Econ 219B
Psychology and Economics: Applications
(Lecture 6)

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Outline

1. Reference Dependence: Insurance
2. Social Preferences: Introduction
3. Social Preferences: Workplace
4. Social Preferences: Gift Exchange
5. Methodology: Field Experiments
6. Reference Dependence: Endowment Effect (EXTRA)
7. Methodology: Effect of Experience (EXTRA)

1 Reference Dependence: Insurance

- Much of the laboratory evidence on prospect theory is on risk taking
- Field evidence considered so far (mostly) does not involve risk:
  - Trading behavior – Endowment Effect
  - House Sale
  - Merger Offer
- Field evidence on risk taking?
- Sydnor (2010) on deductible choice in the life insurance industry
- Uses Menu Choice as identification strategy as in DellaVigna and Malmendier (2006)
- Slides courtesy of Justin Sydnor

Dataset

- 50,000 Homeowners-Insurance Policies
  - 12% were new customers
- Single western state
- One recent year (post 2000)
- Observe
  - Policy characteristics including deductible
    - 1000, 500, 250, 100
  - Full available deductible-premium menu
  - Claims filed and payouts by company

Features of Contracts

- Standard homeowners-insurance policies (no renters, condominiums)
- Contracts differ only by deductible
- Deductible is *per claim*
- No experience rating
  - Though underwriting practices not clear
- Sold through agents
  - Paid commission
  - No “default” deductible
- Regulated state

Summary Statistics

Variable	Full Sample	Chosen Deductible 1000	500	250	100
Insured home value	206,917	266,461	205,026	180,895	164,485
	(91,178)	(127,773)	(81,834)	(65,089)	(53,808)
Number of years insured by the company	8.4	5.1	5.8	13.5	12.8
	(7.1)	(5.6)	(5.2)	(7.0)	(6.7)
Average age of H.H. members	53.7	50.1	50.5	59.8	66.6
	(15.8)	(14.5)	(14.9)	(15.9)	(15.5)
Number of paid claims in sample year (claim rate)	0.042	0.025	0.043	0.049	0.047
	(0.22)	(0.17)	(0.22)	(0.23)	(0.21)
Yearly premium paid	719.80	798.60	715.60	687.19	709.78
	(312.76)	(405.78)	(300.39)	(267.82)	(269.34)
N	49,992	8,525	23,782	17,536	149
Percent of sample	100%	17.05%	47.57%	35.08%	0.30%

* Means with standard errors in parentheses.

Premium-Deductible Menu

Available Deductible	Full Sample
1000	$615.82 (292.59)
500	+99.91 (45.82)
250	+86.59 (39.71)
100	+133.22 (61.09)

* Means with standard deviations in parentheses

Risk Neutral Claim Rates?

100/500 = 20%

87/250 = 35%

133/150 = 89%

Potential Savings with 1000 Ded

Claim rate?

Value of lower deductible?

Additional premium?

Potential savings?

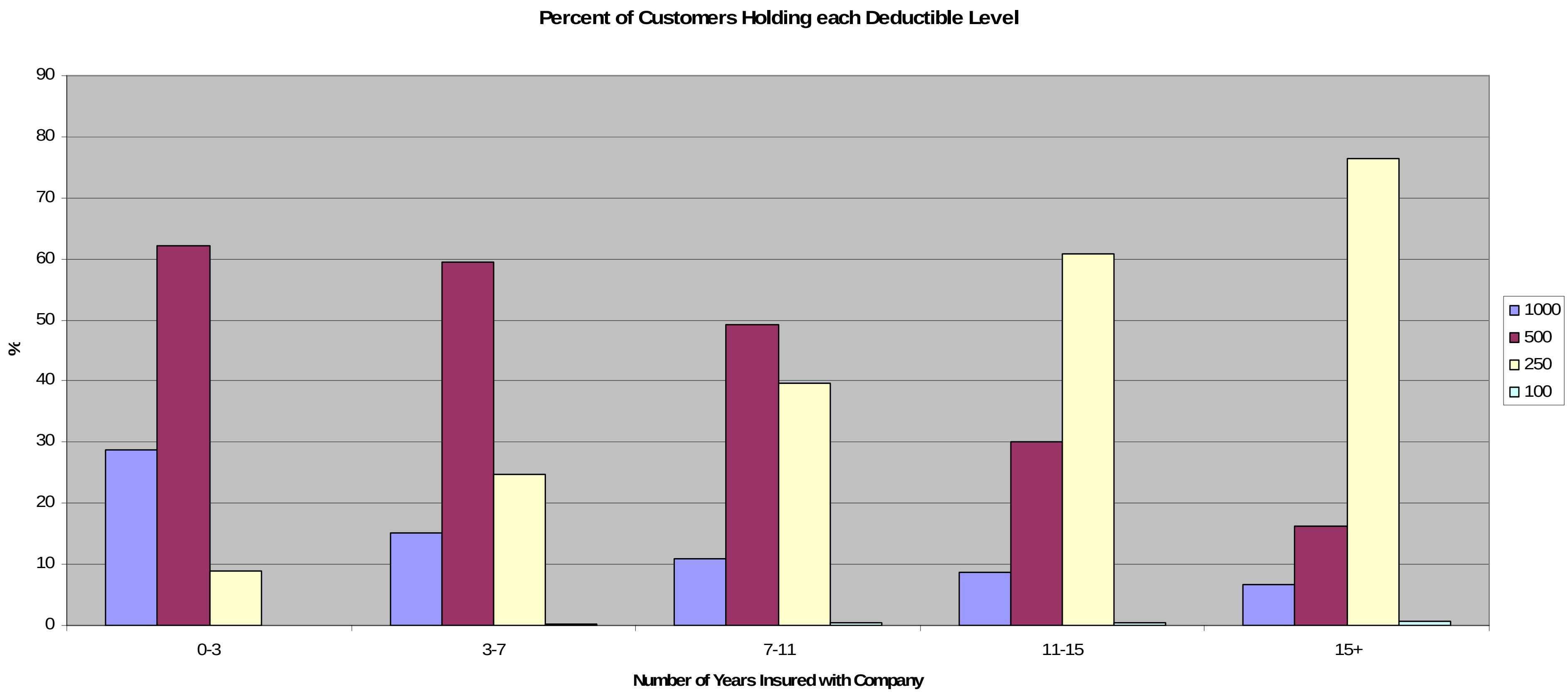
Chosen Deductible	Number of claims per policy	Increase in out-of-pocket payments *per claim* with a $1000 deductible	Increase in out-of-pocket payments *per policy* with a $1000 deductible	Reduction in yearly premium per policy with $1000 deductible	Savings per policy with $1000 deductible
$500 N=23,782 (47.6%)	0.043 (.0014)	469.86 (2.91)	19.93 (0.67)	99.85 (0.26)	79.93 (0.71)
$250 N=17,536 (35.1%)	0.049 (.0018)	651.61 (6.59)	31.98 (1.20)	158.93 (0.45)	126.95 (1.28)
Average forgone expected savings for all low-deductible customers: $99.88					

* Means with standard errors in parentheses

Back of the Envelope

- BOE 1: Buy house at 30, retire at 65, 3% interest rate $\Rightarrow$ \$6,300 expected
  - With 5% Poisson claim rate, only 0.06% chance of losing money
- BOE 2: (Very partial equilibrium) 80% of 60 million homeowners could expect to save \$100 a year with “high” deductibles $\Rightarrow$ \$4.8 billion per year

Consumer Inertia?



Look Only at New Customers

Chosen Deductible	Number of claims per policy	Increase in out-of-pocket payments *per claim* with a $1000 deductible	Increase in out-of-pocket payments *per policy* with a $1000 deductible	Reduction in yearly premium per policy with $1000 deductible	Savings per policy with $1000 deductible
$500	0.037	475.05	17.16	94.53	77.37
N = 3,424 (54.6%)	(.0035)	(7.96)	(1.66)	(0.55)	(1.74)
$250	0.057	641.20	35.68	154.90	119.21
N = 367 (5.9%)	(.0127)	(43.78)	(8.05)	(2.73)	(8.43)

Average forgone expected savings for all low-deductible customers: $81.42

Model of Deductible Choice

- Choice between (P_L,D_L) and (P_H,D_H)
- π = probability of loss
  - Simple case: only one loss
- EU of contract:
  - $U(P,D,\pi) = \pi u(w-P-D) + (1- \pi)u(w-P)$

Bounding Risk Aversion

Assume CRRA form for u:

$$u(x) = \frac{x^{(1-\rho)}}{(1-\rho)} \quad for\ \rho \neq 1, \quad and \quad u(x) = \ln(x)\ \ for\ \rho = 1$$

Indifferent between contracts iff:

$$\pi \frac{(w - P_L - D_L)^{(1-\rho)}}{(1-\rho)} + (1-\pi)\frac{(w - P_L)^{(1-\rho)}}{(1-\rho)} = \pi \frac{(w - P_H - D_H)^{(1-\rho)}}{(1-\rho)} + (1-\pi)\frac{(w - P_H)^{(1-\rho)}}{(1-\rho)}$$

Getting the bounds

- Search algorithm at individual level
  - New customers
- Claim rates: Poisson regressions
  - Cap at 5 possible claims for the year
- Lifetime wealth:
  - Conservative: $1 million (40 years at $25k)
  - More conservative: Insured Home Value

CRRA Bounds

	Measure of Lifetime Wealth (W): (Insured Home Value)		
Chosen Deductible	W	min ρ	max ρ
$1,000	256,900	- infinity	794
N = 2,474 (39.5%)	{113,565}		(9.242)
$500	190,317	397	1,055
N = 3,424 (54.6%)	{64,634}	(3.679)	(8.794)
$250	166,007	780	2,467
N = 367 (5.9%)	{57,613}	(20.380)	(59.130)

Interpreting Magnitude

- 50-50 gamble:
  Lose $1,000/ Gain $10 million
  - 99.8% of low-ded customers would reject
  - Rabin (2000), Rabin & Thaler (2001)
- Labor-supply calibrations, consumption-savings behavior $\Rightarrow \rho < 10$
  - Gourinchas and Parker (2002) -- 0.5 to 1.4
  - Chetty (2005) -- < 2

Wrong level of wealth?

- Lifetime wealth inappropriate if borrowing constraints.
- \$94 for \$500 insurance, 4% claim rate
  - W = \$1 million $\Rightarrow \rho = 2{,}013$
  - W = \$100k $\Rightarrow \rho = 199$
  - W = \$25k $\Rightarrow \rho = 48$

Prospect Theory

- Kahneman & Tversky (1979, 1992)
- Reference dependence
  - Not final wealth states
- Value function
  - Loss Aversion
  - Concave over gains, convex over losses
- Non-linear probability weighting

Model of Deductible Choice

- Choice between (P_L, D_L) and (P_H, D_H)
- π = probability of loss
- EU of contract:
  - $U(P,D,\pi) = \pi u(w-P-D) + (1-\pi)u(w-P)$
- PT value:
  - $V(P,D,\pi) = v(-P) + w(\pi)v(-D)$
- Prefer (P_L, D_L) to (P_H, D_H)
  - $v(-P_L) - v(-P_H) < w(\pi)[v(-D_H) - v(-D_L)]$

No loss aversion in buying

- Novemsky and Kahneman (2005) (Also Kahneman, Knetsch & Thaler (1991))
  - Endowment effect experiments
  - Coefficient of loss aversion = 1 for "transaction money"
- Köszegi and Rabin (forthcoming QJE, 2005)
  - Expected payments
- Marginal value of deductible payment > premium payment (2 times)

So we have:

- Prefer (P_L,D_L) to (P_H,D_H):

$$v(-P_L) - v(-P_H) < w(\pi)[v(-D_H) - v(-D_L)]$$

- Which leads to:

$$P_L^{\beta} - P_H^{\beta} < w(\pi)\lambda[D_H^{\beta} - D_L^{\beta}]$$

- Linear value function:

$$WTP = \Delta P = \boxed{w(\pi)\lambda}\Delta D$$

= 4 to 6 times EV

Parameter values

- Kahneman and Tversky (1992)
  - $\lambda = 2.25$
  - $\beta = 0.88$
- Weighting function

$$w(\pi) = \frac{\pi^{\gamma}}{(\pi^{\gamma} + (1-\pi)^{\gamma})^{1/\gamma}}$$

  - $\gamma = 0.69$

WTP from Model

- Typical new customer with $500 ded
  - Premium with $1000 ded = $572
  - Premium with $500 ded = +$94.53
  - 4% claim rate
- Model predicts WTP = $107
- Would model predict $250 instead?
  - WTP = $166. Cost = $177, so no.

