- We know who is working at any moment in time, where, and whom they are facing
- Unlike much of the previous literature, our measure of productivity is precise, worker-specific and varies with high-frequency.

Institutional features

- Workers in our sample perform the same task use the same technology, and are subject to the same incentives
- Workers are unionized
- Compensation is a fixed hourly payment
- Firm gives substantial scheduling flexibility to the workers

What is the relationship between individual effort and co-worker permanent productivity?

- First we measure the *permanent* component of productivity of each worker

$$y_{itcs} = \theta_i + \Sigma_{j \neq i} \pi_j W_{jtcs} + \psi X_{itcs} + \gamma_{dhs} + \lambda_{cs} + e_{itcs.}$$

  For each worker *i*, 10 minute period and store, we average the permanent productivity of all the co-workers (excluding *i*) who are active in that period: $\Delta \bar{\theta}_{-ist}$

- Second, we regress ten minutes *changes* in individual productivity on *changes* in average permanent productivity of co-workers

Finding 1: There is a positive association between changes in co-worker permanent productivity and changes in individual effort

	(1)	(2)
Δ Co-worker permanent Productivity	0.176 (0.023)	0.159 (0.023)
Controls	No	Yes

$$\Delta y_{itcs} = \beta \Delta \overline{\theta}_{-ist} + \gamma_{tds} + \psi \Delta X_{tcs} + e_{itcs}$$

i = individual
t = 10 minute time interval
c = calendar date
s = store

Finding 1: There is a positive association between changes in co-worker permanent productivity and changes in individual productivity

Entry of above average productivity worker	0.011 (0.001)	
Exit of an above average productivity worker	-0.005 (0.001)	
Shift entry of above average productivity worker		0.006 (0.002)
Shift exit of an above average productivity worker		-0.006 (0.002)
Controls	Yes	Yes

Finding 2: The magnitude of the spillover effect varies dramatically depending on the skill level

	(2)	(3)
Δ Co-worker permanent productivity	0.159	0.261
	(0.023)	(0.033)
Δ Co-worker permanent prod. × Above average worker		-0.214
		(0.046)
Observations	1,734,140	1,734,140
Controls	Yes	Yes

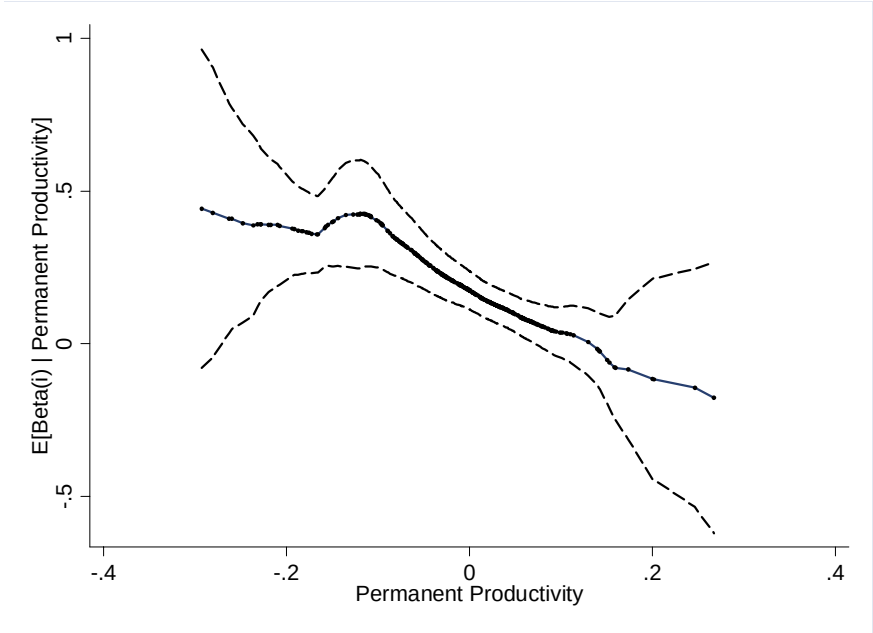
$$\Delta y_{itcs} = \beta \Delta \bar{\theta}_{-ist} + \gamma_{tds} + \psi \Delta X_{tcs} + e_{itcs}$$

Individual-specific Spillover

- Our longitudinal data allow for models with an individual-specific spillover effect, β_i:

$$\Delta y_{itcs} = \beta_i \Delta \overline{\theta}_{-icts} + \psi \Delta X_{tcs} + \gamma_{tds} + e_{itcs}$$

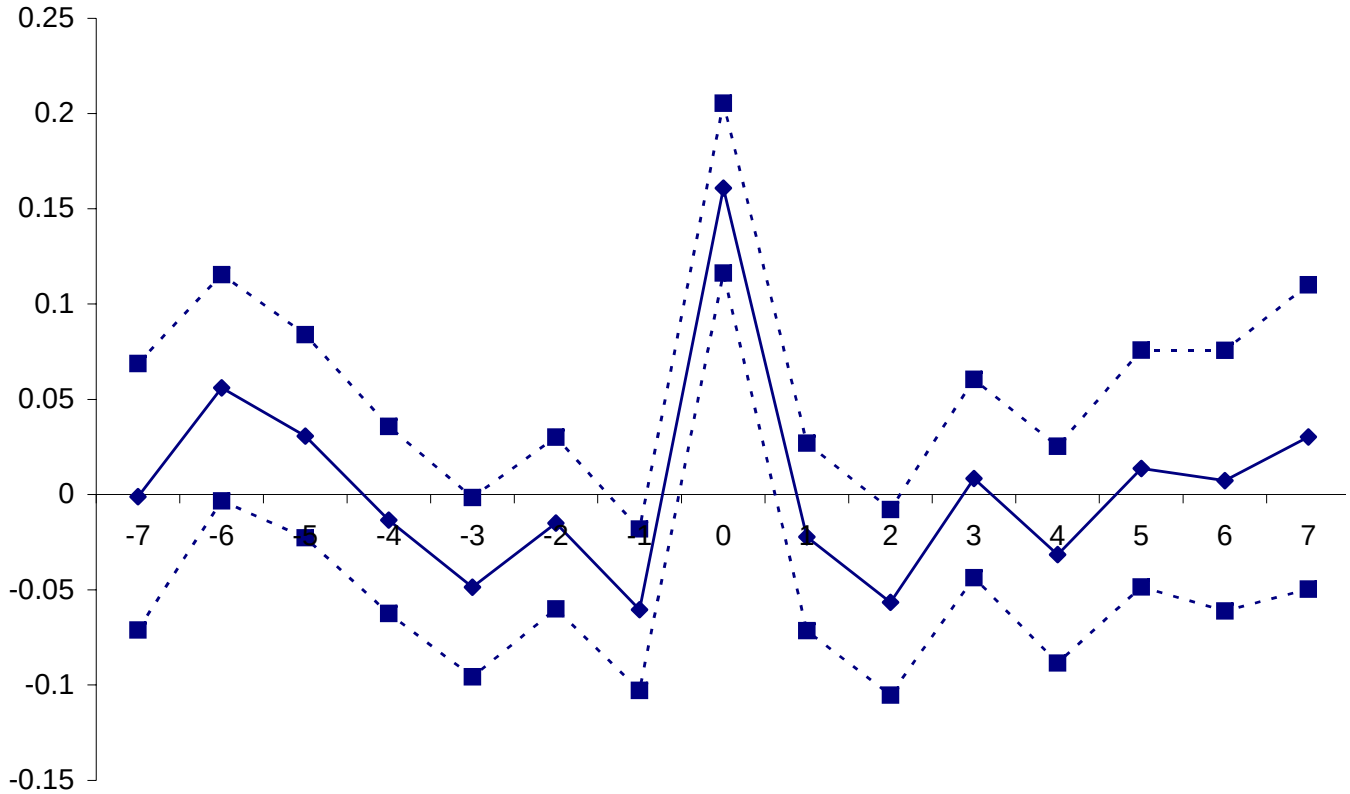
The relationship between individual permanent productivity and worker specific spillover effect



What Determines Variation in Co-Workers Quality?

- Shifts are pre-determined
- Management has no role in selecting specific workers for shifts
- We measure co-workers productivity using permanent productivity (not current)
- Our models are in first differences: We use variation within a day and within a worker

The lags and leads for the effect of changes of average co-worker productivity on reference worker productivity



$$\Delta y_{itcs} = \beta_{-7}\Delta\bar{\theta}_{-i(t-7)cs} + \beta_{-6}\Delta\bar{\theta}_{-i(t-6)cs} + \beta_{-5}\Delta\bar{\theta}_{-i(t-5)cs} + \beta_{-4}\Delta\bar{\theta}_{-i(t-4)cs} + \beta_{-3}\Delta\bar{\theta}_{-i(t-3)cs} + \beta_{-2}\Delta\bar{\theta}_{-i(t-2)cs}$$
$$+ \beta_{-1}\Delta\bar{\theta}_{-i(t-1)cs} + \beta_{0}\Delta\bar{\theta}_{-i(t)cs} + \beta_{1}\Delta\bar{\theta}_{-i(t+1)cs} + \beta_{2}\Delta\bar{\theta}_{-i(t+2)cs} + \beta_{3}\Delta\bar{\theta}_{-i(t+3)cs} + \beta_{4}\Delta\bar{\theta}_{-i(t+4)cs} + \beta_{5}\Delta\bar{\theta}_{-i(t+5)cs}$$
$$+ \beta_{6}\Delta\bar{\theta}_{-i(t+6)cs} + \beta_{7}\Delta\bar{\theta}_{-i(t+7)cs} + \zeta\mathbf{M} + e_{itcs},$$

What explains spillovers?

- There are at least two possible explanations (Kendal and Lazear, 1992)
  - Guilt / Contagious enthusiasm
  - Social pressure ("I care what my co-workers think about me")
- We use the spatial distribution of register to help distinguish between mechanisms

- Guilt / Contagious enthusiasm implies that the spillover generate by the entry of a new worker should be larger for those workers who can observe the entering worker

- Social pressure implies that the spillover generate by the entry of a new worker should be larger for those workers who who are observed by the new worker

Finding 3

- Most of the peer effect operates through changes in workers that are able to monitor other workers

- As more productive workers are introduced into a shift, they influence only the co-workers that can be monitored. There is no effect on co-workers that can not be monitored.

