

The Trust Game and Reciprocity

- Definitions
- The trust game
- Gift exchange in labor markets

Reciprocity

-Reciprocity means that friendly actions are rewarded and hostile actions are punished (and the term in economics typically concerns behavior not motivated by material gains).

-Direct reciprocity: reciprocity in repeated interactions with the same individual (e.g. tit-for-tat in repeated prisoners' dilemma game). Motivated by material gains.

-Indirect reciprocity: "reputation building" in interactions among a group of individuals; a "good reputation" is rewarded by other individuals. Motivated by material gains.

-Strong reciprocity (definitions from Fehr et al. Human Nature 2002):

-Strong positive reciprocity: A person is a strong reciprocator if she is willing to sacrifice resources to be kind to those who are being kind even if this provides neither present nor future material rewards for the reciprocator.

-Strong negative reciprocity: A person is a strong reciprocator if she is willing to sacrifice resources to punish those who are being unkind even if this provides neither present nor future material rewards for the reciprocator.

-Not totally satisfactory definition (does for instance not cover "withdrawn" generosity/cooperation as a punishment in response to unkind acts). Better defined as a difference between conditional and unconditional behavior not motivated by present or future material rewards (see Cox GEB 2004).

Trust

Strong reciprocity is about preferences. Trust is about beliefs. Beliefs about the behavior of other persons (based on beliefs about the preferences of other persons).

Definition from Cox (GEB 2002):

An action that is trusting of another is one that creates the possibility of mutual benefit, if the other person is cooperative, and the risk of loss to oneself if the other person defects.

The Trust Game

A first person (the investor/trustor) decides how much of a sum of money (e.g. SEK 100) to transfer to a second person (the trustee). The money transferred is multiplied by a factor >1 (typically 3) and the second person decides how much money to send back to the first person.

First Trust Game Experiment (Berg et al. GEB 1995)

Design: A lab experiment with a double-blind design (the decision of a specific individual cannot be observed by either other subjects or the experimenters). The investor decides how much of \$10 to send to the trustee; transfers are tripled; and the trustee decides how much of the tripled money to send back to the investor (the trustee also received an initial \$10 endowment, but that could not be invested).

No history treatment: Standard trust game.

Social history treatment: Subjects received information about the decisions of subjects in the no history treatment (information about the number of subjects choosing each possible investment level (\$0-\$10), the average backtransfer at each investment level, and the average net return to the investor at each investment level).