Choices: Observed vs. Model

Chosen Deductible	Predicted Deductible Choice from Prospect Theory NLIB Specification: $\lambda = 2.25$, $\gamma = 0.69$, $\beta = 0.88$				Predicted Deductible Choice from EU(W) CRRA Utility: $\rho = 10$, W = Insured Home Value			
	1000	500	250	100	1000	500	250	100
$1,000 N = 2,474 (39.5%)	**87.39%**	11.88%	0.73%	0.00%	**100.00%**	0.00%	0.00%	0.00%
$500 N = 3,424 (54.6%)	18.78%	**59.43%**	21.79%	0.00%	100.00%	**0.00%**	0.00%	0.00%
$250 N = 367 (5.9%)	3.00%	44.41%	**52.59%**	0.00%	100.00%	0.00%	**0.00%**	0.00%
$100 N = 3 (0.1%)	33.33%	66.67%	0.00%	**0.00%**	100.00%	0.00%	0.00%	**0.00%**

Alternative Explanations

- Misestimated probabilities
  - ≈ 20% for single-digit CRRA
  - Older (age) new customers just as likely
- Liquidity constraints
- Sales agent effects
  - Hard sell?
  - Not giving menu? ($500?, data patterns)
  - Misleading about claim rates?
- Menu effects

- **Barseghyan, Molinari, O'Donoghue, and Teitelbaum (AER 2012)**
  - Micro data for same person on 4,170 households for 2005 or 2006 on
    - home insurance
    - auto collision insurance
    - auto comprehensive insurance

- Estimate a model of reference-dependent preferences with Koszegi-Rabin reference points
  - Separate role of loss aversion, curvature of value function, and probability weighting

- Key to identification: variation in probability of claim:
  - - home insurance –> 0.084
    - auto collision insurance –> 0.069
    - auto comprehensive insurance –> 0.021

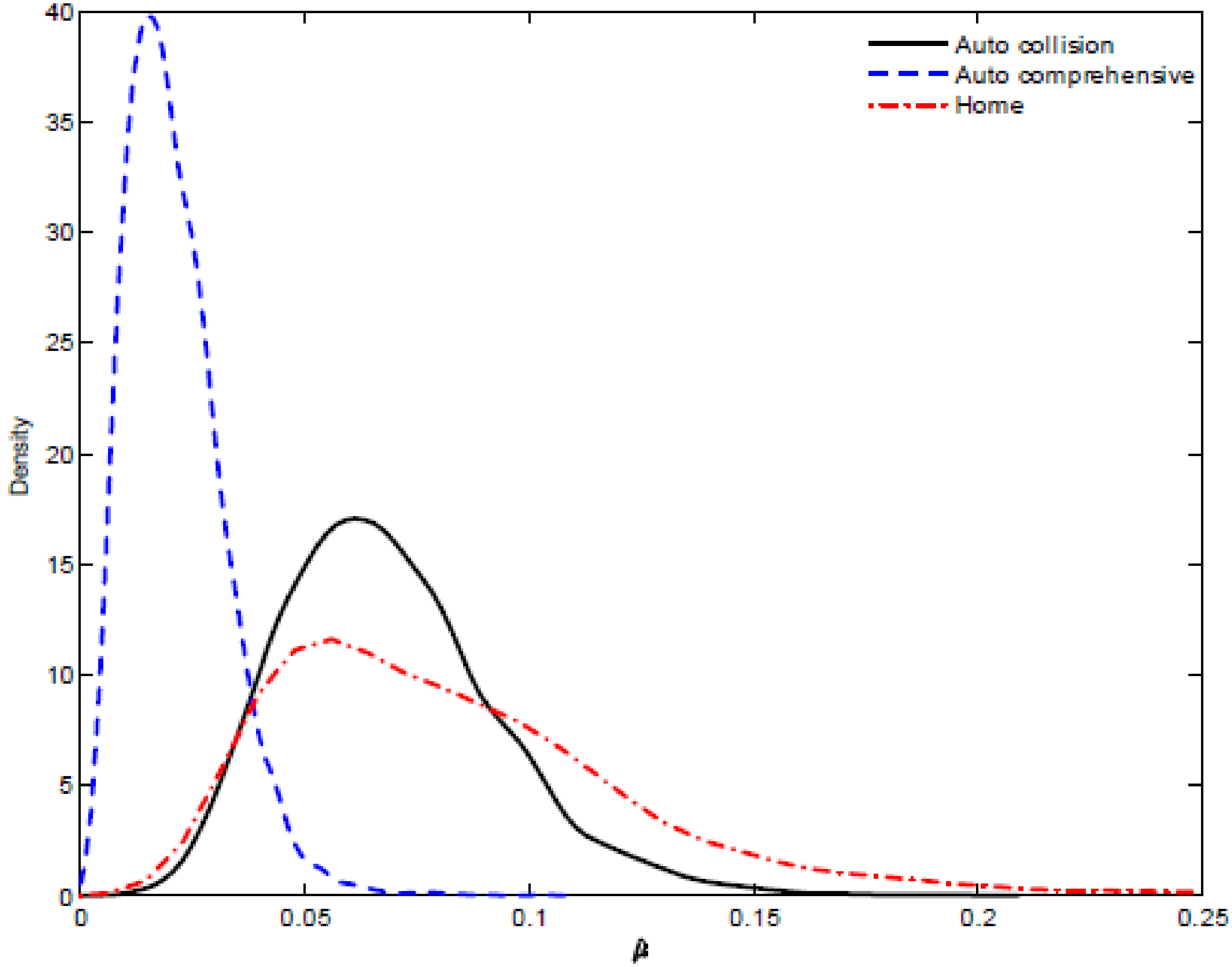


Figure 1: Empirical Density Functions for Predicted Claim Probabilities

- This allows for better identification of probability weighting function

- Main result: Strong evidence from probability weighting, implausible to obtain with standard risk aversion

- Share of probability weighting function

- With probability weighting, realistic demand for low-deductible insurance

- Follow-up work: distinguish probability weighting from probability distortion

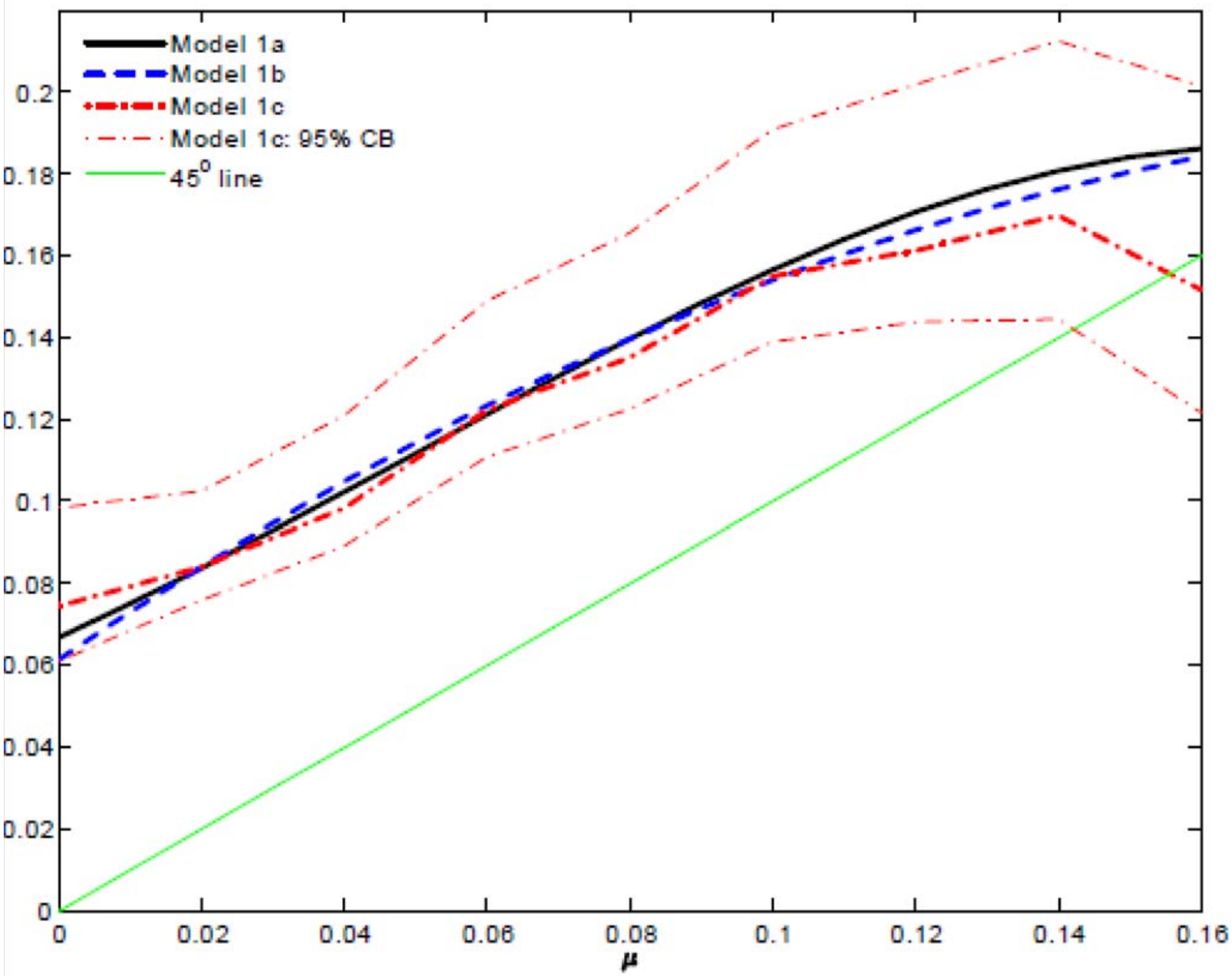


Figure 2: Estimated $\Omega(\mu)$ – Model 1

Table 6: Economic Significance

	(1)	(2)	(3)	(4)	(5)
Standard risk aversion	**r=0**	**r=0.00064**	**r=0**	**r=0.00064**	**r=0.0129**
Probability distortions?	**No**	**No**	**Yes**	**Yes**	**No**
μ	**WTP**	**WTP**	**WTP**	**WTP**	**WTP**
0.020	10.00	14.12	41.73	57.20	33.76
0.050	25.00	34.80	55.60	75.28	75.49
0.075	37.50	51.60	67.30	90.19	104.86
0.100	50.00	68.03	77.95	103.51	130.76
0.125	62.50	84.11	86.41	113.92	154.00

Notes: WTP denotes—for a household with claim rate μ, the utility function in equation (2), and the specified utility parameters—the household's maximum willingness to pay to reduce its deductible from $1000 to $500 when the premium for coverage with a $1000 deductible is $200. Columns (3) and (4) use the probability distortion estimates from Model 1a.

2 Social Preferences: Introduction

- Laboratory data from ultimatum, dictator, and trust games
  —> Clear evidence of social preferences

- **Fehr-Schmidt (QJE, 1999)** and **Charness-Rabin (QJE, 2002)**

- Simplified model of preferences of B when interacting with A:

$$\begin{aligned} U_B(\pi_A, \pi_B) &\equiv \rho\pi_A + (1-\rho)\pi_B \text{ when } \pi_B \geq \pi_A. \\ U_B(\pi_A, \pi_B) &\equiv \sigma\pi_A + (1-\sigma)\pi_B \text{ when } \pi_B \leq \pi_A. \end{aligned}$$

- Captures:
  - baseline altruism (if $\rho > 0$ and $\sigma > 0$)
  - differentially so if ahead or behind ($\rho > \sigma$)

- Example: 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 $\rho \geq .5 \geq \sigma$

- 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 B with disposable income M_B meets needy person A with income $M_A < M_B$
  - Person B decides on donation D
  - Assume parameters $\rho \geq .5 \geq \sigma$
  - This implies $\pi_A^* = \pi_B^*$ -> $M_B - D^* = M_A + D^*$ -> $D^* = (M_B - M_A)/2$
  - Wealthy person transfers half of wealth difference!
  - Clearly counterfactual

- Issue 2.
  - Lab: Person A and B.
  - 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 B treated nicely by A

- Positive reciprocity and negative reciprocity

- More evidence of the latter in experiments

3 Social Preferences: Workplace

- In the workplace, do workers respond in kind to generous behavior by employers?