- This finding is consistent with social pressure

Table 5: Models by spatial orientation and proximity

	(1)	(3)
Δ Co-worker permanent productivity behind	0.233 (0.019)	
Δ Co-worker permanent productivity in front	0.007 (0.018)	
Δ Co-worker permanent productivity behind & closer		0.162 (0.016)
Δ Co-worker permanent productivity in front & closer		0.016 (0.015)
Δ Co-worker permanent productivity behind & farther		0.100 (0.018)
Δ Co-worker permanent productivity in front & farther		0.003 (0.018)

Previous scheduling overlap

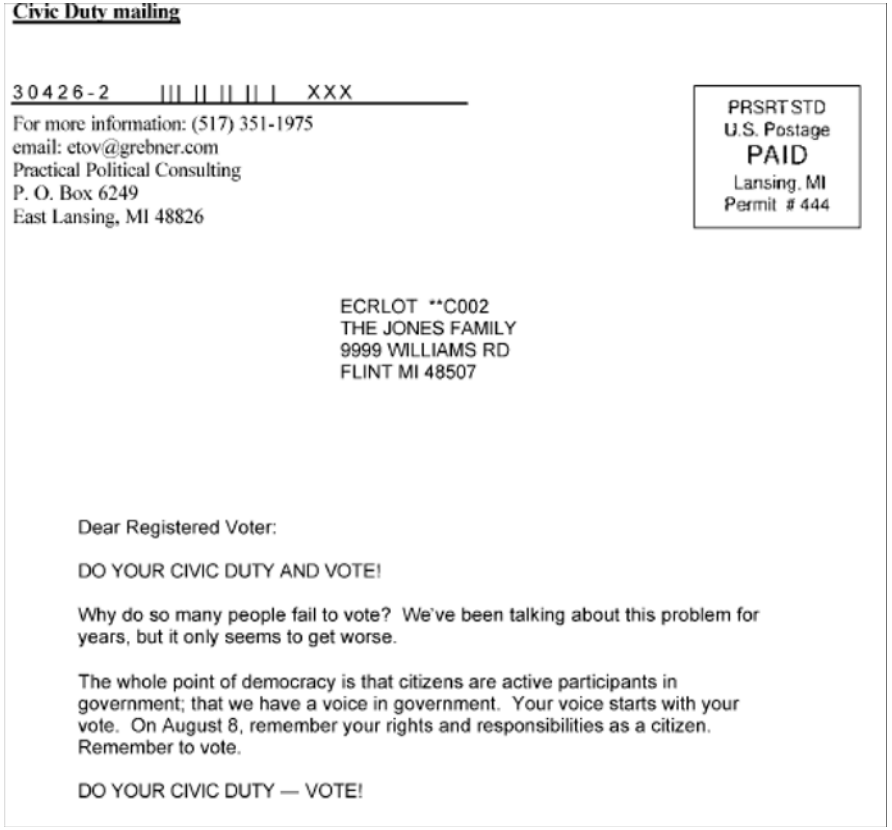
	(1)
(I) Δ Co-worker permanent prod: low exposure	0.013
	(0.012)
(II) Δ Co-worker permanent prod: medium exposure	0.084
	(0.014)
(III) Δ Co-worker permanent prod: high exposure	0.075
	(0.017)
p-value: Ho: (I) = (II)	0.000
Ho: (I) = (III)	0.003
Ho: (II) = (III)	0.655
Observations	1,659,450

- Final Example: Effect of Social Pressure on Voting
  - Large literature of field experiments to impact voter turnout
  - Typical design: Day before (local) election reach treatment household and encourage them to vote
  - Some classical examples

Paper	Treatment (1)	Election type or question (2)	Variable t (3)	Year (4)	Place (5)	Sample size (6)	Control group t_T (7)	Treatment group t_C (8)	Exposure rate $e_T - e_C$ (9)	Persuasion rate (10)
Field Experiments										
Gerber and Green [2000]	Door-to-door canvassing	Federal elect.	Turnout	1998	New Haven	N = 14,473	0.422	0.463	0.270	0.263
	Canvassing + mail + calls	Federal elect.	Turnout	1998	New Haven	N = 14,850	0.422	0.448	0.270	0.167
Green, Gerber, and Nickerson [2003]	Door-to-door canvassing	Local elect.	Turnout	2001	6 cities	N = 18,933	0.286	0.310	0.293	0.118
Green and Gerber [2001]	Phone calls by youth vote	General elect.	Turnout	2000	4 cities	N = 4,377	0.660	0.711	0.737	0.205
	Phone calls 18–30-year-olds	General elect.	Turnout	2000	2 cities	N = 4,377	0.405	0.416	0.414	0.045

- In these experiments, typically mailings are the cheapest, but also the least effective get-out-the-vote treatment
- **Gerber, Green, and Larimer (APSR, 2008):** Add social pressure to these treatments
- Setting:
  - August 2006, Michigan
  - Primary election for statewide offices
  - Voter turnout 17.7% registered voters
- Experimental sample: 180,000 households on Voter File
- Mailing sent 11 days prior to election

- Experimental design:
  - Control households get no mail (N=100,000)
  - *Civic Duty Treatment.* 'DO YOUR CIVIC DUTY—VOTE!"'



Civic Duty mailing

30426-2 ||| || || || | XXX

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FLINT MI 48507

Dear Registered Voter:

DO YOUR CIVIC DUTY AND VOTE!

Why do so many people fail to vote? We've been talking about this problem for years, but it only seems to get worse.

The whole point of democracy is that citizens are active participants in government; that we have a voice in government. Your voice starts with your vote. On August 8, remember your rights and responsibilities as a citizen. Remember to vote.

DO YOUR CIVIC DUTY — VOTE!

- – *Hawthorne Treatment.* Information that voters turnout records are being studied

Dear Registered Voter:

YOU ARE BEING STUDIED!

Why do so many people fail to vote? We've been talking about this problem for years, but it only seems to get worse.

This year, we're trying to figure out why people do or do not vote. We'll be studying voter turnout in the August 8 primary election.

Our analysis will be based on public records, so you will not be contacted again or disturbed in any way. Anything we learn about your voting or not voting will remain confidential and will not be disclosed to anyone else.

DO YOUR CIVIC DUTY — VOTE!

- – *Self-Information Treatment.* Give information on own voting record

Dear Registered Voter:

WHO VOTES IS PUBLIC INFORMATION!

Why do so many people fail to vote? We've been talking about the problem for years, but it only seems to get worse.

This year, we're taking a different approach. We are reminding people that who votes is a matter of public record.

The chart shows your name from the list of registered voters, showing past votes, as well as an empty box which we will fill in to show whether you vote in the August 8 primary election. We intend to mail you an updated chart when we have that information.

We will leave the box blank if you do not vote.

DO YOUR CIVIC DUTY—VOTE!

OAK ST	Aug 04	Nov 04	Aug 06
9999 ROBERT WAYNE		Voted	_____
9999 LAURA WAYNE	Voted	Voted	_____

- – *Other-Information Treatment.* Know if neighbors voted!

Dear Registered Voter:

WHAT IF YOUR NEIGHBORS KNEW WHETHER YOU VOTED?

Why do so many people fail to vote? We've been talking about the problem for years, but it only seems to get worse. This year, we're taking a new approach. We're sending this mailing to you and your neighbors to publicize who does and does not vote.

The chart shows the names of some of your neighbors, showing which have voted in the past. After the August 8 election, we intend to mail an updated chart. You and your neighbors will all know who voted and who did not.

DO YOUR CIVIC DUTY — VOTE!

MAPLE DR	Aug 04	Nov 04	Aug 06
9995 JOSEPH JAMES SMITH	Voted	Voted	_____
9995 JENNIFER KAY SMITH		Voted	_____
9997 RICHARD B JACKSON		Voted	_____

- Results:
  - Substantial impacts especially when neighbors get to see
  - All the results are highly statistically significant
  - Results huge given that 1/3 of recipients probably never opened the mailer
  - Impact: Obama campaign considered using this, but decided too risky

TABLE 2. Effects of Four Mail Treatments on Voter Turnout in the August 2006 Primary Election

		Experimental Group			
	Control	Civic Duty	Hawthorne	Self	Neighbors
Percentage Voting	29.7%	31.5%	32.2%	34.5%	37.8%
N of Individuals	191,243	38,218	38,204	38,218	38,201

5 Social Pressure II: Charitable Giving

- **DellaVigna, Malmendier, and List (2012)**

This Paper

- Model of giving with altruism and social pressure
  - Consumer may receive advance notice of fundraiser
  - Consumer can avoid (or seek) fundraiser at a cost
  - Consumer decides whether to give (if at home)
- Field experiment: door-to-door fundraiser
  - Control group: standard fundraiser
  - Flyer Treatment: flyer on doorknob on day before provides advance notice about hour of visit
  - Opt-Out Flyer Treatment: flyer with box “do not disturb”

Flyer Layout with and without Opt-Out

This Paper

- Model of giving with altruism and social pressure
  - Consumer may receive advance notice of fundraiser
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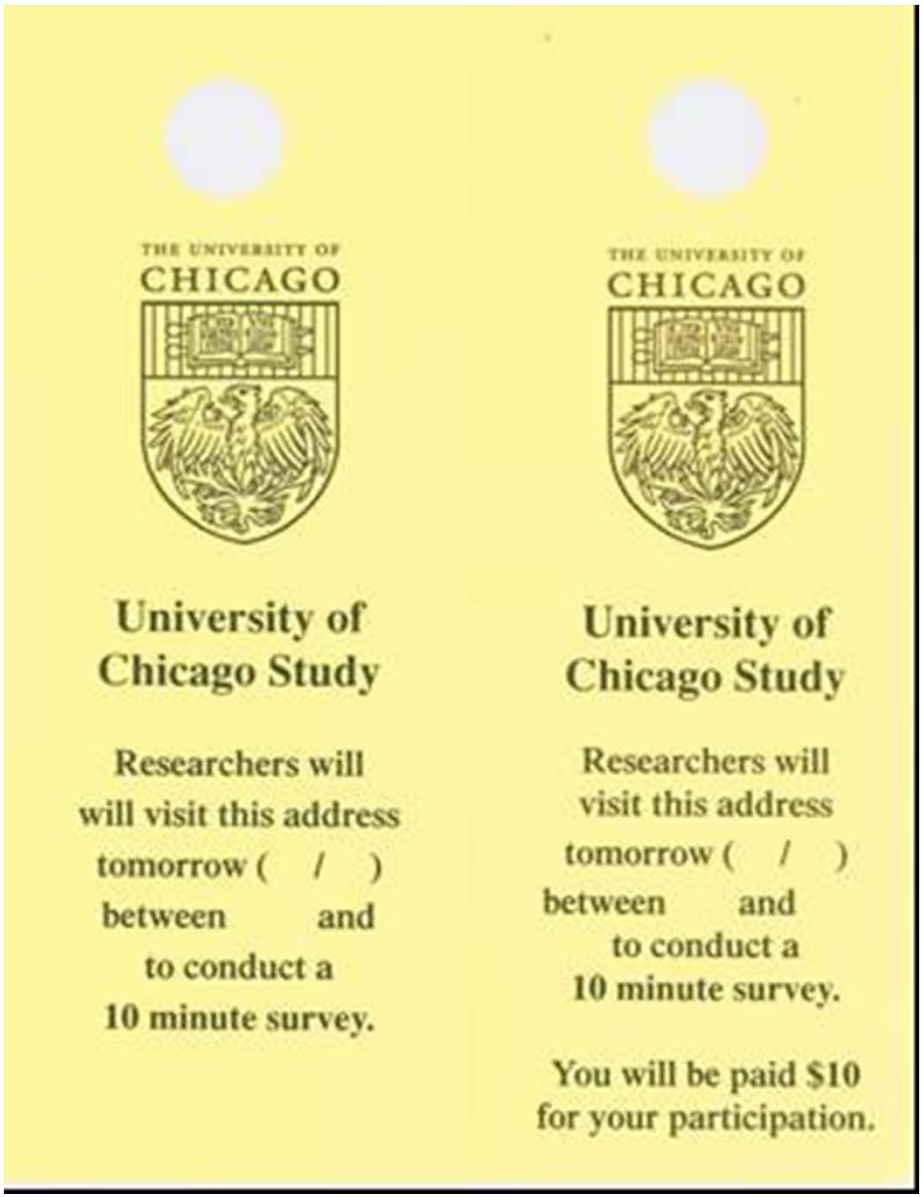
  - Consumer decides whether to give (if at home)
- Field experiment: door-to-door fundraiser
  - Control group: standard fundraiser
  - Flyer Treatment: flyer on doorknob on day before provides advance notice about hour of visit
  - Opt-Out Flyer Treatment: flyer with box "do not disturb"
  - Survey Treatments: Administer surveys with varying payment and duration and with or without flyers → to structurally estimate parameters.

