Econ 219B
Psychology and Economics: Applications
(Lecture 7)

Stefano DellaVigna

April 9, 2014

Outline

1. Social Preferences: Introduction
2. Social Preferences: Workplace I
3. Social Preferences: Gift Exchange
4. Methodology: Field Experiments
5. Social Preferences: Charitable Giving

1 Social Preferences: Introduction

- **Charness-Rabin (QJE, 2002)**
- Simplified model of preferences of s (self) when interacting with o (other):

$$\begin{aligned}(1-\rho)\pi_s + \rho\pi_o \text{ if } \pi_s &> \pi_o \\ (1-\sigma)\pi_s + \sigma\pi_o \text{ if } \pi_s &< \pi_o.\end{aligned}$$

- Captures:
  - selfishness ($\rho = \sigma = 0$)
  - baseline altruism (if $\rho = \sigma > 0$)
  - full altruism ($\rho = \sigma = 1/2$)
  - differentially so if ahead or behind ($\rho > \sigma$)
  - inequity aversion (**Fehr-Schmidt QJE, 1999,** $\rho > 0 > \sigma$)

- Dictator Game. Have $10 and have to decide how to share
- **Forsythe et al. (GEB, 1994)**: sixty percent of subjects transfers a positive amount.
- Transfer $5 if

$$\begin{aligned} \rho 5 + (1-\rho)5 &= 5 \geq \rho 0 + (1-\rho)10 \text{ ->} \rho \geq 1/2 \text{ and} \\ \sigma 5 + (1-\sigma)5 &\geq \sigma 10 + (1-\sigma)0 \text{ ->} \sigma \leq 1/2 \end{aligned}$$

- Transfer $5 if

$$\begin{aligned} \rho &\geq .5 \text{ ->} \text{ Prefer giving \$5 to giving \$0} \\ .5 &\geq \sigma \text{ ->} \text{ Prefer giving \$5 to giving \$10} \end{aligned}$$

- Dictator game behavior consistent with inequity aversion

- Taking this to field data? Hard
- **Charitable giving.**
- Qualitative Patterns consistent overall with social preferences:
  - 240.9 billion dollars donated to charities in 2002 (Andreoni, 2006)
  - 2 percent of GDP
- Quantitative patterns, however: Hard to fit with models of social preferences from the lab

- Issue 1:
  - Person s with disposable income M_s meets needy person o with income $M_o < M_s$
  - Person s decides on donation D
  - Assume parameters $\rho \geq .5 \geq \sigma$
  - This implies $\pi_s^* = \pi_s^*$ –> $M_o - D^* = M_s + D^*$ –> $D^* = (M_s - M_o)/2$
  - Wealthy person transfers half of wealth difference!
  - Clearly counterfactual

- Issue 2.
  - Lab: n subjects, with n small
  - Field: Millions of needy people. Public good problem
- Issue 3.
  - Lab: Forced interaction.
  - Field: Sorting – can get around, or look for, occasions to give

- In addition to payoff-based social preferences, intentions likely to matter
  - ρ and σ higher when s treated nicely by o
  - Model intentions of o
  - Positive reciprocity: Respond to being treated nicely
  - Negative reciprocity: Respond to being treated unfairly
  - More evidence of the latter in lab experiments

2 Social Preferences: Workplace

- First, *horizontal social preferences* in the workplace:
  - Do employees care for other employees?
  - Baseline altruism model
- Then, *vertical social preferences* in the workplace:
  - Do employees care for their employer?
  - Inequity aversion and reciprocity models

- **Bandiera-Barankay-Rasul (QJE, 2005)**
  - Impact of relative pay versus piece rate on productivity
- Standard model:
  - *Piece rate:* Worker i maximizes

$$\max_{e_i} pe_i - c(e_i)$$

  - Solution:

$$e_{iP}^* = c'^{-1}(p)$$

  - *Relative pay*: Worker i maximizes

$$\max_{e_i} pe_i - \gamma \sum_{j \neq i} \frac{e_j}{I-1} - c(e_i)$$

  - Solution

$$e_{iRP}^* = e_P^* = c'^{-1}(p)$$

- Model with simple altruism:

$$U_i = u_i + \alpha \sum_{j \neq i} u_j$$

  - *Piece rate*: Worker maximizes

$$\max_{e_i} pe_i - c\left(e_i\right) + \alpha \sum_{j \neq i} \left[pe_j - c\left(e_j\right) \right]$$

  - Same solution as with $\alpha = 0$
  - *Relative pay*: Worker i maximizes

$$\max_{e_i} pe_i - \gamma \sum_{j \neq i} \frac{e_j}{I-1} - c\left(e_i\right) + \alpha \sum_{j \neq i} \left[pe_j - \gamma \sum_{q \neq j} \frac{e_q}{I-1} - c\left(e_j\right) \right]$$

  - Solution

$$c'\left(e_{iRP}^*\right) = p - \alpha\gamma\left(I-1\right) \text{ -> } e_{iRP}^* < e_{iP}^*$$

- Test for impact of social preferences in the workplace
  - Does productivity increase when switching to piece rate?
- Use personnel data from a fruit farm in the UK
- Measure productivity as a function of compensation scheme
- Timeline of quasi-field experiment:
  - First 8 weeks of the 2002 picking season –> Fruit-pickers compensated on a relative performance scheme
    - Per-fruit piece rate is decreasing in the average productivity.
    - Workers that care about others have incentive to keep the productivity low
  - Next 8 weeks –> Compensation switched to flat piece rate per fruit
  - Switch announced on the day change took place

- Dramatic 50 percent increase in productivity

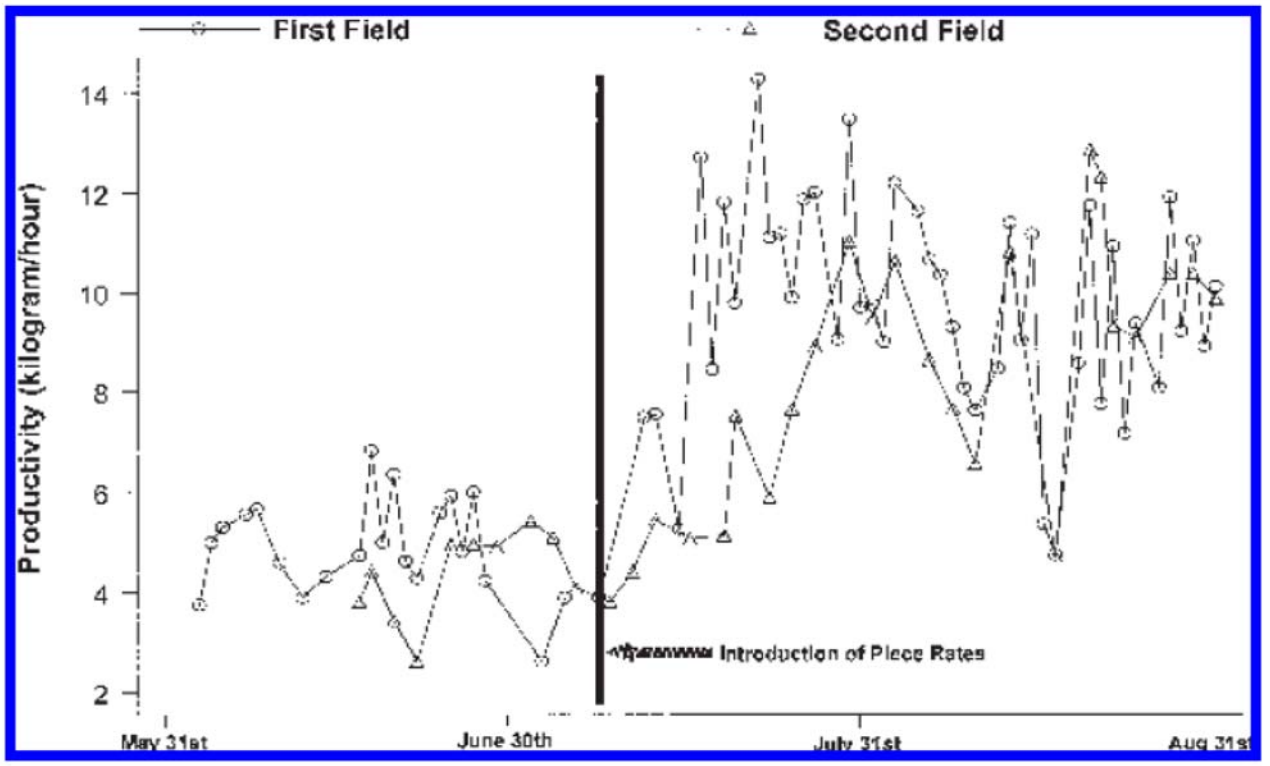


FIGURE I
Productivity (kilogram/hour) over the Season

- No other significant changes

	Relative incentives	Piece rates	Difference
Worker productivity (kg/hr)	5.01	7.98	
	(.243)	(.208)	2.97***
	[4.53, 5.49]	[7.57, 8.39]	
Kilos picked per day	Confidential		23.2***
Hours worked per day	Confidential		−.475
Number of workers in same field	41.1	38.1	−3.11
	(2.38)	(1.29)	
Daily pay	Confidential		1.80
Unit wage per kilogram picked	Confidential		−.105***

*** denotes significance at 1 percent. Sample sizes are the same as those used for the productivity regressions. Standard errors and confidence intervals take account of the observations being clustered by field-day. Productivity is measured in kilograms per hour. Daily pay refers to pay from picking only. Both daily pay and the unit wage per kilogram picked are measured in UK Pounds Sterling. Some information in the table cannot be shown due to confidentiality requirements.

- Is this due to response to change in piece rate?
  - No, piece rate went down –> Incentives to work less (susbt. effect)

- Results robust to controls
- Results are stronger the more friends are on the field

	(1a) Relative incentives	(1b) Relative incentives	(2a) Piece rates	(2b) Piece rates
Share of workers in the field who are friends	−1.68***	−5.52**	.072	1.17
	(.647)	(2.36)	(.493)	(1.60)
Share of workers in the field who are friends × number of workers in same field		1.60**		−.285
		(.684)		(.501)
Number of workers in same field		.182		.085
		(.117)		(.069)
Marginal effect of group size (at mean friends' share)		.236**		.076
		(.110)		(.065)
Worker fixed effects	Yes	Yes	Yes	Yes
Field fixed effects	Yes	Yes	Yes	Yes
Other controls	Yes	Yes	Yes	Yes
Adjusted R^2	.3470	.3620	.3065	.3081
Number of observations (worker-field-day)	2860	2860	4400	4400

- Two Interpretations:
  - Social Preferences:
    - Work less to help others
    - Work even less when friends benefit, since care more for them
  - Repeated Game
    - Enforce low-effort equilibrium
    - Equilibrium changes when switch to flat pay
- Test: Observe results for tall plant where cannot observe productivity of others (raspberries vs. strawberries)

- Compare Fruit Type 1 (Strawberries) to Fruit Type 2 (Raspberries)
  - No effect for Raspberries

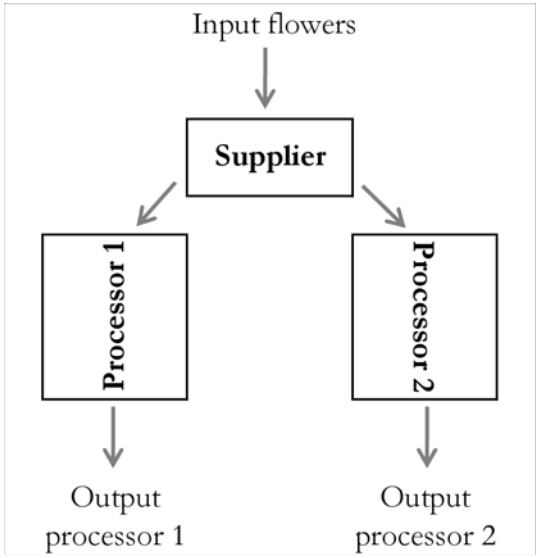
DEPENDENT VARIABLE = LOG OF WORKER'S PRODUCTIVITY
(KILOGRAM PICKED PER HOUR PER FIELD-DAY)
ROBUST STANDARD ERRORS REPORTED IN PARENTHESES, ALLOWING FOR CLUSTERING AT FIELD-DAY LEVEL