- Basis for some efficiency wage models

  - Natural Experiment: Krueger-Mas (2004)

  - Field Experiment on Social Preferences: Bandiera-Barankay-Rasul (2005)

  - Field Experiments on Gift Exchange: Kube-Marechel-Puppe and Gneezy-List

- **Krueger-Mas (JPE, 2004).**

- Setting:

  - Unionized Bridgestone-Firestone plant

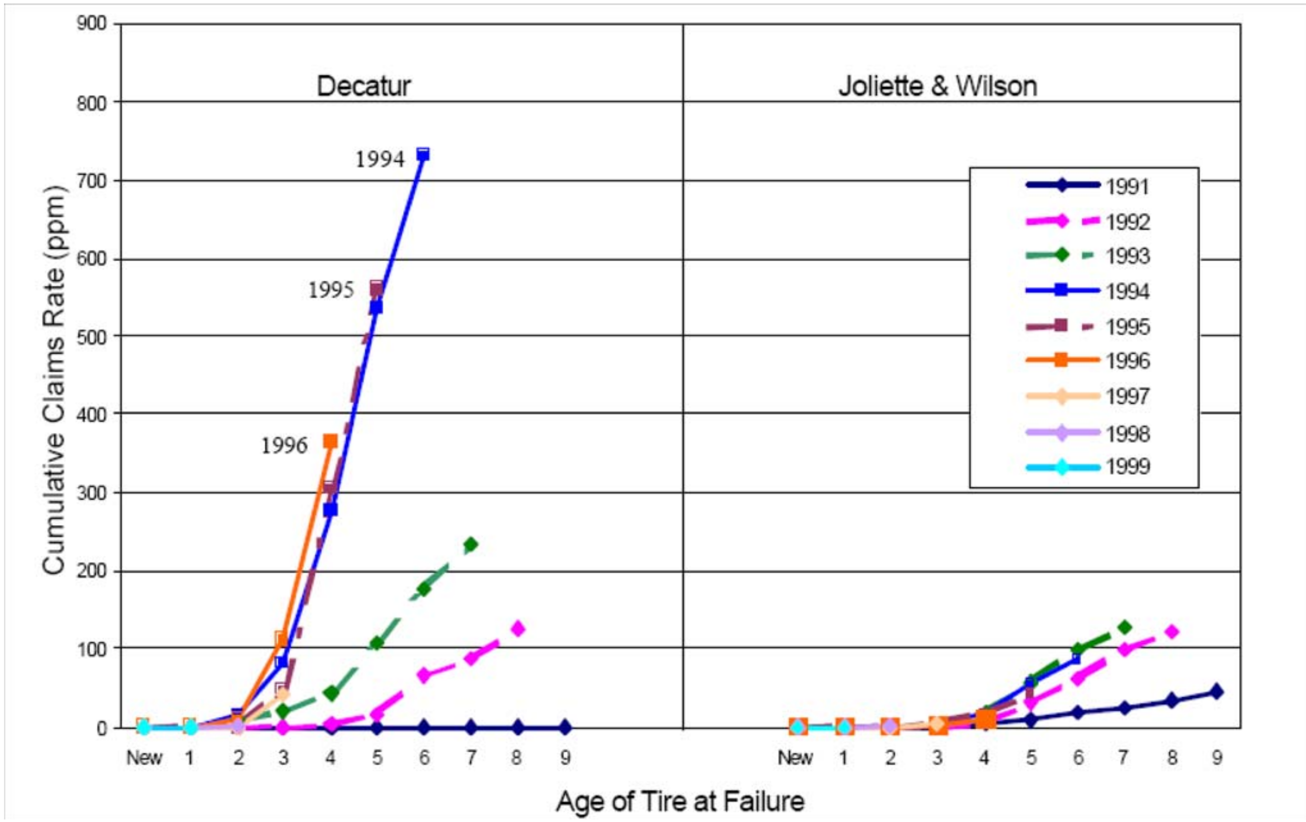
  - Workers went on strike in July 1994

  - 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

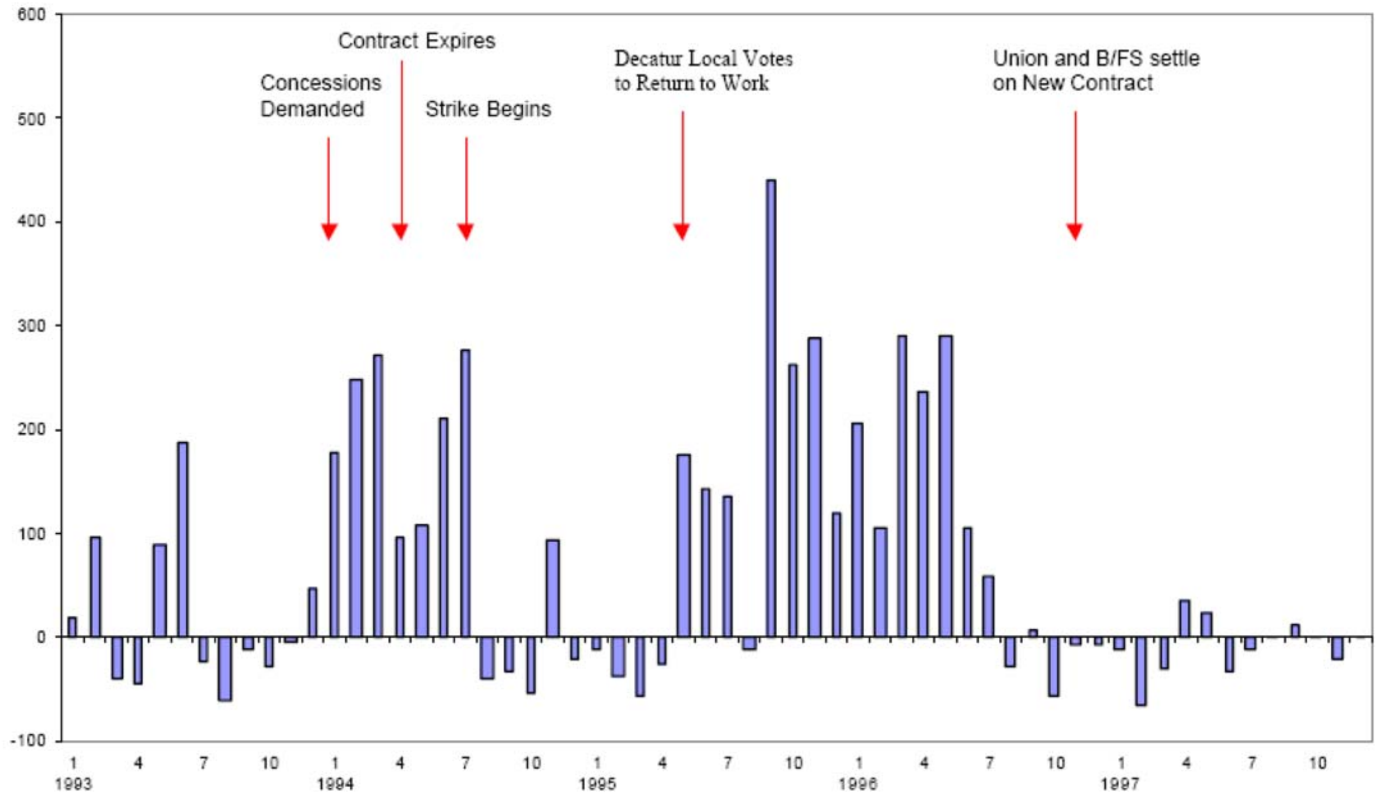
  - Agreement not reached until December 1996

- 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

- **Bandiera-Barankay-Rasul (QJE, 2005).**
- Test for impact of social preferences in the workplace
- Use personnel data from a fruit farm in the UK
- Measure productivity as a function of compensation scheme
- Timeline:
  - 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

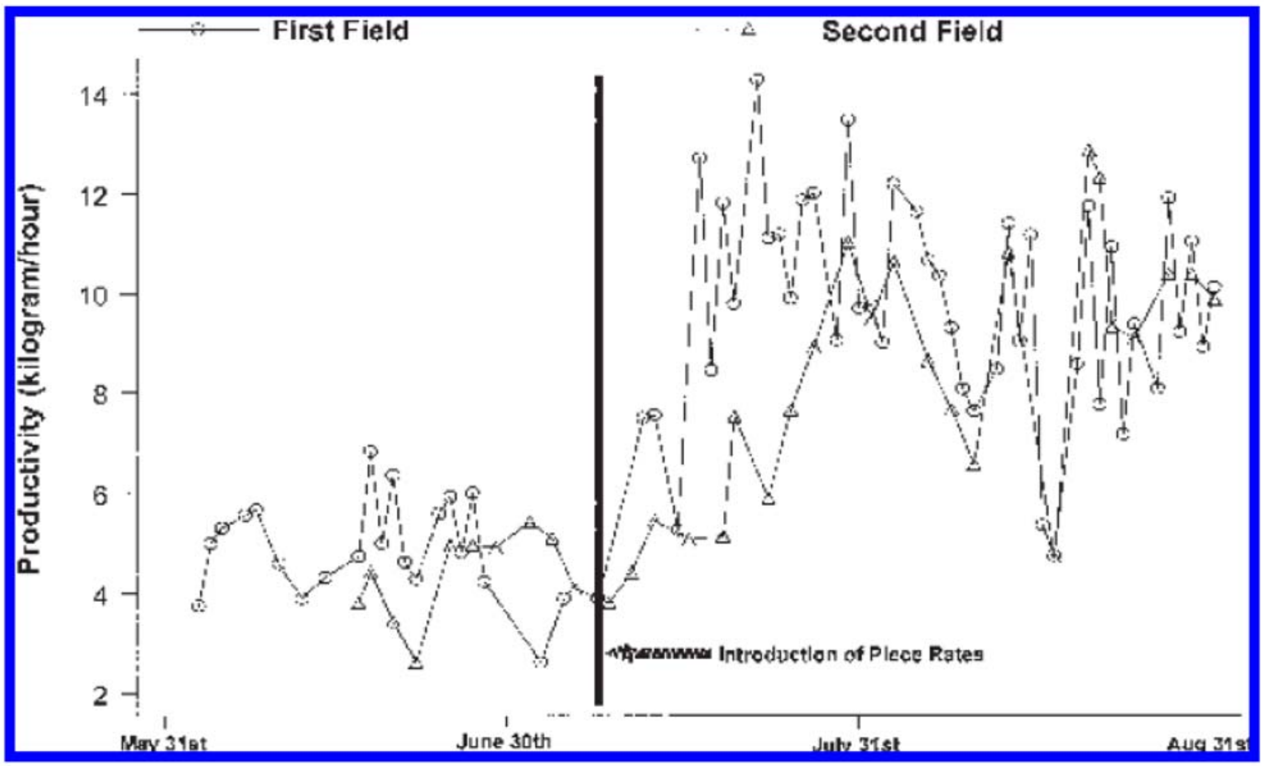


FIGURE I
Productivity (kilogram/hour) over the Season

- 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 –> Next papers

- **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 (forthcoming)**
  - 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]	

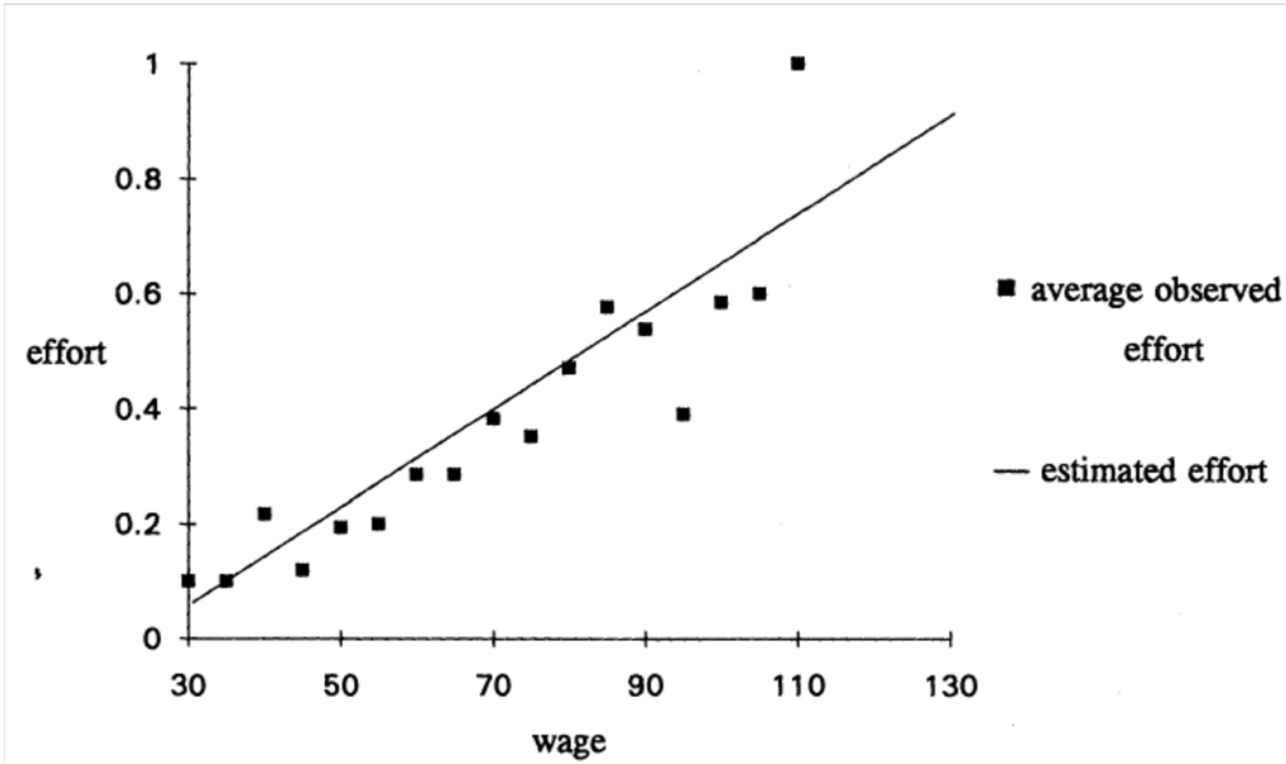
Notes: All models are estimated by OLS. All coefficients and means are multiplied by one hundred. Standard errors, clustered by campus/department, are in parentheses (818 clusters for all models). "Earnings" refers to total UC payments in 2007. Pay unit refers to the respondent's department or administrative 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.