Survey Flyers



THE UNIVERSITY OF CHICAGO

University of Chicago Study

Researchers will will visit this address tomorrow (/) between and to conduct a 10 minute survey.

THE UNIVERSITY OF CHICAGO

University of Chicago Study

Researchers will visit this address tomorrow (/) between and to conduct a 10 minute survey.

You will be paid $10 for your participation.

- **Model**

- Giving game with giver and fund-raiser. Timing:
  - *Stage 1*:
    - No Flyer: Giver at home with probability $h = h_0$
    - Flyer:
      - Giver sees flyer with probability r
      - Can alter probability of being at home h from baseline h_0 at cost $c(h)$, with $c(h_0) = 0$, $c'(h_0) = 0$, and $c''(\cdot) > 0$
  - *Stage 2*:
    - Fund-raiser visits home of giver:
      - If giver at home (w/ prob. h), in-person donation $g^* \geq 0$
      - If saw flyer (w/ prob. r), donation via mail $g_m^* \geq 0$

- Utility function of giver:

$$U(g) = u(W - g - g_m) + av(g + \theta g_m, G_{-i}) - s(g)$$

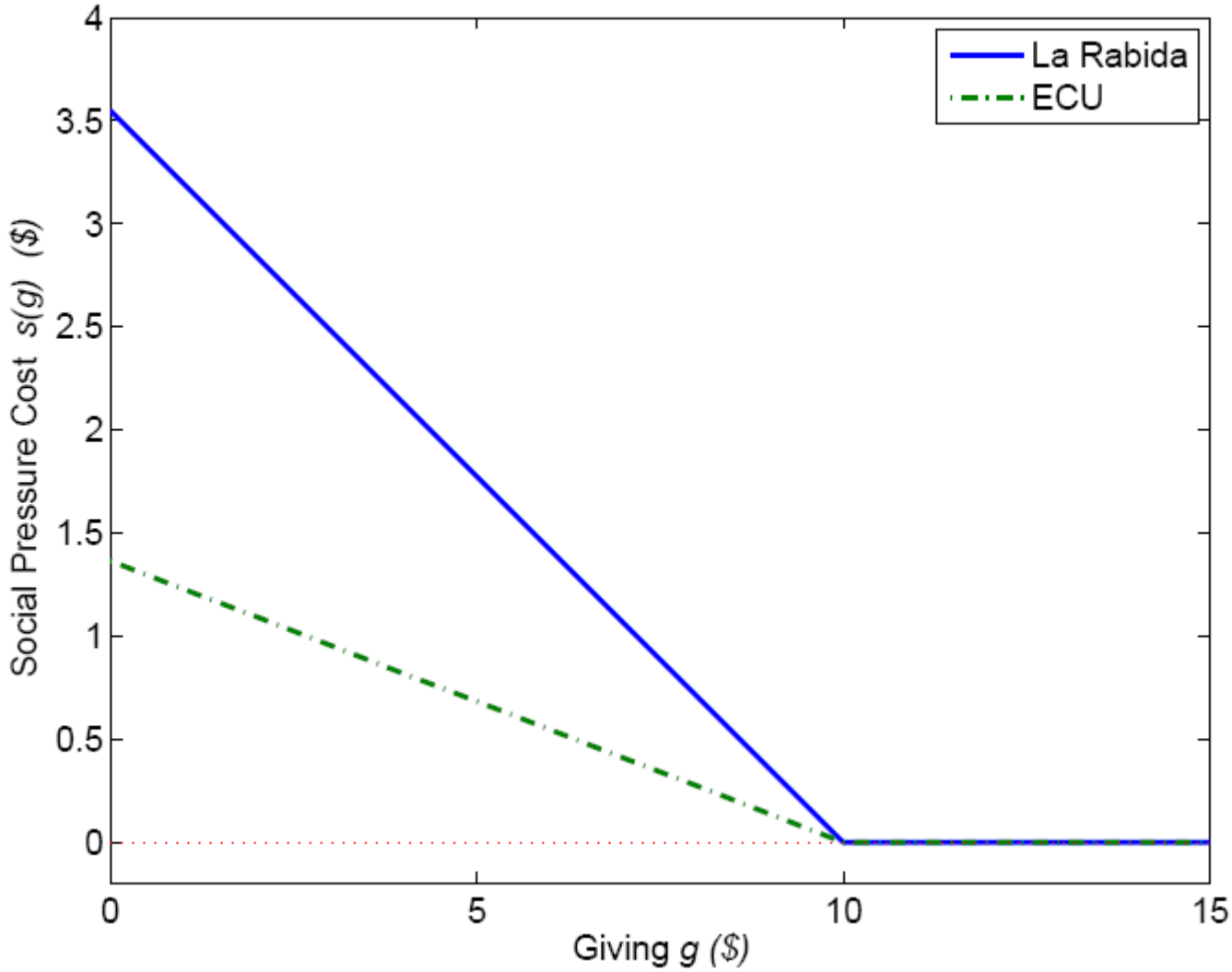
- Agent cares about:
  - Private consumption $u(W - g - g_m)$, with $u'(\cdot) > 0$ and $u''(\cdot) \leq 0$
  - Giving to charity $av(\cdot, G_{-i})$, with $v'_g(\cdot,\cdot) > 0$, $v''_{g,g}(\cdot,\cdot) < 0$, $\lim_{g\to\infty} v'_g(g,\cdot) = 0$, and $v(0, G_{-i}) = 0$.

- Two special cases for $v(g, G_{-i})$:
  - *Pure altruism* (Charness and Rabin 2002, Fehr and Gächter, 2000): $v(g, G_{-i}) = v(g + \theta g_m + G_{-i})$, a is altruism parameter
  - *Warm glow* (Andreoni, 1989 and 1990): $v(g, G_{-i}) = v(g)$, a is weight on warm glow

- Giving via mail is less attractive ($\theta < 1$): less warm glow, cost of giving,...

- Social Pressure $s(g) = S(g^s - g) \cdot \mathbf{1}_{g<g^s} \geq 0$
  - Social pressure $s = 0$ if not at home or if giving $g \geq g^s$ (socially acceptable amount)
  - Social pressure $s > 0$ for giving $g < g^s$, decreasing in g
- Captures identity (Akerlof and Kranton, 2000), social norms, or self-signalling (Bodner and Prelec, 2002; Grossman, 2007)
- Psychology evidence:
  - Tendency to conformity and obedience (Milgram, 1952 and Asch, 1957)
  - Effect stronger for face-to-face interaction