	(1) Fruit type 2	(2) Fruit type 1	(3) Fruit types 1 and 2 combined
Piece rate dummy (P_t)	−.063	.483***	
	(.129)	(.094)	
Piece rate × fruit type 2			−.100
			(.095)
Piece rate × fruit type 1			.490***
			(.092)

- –> No Pure Social Preferences. However, can be reciprocity

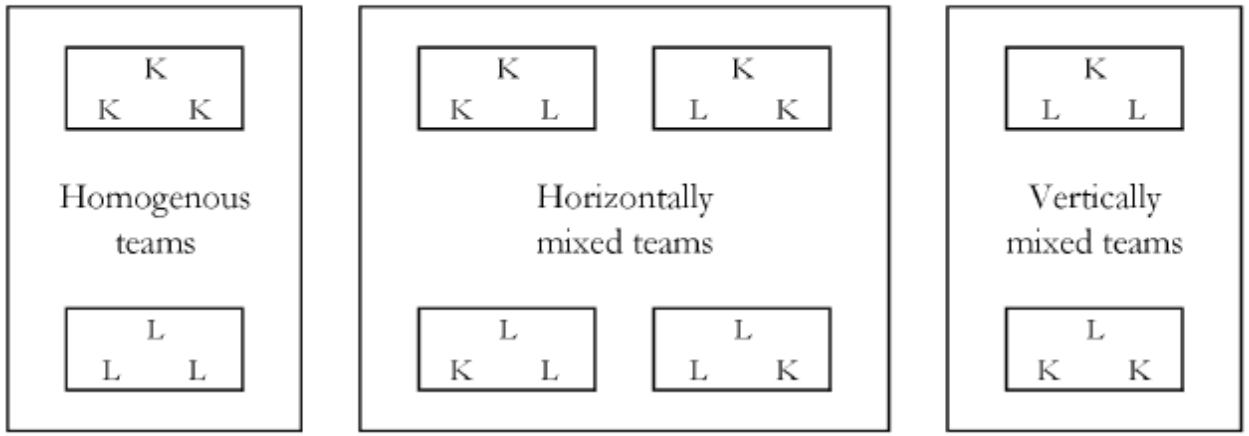
- Important to control for repeated game effects –> Field experiments

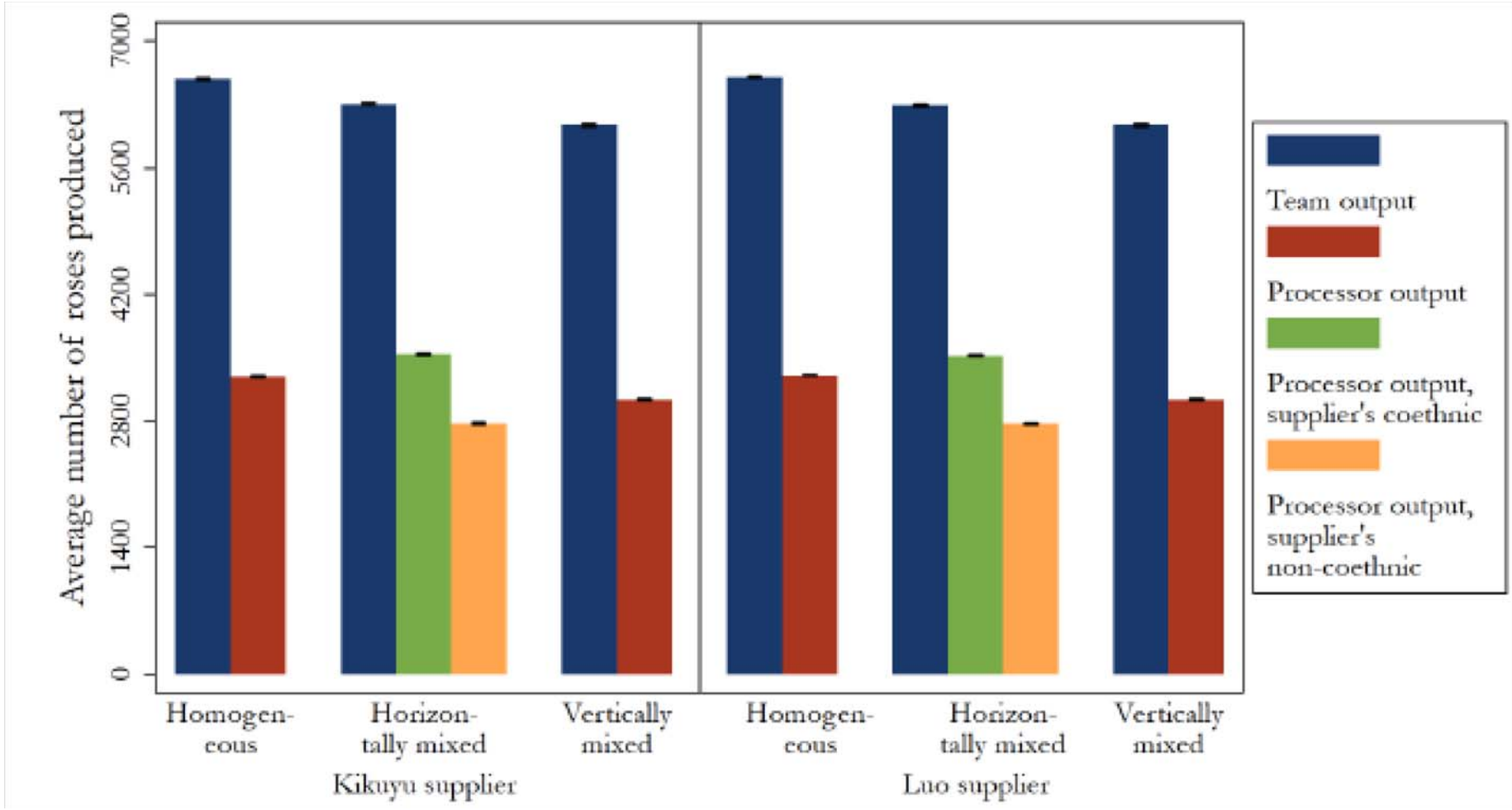
- **Hjort (2013):** Social preferences among co-workers as function of ethnicity
  - Kenya flower plant
  - Teams of 3: one supplier, two processors
  - Piece rate (at least initially) for two processors, and supplier gets pay for average productivity



- Different team ethnicity configurations of Luos and Kikuyu:
  - Vertically mixed teams –> Work less hard to sort flower
  - Horizontally mixed teams –> Sort fewer flowers to non-coethnic
  - Findings strikingly aligned to predictions of model

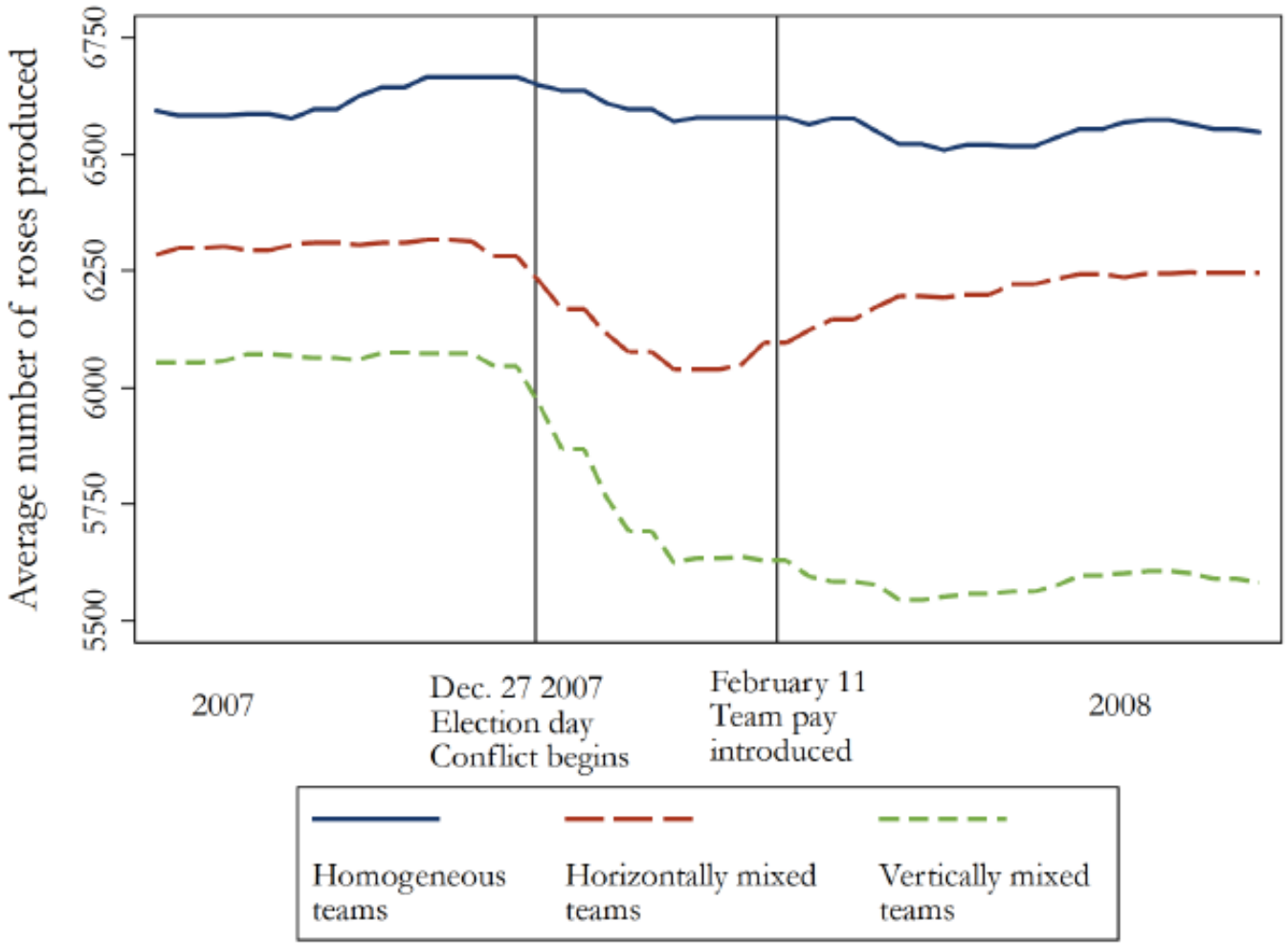
Figure I.b
Team ethnicity configuration categories




Average number of roses produced
0
1400
2800
4200
5600
7000
Homogen-eous
Horizon-tally mixed
Vertically mixed
Kikuyu supplier
Homogen-eous
Horizon-tally mixed
Vertically mixed
Luo supplier
Team output
Processor output
Processor output, supplier's coethnic
Processor output, supplier's non-coethnic

- Two further pieces of evidence:
  1. Period of ethnic animosity and violence
  2. Switch to team pay for the processors
- Prediction of first change:
  - Exacerbate patterns
- Prediction of second change:
  - Reduce effect in horizontally-mixed teams
  - Not in vertically-mixed teams

Figure II
Output in homogeneous and mixed teams across time



- **Social Comparisons in the Workplace**

- General idea – when is something fair in the marketplace?