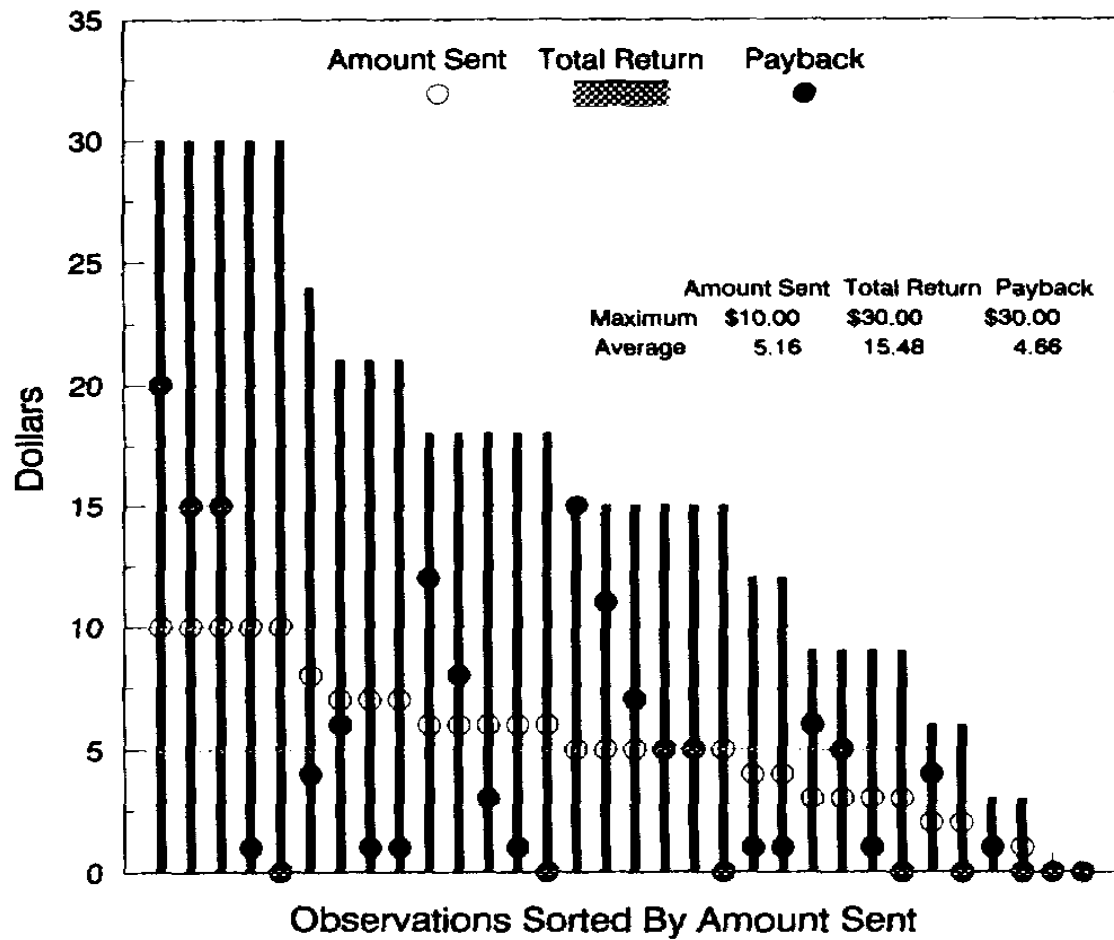


FIG. 2. Trust experiment results showing amount sent (○), total return (■), and payback (●). No history was provided to the subjects.