Figure. Social Pressure Cost At Estimated Parameters

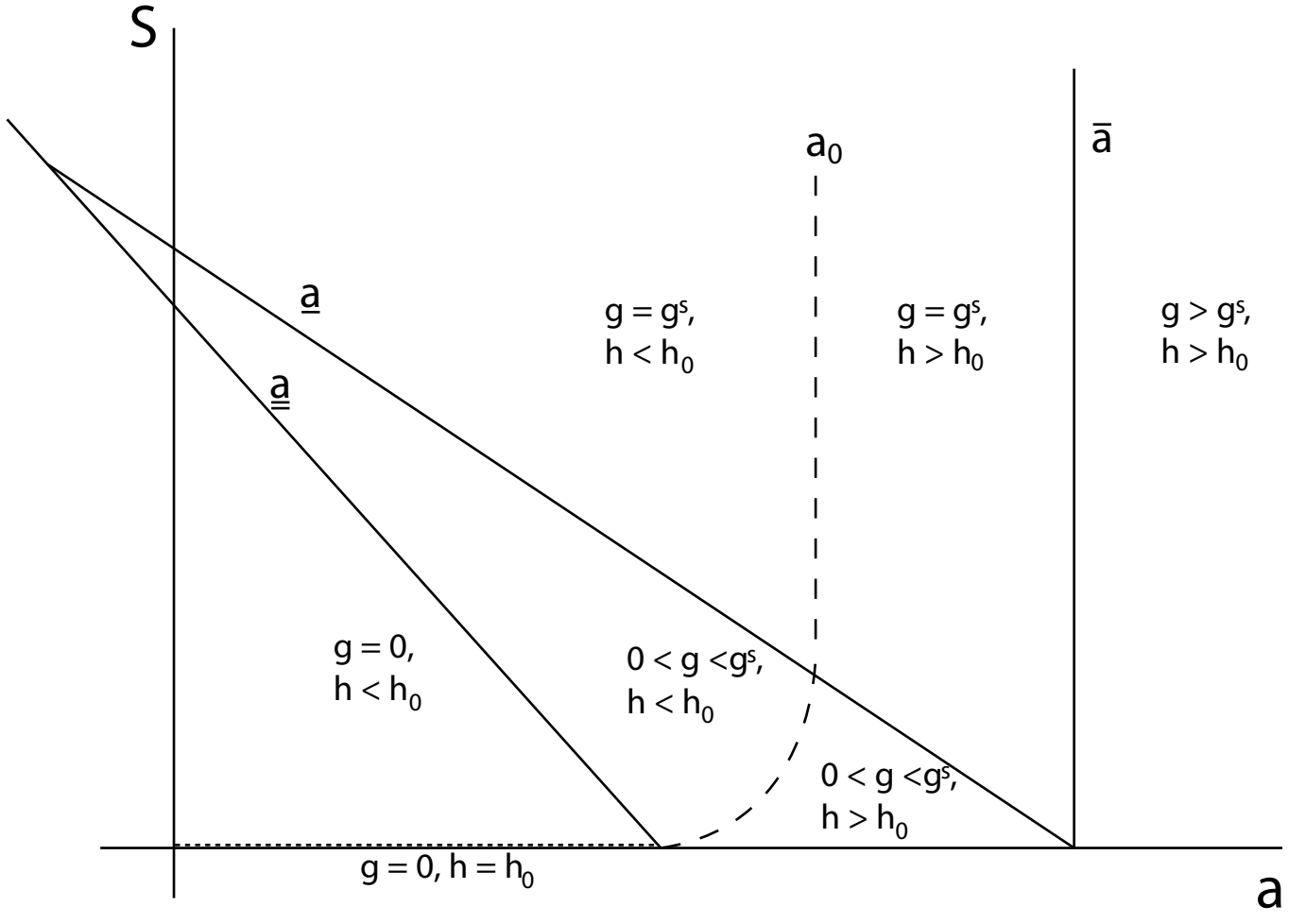


- **Second-stage Maximization (Giving)**

- **Lemma 1a. (Conditional Giving In Person).** *There is a unique optimal donation* $g^*(a, S)$ *(conditional on being at home), which is weakly increasing in* a *and takes the form: (i)* $g^*(a, S) = 0$ *for* $a \leq \underline{\underline{a}}$*; (ii)* $0 < g^*(a, S) < g^s$ *for* $\underline{\underline{a}} < a < \underline{a}$*; (iii)* $g^*(a, S) = g^s$ *for* $\underline{a} \leq a \leq \bar{a}$*; (iv)* $g^*(a, S) > g^s$ *for* $a > \bar{a}$*.*

- No giving via mail when at home

- **Lemma 1b (Conditional Giving Via Mail).** *There is a unique optimal donation via mail* $g_m^*(a)$ *(conditional on not being at home), which is weakly increasing in* a *and takes the form: (i)* $g_m^*(a) = 0$ *for* $a < a_m$*; (ii)* $g_m^*(a) > 0$ *for* $a \geq a_m$*; (iii) for all levels of* a*,* $g_m^*(a) \leq g^*(a; S)$*.*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- **First-Stage Maximization (Presence at Home)**

- Probability of being at home h:
  - **Control (NF) Treatment** $(r = 0)$: Exogenous, $h = h_0$
  - **Flyer (F) Treatment** $(r > 0)$: Choose $h \in [0, 1]$ at cost $c(h)$

- **Lemma 2 (Presence at Home).** *There is a unique optimal probability of being at home* $h^*(a, S)$
  - *For* $S = 0$ *(no social pressure),* $h^*(a, 0) = h_0$ *for* $a \leq \underline{\underline{a}}$ *and* $h^*(a, 0) > h_0$.
  - *For* $S > 0$ *(social pressure),* $h^*(a, S) < h_0$ *for* $a \leq \underline{\underline{a}}$*; there is unique* $a_0(S) \in (\underline{\underline{a}}, \bar{a})$ *such that* $h^*(a_0(S)) = h_0$.

- *Giving due to altruism* –> $h > h_0$ (Seek being at home)

- *Giving due to social pressure* –> $h < h_0$ (Avoid being at home)

- **Opt-Out (O) Treatment**
  - Flyer + Consumers can tell the charity not to disturb
  - Cost of probability of home:

$$C(h) = \begin{cases} 0 & \text{if} \quad h = 0 \\ c(h) & \text{if} \quad h > 0 \end{cases}$$

  - Still costly to remain at home, but no cost to keep charity out
  - (Notice: Never want to set $0 < h < h_0$)

- **Lemma 3 (Opt-Out Decision).** *For $S = 0$ (no social pressure), the agent never opts out for any a. For $S > 0$ (social pressure), the agent opts out for sufficiently low altruism, $a < a_0(S)$.*

- Allow for heterogeneity in altruism a, with $a \sim F$

- Two special cases:
  - *Altruism and No Social Pressure* (*A-NoS*, $S = 0$ and $F\left(\underline{\underline{a}}\right) < 1$)
  - *Social Pressure and Limited Altruism* (*S-NoA*, $S > 0$ and $F\left(\underline{\underline{a}}\right) = 1$)

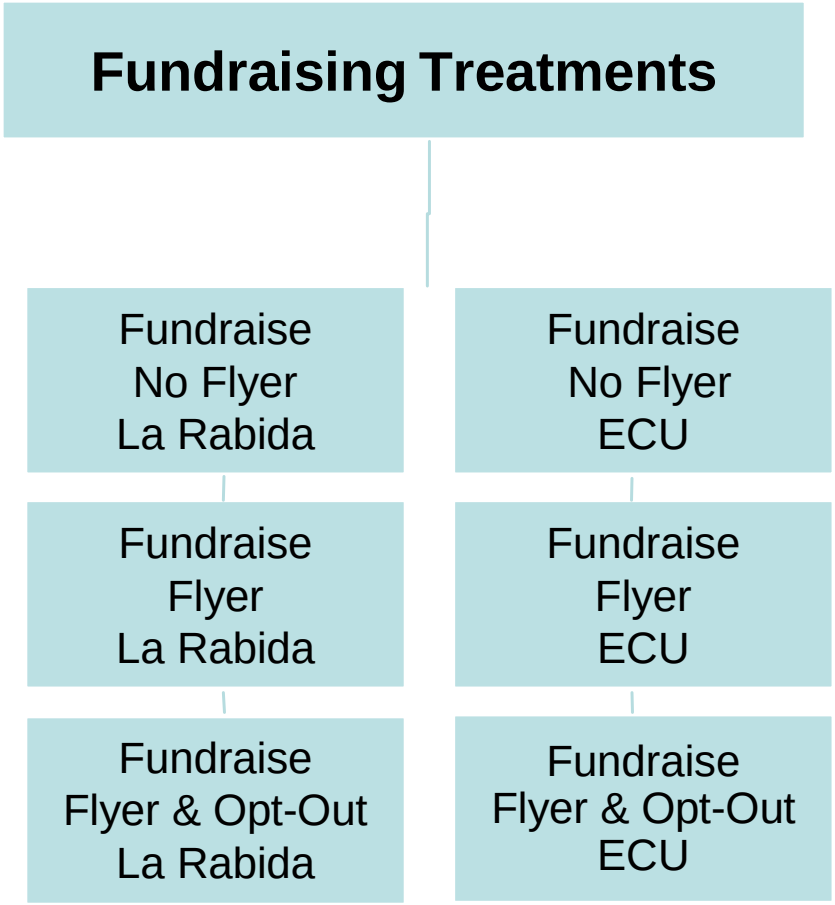
- **Proposition 1.** *The probability* $P(H)$ *of home presence is*
  - *A-NoS:* $P(H)_F = P(H)_{OO} > P(H)_{NF}$
  - *S-NoA:* $P(H)_{NF} > P(H)_F > P(H)_{OO}$

- **Proposition 2.** *The unconditional probability* $P(G)$ *of giving is*
  - *A-NoS:* $P(G)_F = P(G)_{OO} > P(G)_{NF}$
  - *S-NoA:* $P(G)_{NF} > P(G)_F > P(G)_{OO}$

Experimental Design

- Fund-raising for two charities:
  - La Rabida Children's Hospital in Chicago
  - East Carolina Hazard Center (ECU)
  - Ask survey respondents to rank 5 charities:
    - La Rabida – Rank 3.95 (out of 5)
    - Donate Life – Rank 3.79
    - Seattle Children's Hospital – Rank 3.47
    - Chicago Historical Society – Rank 2.96
    - ECU – Rank 2.54

- Door-to-Door (DTD) Fund-raising
  - How Common? Survey with 177 respondents
    - 73% had DTD visit in past 12 months (84% for phone)
    - 40% gave at least once in past 12 months (27% for phone)
    - Amount given (cap at $1,000) $26 for DTD ($59 for phone)
  - Summary: Common method, Small amounts given


Fundraising Treatments
Fundraise
No Flyer
La Rabida
Fundraise
Flyer
La Rabida
Fundraise
Flyer & Opt-Out
La Rabida
Fundraise
No Flyer
ECU
Fundraise
Flyer
ECU
Fundraise
Flyer & Opt-Out
ECU

Experimental Design

- Recruitment and Training: 48 solicitors and surveyors
  - undergraduate students at the University of Chicago, UIC, and Chicago State University
  - Interviewed, trained at UoC
  - aware of different charities but not of treatment
- Time and Place:
  - Saturdays and Sundays between April, 2008 and October, 2008
  - Hours between 10am and 5pm
  - Towns around Chicago: Burr Ridge, Flossmoor, Kenilworth, Lemont, Libertyville, Oak Brook, Orland Park, Rolling Meadows, and Roselle
- Randomization
  - within a solicitor-day observations (4h/6h shifts per day) and
  - at the street level within a town
- Different treatments in different periods ➔ randomization is conditional on solicitor and day fixed effects