  1. Pricing. When are price increases acceptable?
     - **Kahneman, Knetsch and Thaler (1986)**
     - Survey evidence
     - Effect on price setting

  2. Wage setting. Fairness toward other workers –> Wage compression

- **Card-Mas-Moretti-Saez (AER 2012)**
  - Study of job satisfaction for UC employees
  - Examine the impact of salary comparisons
- UC is ideal setting:
  - Salaries are public
  - But not as easy to access
  - Sacramento Bee posted them online
- Design:
  - Email survey to staff at various University of California Campuses
  - Field experiment on content of survey

- Mention to some, but not others, the website of the Sacramento Bee: "*Are you aware of the web site created by the Sacramento Bee newspaper that lists salaries for all State of California employees? (The website is located at www.sacbee.com/statepay, or can be found by entering the following keywords in a search engine: Sacramento Bee salary database).*"
- Counting on human curiosity for first stage...
- Follow-up survey to measure job satisfaction and interest in moving to other job
- Impact on stated job satisfaction and reported intention to look for new job

Table 4: Effect of Information Treatment on Measures of Job Satisfaction

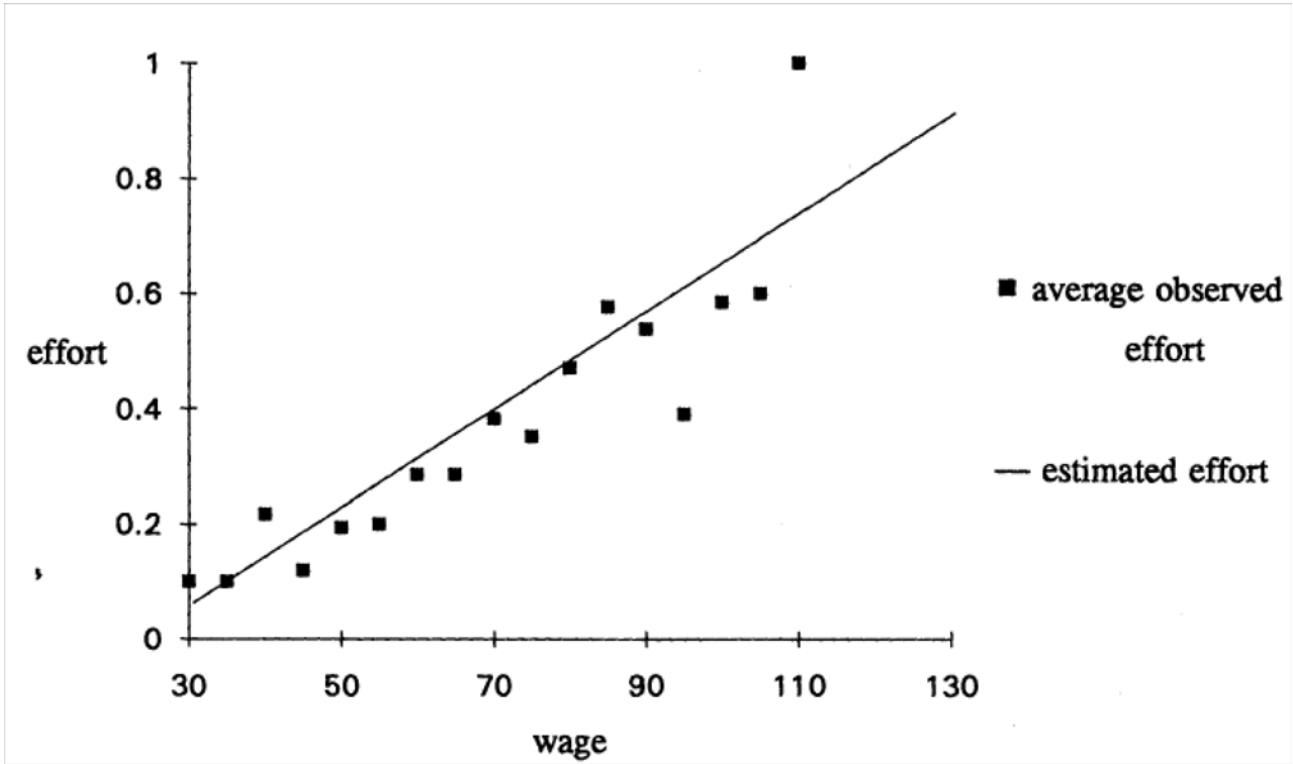
	Satisfaction Index (10 point scale)			Reports Very likely to Look for New Job (Yes = 1)			Dissatisfied and Likely Looking for a New Job (Yes = 1)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Treated individual	-2.0 (2.2)	--	--	1.0 (1.2)	--	--	2.0 (1.1)	--	--
I. Treated individual with earnings ≤ median pay in unit	--	-6.3 (2.9)	--	--	4.3 (1.8)	--	--	5.2 (1.8)	--
II. Treated individual with earnings > median pay in unit	--	2.0 (2.6)	2.2 (2.6)	--	-2.0 (1.6)	-2.0 (1.6)	--	-0.9 (1.3)	-0.9 (1.3)
II-I	--	8.3 (3.5)	--	--	-6.3 (2.4)	--	--	-6.1 (2.1)	--
Treated × earnings in first quartile in pay unit	--	--	-15.0 (4.0)	--	--	8.0 (2.6)	--	--	8.1 (2.4)
Treated × earnings in second quartile in pay unit	--	--	1.9 (3.9)	--	--	0.8 (2.5)	--	--	2.5 (2.3)
P-value for exclusion of treatment effects	0.36	0.05	0.00	0.85	0.03	0.01	0.08	0.01	0.00
Mean of the dependent variable in the control group [standard deviation]		274.2 [66.1]			21.9 [41.4]			12.9 [33.5]	

Notes: All models are estimated by OLS. All coefficients and means are multiplied by one hundred. Standard errors, clustered by campus/department, are in parentheses (818 clusters for all models). "Earnings" refers to total UC payments in 2007. Pay unit refers to the respondent's department or administrative unit. Median pay is computed seperately for faculty and staff. The satisfaction index is the average of responses for the questions: "How satisfied are you with your wage/salary on this job?", "How satisfied are you with your job?", and "Do you agree or disagree that your wage is set fairly in relation to others in your department/unit?". Responses to each of these questions are on a 1-4 scale and are ordered so that higher values indicate greater satisfaction. The variable "Dissatisfied and Likely Looking for a New Job" is 1 if the respondent is below the median value of the satisfaction index and reports being "very likely" to make an effort to find a new job. See text and Appendix Table A3 for further details on the construction of the dependent variables. In addition to the explanatory variables presented in the table, all models include controls for campus × (staff/faculty), a cubic in earnings, and main effects. The sample size is 6,411.

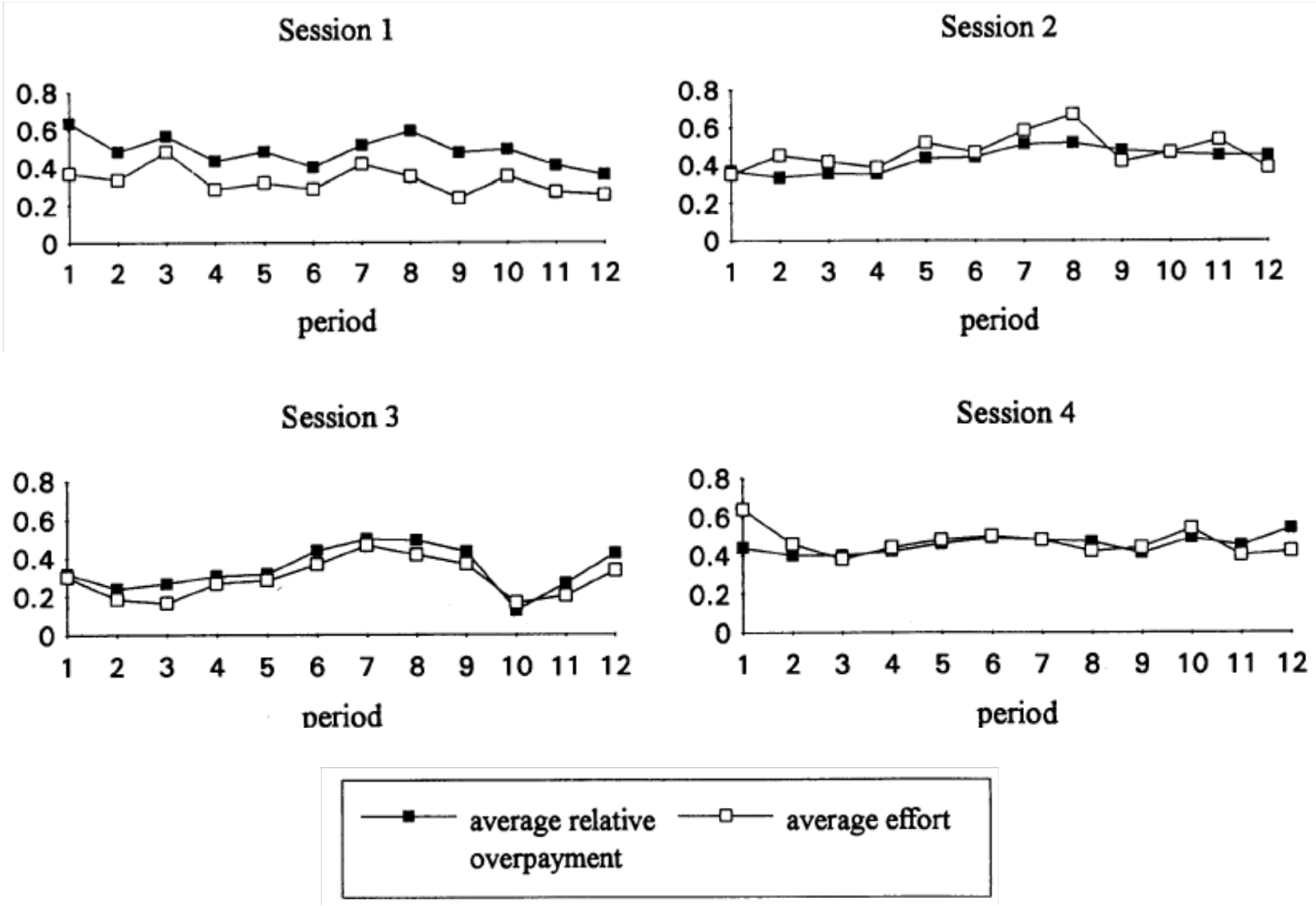
3 Social Preferences: Gift Exchange

- 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

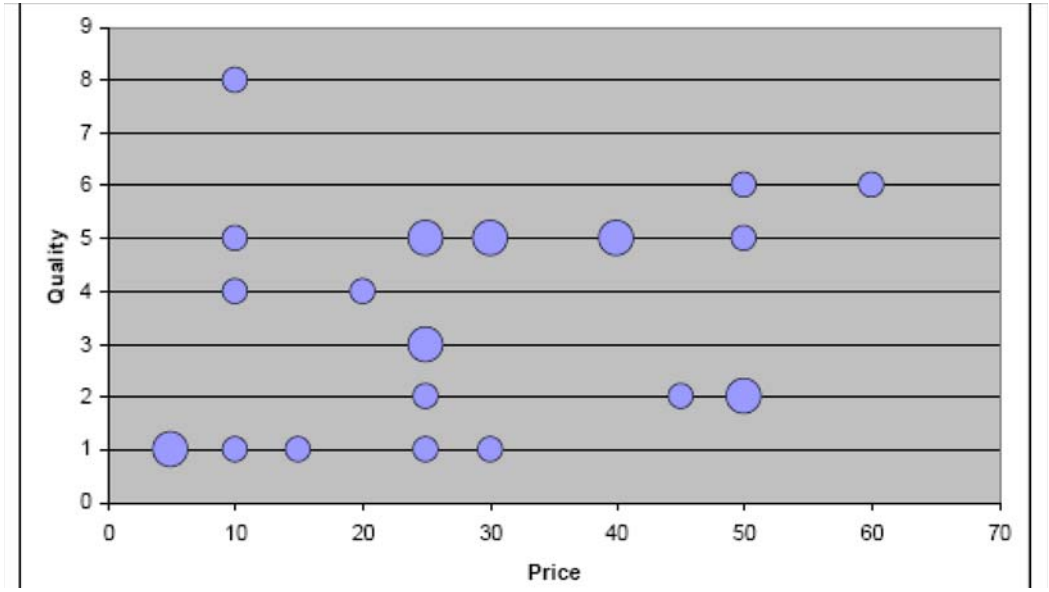

Session 1
0.8
0.6
0.4
0.2
0
1 2 3 4 5 6 7 8 9 10 11 12
period
Session 2
0.8
0.6
0.4
0.2
0
1 2 3 4 5 6 7 8 9 10 11 12
period
Session 3
0.8
0.6
0.4
0.2
0
1 2 3 4 5 6 7 8 9 10 11 12
period
Session 4
0.8
0.6
0.4
0.2
0
1 2 3 4 5 6 7 8 9 10 11 12
period
average relative overpayment
average effort