4 Social Preferences: Gift Exchange

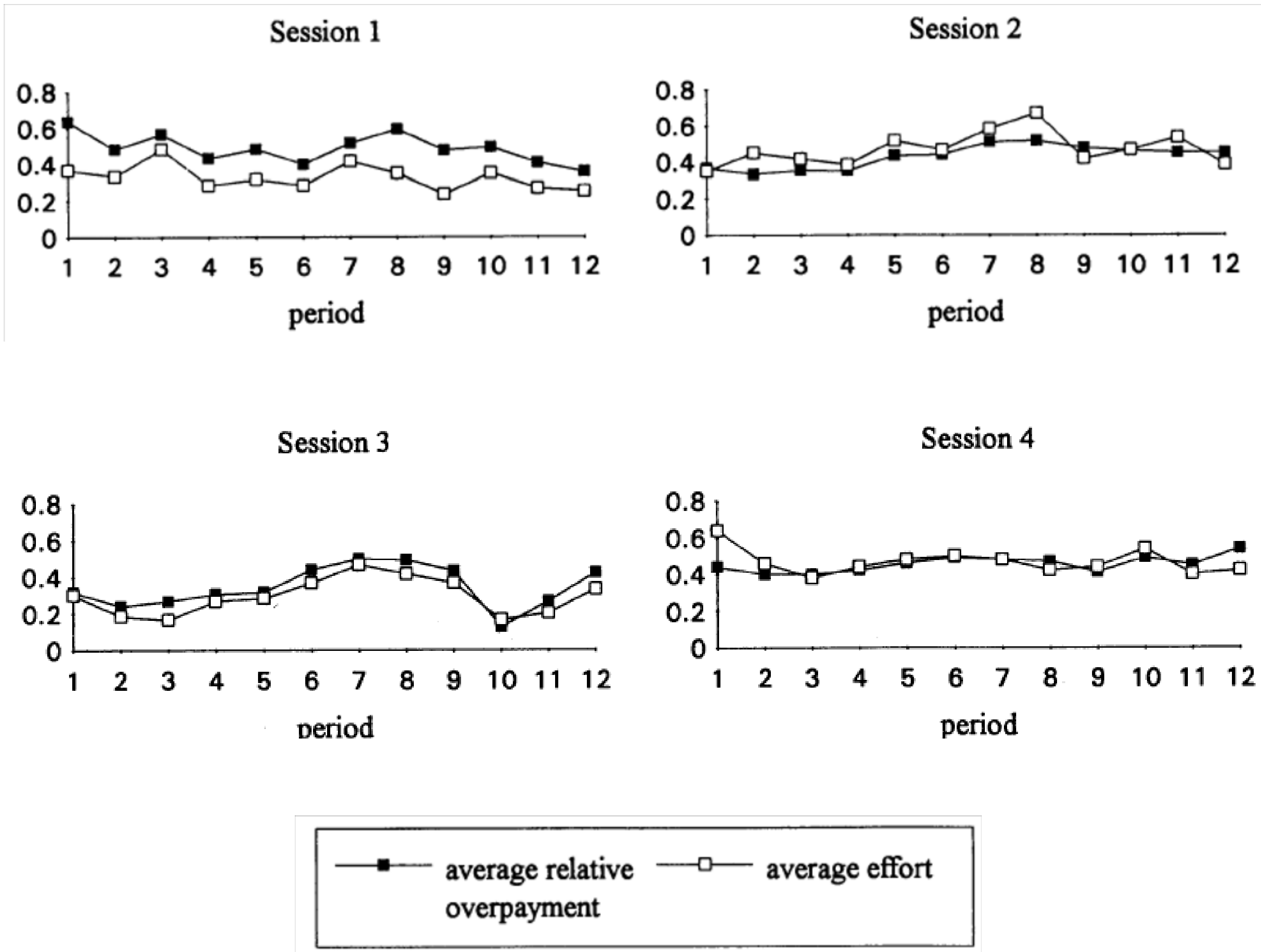
- Laboratory evidence: **Fehr-Kirchsteiger-Riedl (QJE, 1993).**
  - 5 firms bidding for 9 workers
  - Workers are first paid $w \in \{0, 5, 10, ...\}$ and then exert effort $e \in [.1, 1]$
  - Firm payoff is $(126 - w)\, e$
  - Worker payoff is $w - 26 - c\,(e)$, with $c\,(e)$ convex (but small)

- 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
Session 2
Session 3
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

- Where evidence of gift exchange in the field?

- **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

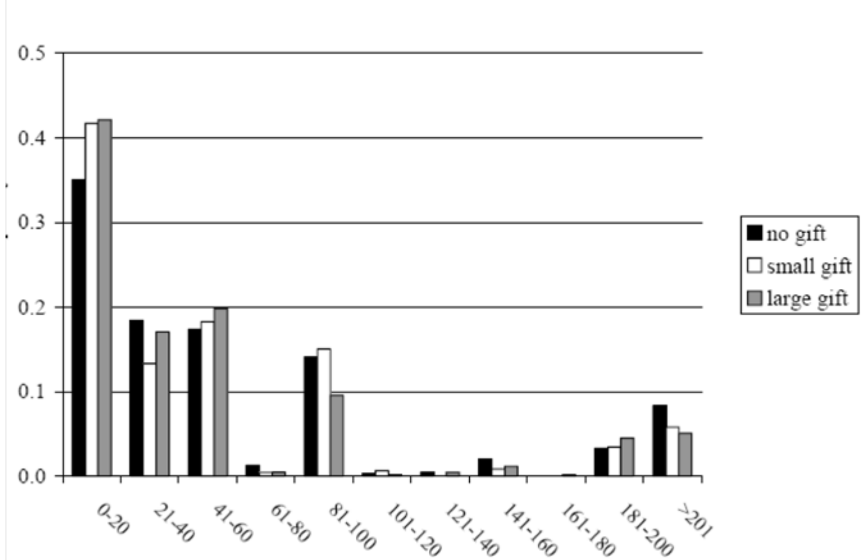
- Large gift leads to doubling of donation probability

- 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)

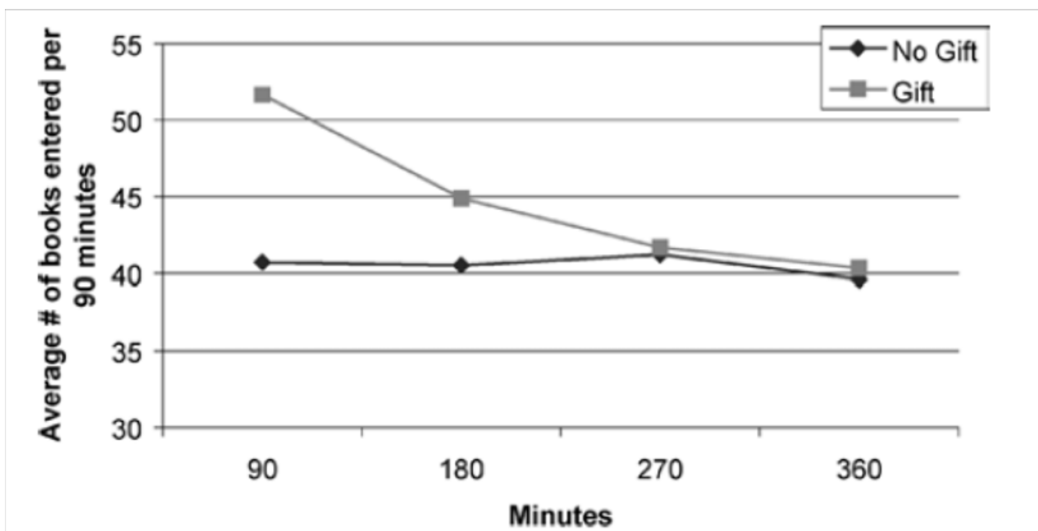
FIGURE 1: HISTOGRAMS OF DONATIONS FOR EACH TREATMENT



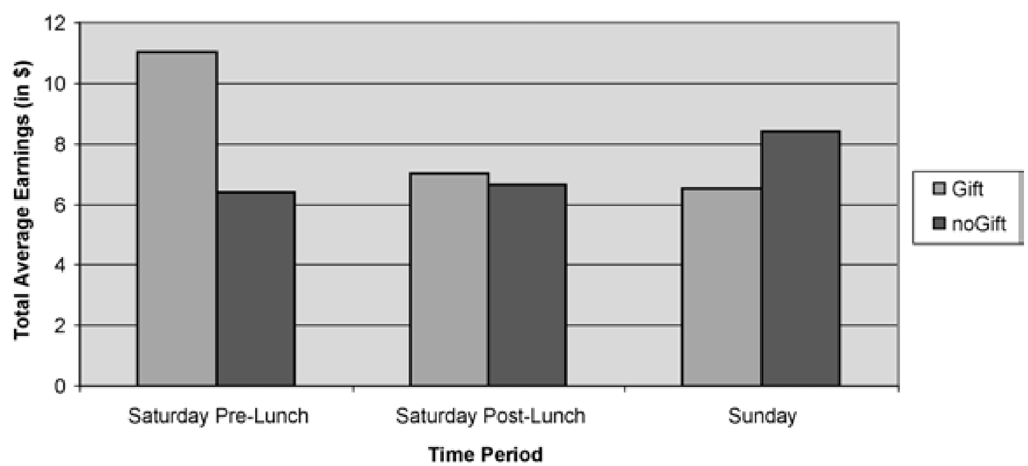
- Limited intertemporal substitution. February 2002 mailing with no gift. Percent donation is 9.6 (control), 8.9 (small gift), and 8.6 (large gift) (differences not significant)

- **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

- Issue: These papers test only for positive reciprocity

- Laboratory evidence: negative reciprocity stronger than positive reciprocity

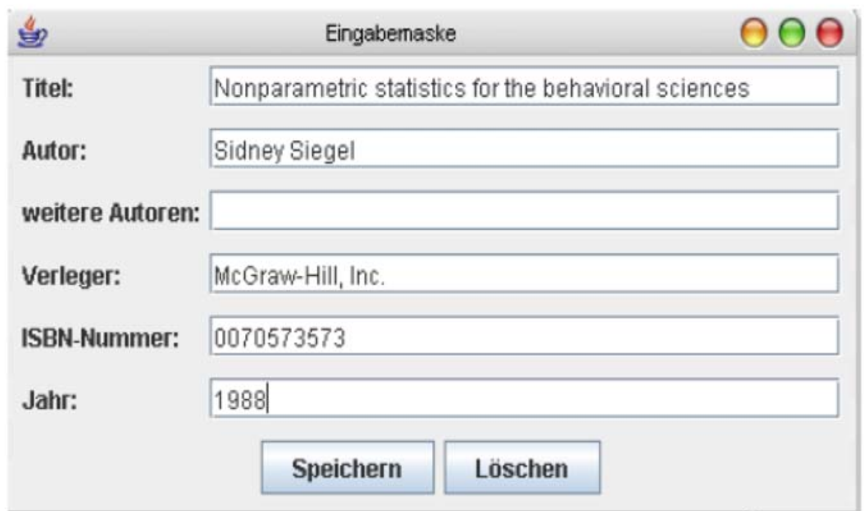
- More difficult to test for negative reciprocity

- Can say that pay is random and see what happens to (randomly) lower paid people

- **Kube-Marechal-Puppe (2007).**

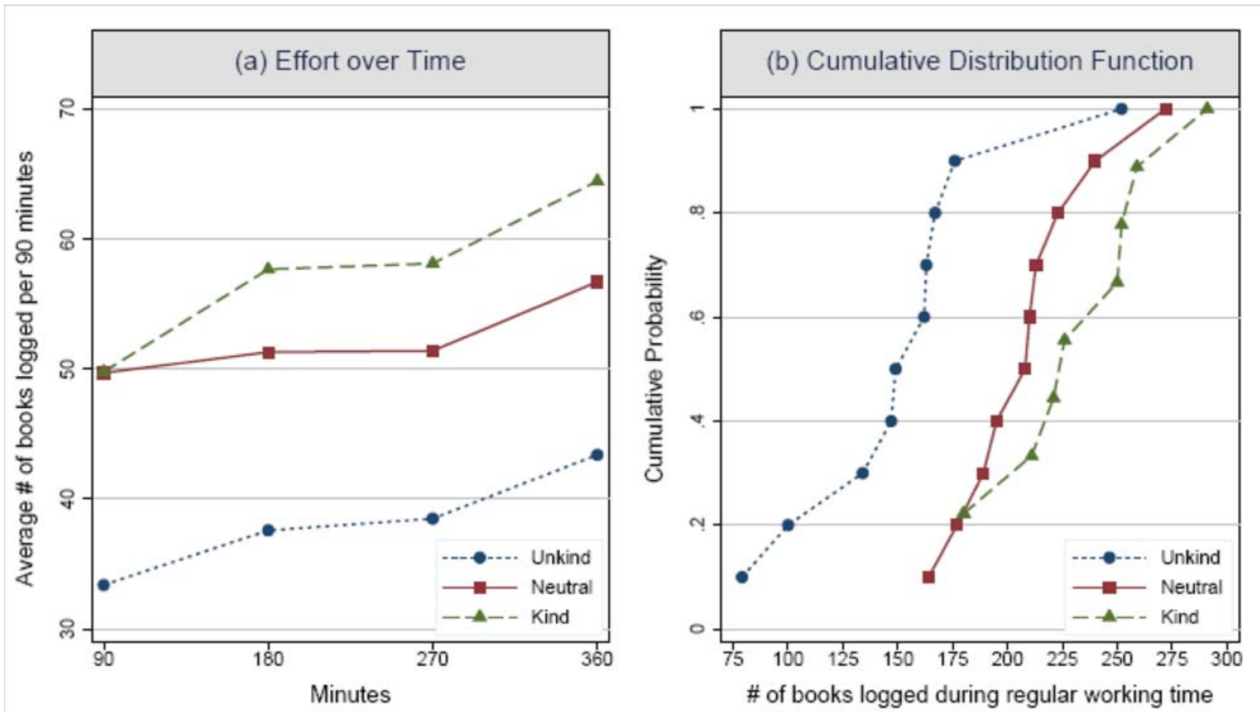
- Field Experiment: Hire job applicants to catalog books for 6 hours

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



- Notice: No effect on quality of effort (no. of books incorrectly classified)

- Finding consistent with experimental results:

  - Positive reciprocity weaker than negative reciprocity

- 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

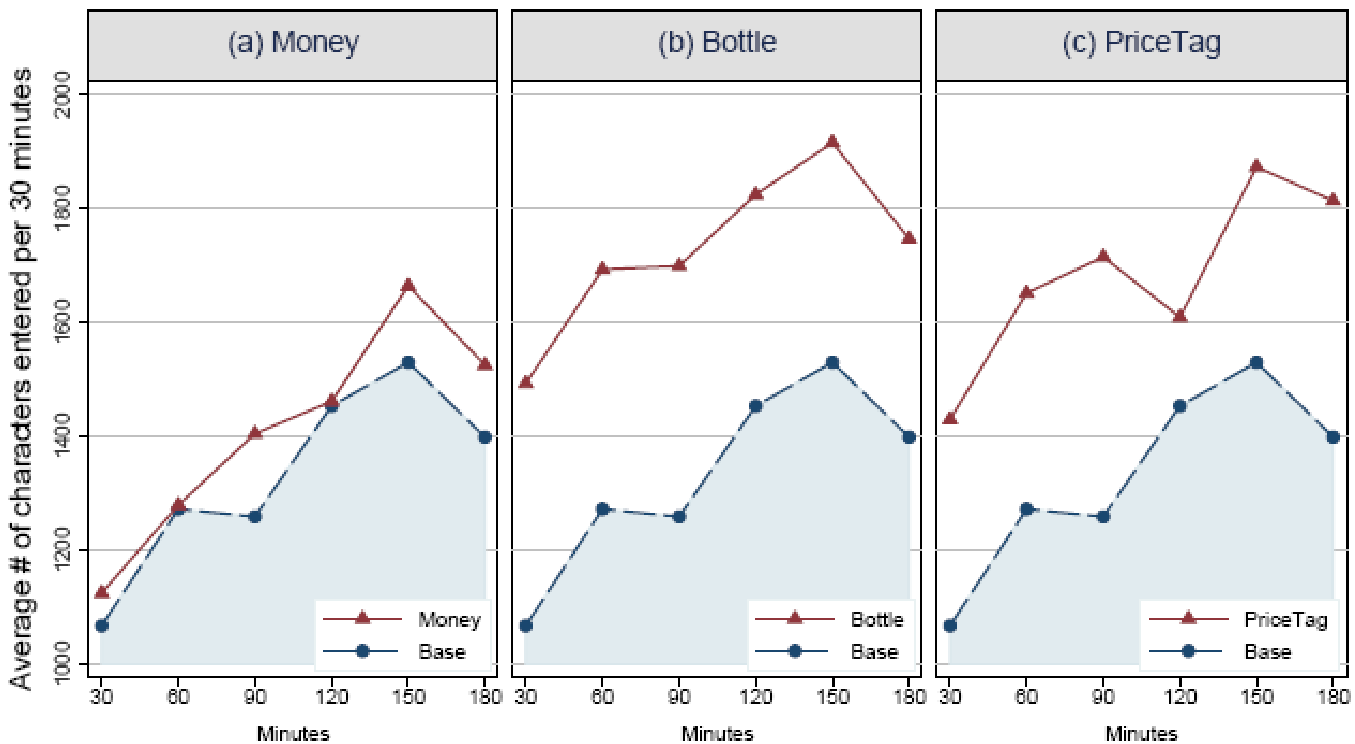
- **Kube-Marechal-Puppe (2008).**

- 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. Works more on negative than on positive side (as in lab)

3. Effect is sensitive to perception of gift

- BUT: Think harder about these conclusions using **models**

- **Concl. 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)

  - Intuition: Firm does not fall behind the worker just because of a pay increase

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

- **Concl. 2.** Positive gifts work more than negative gifts

- But: key unobservable is *cost of effort*: How costly is it to increase effort at margin?
  - If not costly –> minuscule reciprocity can generate gift exchange
  - If costly –> reciprocity needs to be sizeable
  - Cost of effort could be such that positive reciprocity is stronger than negative, but marginal cost of effort steeply increasing, confounding conclusions

- **[Add slides]**

Gift Exchange Field Experiment

- Simple model of utility maximization of worker in gift exchange experiment

$$\max_{e} u(e) = W + p_W e - C(e) + \alpha (p_F - p_W) e$$

  - e is effort, measurable
  - W is fixed payment, say gift
  - p_W is piece-rate (typically zero in experiments)
  - $C(e)$ is cost of effort
  - α is altruism coefficient
  - p_F is return to the firm for unit of effort

- Would like to estimate α, and how it changes when a gift is given

Gift Exchange Field Experiment

- Simple model of utility maximization of worker in gift exchange experiment

$$\max_e u(e) = W + p_W e - C(e) + \alpha (p_F - p_W) e$$

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  - $C(e)$ is cost of effort
  - α is altruism coefficient
  - p_F is return to the firm for unit of effort

- First-order condition:

$$p_W + \alpha (p_F - p_W) - C'(e^*) = 0$$

- Can we estimate α? Missing p_F and $C(e)$

Gift Exchange Field Experiment – Design

- Standard gift-exchange field experiment is missing two key components:
  - Issue 1. The worker does not know how much effort is worth to the firm: coding a library book?
  - Issue 2. Cost of effort is not observed
  - These issues make it impossible to estimate parameters, and also to make inference on positive versus negative reciprocity

- **DellaVigna, List, Malmendier, and Rao** (work in progress). Remedy this with a new design
  - Address issue 1 by informing workers of their return to the firm
  - Address issue 2 by estimating the cost of effort function by varying the piece rate

Gift Exchange Field Experiment – Design

- Recruit for a temporary, one-day 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

"The envelopes filled in this session will be used in a campaign for Charity 1. As mentioned before, Charity 1 will be paying for your work, and in this session you will receive $ __X___ / envelope completed in this session, as noted on your schedule.

Charity 1 has run a number of such campaigns in the past, and historically has gotten roughly $___Y_____per mailer in similar campaigns. Taking account of Charity 1's payment for your help today, it expects to get roughly $ Y – X for each envelope that you prepare during this session."

Gift Exchange Field Experiment – Design

- To estimate cost of effort, we do within experiment (for power reason)
- Every 30 minutes, different treatment with 5 minute breaks
  - We vary the piece rate X
  - We vary the return to charity Y
- To do so plausibly, we have workers work for two different charities
- Later in the day, we introduce a gift

- This design should allow us to estimate all parameters, and crucially both the level of altruism α, and how it varies with the gift
- Design also allows us to reject simple altruism/reciprocity model, if appropriate

- **List (JPE, 2006).** Test of social preferences from sellers to buyers

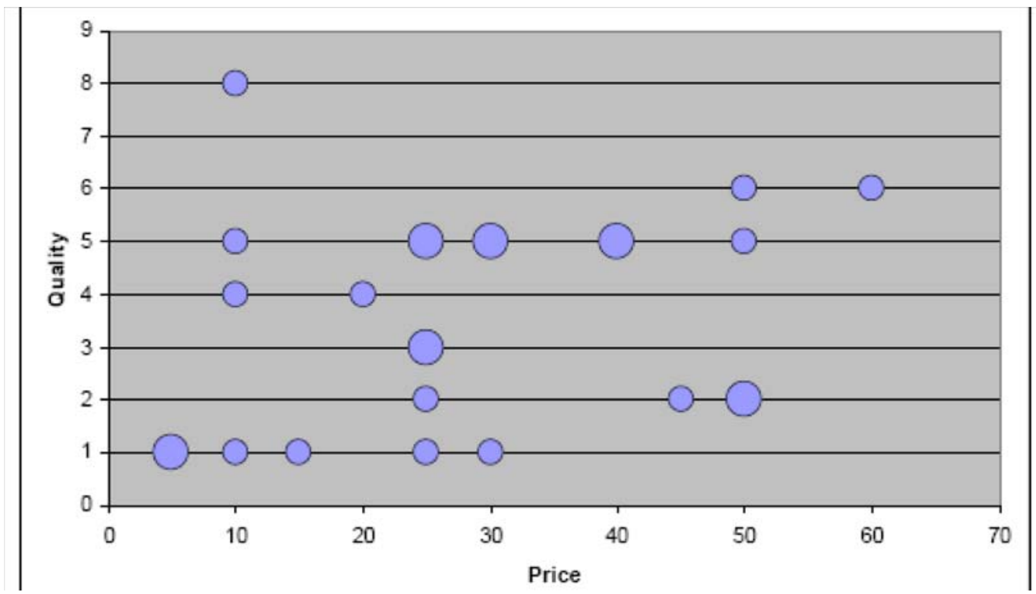
- Context: sports card fairs –> Buyers buying a particular (unrated) card from dealers

- Compare effect of laboratory versus field setting

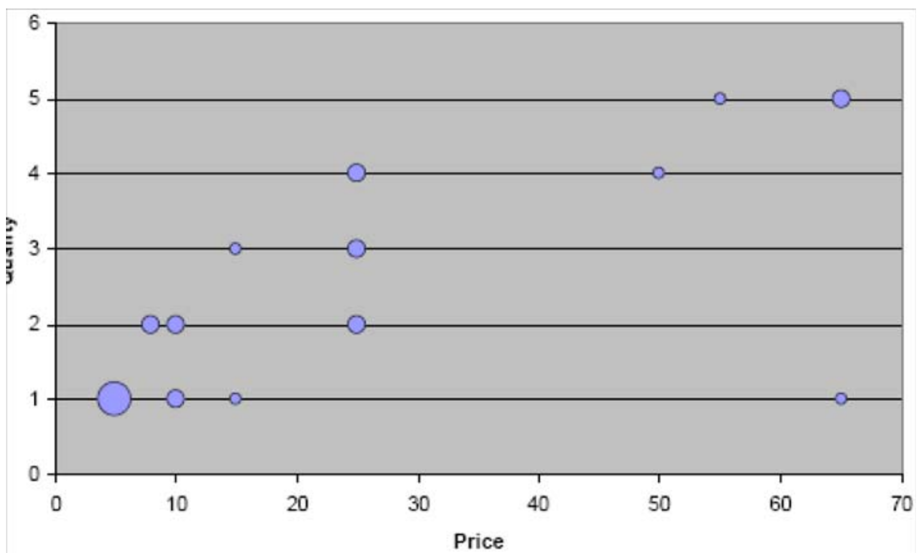
- *Treatment I-R.* Clever dual version to the **Fehr-Kirchsteiger-Riedl (1993)** payoffs
  - Laboratory setting, abstract words
  - Buyer pay $p \in \{5, 10, ...\}$ and dealer sells card of quality $q \in [.1, 1]$
  - Buyer payoff is $(80 - p)\, q$
  - Dealer payoff is $p - c(q)$, with $c(q)$ convex (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

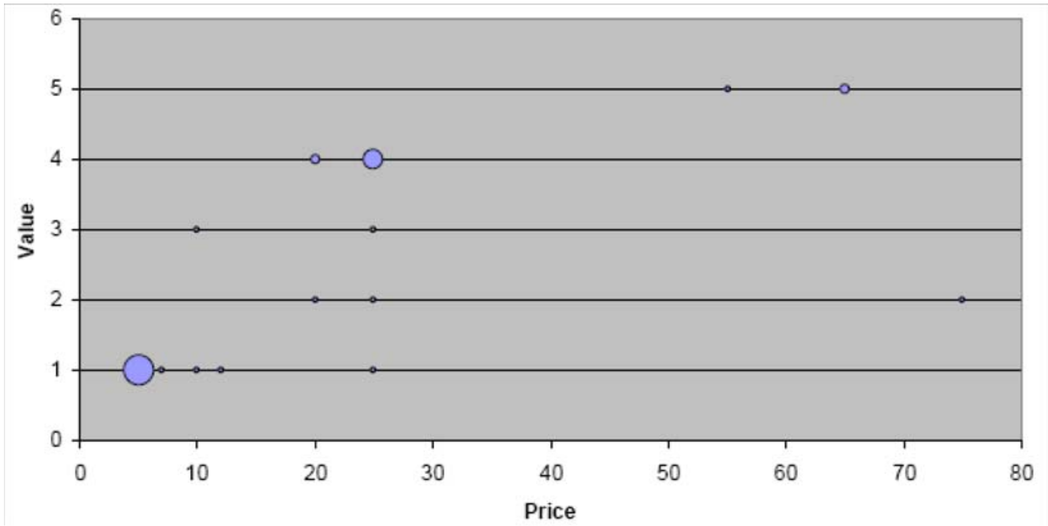


- *Treatment I-RF.* Similar result (with more instances of $p = 5$) when payoffs changed to
  - Buyer payoff is $v(q) - p$
  - Dealer payoff is $p - c(q)$, with $c(q)$ convex (but small)
  - $v(q)$ estimated value of card to buyer, $c(q)$ estimate cost of card to dealer