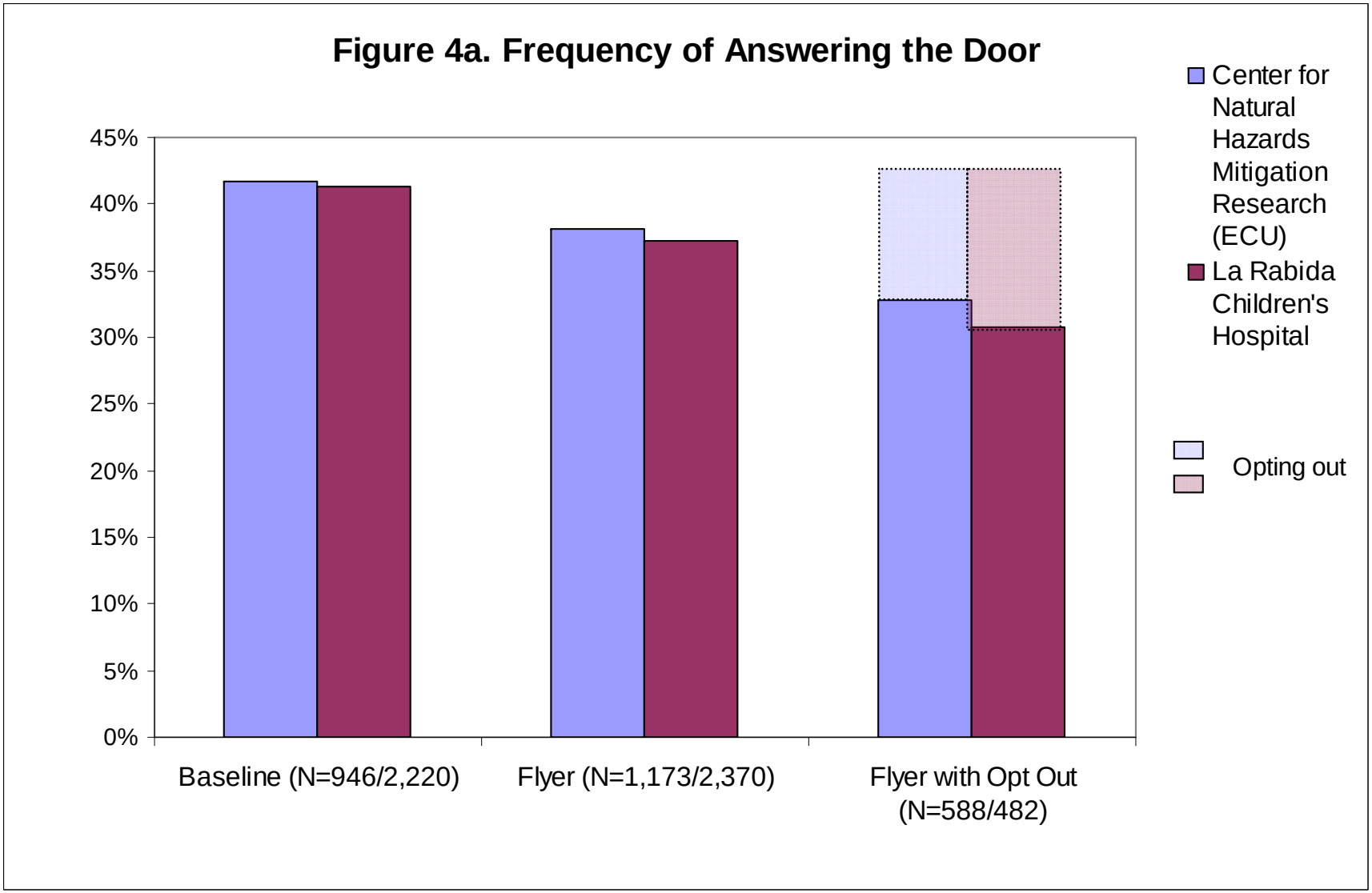


Figure 4a. Frequency of Answering the Door
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
Baseline (N=946/2,220)
Flyer (N=1,173/2,370)
Flyer with Opt Out (N=588/482)
Center for Natural Hazards Mitigation Research (ECU)
La Rabida Children's Hospital
Opting out

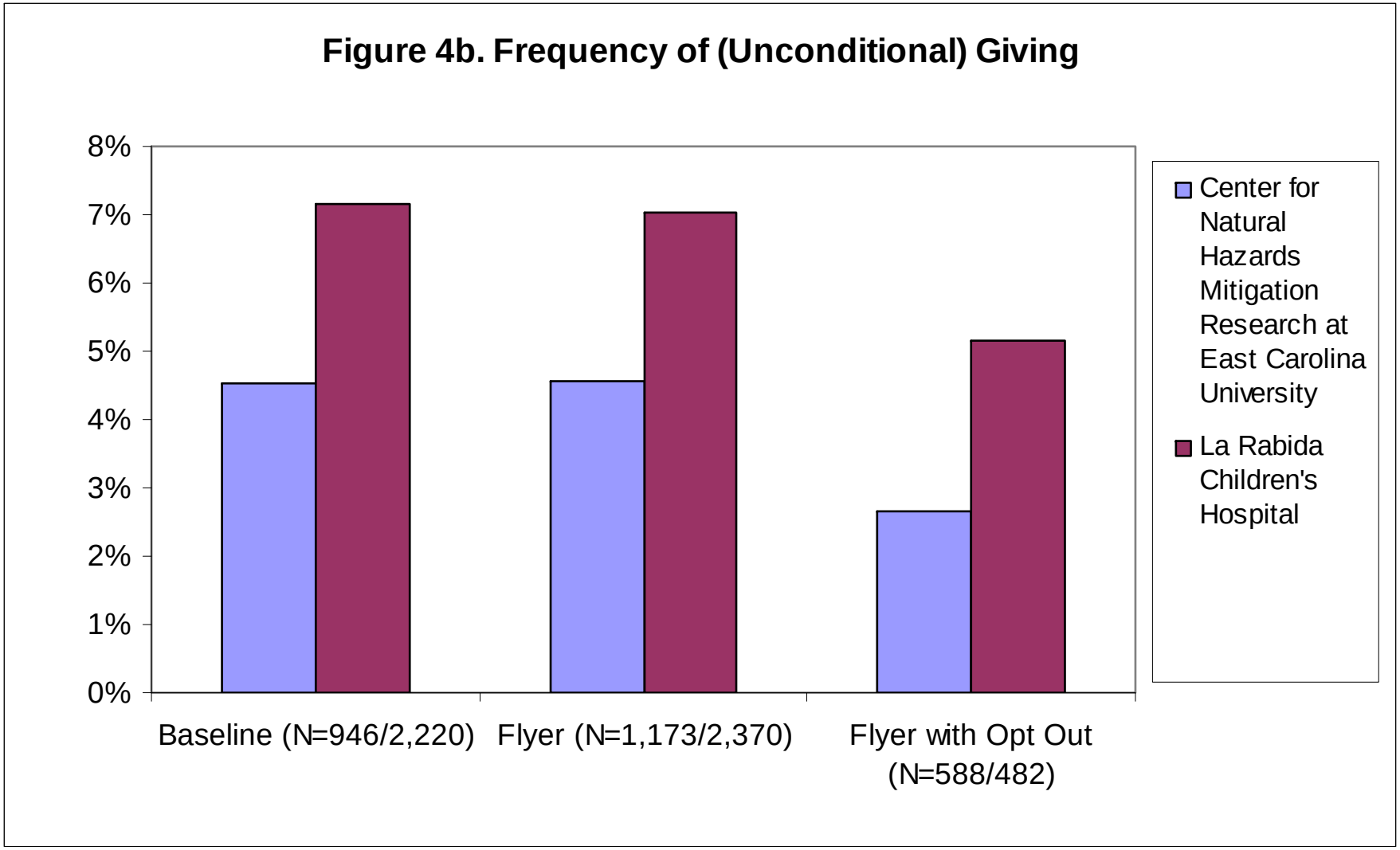


Figure 4b. Frequency of (Unconditional) Giving
8%
7%
6%
5%
4%
3%
2%
1%
0%
Baseline (N=946/2,220)
Flyer (N=1,173/2,370)
Flyer with Opt Out (N=588/482)
Center for Natural Hazards Mitigation Research at East Carolina University
La Rabida Children's Hospital

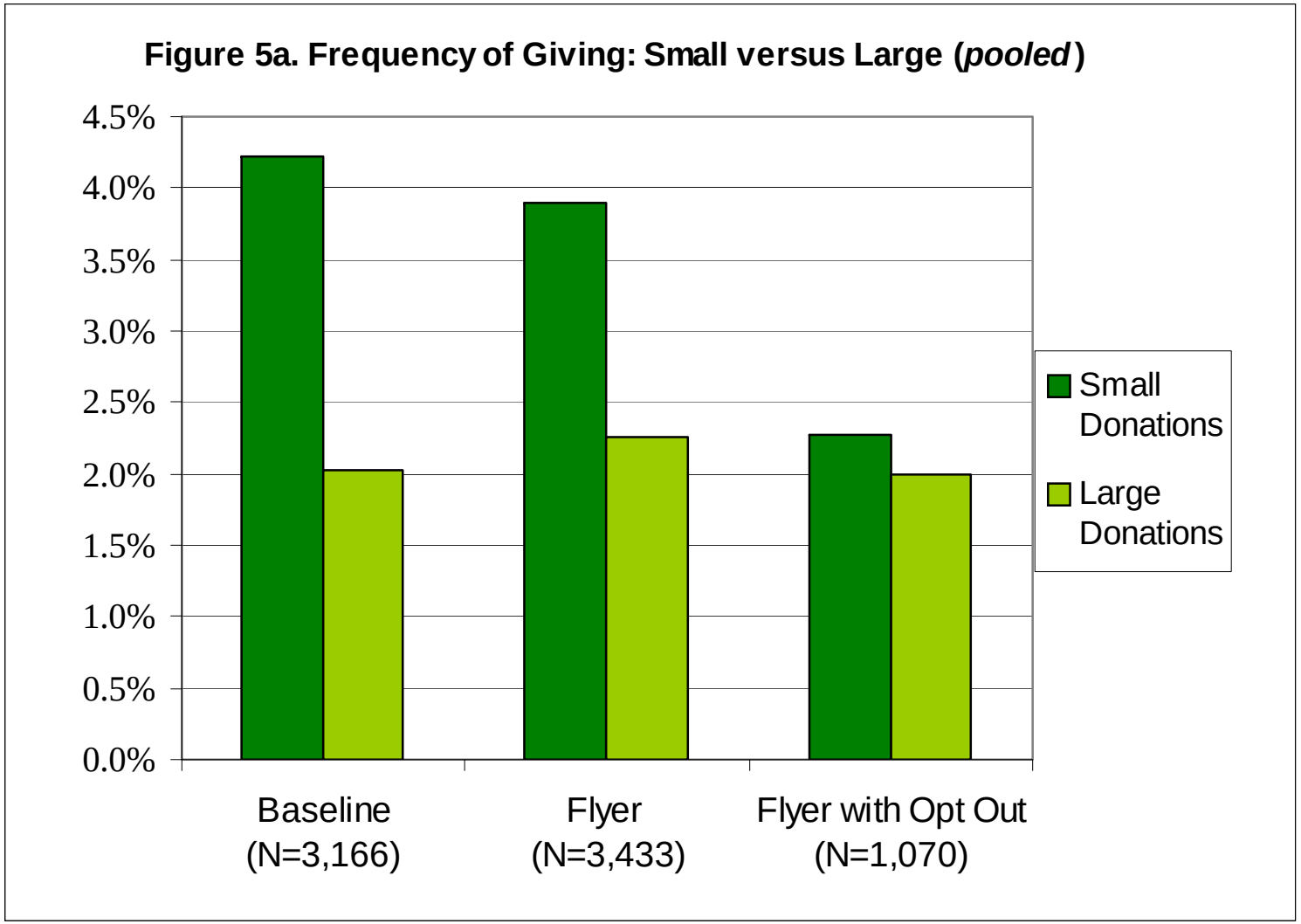
Table 2. Results for Fund-Raising Treatments