- 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

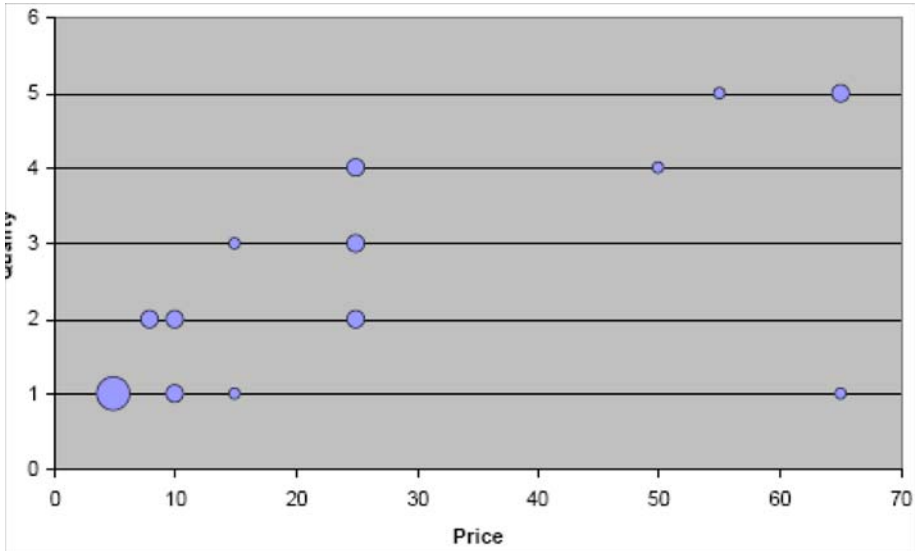
- Alternative model: *Reciprocity*
  - Worker cares about firm with weight α
  - Altruism weight is a function of how nicely workers has been treated
  - Positive gift increases α
  - —> Worker puts more effort because he cares more about firm
  - The higher the wage, the larger the transfer given mechanism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

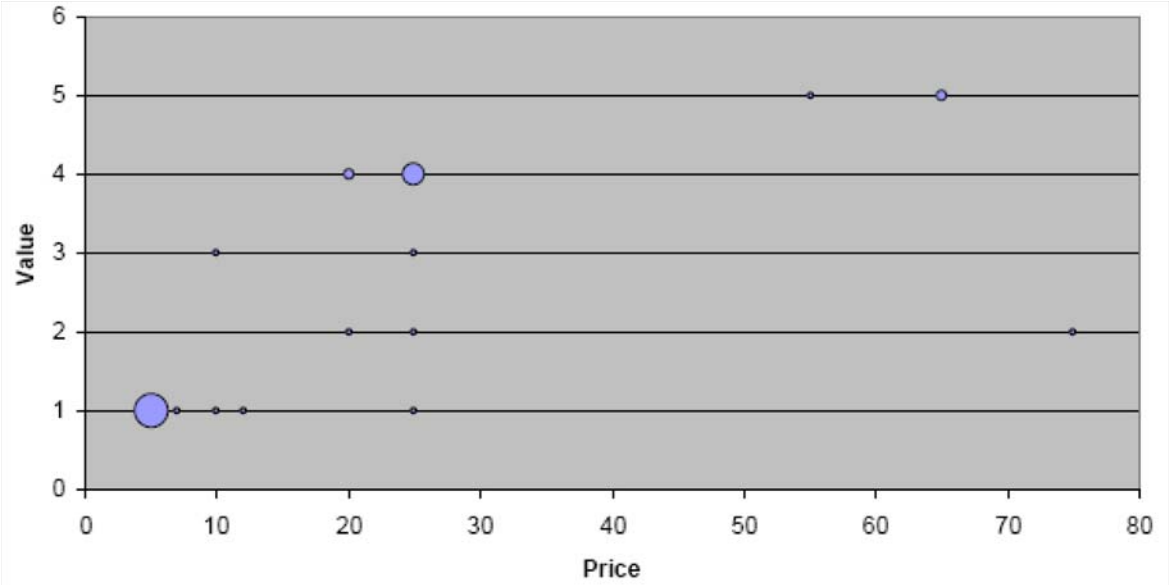
- Effect: Substantial reciprocity
  - Buyers offer prices $p > 0$
  - Dealers respond with increasing quality to higher prices



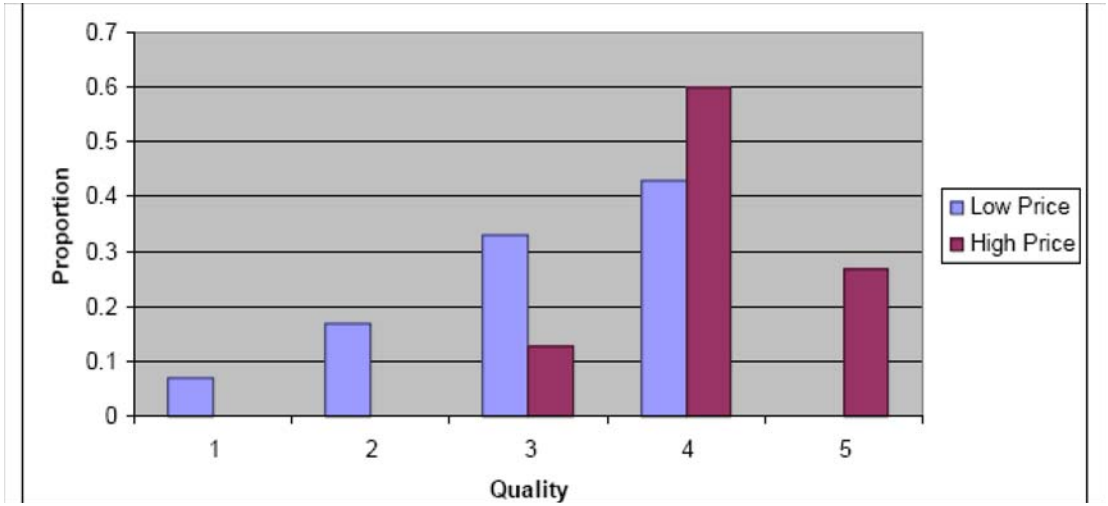
- *Treatment I-RF.* Similar result (with more instances of $p = 5$) when payoffs changed to
  - Buyer payoff is $v(q) - p$
  - Dealer payoff is $p - c(q)$, with $c(q)$ convex (but small)
  - $v(q)$ estimated value of card to buyer, $c(q)$ estimate cost of card to dealer



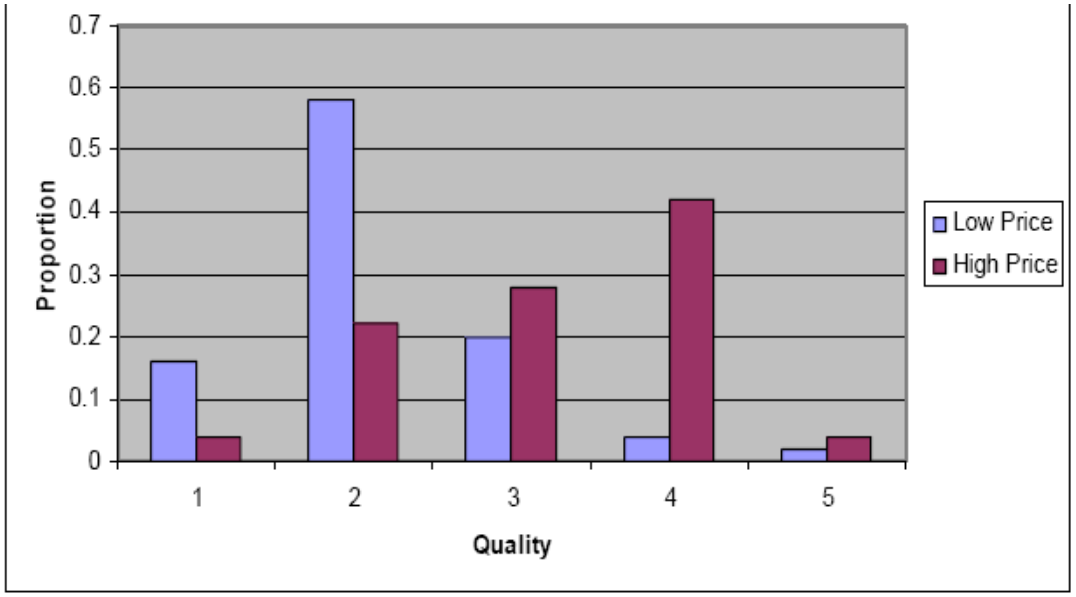
- *Treatment II-C.* Same as Treatment I-RF, except that use context (C) of Sports Card
- Relatively similar results



- *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"



- However, "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 rational 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?

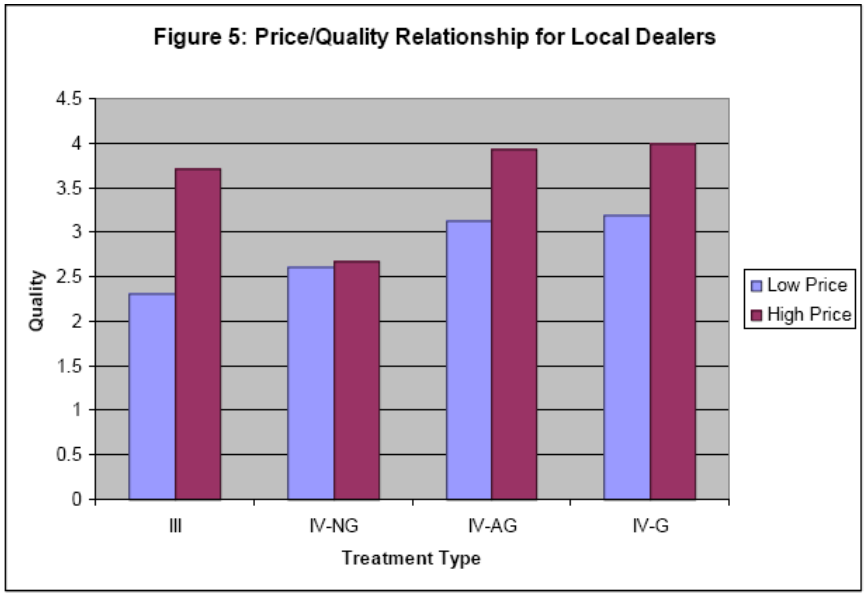


Figure 5: Price/Quality Relationship for Local Dealers
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Quality
III
IV-NG
IV-AG
IV-G
Treatment Type
Low Price
High Price