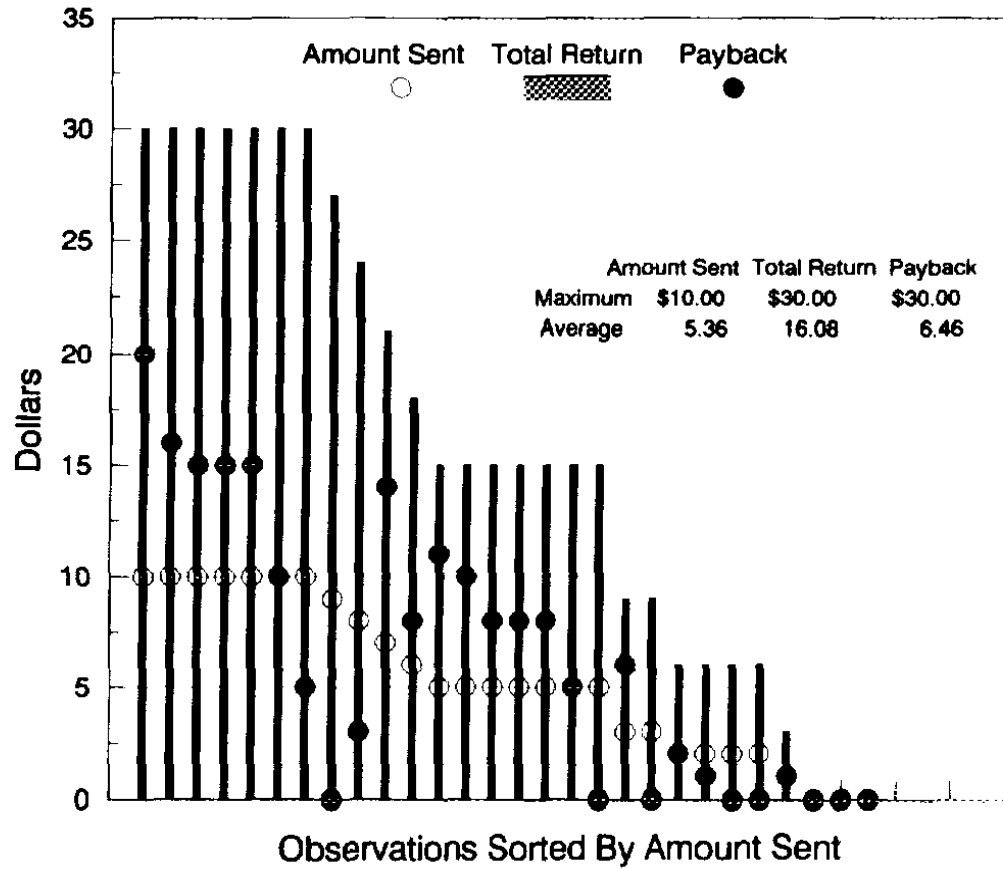


FIG. 3. Trust experiment results showing amount sent (○), total return (■), and payback (●). A social history was provided to the subjects.

Interpreting the Results of the Trust Game (Cox. GEB 2004)

Background: Not straightforward to interpret investments in the trust game as trust and backtransfers as reciprocity. Other motivations may also play a role in investment and backtransfer decisions. Cox tries to separate the effect of trust and reciprocity from the effect of other-regarding preferences (altruism, inequality aversion) in the trust game. Double-blind design.

Design:

Treatment A: A standard trust game with an endowment of \$10 and the investor decides how much of that to transfer to the trustee (the trustee also received an endowment of \$10, but that could not be invested). Invested amounts are tripled and the trustee decides how much of the tripled amount to backtransfer.

Treatment B: The first stage of the trust game in treatment A, but without the second stage. Both players have an endowment of \$10 and one of the players decide how much of that to transfer to the other player. The transferred amount is tripled. Eliminates trust from investor decisions; the difference between treatment A and B is a measure of trust.

Treatment C: The second stage of the trust game in treatment A, but without the first stage. The "investors" receive endowments equal to the amounts kept in treatment A and "trustees" receives endowments equal to the tripled amounts sent in treatment A (in addition to their initial \$10 endowment). The "trustee" decides how much money to transfer to the investor. Eliminates reciprocity from trustee decisions; the difference between treatment A and C is a measure of reciprocity.