Specification:	OLS Regressions			
Dep. Var.:	Indicator for Answering the Door		Indicator for Giving	
	(1)	(2)	(3)	(4)
Flyer Treatment	-0.0388 (0.0137)***		-0.0009 (0.0062)	
Flyer with opt out Treatment	-0.0966 (0.0193)***		-0.0197 (0.0083)**	
Flyer Treatment * ECU Charity		-0.0365 (0.0313)		0.0006 (0.0094)
Flyer with opt out * ECU Charity		-0.089 (0.0271)***		-0.0183 (0.0100)*
Flyer Treatment * La Rabida Charity		-0.0396 (0.0144)***		-0.0019 (0.0078)
Flyer with opt out * La Rabida Charity		-0.106 (0.0319)***		-0.0202 (0.0132)
Indicator ECU Charity		0.0041 (0.0234)		-0.0263 (0.0085)***
Omitted Treatment	No-Flyer	No-Flyer, La Rabida	No-Flyer	No-Flyer, La Rabida
Mean of Dep. Var. for Omitted Treatment	0.4151	0.413	0.0629	0.0717
Fixed Effects for Solicitor, Date-Location, Hour, and Area Rating	X	X	X	X
N	N = 7668	N = 7668	N = 7668	N = 7668

•**Evidence by Donation Size:**

Social pressure more likely to yield small donations

Use median donation size ($10) as cut-off point



Survey Treatments

- Results of fundraiser do not easily allow the estimation of altruism and social pressure parameters
  - Unobserved cost of adjustment *c(h)*
- Solution: estimate elasticity with respect to monetary incentives
- Survey treatments with varying compensation and duration
- Treatments run in 2008 and 2009

Experimental Treatments Run in 2008

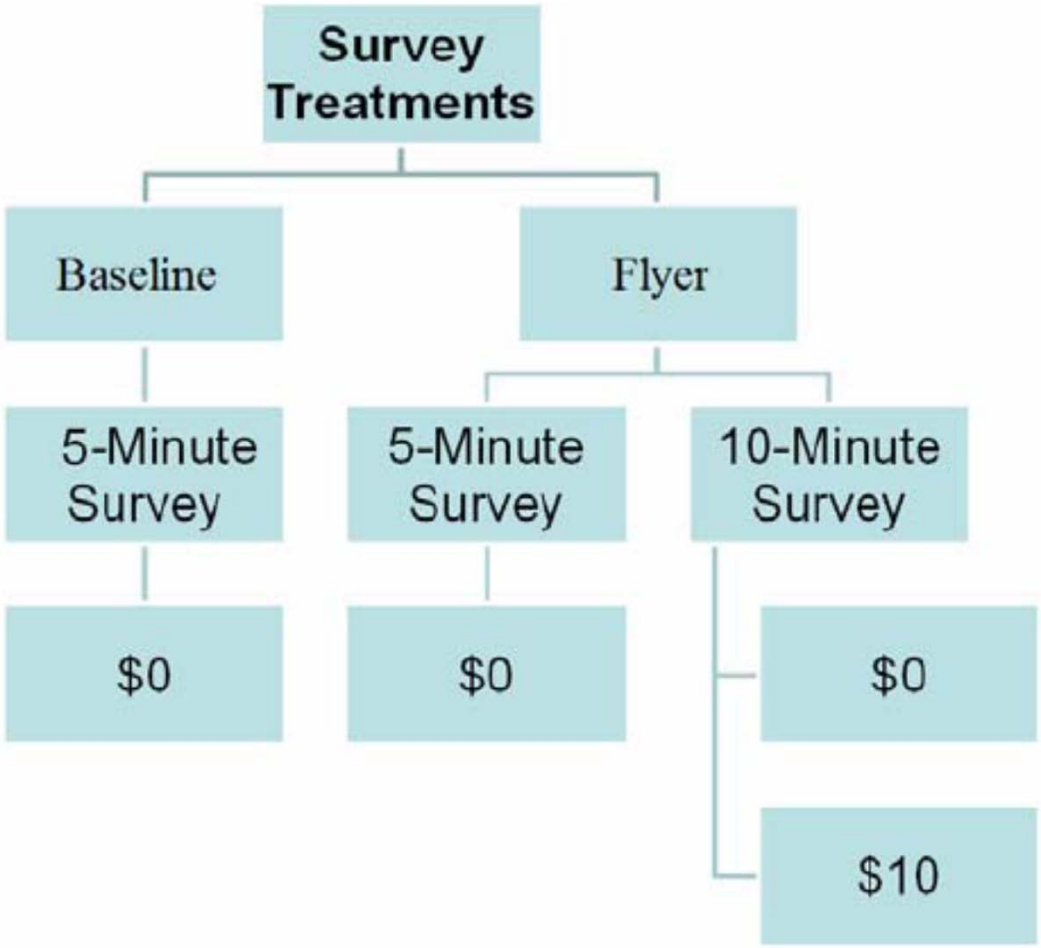
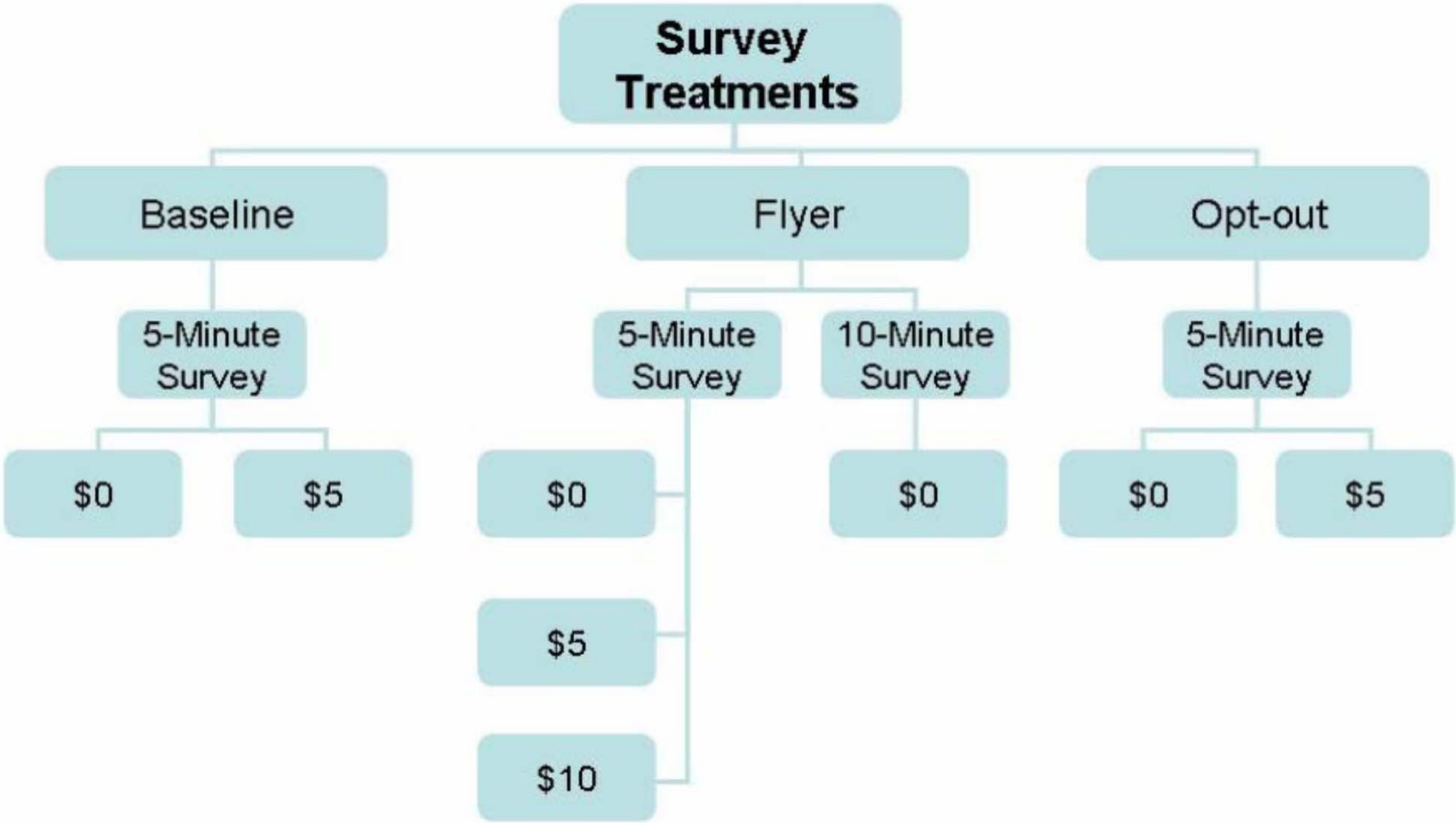
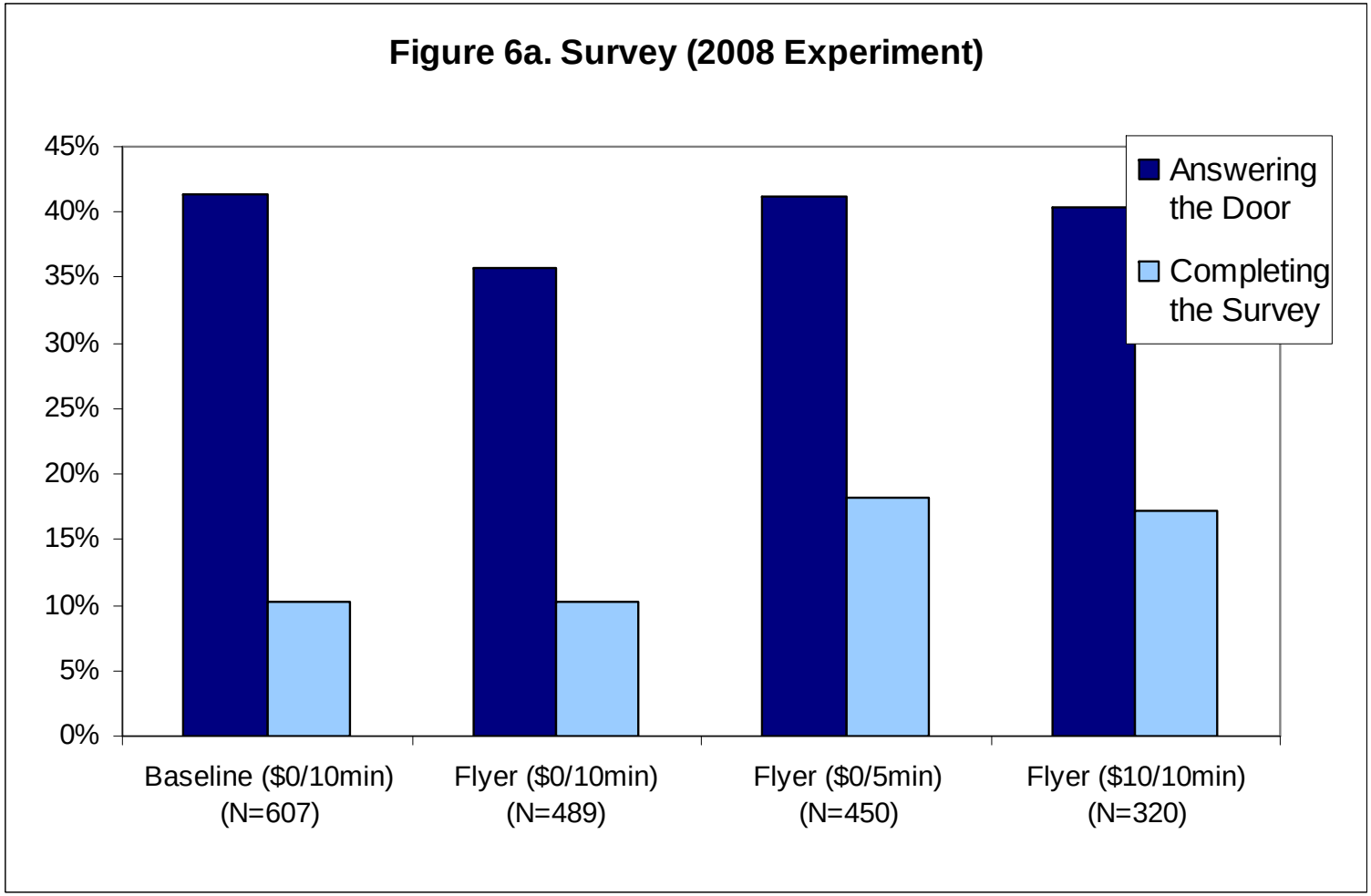