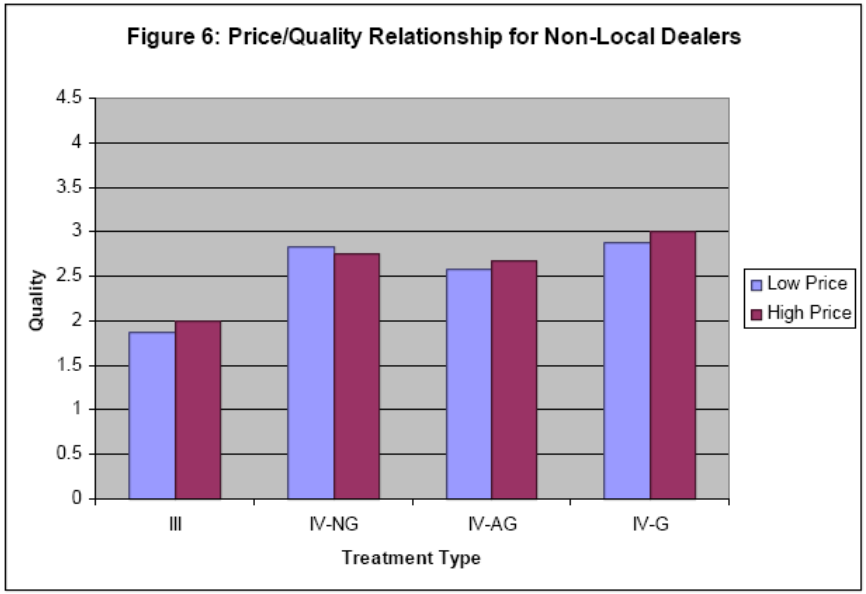
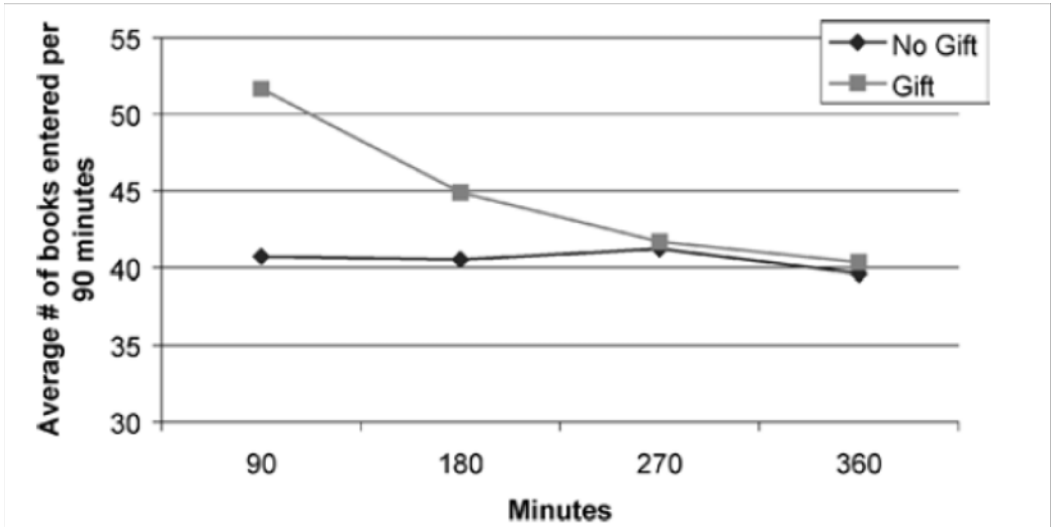
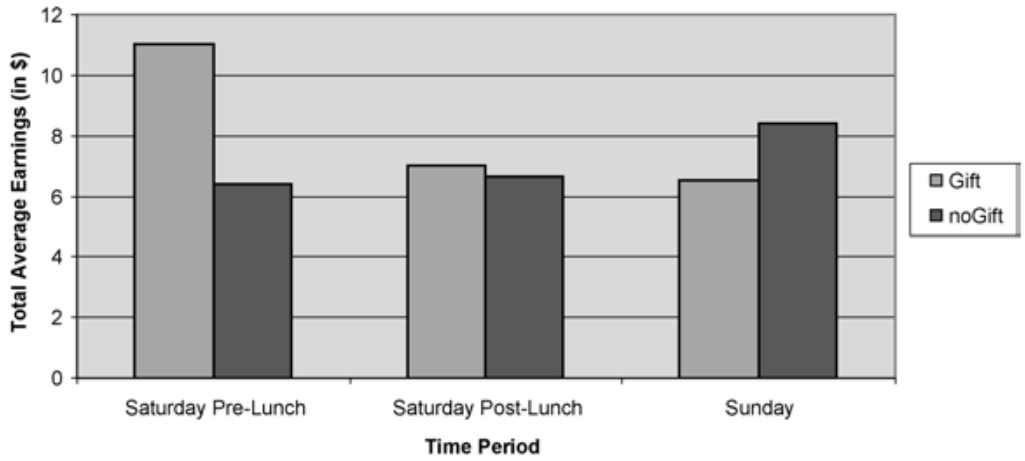


Figure 6: Price/Quality Relationship for Non-Local Dealers
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Quality
III
IV-NG
IV-AG
IV-G
Treatment Type
Low Price
High Price

- 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 ($N = 9$)



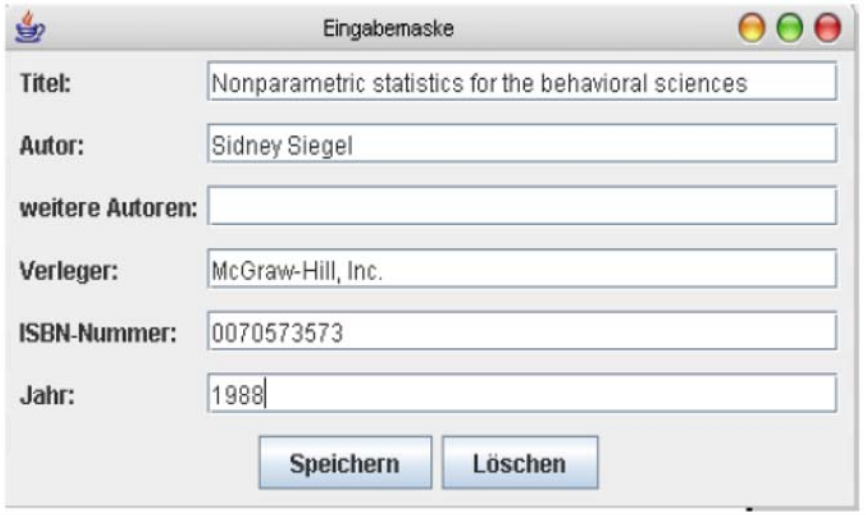
- *Field experiment 2.* Door-to-Door fund-raising in NC for one-time weekend for \$10/hour
  - Control group paid \$10 ($N = 10$)
  - Treatment group paid \$20 ($N = 13$)



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

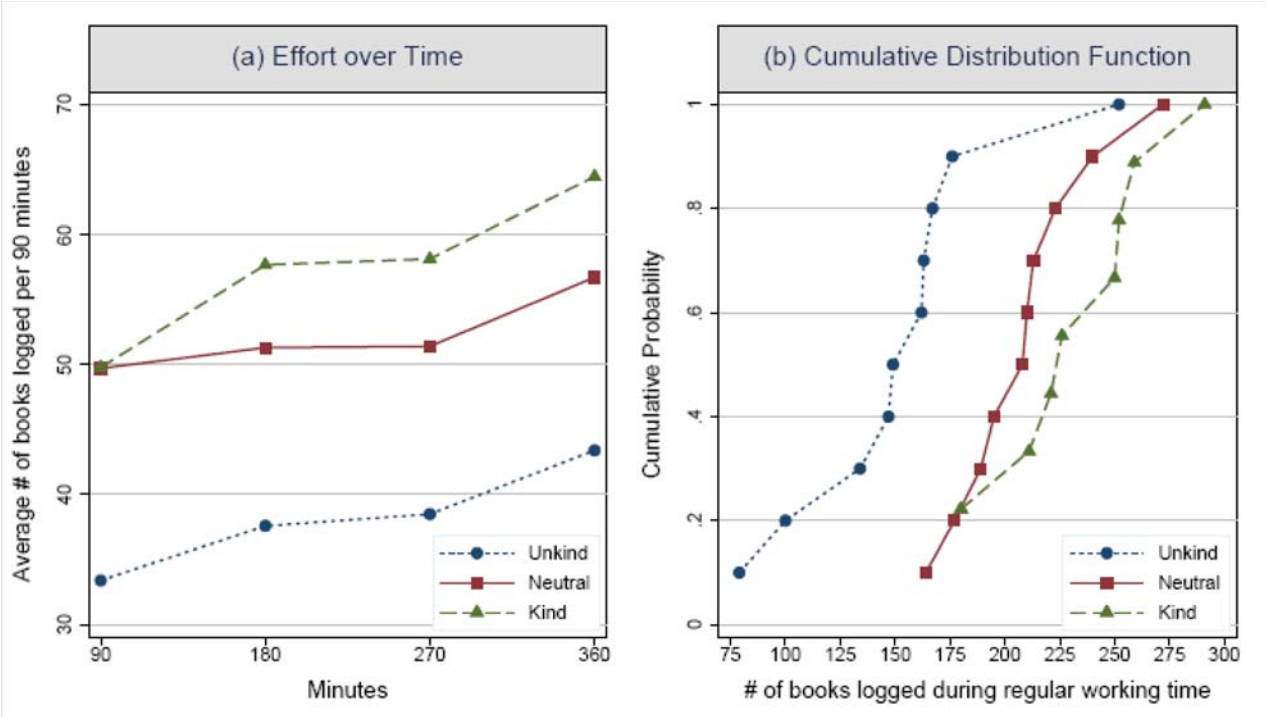
- Laboratory evidence: negative reciprocity stronger than positive reciprocity
- Test for positive versus negative reciprocity in the field?
- **Kube-Marechal-Puppe (JEEA 2013).**
- Field Experiment: Hire job applicants to catalog books for 6 hours