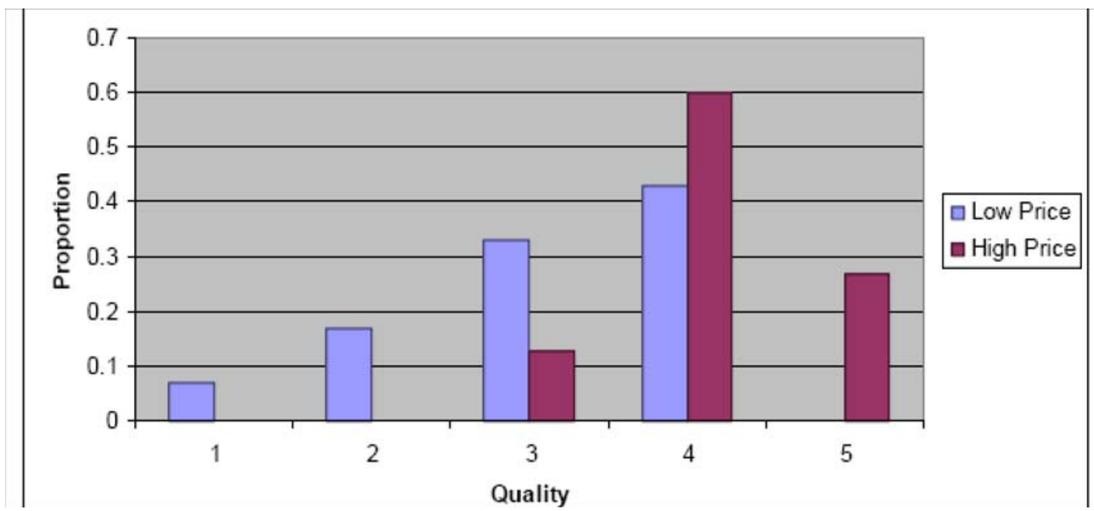


- *Treatment II-C.* Same as Treatment I-RF, except that use context (C) of Sports Card

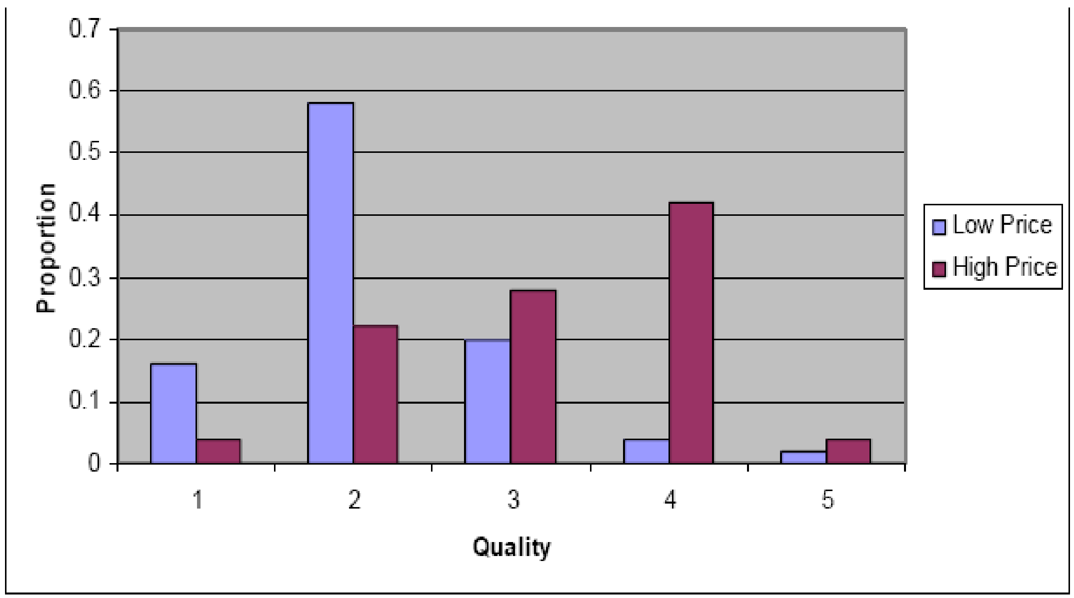
- Relatively similar results



- *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

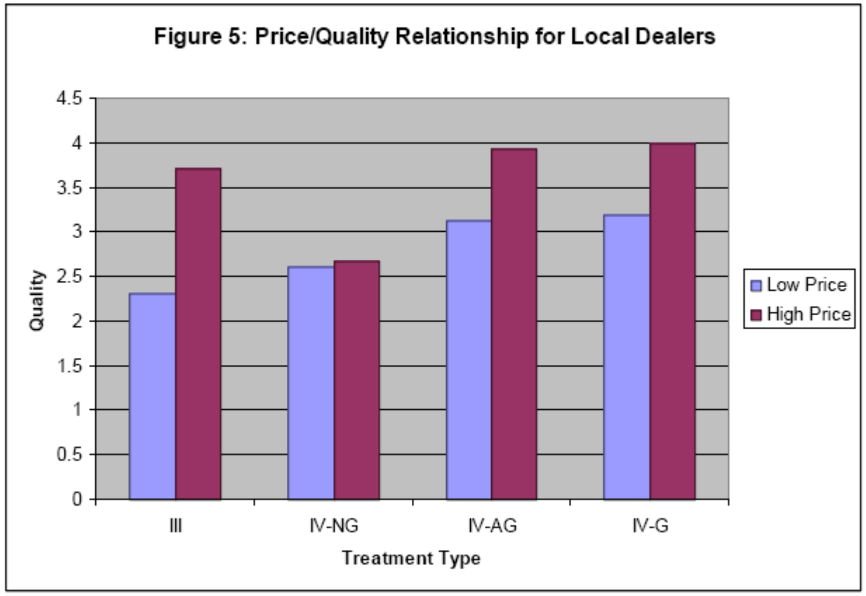


Figure 5: Price/Quality Relationship for Local Dealers
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Quality
III
IV-NG
IV-AG
IV-G
Treatment Type
Low Price
High Price

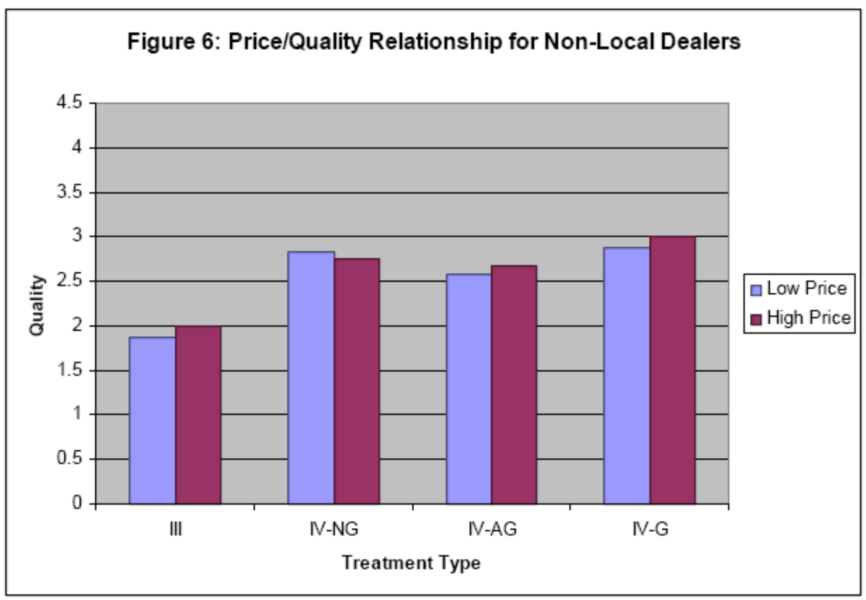


Figure 6: Price/Quality Relationship for Non-Local Dealers
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Quality
III
IV-NG
IV-AG
IV-G
Treatment Type
Low Price
High Price

Table 1. Experimental Design

Treatment I	**Treatment I-R** *Replicate lab studies* *n* = 25	**Treatment I-RF** *Extend to field values* *n* = 25	**Treatment I-RF1** *Extend to one-shot environment* *n* = 27
Treatment II	**Treatment II-C** *Adds market context* *n* = 32	**Treatment II-M$20** *Adds market interaction* *n* = 30	**Treatment II-M$65** *Adds market interaction* *n* = 30
Treatment III	**Treatment III$20** *Naturally occurring sportscards* *n* = 50	**Treatment III$65** *Naturally occurring sportscards* *n* = 50	
Treatment IV	**Treatment IV-NG** *Naturally occurring tickets before grading was available* *n* = 60	**Treatment IV-AG** *Naturally occurring tickets post-grading announcement* *n* = 54	**Treatment IV-G** *Naturally occurring tickets when grading service is available* *n* = 36

Notes: Each cell represents one (or two, in the case of Treatment IV) unique treatment. For example, Treatment I-R in row 1, column 1, denotes that 25 dealer and 25 nondealer observations were gathered to replicate the laboratory gift exchange studies in the literature.

Table 3: Marginal Effects Estimates for the Sellers' Quality[a,b]

	Treatment Type									
Variable	**I-R**	**I-RF**	**I-RF1**	**II-C**	**II-M**	**III**	**IV-NG**	**IV-AG**	**IV-G**	**IV-P**
Price	0.05*	0.05^	0.10^	0.06^	0.02^	0.02^	-0.001	0.02^	0.02	0.02^
	(1.8)	(3.3)	(5.0)	(4.2)	(4.4)	(6.6)	(0.01)	(2.1)	(1.1)	(2.6)
Constant	0.6	-0.4	-0.8	-0.6	1.6^	0.6^	1.7^	1.6^	1.8^	1.7^
	(0.7)	(0.7)	(1.7)	(1.7)	(6.2)	(3.1)	(8.0)	(5.8)	(3.3)	(7.3)
θ	---	$0.72^	$1.3^	$0.77^	0.45^	$0.21^	$0.01	$0.17	$0.23	$0.21^
		(3.6)	(5.5)	(4.2)	(2.1)	(5.0)	(0.3)	(1.1)	(1.1)	(2.3)
Person Random Effects	YES	YES	NO	NO	YES	YES	YES	YES	YES	YES
N	25	25	27	32	60	100	60	54	36	90

[a]Dependent variable is the sellers' product quality given to the buyer. IV-P pools IV-AG and IV-G data. θ is the monetary gift exchange estimate, computed as $\partial v(q)/\partial P$.
[b]t-ratios (in absolute value) are beneath marginal effect estimates.
^ Significant at the .05 level.
* Significant at the .10 level.

Table 4: Marginal Effects Estimates for the Sellers' Quality Split by Dealer Type[a,b,c]

	Treatment Type								
Variable	**III_L**	**III_N**	**$IV\text{-}NG_L$**	**$IV\text{-}NG_N$**	**$IV\text{-}AG_L$**	**$IV\text{-}AG_N$**	**$IV\text{-}G_L$**	**IVG_N**	**$IV\text{-}P_L$**
Price	0.03^	0.004	0.002	-0.005	0.04^	0.003	0.04^	0.003	0.04^
	(8.6)	(0.7)	(0.2)	(0.5)	(2.1)	(0.3)	(2.7)	(0.1)	(4.8)
Constant	0.6^	0.6^	1.6^	1.8^	1.7^	1.5^	1.8^	1.8*	1.8^
	(4.1)	(4.6)	(5.0)	(5.2)	(5.2)	(4.6)	(5.0)	(1.7)	(10.0)
θ	$0.31^	$0.01	$0.02	-$0.006	$0.32	$0.02	$0.42	$0.03	$0.35^
	(5.2)	(0.5)	(0.4)	(0.5)	(1.4)	(0.6)	(1.5)	(0.1)	(2.1)
Person Random Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	70	30	36	24	30	24	20	16	50

- Conclusion on gift exchange and social preferences
  - Reciprocation and gift exchange are present in field-type setting (Falk)
  - They disappear fast (Gneezy-List)...
  - ...Or maybe not (Kube et al.)
  - They are stronger on the negative than on the positive side (Kube et al.)
  - Not all individuals display them – not dealers, for example (List)
  - Laboratory settings may (or may not) matter for the inferences we derive

5 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): Braoder 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 stastitical 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.** Two key issues: Power calculations and Pilots
  - *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 $\sqrt{p(1-p)/n}$
      - 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 use pilot as data analysis (sample too small)

- **Advice 5.** Other practical issues:
  - Mostly refer to **Duflo-Glennerster-Kremer (NBER, 2006)**
  - Approval from Humans Subjects!
    - At Berkeley, takes about 2 months
    - More about this later
  - 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 to do if requires just computerized implementation (ex: loan offers)

- Monitor what happens in the field *continuously*

- Build in data redundancy to catch measurement error or implementation problems

    * Example: 'Did you see a flyer on the door?' in DellaVigna-List-Malmendier (2009)

- **Advice 6.** Start looking soon for funding
  - Funding harder to obtain for graduate students
  - Good options:
    * IBER: $1,000 administered quickly (one week or so)
    * Russel Sage Small Grant Program: $5,000 ($2,500 for paying subjects) (two to three months)
    * NSF dissertation improvement grant website (http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13453)
    * Look at CVs of assistant professors in your field or job market students (Jonas' advice)
    * Ask your advisor –> May know of some funding sources

6 Reference Dependence: Endowment Effect

- Plott and Zeiler (AER 2005) replicating Kahneman, Knetsch, and Thaler (JPE 1990)
  - Half of the subjects are given a mug and asked for WTA
  - Half of the subjects are shown a mug and asked for WTP
  - Finding: $WTA \simeq 2 * WTP$

Table 2: Individual Subject Data and Summary Statistics from KKT Replication

Treatment	Individual Responses (in U.S. dollars)	Mean	Median	Std. Dev.
WTP (n = 29)	0, 0, 0, 0, 0.50, 0.50, 0.50, 0.50, 0.50, 1, 1, 1, 1, 1, 1.50 2, 2, 2, 2, 2, 2.50, 2.50, 2.50, 3, 3, 3.50, 4.50, 5, 5	1.74	1.50	1.46
WTA (n = 29)	0, 1.50, 2, 2, 2.50, 2.50, 3, 3.50, 3.50, 3.50, 3.50, 3.50, 4, 4.50 4.50, 5.50, 5.50, 5.50, 6, 6, 6, 6.50, 7, 7, 7, 7.50, 7.50, 7.50, 8.50	4.72	4.50	2.17