Figure 2b. Summary of Door-to-Door Experimental Treatments Run in 2009



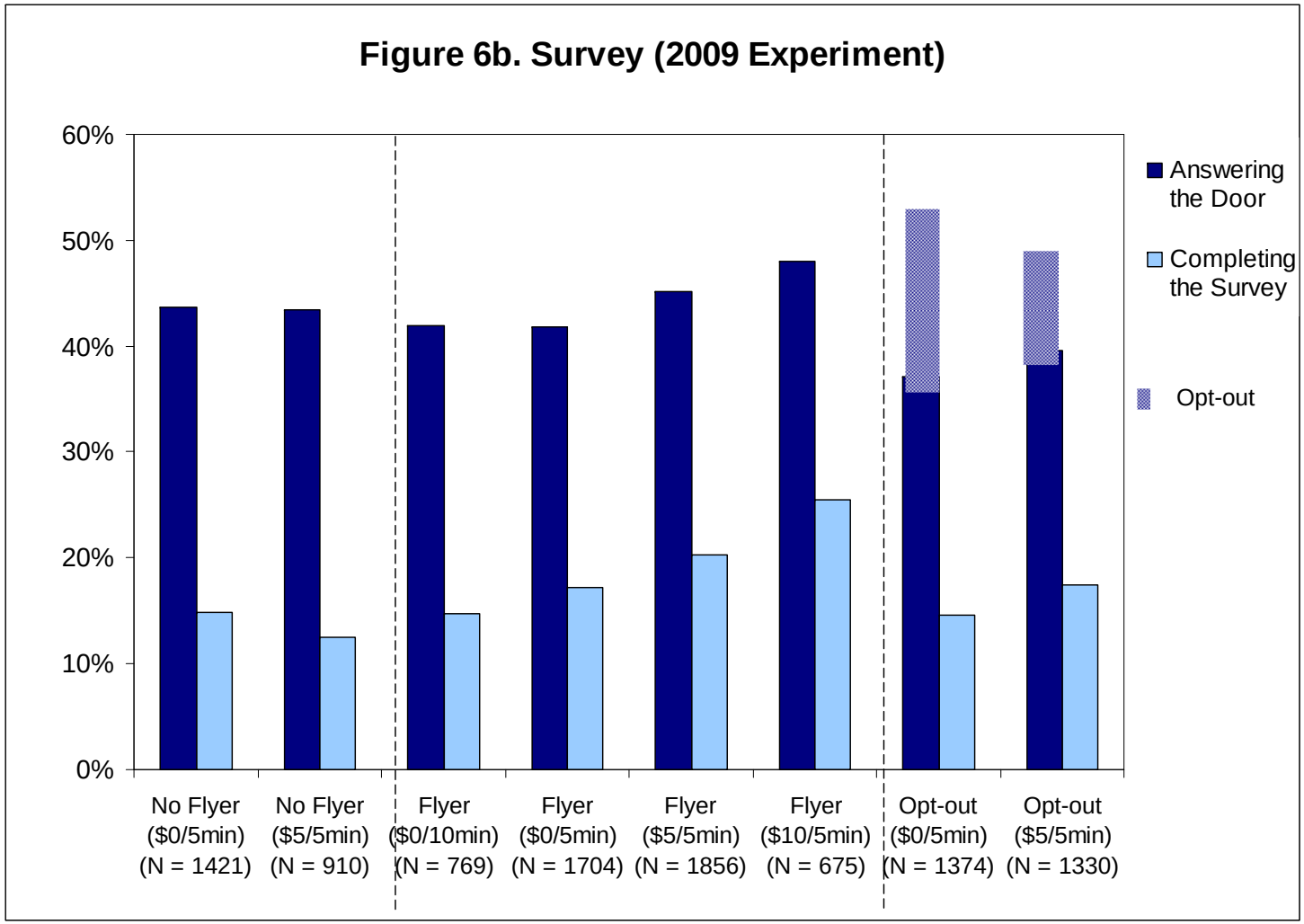


•**Survey Results (2008, N = 1865)**

Higher payment (lower duration)

increases proportion at home by 10% (insig.)

increases survey completion by 70% (significant)



- **Survey Results (2009, N = 10,032)**

Higher payment (lower duration)

increases proportion at home monotonically

increases survey completion monotonically (except in NF)

- **Structural estimates (Minimum-distance estimator)**

- Minimize distance between predicted moments $m(\vartheta)$ and observed ones $\hat{m}$:

$$\min_{\vartheta} (m(\vartheta) - \hat{m})' W (m(\vartheta) - \hat{m})$$

- Moments $m(\vartheta)$:
  1. Probability of opening the door $(P(H)_j^c,\ j = F, NF, OO,\ c = LaR, Ecu)$
  2. Probability of checking opt-out box $(P(OO)_{OO}^c,\ c = LaR, Ecu)$
  3. Probability of giving at all, and giving an amount range $(P(G)_j^c,\ j = F, NF, OO,\ c = LaR, Ecu)$
  4. Probability of opening door in survey $(P(H)_j^S)$
  5. Probability of filling survey $(P(S)_j^S)$

- Weighting matrix W diagonal of inverse of variance-covariance matrix

- Parametric assumption to estimate the model:
  1. Consumption utility linear: $u(W-g) = W - g$
  2. Altruism function $av(g, G_{-i}) = a \log(G+g)$
  3. Altruism a is distributed $N(\mu, \sigma)$
  4. Acceptable donation $g^S =$ \$10 (median)
  5. Cost function $c(h) = (h - h_0)^2 / 2\eta$
  6. No mail giving ($\theta = 0$)

- Marginal utility of giving: $a/(G+g) - 1$

- Parameters ϑ:
  1. h_0^{2008} and h_0^{2009}—probability of being at home in no-flyer conditions
  2. r—probability of observing and remembering the flyer
  3. η—responsiveness of the probability of being at home to the utility of being at home
  4. μ_a^c $(c = LaR, Ecu)$—mean of the distribution F of the altruism α
  5. σ_α^c $(c = LaR, Ecu)$—standard deviation of $F(\alpha)$
  6. G—curvature of altruism/warm glow function
  7. S^c $(c = LaR, Ecu)$—social pressure associated with not giving
  8. μ^S—mean of the distribution F^S from which the utility of the survey is drawn
  9. σ^S—standard deviation of F^S
  10. S^S—social pressure associated with saying no
  11. v^S—value of an hour of time completing a survey

- Identification:
  - Prob. being at home h_0 <– Control group
  - Prob. seeing flyer r <– Share opting out
  - Utility of doing survey μ^S and σ^S <– Share completing survey
  - Value of time v^S <– Comparison of effect of \$10 payment and 5 minute duration
  - Elasticity of home presence η <– Share opening door in survey for different payments + Giving in charity
  - Altruism parameters μ^c, σ^c, G <– Given η, share giving different amounts
  - Social pressure parameters S^i and S^S <– Share opening door and giving