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

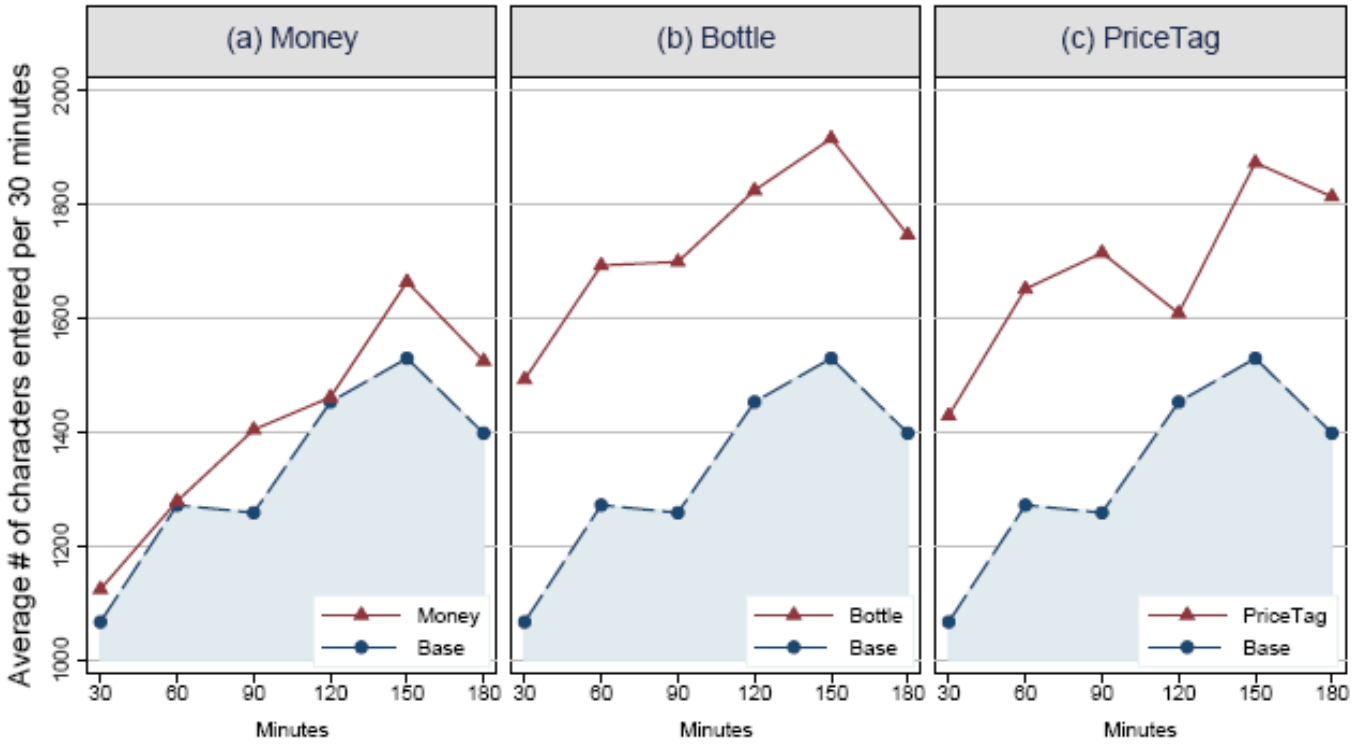


- Finding consistent with experimental results:
  - Positive reciprocity weaker than negative reciprocity
  - Notice: No effect on quality of effort (no. of books incorrectly classified)
- Important other result:
  - No negative effect on quality of effort (no. of books incorrectly classified)
  - All 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

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

  - e is effort, measurable
  - w is fixed payment (could be a gift)
  - $c\left(e\right)$ 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 p_F: 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

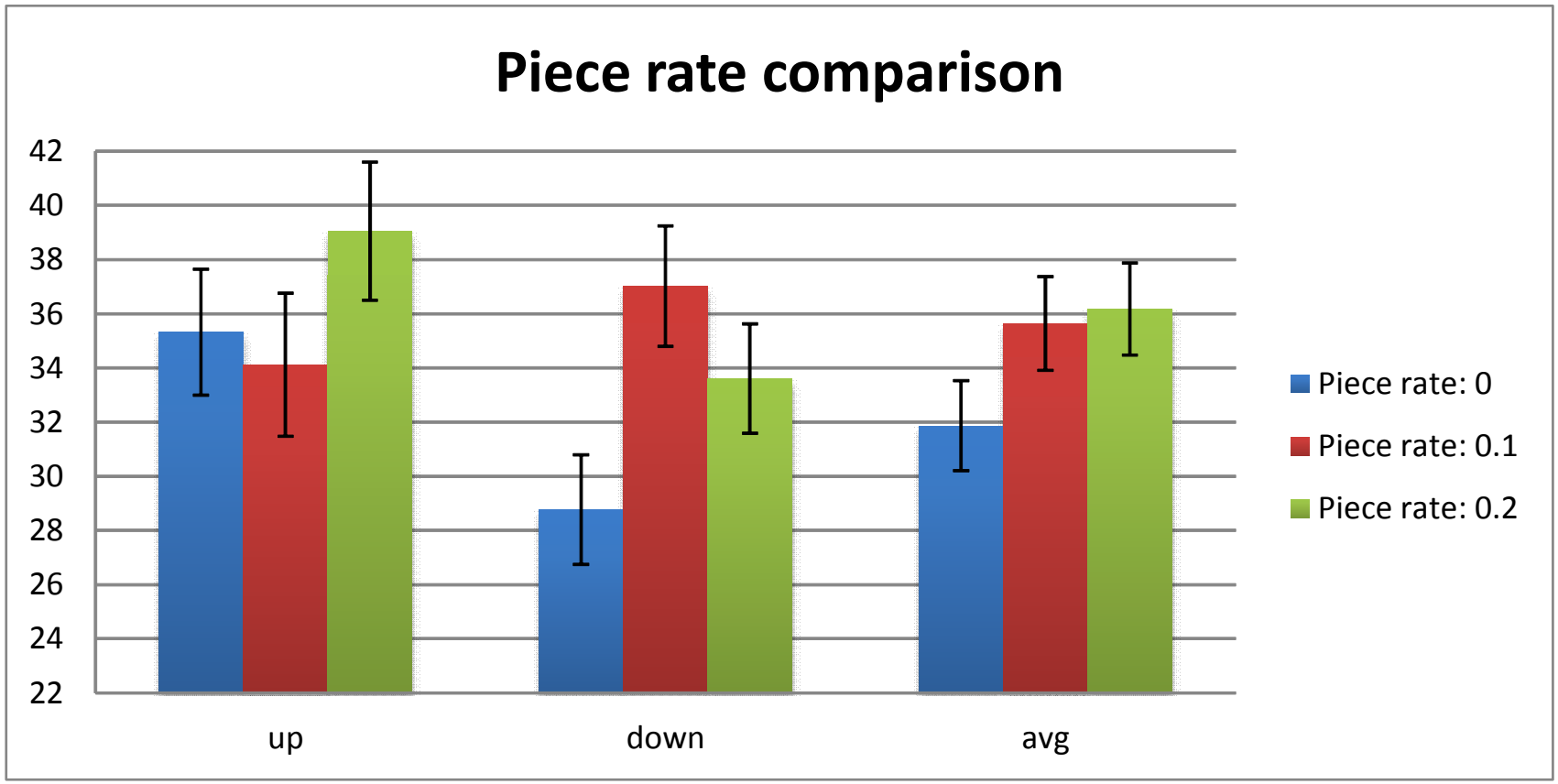
- Logistics:
  - Recruit for a one-time, 5-hour job
  - Task is to fold letters, stuff into appropriate envelope, and attach mailing address
  - Task is simple, but not implausible for a temp worker
  - Workers are working for a charity which pays them X per envelope
  - Workers are told the (expected) 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."

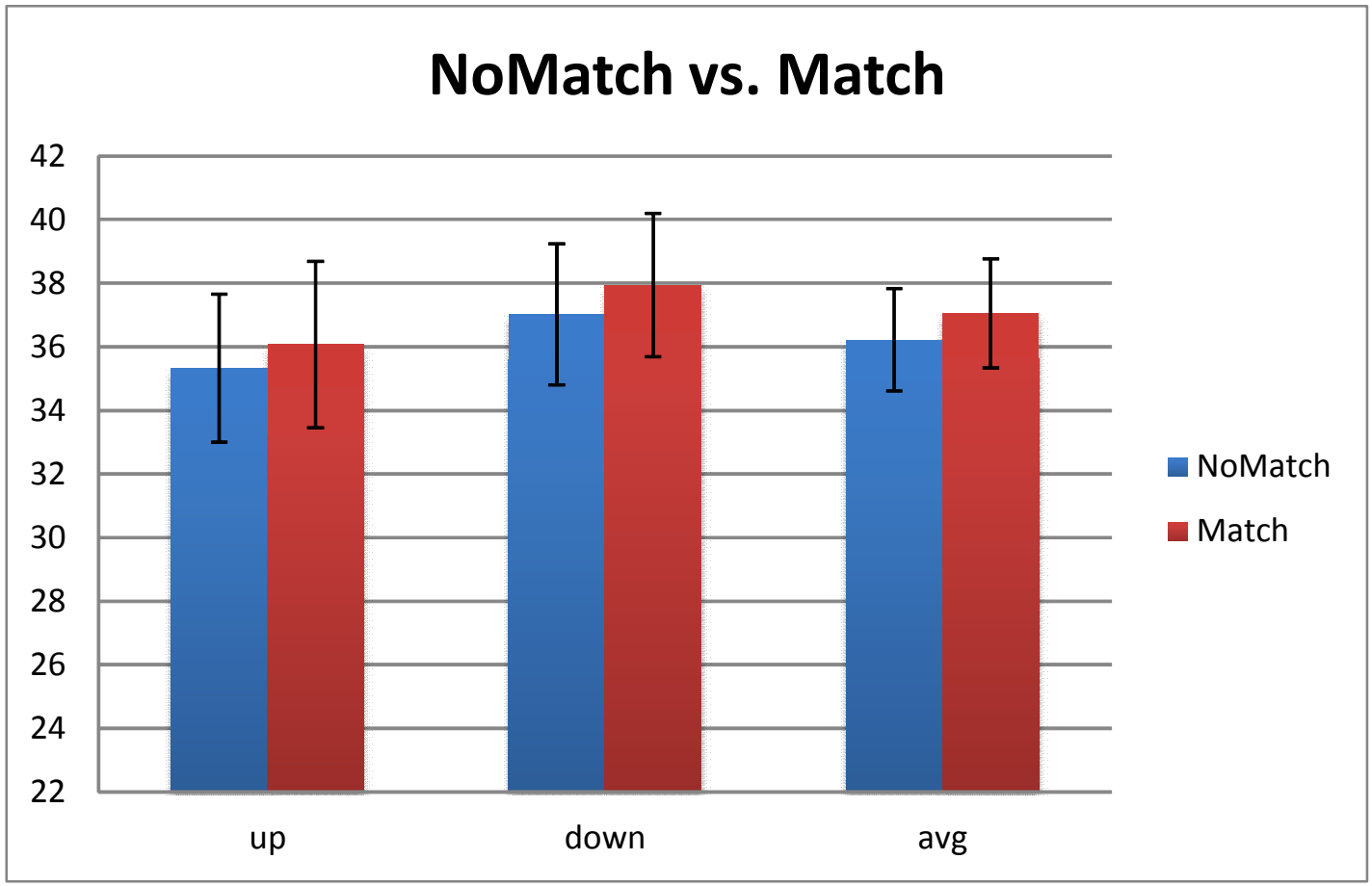
- To estimate cost of effort, we vary the piece rate within person
  - Ten 20-minute periods of folding envelopes with 5 min breaks
  - We vary the piece rate X (0 cents vs. 10 cents vs. 20 cents)
  - We vary the return to charity Y (30 cents vs. 60 cents)
  - We introduce training sessions where output 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