- How do we interpret it? Use reference-dependence in piece-wise linear form
  - Assume only gain-loss utility, and assume piece-wise linear formulation (1)+(3)
  - Two components of utility: utility of owning the object $u(m)$ and (linear) utility of money p
  - Assumption: No loss-aversion over money
  - WTA: Given mug –> $r = \{mug\}$, so selling mug is a loss
  - WTP: Not given mug –> $r = \{\varnothing\}$, so getting mug is a gain
  - Assume $u\{\varnothing\} = 0$

- This implies:
  - WTA: Status-Quo $\sim$ Selling Mug

$$u\{mug\} - u\{mug\} = \lambda\left[u\left\{\varnothing\right\} - u\{mug\}\right] + p_{WTA} \text{ or}$$
$$p_{WTA} = \lambda u\{mug\}$$

  - WTP: Status-Quo $\sim$ Buying Mug

$$u\left\{\varnothing\right\} - u\left\{\varnothing\right\} = u\{mug\} - u\left\{\varnothing\right\} - p_{WTP} \text{ or}$$
$$p_{WTP} = u\{mug\}$$

  - It follows that

$$p_{WTA} = \lambda u\{mug\} = \lambda p_{WTP}$$

  - If loss-aversion over money,

$$p_{WTA} = \lambda^2 p_{WTP}$$

- Result $WTA \simeq 2 * WTP$ is consistent with loss-aversion $\lambda \simeq 2$
- Plott and Zeiler (*AER* 2005): The result disappears with
  - appropriate training
  - practice rounds
  - incentive-compatible procedure
  - anonymity

Pooled Data	WTP (n = 36)		6.62	6.00	4.20
	WTA (n = 38)		5.56	5.00	3.58

- What interpretation?

- Interpretation 1. Endowment effect and loss-aversion interpretation are wrong

  - Subjects feel bad selling a 'gift'

  - Not enough training

- Interpretation 2. In Plott-Zeiler (2005) experiment, subjects did *not* perceive the reference point to be the endowment

- Koszegi-Rabin: *Assume* reference point $(.5,\ \{mug\};\ .5,\ \{\varnothing\})$ in both cases

  - WTA:

$$\left[\begin{array}{c} .5*[u\{mug\}-u\{mug\}] \\ +.5*[u\{mug\}-u\{\varnothing\}] \end{array}\right] = \left[\begin{array}{c} .5*\lambda\left[u\{\varnothing\}-u\{mug\}\right] \\ +.5*\left[u\{\varnothing\}-u\{\varnothing\}\right] \end{array}\right] + p_{WTA}$$

  - WTP:

$$\left[\begin{array}{c} .5*\lambda\left[u\{\varnothing\}-u\{mug\}\right] \\ +.5*\left[u\{\varnothing\}-u\{\varnothing\}\right] \end{array}\right] = \left[\begin{array}{c} .5*[u\{mug\}-u\{mug\}] \\ +.5*[u\{mug\}-u\{\varnothing\}] \end{array}\right] - p_{WTP}$$

  - This implies no endowment effect:

$$p_{WTA} = p_{WTP}$$

- Notice: Open question, with active follow-up literature
  - Plott-Zeiler (*AER* 2007): Similar experiment with different outcome variable: Rate of subjects switching
  - Isoni, Loomes, and Sugden (*AER* 2010):
    * In Plott-Zeiler data, there is endowment effect for lotteries in training rounds on lotteries!
    * New experiments: for lotteries, mean WTA is larger than the mean WTP by a factor of between 1.02 and 2.19
- Rejoinder paper(s)?

- List (*QJE* 2003) – Further test of endowment effect and role of experience

- Protocol:

  – Get people to fill survey

  – Hand them memorabilia card A (B) as thank-you gift

  – After survey, show them memorabilia card B (A)

  – "Do you want to switch?"

  – "Are you going to keep the object?"

  – Experiments I, II with different object

- Prediction of Endowment effect: too little trade

- Experiment I with Sport Cards – Table II

TABLE II
SUMMARY TRADING STATISTICS FOR EXPERIMENT I: SPORTSCARD SHOW

Variable	Percent traded	p-value for Fisher's exact test
Pooled sample (n = 148)		
Good A for Good B	32.8	<0.001
Good B for Good A	34.6	
Dealers (n = 74)		
Good A for Good B	45.7	0.194
Good B for Good A	43.6	
Nondealers (n = 74)		
Good A for Good B	20.0	<0.001
Good B for Good A	25.6	

a. Good A is a Cal Ripken, Jr. game ticket stub, circa 1996. Good B is a Nolan Ryan certificate, circa 1990.
b. Fisher's exact test has a null hypothesis of no endowment effect.

- Experiment II with Pins – Table V

TABLE V

SUMMARY TRADING STATISTICS FOR EXPERIMENT II: PIN TRADING STATION

Variable	Percent traded	p-value for Fisher's exact test
Pooled sample (n = 80)		
Good C for Good D	25.0	<0.001
Good D for Good C	32.5	
Inexperienced consumers (<7 trades monthly; n = 60)	25.0	<0.001
Experienced consumers (≥7 trades monthly; n = 20)	40.0	0.26
Inexperienced consumers (<5 trades monthly; n = 50)	18.0	<0.001
Experienced consumers (≥5 trades monthly; n = 30)	46.7	0.30

- **Finding 1.** Strong endowment effect for inexperienced dealers

- How to reconcile with Plott-Zeiler?
  - Not training? No, nothing difficult about switching cards)
  - Not practice? No, people used to exchanging cards)
  - Not incentive compatibility? No
  - Is it anonymity? Unlikely
  - Gift? Possible

- **Finding 2.** Substantial experience lowers the endowment effect to zero
  - Getting rid of loss aversion?
  - Expecting to trade cards again? (Koszegi-Rabin, 2005)

- Objection 1: Is it experience or is it just sorting?
- Experiment III with follow-up of experiment I – Table IX

TABLE IX

SUMMARY STATISTICS FOR EXPERIMENT III: FOLLOW-UP SPORTSCARD SHOW

	Increased number of trades	Stable number of trades	Decreased number of trades
No trade in Experiment I; trade in Experiment III	13	1	2
No trade in Experiment I; no trade in Experiment III	8	7	11
Trade in Experiment I; Trade in Experiment III	4	0	0
Trade in Experiment I; No trade in Experiment III	2	0	5
N	27	8	18

a. Columns denote changes in subjects' trading experience over the year; rows denote subjects' behavior in the two field trading experiments.
b. Fifty-three subjects participated in both Experiment I and the follow-up experiment.

- Objection 2. Are inexperienced people indifferent between different cards?

- People do not know own preferences – Table XI

TABLE XI
SELECTED CHARACTERISTICS OF TUCSON SPORTSCARD PARTICIPANTS

	Dealers		Nondealers	
	WTA mean (std. dev.)	WTP mean (std. dev.)	WTA mean (std. dev.)	WTP mean (std. dev.)
Bid or offer	8.15	6.27	18.53	3.32
	(9.66)	(6.90)	(19.96)	(3.02)
Trading experience	16.67	15.78	4.00	3.73
	(19.88)	(13.71)	(5.72)	(3.46)
Years of market experience	10.23	10.57	5.97	5.60
	(5.61)	(8.13)	(5.87)	(6.70)

- Objection 3. What are people learning about?

- Getting rid of loss-aversion?

- Learning better value of cards?

- If do not know value, adopt salesman technique

- Is learning localized or do people generalize the learning to other goods?

- List (*EMA*, 2004): Field experiment similar to experiment I in List (2003)

- Sports traders but objects are mugs and chocolate

- Trading in four groups:

  1. Mug: "Switch to Chocolate?"

  2. Chocolate: "Switch to Mug?"

  3. Neither: "Choose Mug or Chocolate?"

  4. Both: "Switch to Mug or Chocolate?"

	Preferred Exchange	p-Value for Fisher's Exact Test
Panel D. Trading Rates		
Pooled nondealers (n = 129)	.18 (.38)	< .01
Inexperienced consumers (< 6 trades monthly; n = 74)	.08 (.27)	< .01
Experienced consumers (≥ 6 trades monthly; n = 55)	.31 (.47)	< .01
Intense consumers (≥ 12 trades monthly; n = 16)	.56 (.51)	.64
Pooled dealers (n = 62)	.48 (.50)	.80

- Large endowment effect for inexperienced card dealers
- No endowment effect for experienced card dealers!
- Learning (or reference point formation) generalizes beyond original domain

- More recent evidence: Ericson and Fuster (QJE 2011)

7 Methodology: Effect of Experience

- Effect of experience is debated topic
- Does Experience eliminate behavioral biases?
- Argument for 'irrelevance' of Psychology and Economics
- Opportunities for learning:
  - Getting feedback from expert agents
  - Learning from past (own) experiences
  - Incentives for agents to provide advice
- This will drive away 'biases'

- However, four arguments to contrary:

  1. Feedback is often infrequent (house purchases) and noisy (financial investments) –> Slow convergence

  2. Feedback can exacerbate biases for non-standard agents:

     – Ego-utility (Koszegi, 2001): Do not want to learn

     – Learn on the wrong parameter

     – See Haigh and List (2004) below

3. No incentives for Experienced agents to provide advice

   – Exploit naives instead

   – Behavioral IO –> DellaVigna-Malmendier (2004) and Gabaix-Laibson (2006)

4. No learning on preferences:

   – Social Preferences or Self-control are non un-learnt

   – Preference features as much as taste for Italian red cars (undeniable)

- Empirically, four instances:

- **Case 1. Endowment Effect**. List (2003 and 2004)

  - Trading experience –> Less Endowment Effect

  - Effect applies across goods

  - Interpretations:

    * Loss aversion can be un-learnt

    * Experience leads to update reference point –> Expect to trade

- **Case 2. Nash Eq. in Zero-Sum Games.**

- Palacios-Huerta-Volij (*EMA* 2008): Soccer players practice –> Better Nash play

- Idea: Penalty kicks are practice for zero-sum game play

$1\backslash 2$	A	B
A	.60	.95
B	.90	.70

- How close are players to the Nash mixed strategies?

- Compare professional (2nd League) players and college students – 150 repetitions

Table E - Summary Statistics in Penalty Kick's Experiment

		Equilibrium	Professional Soccer Players	College Students Soccer Experience	College Students No Soccer Experience
I. Aggregate Data					
Row Player frequencies	*L*	0.363	0.333	0.392	0.401
	R	0.636	0.667	0.608	0.599
Column Player frequencies	*L*	0.454	0.462	0.419	0.397
	R	0.545	0.538	0.581	0.603
Row Player Win percentage		0.7909	0.7947	0.7927	0.7877
(std. deviation)		(0.0074)			
II. Number of Individual Rejections of Minimax Model at 5 (10) percent					
Row Player (All Cards)		1 (2)	0 (1)	1 (3)	2 (3)
Column Player (All Cards)		1 (2)	1 (2)	2 (2)	3 (10)
Both Players (All Cards)		1 (2)	1 (1)	1 (3)	3 (9)
All Cards		4 (8)	4 (7)	9 (12)	12 (20)

- Surprisingly close on average

- More deviations for students –> Experience helps (though people surprisingly good)

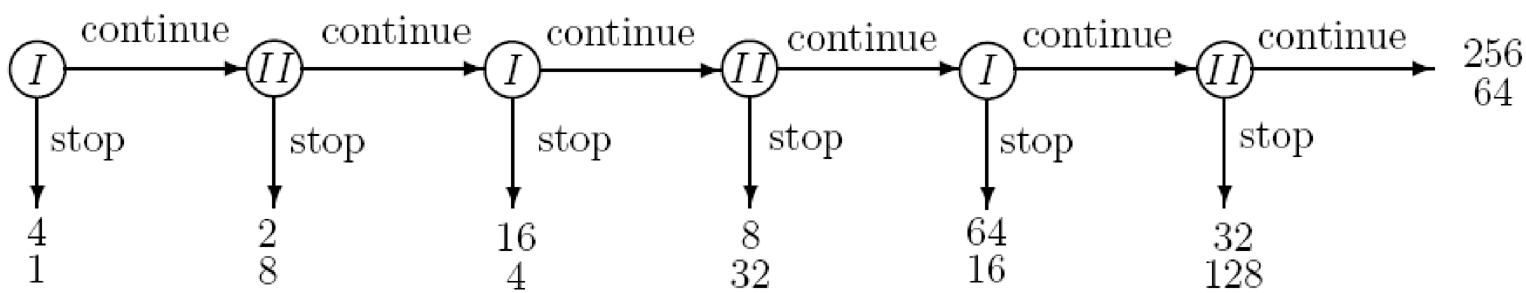
- However: Levitt-List-Reley (*EMA* 2010): Replicate in the US