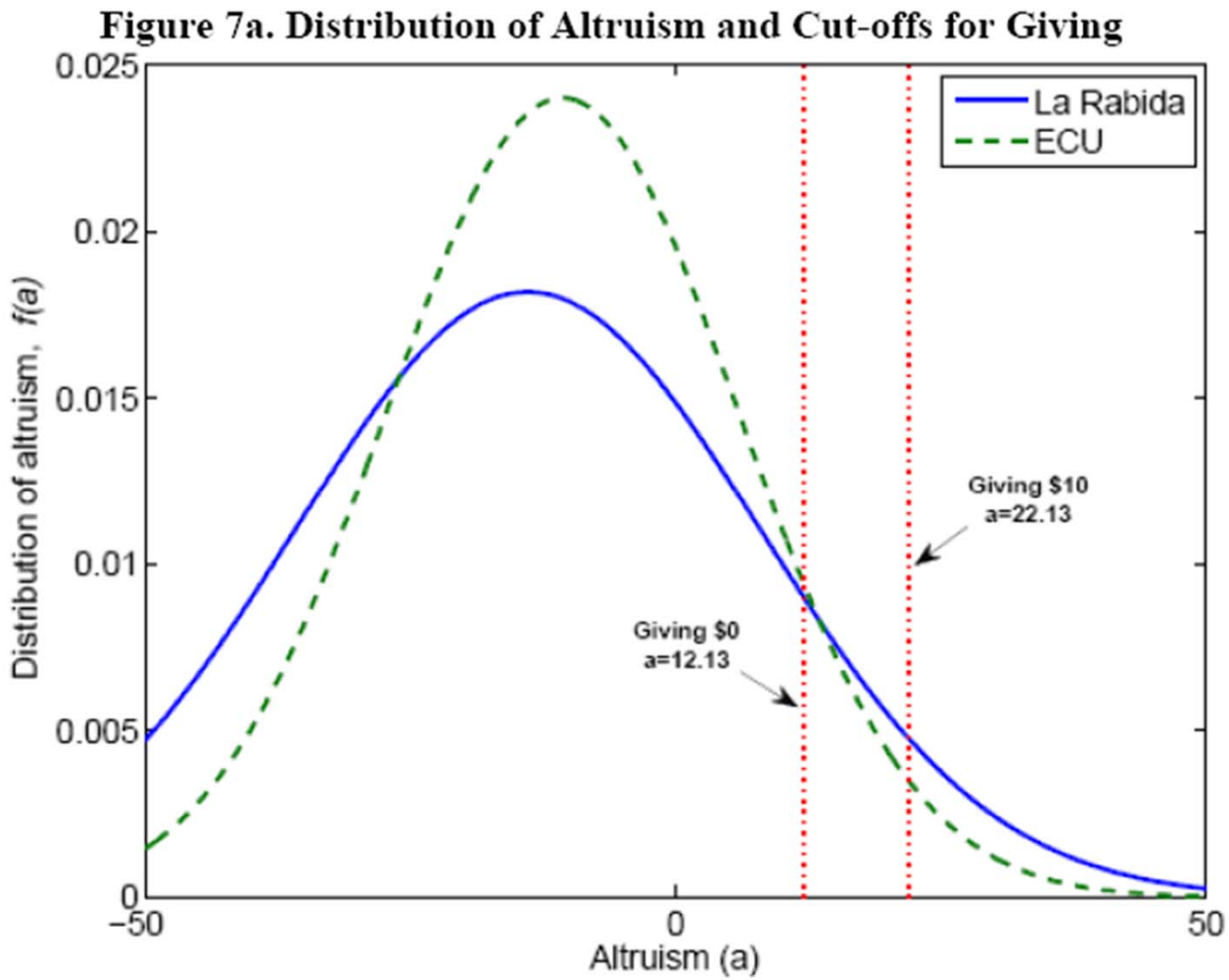
Appendix Table 1. Empirical Moments and Estimated Moments

Specification:	Minimum-Distance Estimates			
Charity	La Rabida Charity		ECU Charity	
Moments for Charity	Empirical Moments	Estimated Moments	Empirical Moments	Estimated Moments
Moments	(1)	(2)	(3)	(4)
P(Home) No Flyer	0.4130	0.4142	0.4171	0.4142
P(Home) Flyer	0.3733	0.3735	0.3806	0.3983
P(Home) Opt-Out	0.3070	0.2989	0.3281	0.2911
P(Opt Out) Opt-Out	0.1202	0.1142	0.0988	0.1179
P(Giving) No Flyer	0.0717	0.0666	0.0455	0.0422
P(Giving) Flyer	0.0699	0.0710	0.0461	0.0449
P(Giving) Opt-Out	0.0515	0.0633	0.0272	0.0390
Additional Moments (not shown)				
P(0<Giving<10), P(Giving=10), P(10<Giving<=20), P(20<Giving<=50), P(Giving>50) in Treatments NF, F, OO	X	X	X	X
N	N = 4962	N = 4962	N = 2707	N = 2707

Table 4. Minimum-Distance Estimates: Benchmark Results

	Benchmark Estimates		Estimates with Identity Weighting Matrix	
Common Parameters	(1)		(2)	
Prob. Answering Door (h) - Year 2008	0.414		0.414	
	(0.004)		(0.006)	
Prob. Answering Door (h) - Year 2009	0.449		0.445	
	(0.007)		(0.008)	
Prob. Observing Flyer (r)	0.322		0.302	
	(0.011)		(0.012)	
Elasticity of Home Presence (eta)	0.047		0.060	
	(0.014)		(0.031)	
Implied Cost of Altering Prob. Home by 10 pp.	0.106		0.083	
Survey Parameters				
Mean Utility (in $) of Doing 10-Minute Survey	-26.865		-26.936	
	(4.233)		(5.509)	
Std. Dev. of Utility of Doing Survey	30.285		30.332	
	(5.208)		(6.303)	
Value of Time of One-Hour Survey	74.580		76.761	
	(22.901)		(26.130)	
Social Pressure Cost of Saying No to Survey	4.784		3.869	
	(1.285)		(1.918)	
Charity Parameters	La Rabida	ECU	La Rabida	ECU
Mean Weight on Altruism Function (mu)	-13.910	-10.637	-13.586	-15.109
	(3.250)	(4.273)	(9.481)	(10.919)
Std. Dev. of Weight on Altruism Function	21.935	16.620	19.832	19.832
	(1.335)	(1.832)	(3.885)	(3.998)
Curvature of Altruism Function (G)	12.133		12.224	
	(5.147)		(15.518)	
Social Pressure Cost of Giving 0 in Person	3.550	1.364	3.140	1.906
	(0.615)	(0.744)	(1.674)	(1.475)

Implied distribution of altruism

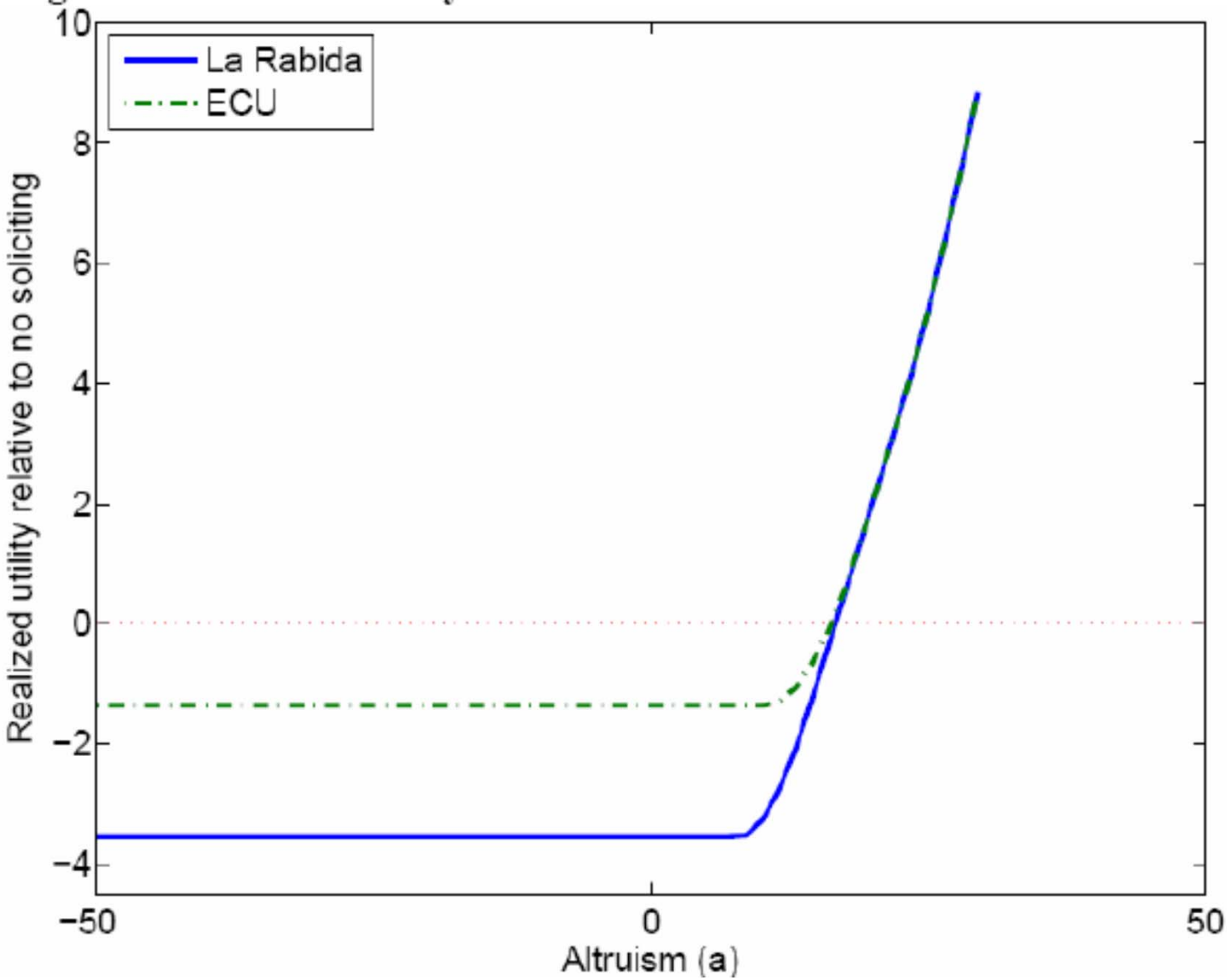


Marginal utility of giving (for $S = 0$) is $a/(G+g)-1$

Hence, give $g > 0$ if $a > G=12.13$

Welfare: Does a fund-raiser increase utility for the giver?

Figure 7b. Overall Utility of Fund-Raiser as function of Altruism



Welfare

1. Low-altruism households pay social pressure cost
2. High-altruism households get benefit
3. Since the former dominate, on net negative welfare for solicitee

Panel C. Welfare	**La Rabida Charity**	**ECU Charity**
Welfare in Standard (No-Flyer) Fund-Raiser		
Welfare per Household Contacted (in $)	-1.077 (0.160)	-0.439 (0.286)
Money Raised per Household Contacted	0.722 (0.036)	0.332 (0.046)
Money Raised per Household, Net of Salary	0.247 (0.036)	-0.143 (0.046)

- Societal welfare effect can still be positive if money used very well
  But amount of money raised small (negative for ECU)

Flyer and opt-out treatment increase solicitee welfare

Can also raise charity welfare (i.e., net fund-raising)

Panel C. Welfare	**La Rabida Charity**	**ECU Charity**
Welfare in Standard (No-Flyer) Fund-Raiser		
Welfare per Household Contacted (in $)	-1.077 (0.160)	-0.439 (0.286)
Money Raised per Household Contacted	0.722 (0.036)	0.332 (0.046)
Money Raised per Household, Net of Salary	0.247 (0.036)	-0.143 (0.046)
Welfare in Fund-Raiser with Flier		
Welfare per Household Contacted (in $)	-0.924 (0.145)	-0.404 (0.273)
Money Raised per Household Contacted	0.859 (0.044)	0.333 (0.046)
Money Raised per Household, Net of Salary	0.248 (0.044)	-0.278 (0.046)
Welfare in Fund-Raiser with Opt-out		
Welfare per Household Contacted (in $)	-0.586 (0.085)	-0.248 (0.196)
Money Raised per Household Contacted	0.810 (0.045)	0.369 (0.055)
Money Raised per Household, Net of Salary	0.294 (0.036)	-0.147 (0.046)

6 Next Lecture

- Signalling
- Non-standard Beliefs
- Overconfidence
- Projection Bias