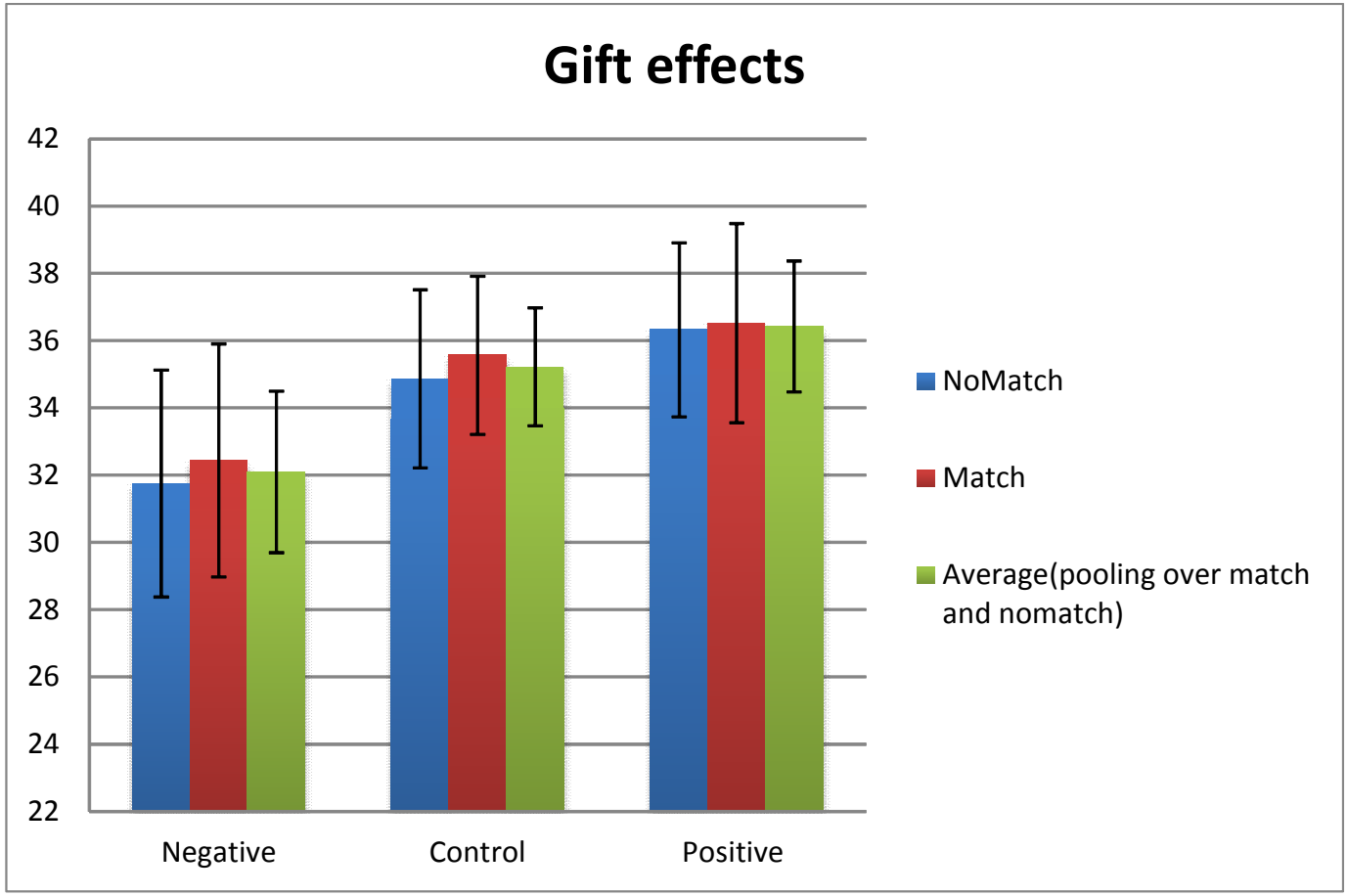
- Finding 1. Significant response to piece rate



- Finding 2. Very small impact of match

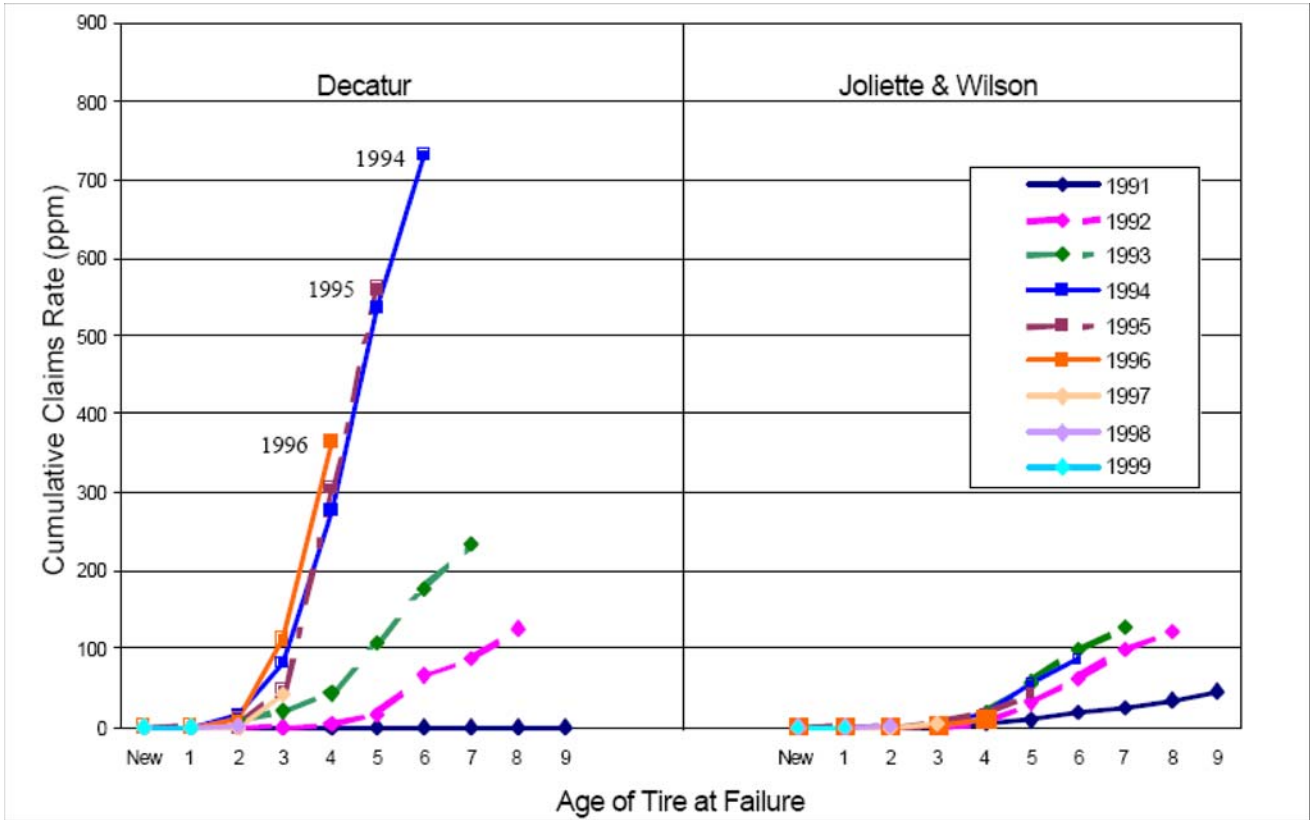


- Finding 3. Larger impact of negative gift, still imprecise



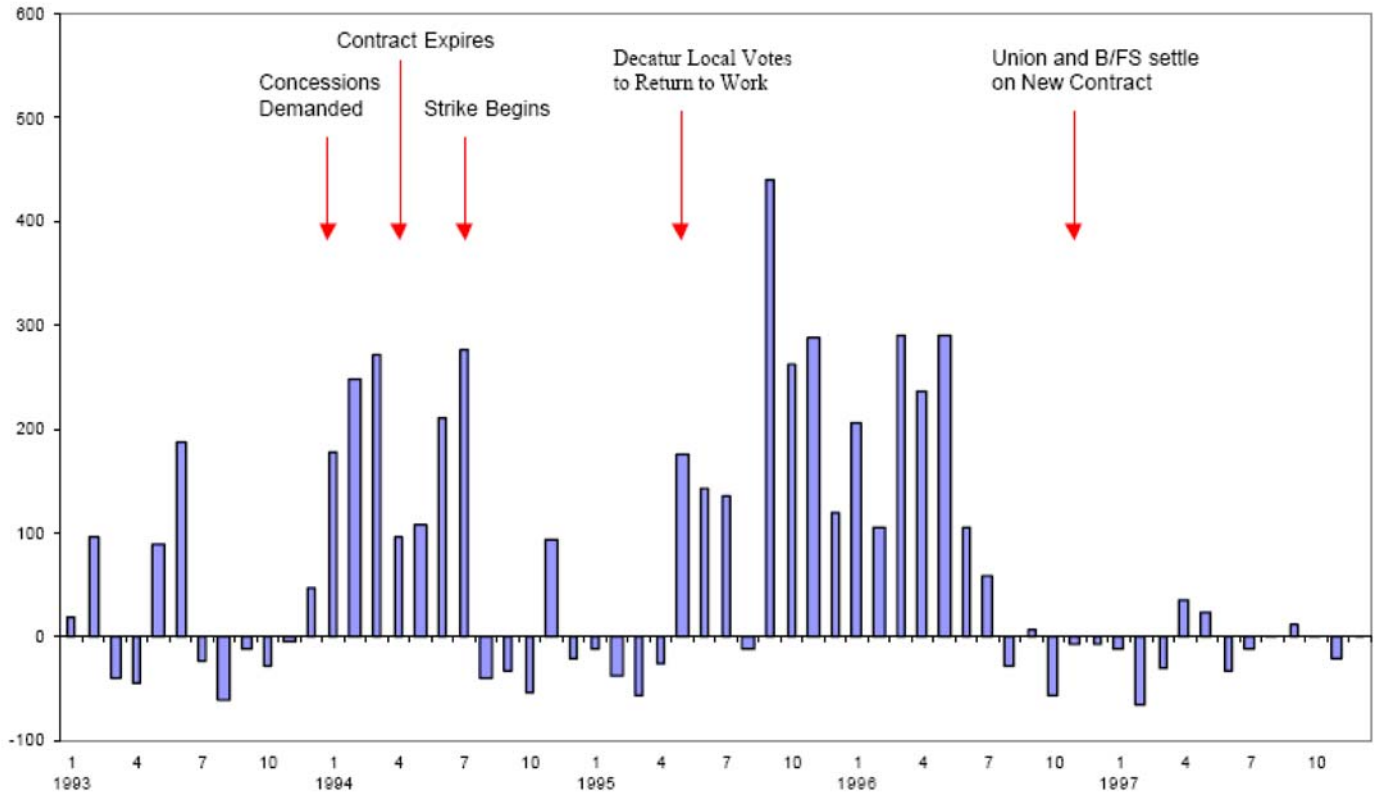
- Is there evidence in a workplace of negative reciprocity towards unkind employer leading to sabotage?
- **Krueger-Mas (JPE, 2004).**
- Setting:
  - Unionized Bridgestone-Firestone plant
  - Workers went on strike in July 1994
  - Replaced by replacement workers
  - Union workers gradually reintegrated 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

4 Methodology: Field Experiments

- Field Experiments combine advantages of field studies and natural experiments:
  - Field setting (External Validity)
  - Randomization (Internal Validity)
- Common in Development, Public, Psychology and Economics, Labor
- Uncommon in IO (except for Demand estimation), Corporate Finance, Asset Pricing, Macro
- Difficulties: large sample (costly) and getting approval for implementation

- Definition 1. Card, DellaVigna, and Malmendier (*JEP* 2011) '*Randomized allocation to treatment and control groups for study purposes in a field setting*'
  - Excludes studies with no randomization (Bandiera et al., 2005 and on)
  - Includes social experiments run by the government
  - Includes experiments run by firms (Ausubel, 1999)
  - Excludes incidental randomization (i.e., lottery winnings, or Vietnam draft number)

- Definition 2. Harrison and List (*JEL* 2004): Broader definition, does not emphasize randomized allocation
  - But then how to separate from natural experiments?
  - Emphasis on laboratory versus field: 4 groups
    1. *(Conventional) Laboratory Experiment*
    2. *Artefactual Laboratory Experiment.* This is laboratory experiment in the field (i.e., on non-students)
    3. *Framed Field Experiment.* Experiment in the field with natural setting, but people aware of experimental treatments
    4. *Natural Field Experiment.* Experiment in the field, subjects unaware of manipulations

- What to do if planning a field experiment?
- **Advice 1.** Read how-to manuals and previous field experiments: **Duflo-Glennerster-Kremer (NBER, 2006)**
  - $*$ Great discussion of practical issues: Compliance, Sample Size,...
    $*$ Discussion of statistical issue, such as power tests
    $*$ Targeted toward development

- **Advice 2.** Choose what type of Experiment
  - *Large-Scale Experiment.* Example: Bandiera et al. (2005)
    - More common in Development
    - Convince company or organization (World Bank, Government)
    - Need substantial funding
    - Example among students:
      - Damon Jones: field experiment on tax preparers
      - However (also Damon): H&R Block experiment fell through after 1-year plans
      - Safeway (research center at Stanford, Kristin Kiesel in charge)