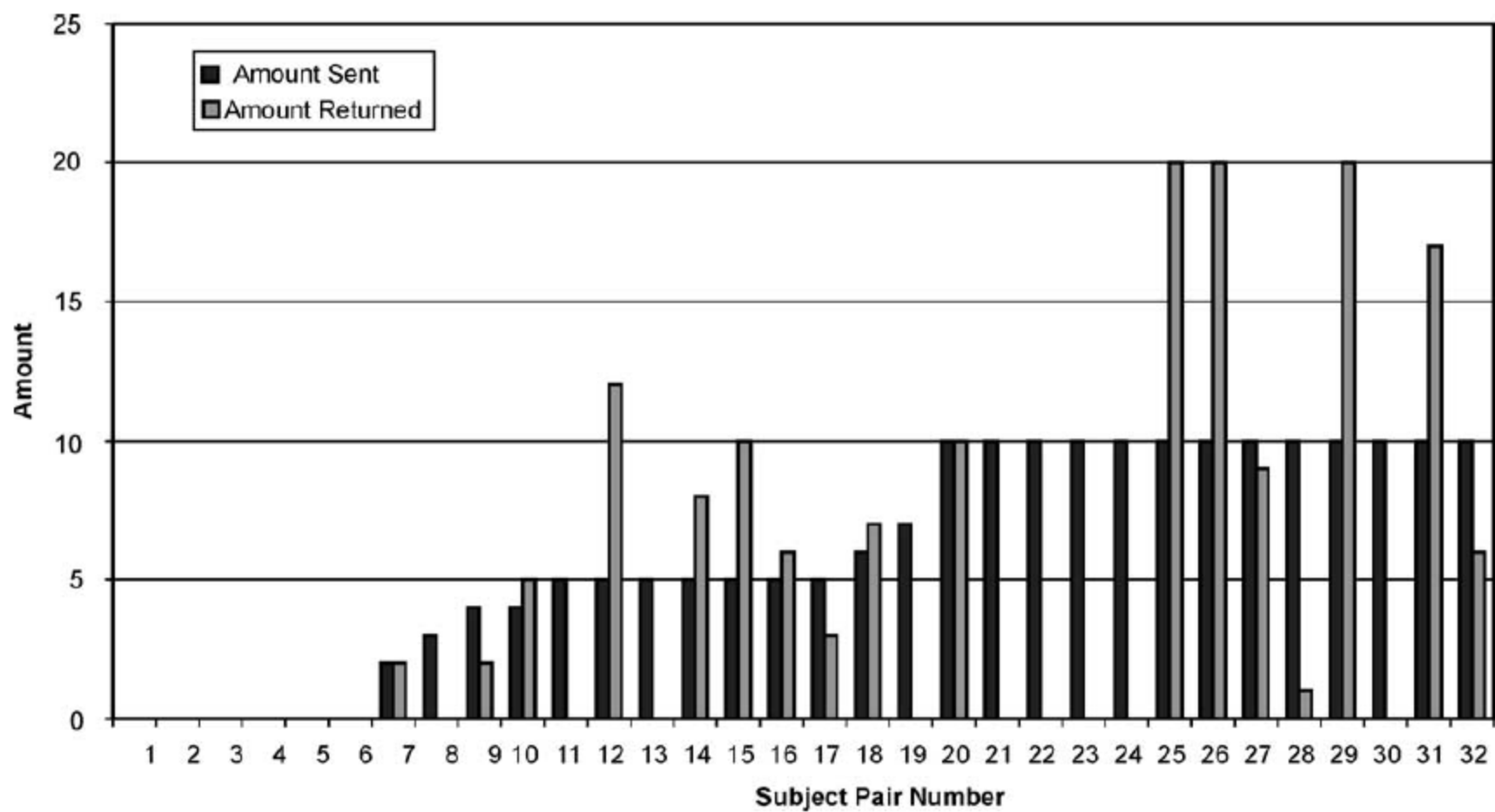


Fig. 1.