  - Soccer and Poker players, 150 repetition

  - No better at Nash Play than students

- Maybe hard to test given that even students are remarkably good

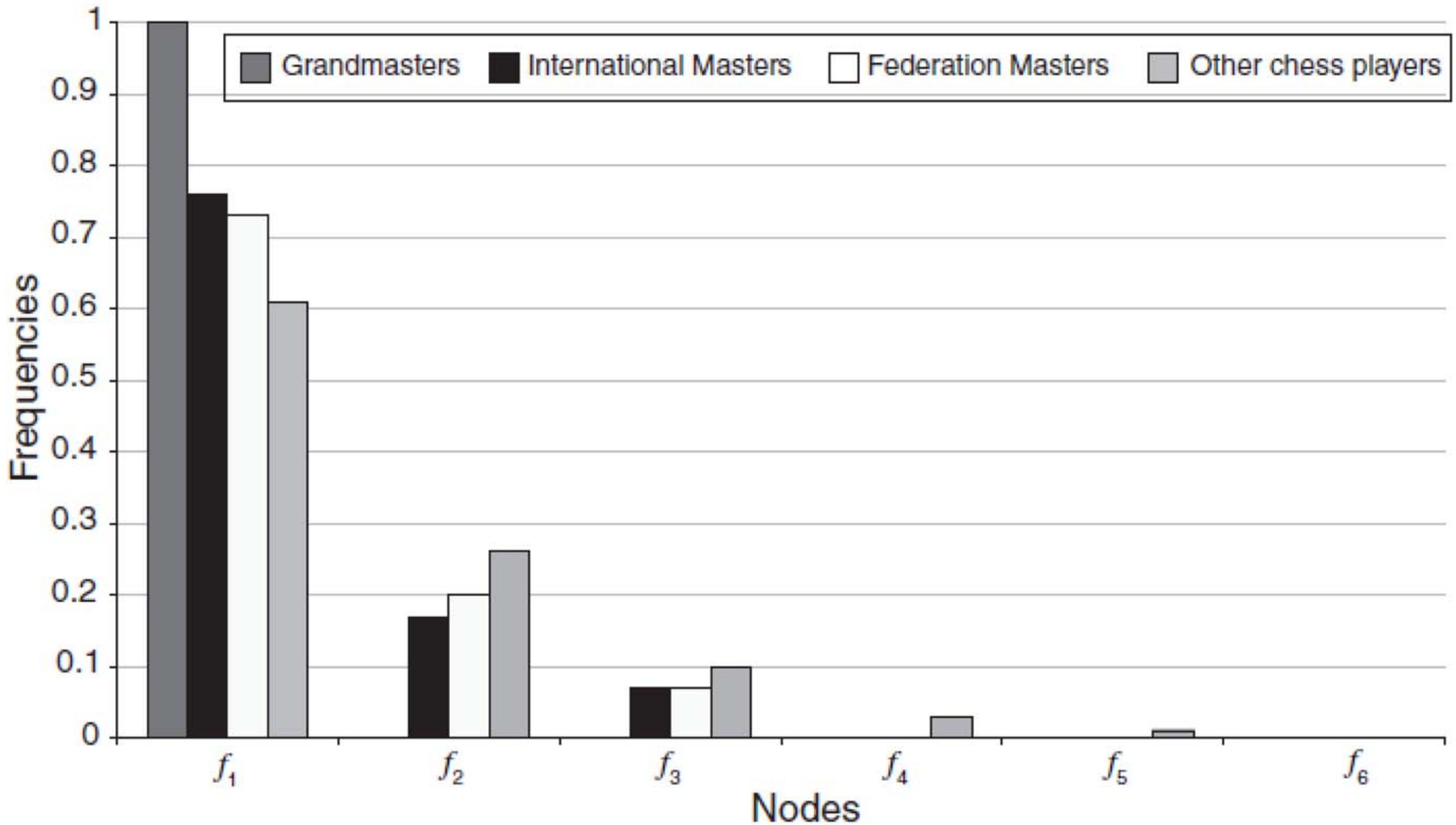
- **Case 3. Backward Induction.** Palacios-Huerta-Volij (*AER* 2009)

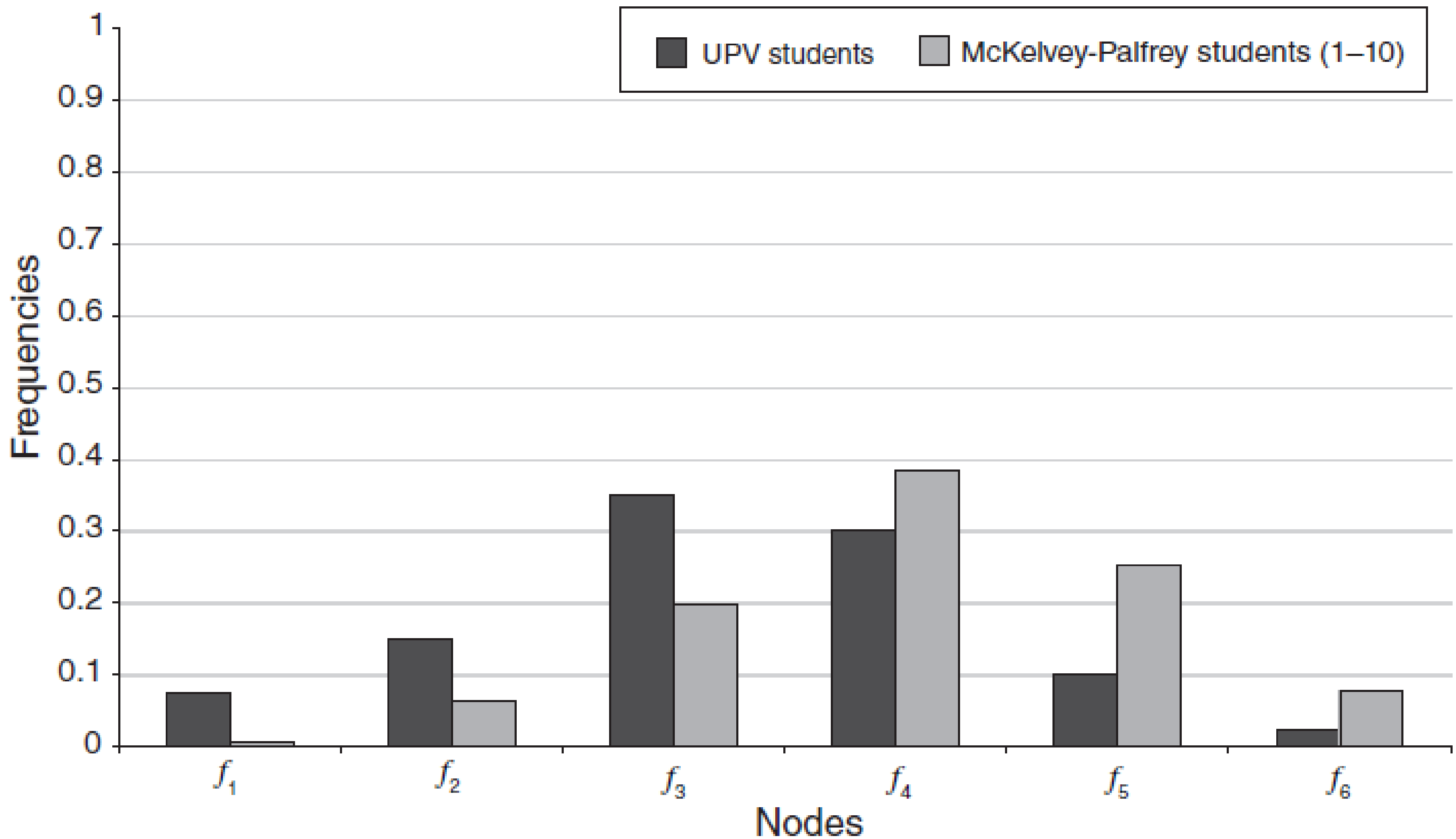


- Play in centipede game
  - Optimal strategy (by backward induction) –> Exit immediately
  - Continue if
    - No induction
    - Higher altruism

- Test of backward induction: Take Chess players
  - 211 pairs of chess players at Chess Tournament
  - Randomly matched, anonymity
  - 40 college students
  - Games with SMS messages

- Results:
  - Chess Players end sooner
  - More so the more experience


Grandmasters
International Masters
Federation Masters
Other chess players
Frequencies
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
f_1
f_2
f_3
f_4
f_5
f_6
Nodes


UPV students
McKelvey-Palfrey students (1–10)
Frequencies
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
f_1
f_2
f_3
f_4
f_5
f_6
Nodes

- Interpretations:
  - Cognition: Better at backward induction
  - Preferences More selfish

- Open questions:
  - Who earned the higher payoffs? almost surely the students
  - What would happen if you mix groups and people know it?

- Laboratory experiment (added after the initial study)
  - Recruit students and chess players (not masters) in Bilbao
  - Create 2*2 combinations, with composition common knowledge

TABLE 5—PROPORTION OF OBSERVATIONS AND IMPLIED STOP PROBABILITIES AT EACH TERMINAL NODE

	Session	N	f_1	f_2	f_3	f_4	f_5	f_6	f_7
Panel A: Proportion of observations f_i									
I. Students versus students	1	100	0.04	0.15	0.40	0.27	0.13	0.01	0
	2	100	0.02	0.18	0.28	0.33	0.14	0.04	0.01
	Total 1–2	200	0.030	0.165	0.340	0.300	0.135	0.025	0.005
II. Students versus chess players	3	100	0.28	0.36	0.19	0.11	0.06	0	0
	4	100	0.32	0.37	0.22	0.07	0.02	0	0
	Total 3–4	200	0.300	0.365	0.205	0.090	0.040	0	0
III. Chess players versus students	5	100	0.37	0.26	0.22	0.09	0.06	0	0
	6	100	0.38	0.29	0.17	0.10	0.06	0	0
	Total 5–6	200	0.375	0.275	0.195	0.095	0.060	0	0
IV. Chess players versus chess players	7	100	0.69	0.19	0.11	0.01	0	0	0
	8	100	0.76	0.16	0.07	0.01	0	0	0
	Total 7–8	200	0.725	0.175	0.090	0.010	0	0	0

- Mixed groups exhibit very different behavior

- Possibility 1: Social preferences I

  - Students care less about chess players than about other students

  - Chess players care more about students than about other chess players

  - Part 2 is very unlikely

- Possibility 2: Social Preferences II

  - Belief that students are more reciprocal

- Possibility 3: Knowledge of rationality matters

  - It is common knowledge that chess players stop early, and that students stop late
  - Where exactly does this belief come from?

- Would be useful to compute whether strategies employed are profit-maximizing against opponent strategies

- **Case 4. Myopic Loss Aversion.**

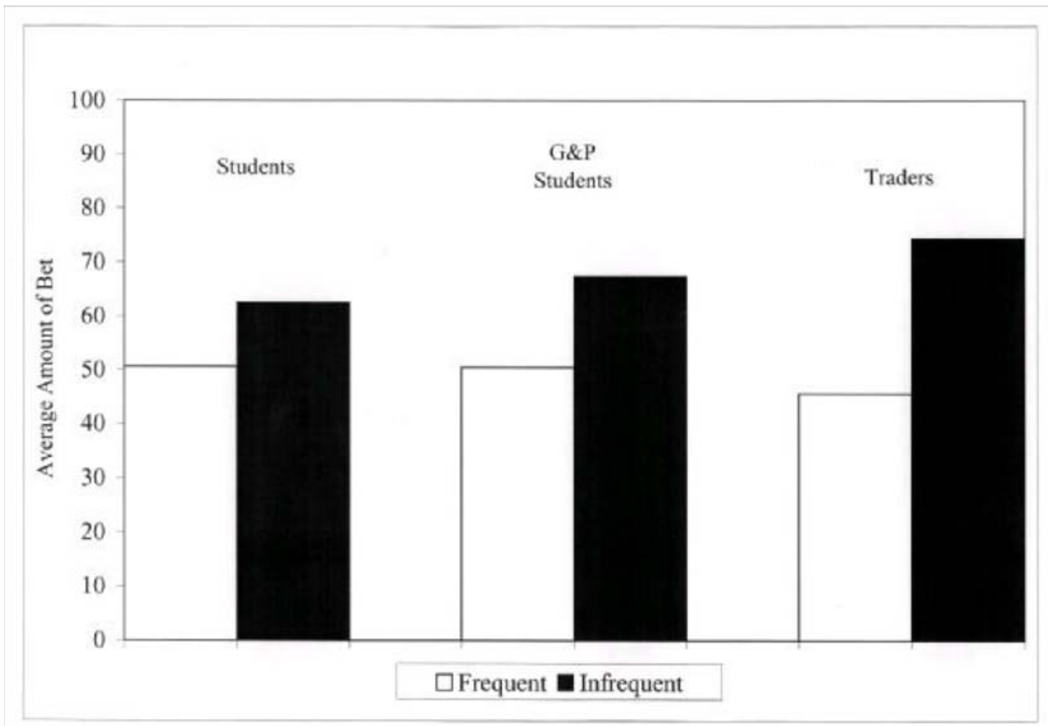
- Lottery: 2/3 chance to win 2.5X, 1/3 chance to lose X
  - Treatment F (Frequent): Make choice 9 times
  - Treatment I (Infrequent): Make choice 3 times in blocks of 3

- Standard theory: Essentially no difference between F and I

- Prospect Theory with Narrow Framing: More risk-taking when lotteries are chosen together —> Lower probability of a loss

- Gneezy-Potters (*QJE*, 1997): Strong evidence of myopic loss aversion with student population

- Haigh and List (*JF* 2004): Replicate with
  - Students
  - Professional Traders –> *More* Myopic Loss Aversion



- Summary: Effect of Experience?
  - Can go either way
  - Open question