- *Small-Scale Experiment.* Example: Falk (2008)
  - More common in Psychology and Economics
  - Need to convince non-profit or small company
  - Limited funds needed – often company will pay
  - Example among students:
    - Dan Acland: projection bias and gym attendance
    - Vinci Chow: commitment devices for on-line computer game play
    - Pete Fishman: small video store randomized advertising

- **Advice 3.** Need two components:
  1. Interesting economic setting:
     - Charity, Gym, Village in Kenya
     - Does Video Games matter? Yes, increasingly so
  2. Economic model to test
     - Examples: Self-control, reciprocity, incentives
     - Avoid pure data-finding experiments
     - Insurance. If you can, pick a case where 'either' result is interesting
     - Best scenario: Do a field experiment tied to a model to infer parameters

- **Advice 4.** Keep in mind three key issues
  - *Power calculations.* Will your sample size be enough?
    - Crucial to do ex ante to avoid wasting time and money
    - Simple case:
      - Assume outcome binary variable, dep.variable is share p doing 1 (Ex: giving to charity, taking up comm. device)
      - Standard error will be $\sqrt{p\left(1-p\right)/n}$
      - Example: $p = .5$, s.e. is .05 with $n = 100$, .025 with $n = 400$
  - *Pilots.* So many things can go wrong – try to do small pilot
    - Use to spot problems in implementation
    - Do not overinfer results from pilot (sample too small)

- *Human Subjects* approval
  - At Berkeley, takes about 2 months
  - More about this later

- **Advice 5.** Do a lot of work before going to the field!
  - Power studies – YES
  - But also: *Model*
    * To the extent possible, write down model
    * Do Monte Carlo of data
    * Estimate model on Monte Carlo data
    * Which parameters are identified?
    * Use that to refine design
    * Gift exchange design (DLMR above): one year before going to the field
  - Also, *Registration*: see Ted's talk today

- **Advice 6.** Other practical issues:
  - Keep in mind *implementation* of randomization
    - Example: Cross Designs hard to implement correctly
    - Example: **Green-Gerber (APSR, 2001)** on voter turnout:
      - cross-randomize phone calls, mailings, in-person visits
      - Hard to implement –> Lead to loss of randomization
    - OK if just computerized implementation (ex: loan offers)
  - Monitor what happens in the field *continuously*
  - Build in *data redundancy* to catch errors or implementation problems
    - 'Did you see a flyer on the door?' in DellaVigna-List-Malmendier (2009)

- **Advice 7.** Start looking soon for funding. Some options:
  - * Russel Sage Small Grant Program: $7,500 (two to three months wait, once-in-career) (http://www.russellsage.org/research/behavioral-economics)
    * RSF-Sloan group on Behavioral Household finance: $10,000 awards for research (ie, Justin Gallagher)
    * NSF dissertation improvement grant website (http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13453)
    * IBER: $1,000 administered quickly (one week or so)
    * Look at CVs of assistant professors in your field or job market students (Jonas' advice)
    * Ask your advisor –> May know of some funding sources

5 Social Preferences: Charitable Giving

- **Andreoni (2004).** Excellent survey of the theory and evidence
- Stylized facts:
  - US Giving very large: 1.5 to 2.1 percent GDP!
  - Most giving by individuals (Table 1)

Table 1
Sources of Private Philanthropy, 2002

Source of gifts	Billions of dollars	Percent of total
Individuals	183.7	76.3
Foundations	26.9	11.2
Bequests	18.1	7.5
Corporations	12.2	5.1
Total for all Sources	240.9	100

Source: Giving USA, 2003

- – Giving fairly constant over time (Figure 1)

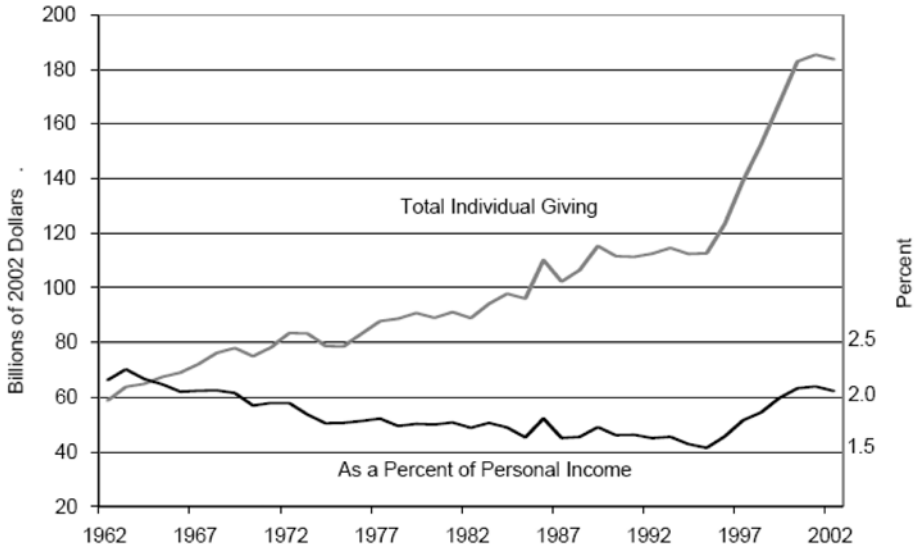


Figure 1: Trends in Individual Giving.
Source: Giving USA 2003.

- Giving by income, age, and education (Table 2 – no controls)
  - Giving as percent of income fairly stable
  - Increase for very rich (tax incentives matter here)

Table 2
Private philanthropy by income, age, and education of the giver, 1995

	Percent of households who give	Average amount given by those who give	Percent of household income
All contributing households	68.5	1,081	2.2
Household Income			
under $10,000	47.3	324	4.8
10,000–19,000	51.1	439	2.9
20,000–29,999	64.9	594	2.3
30,000–39,999	71.8	755	2.2
40,000–49,999	75.3	573	1.3
50,000–59,999	85.5	1,040	1.9
60,000–74,999	78.5	1,360	2.0
75,000-99,999	79.7	1,688	2.0
100,000 or above	88.6	3,558	3.0

- Giving to whom? (Table 3)
  - Mostly for religion
  - Also: human services, education, health
  - Very little international donations

Table 3
Private Philantropy by Type of Charitable Organization, 1995.

Type of Charity	Percent of Households who give	Average amount given by those who give	Percent of total household contributions
Arts, culture and humanities	9.4	221	2.6
Education	20.3	335	9.0
Environment	11.5	110	1.6
Health	27.3	218	8.1
Human Services	25.1	285	9.5
International	3.1	293	1.1
Private and community foundations	6.1	196	1.4
Public or Societal benefit	10.3	127	1.7
Recreation	7.0	161	1.4
Religious	48.0	946	59.4
Youth Development	20.9	140	3.8
Other	2.1	160	0.3

Source: Author's calculations, data from Independent Sector, Giving and Volunteering, 1995.

- What else do we know?
- Until 1990s, very limited research on charitable giving
- Then:
  1. Evidence by Jim Andreoni and others on fund-raising, and especially on crowding out prediction (see below)
  2. Field experiments by John List and others

- Focus on Field Experiments. First paper: **List and Lucking-Reiley (2002)** focuses on seed money
  - Capital campaign to raise money for computer center at Univ. Central Florida
  - 3,000 letters assign to 6 treatments
  - Randomization of seed money, i.e., how much money was already raised
  - Randomization of whether refund promised if threshold not matched

TABLE 1
RESULTS OF THE FIELD EXPERIMENT

	10	10R	33	33R	67	67R
	A. Experimental Design					
Number of solicitations mailed	500	500	500	500	500	500
Seed money (%)	10%	10%	33%	33%	67%	67%
Seed money ($)	$300	$300	$1,000	$1,000	$2,000	$2,000
Refund offered?	no	yes	no	yes	no	yes
	B. Results					
Number of contributions	17	20	33	31	42	40
Participation rate	3.4%	4.0%	6.6%	6.2%	8.4%	8.0%
Total contributions	$202	$379	$805	$863	$1,485	$1,775
Mean amount given	$11.88	$18.95	$24.39	$27.84	$35.36	$44.38
Standard error of mean amount	$2.27	$3.13	$2.50	$4.59	$2.26	$6.19

- Huge effect of the seed money, less so of refund
- Interpretation: Presumably signalling of quality

- **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

Appendix: An example of the included postcards

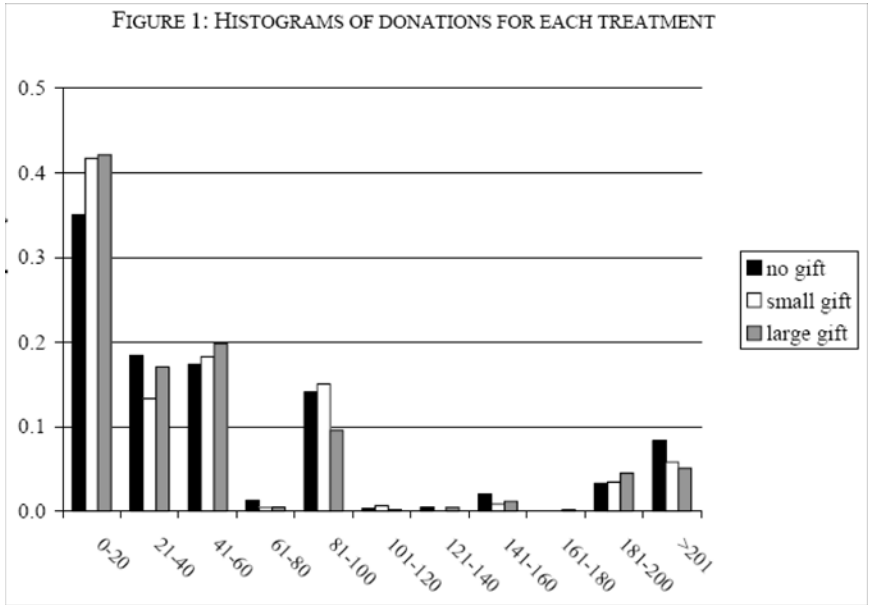
- Short-Run effect: Donations within 3 months

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)

- **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)

- What does this teach us about charitable giving in general? That more affects giving than just pure altruism

- Charitable giving important phenomenon – How do we understand it?
- **Model 1.** Social preferences: Giving because caring for welfare of others
- Problem (i): Amounts given off relative to lab experiments
- Problem (ii): Model predicts crowding out of giving:
  - If government spends on income of needy group, corresponding one-on-one decrease in giving
  - Evidence of crowding out: Limited crowd-out
- Problem (iii): Model predicts giving to one highest-value charity—Instead we observe dispersion across charities
- Problem (iv): In-person or phone requests for giving raise much more than impersonal requests (mail)

- **Model 2. Andreoni (1994)**: Warm-Glow or Impure altruism.
  - Agent gets utility $v(g)$ directly from giving
  - Utility $v(g)$ sharply concave
- Can explain (i), (ii), and (iii) – See Problem Set 3
- Does not directly explain (iv) – Can assume though that warm-glow is triggered more by in-person giving

- **Model 3.** Giving is due to social pressure
  - Pay a disutility cost S if do not give when asked
  - No disutility cost if can avoid to meet the solicitor
- Can explain (i), (ii), and (iii): Give small amounts to charities, mostly because asked
- Can also explain (iv): Give more in higher social pressure environments
- Key prediction differentiating Models 2 and 3:
  - Model 2: Agent seeks giving occasions to get warm glow
  - Model 3: Agents avoids giving occasions to avoid social pressure
- **DellaVigna, List, and Malmendier (QJE 2012)**

6 Next Lecture

- Social Preferences
- Social Pressure
- Non-Standard Beliefs
- Overconfidence