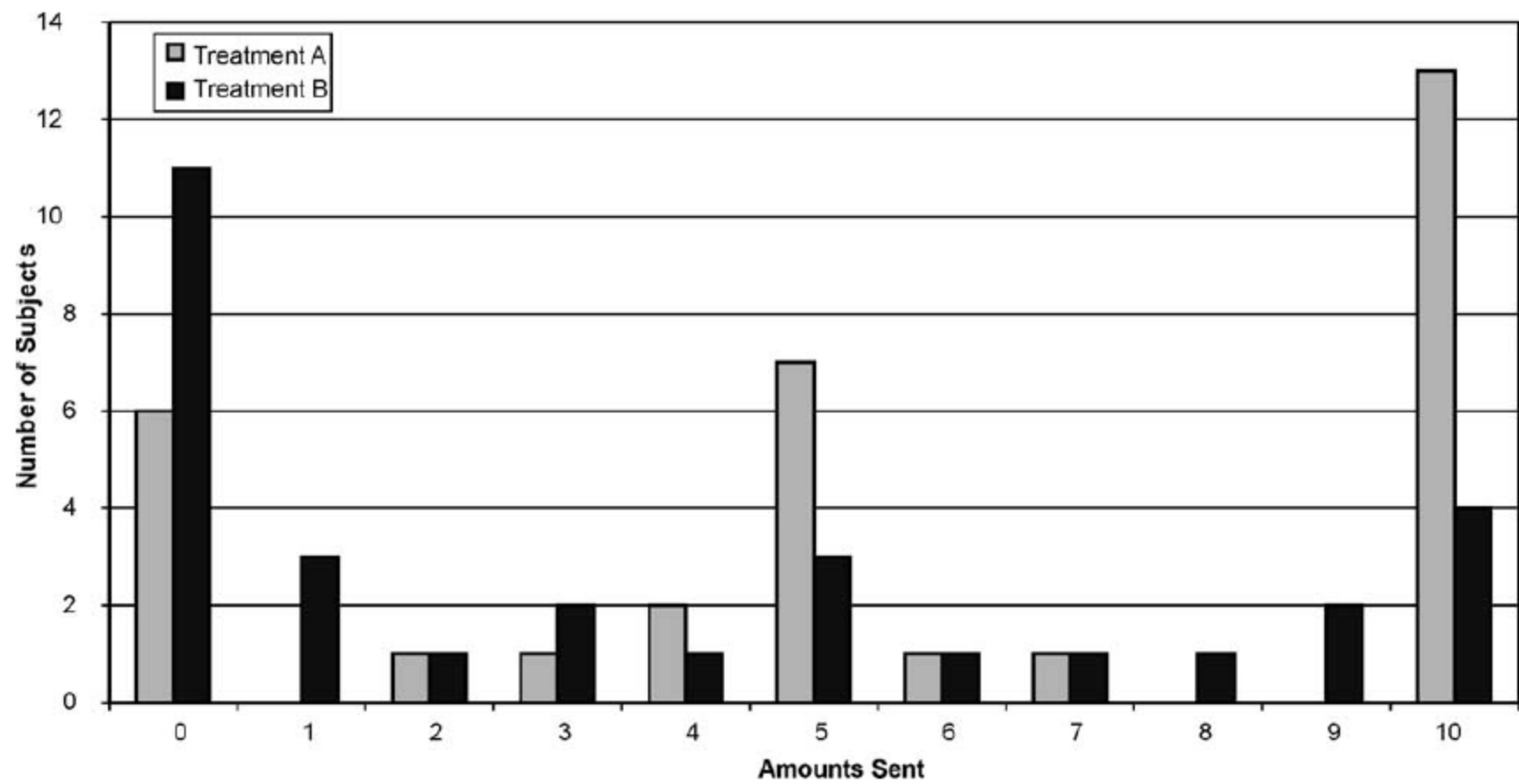


Fig. 2.

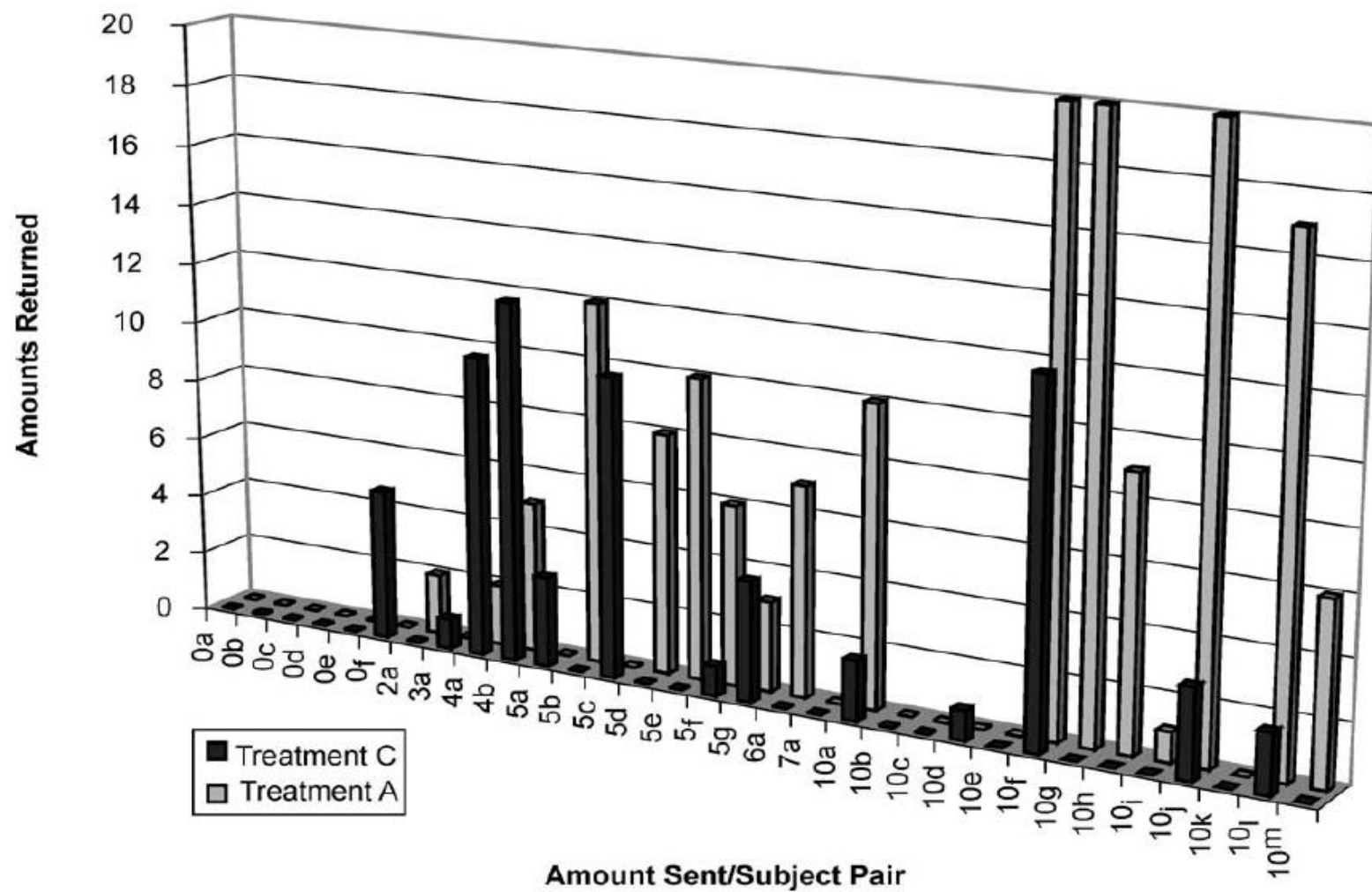


Fig. 3.

Table 1
Decomposition tests for trust and reciprocity

<i>Parametric and nonparametric tests of first- and second-mover data</i>					
Data	Send mean	Return mean	Means tests	Epps–Singleton tests	Mann–Whitney tests
Tr. A	5.97 [3.87] {32}	4.94 [6.63] {32}	...	...
Tr. B	3.63 [3.86] {30}	...	...	...
Tr. C	...	2.06 [3.69] {32}	...	...
Tr. A send vs. Tr. B send	...	...	2.34 (0.010) ^a	16.05 (0.010)	−2.35 (0.010) ^a
Tr. A return vs. Tr. C Return		...	2.88 (0.018) ^a	6.94 (0.219)	−1.55 (0.061) ^a

Gift Exchange in Labor Markets (Gneezy and List Econometrica 2006)

Background: Reciprocity implies that a higher wage to a worker will induce a higher effort; the fair wage-effort theory of involuntary unemployment (Akerlof QJE 1982). Several lab experiments of so called "gift exchange games" suggests that a higher "wage" induce more "effort" (similar to the trust game; but with a multiplier effect on backtransfers). The lab experiments are not based on any real labor tasks or real effort; but only monetary transfers between players). Gneezy and List tests if higher wages induce higher effort in two field experiments.

Design:

Experiment 1: Undergraduate students were invited to take part in an effort to computerize the holdings of a small library at the university. Recruitment posters informed that this was a one-time work that would last 6 hours and they would get paid \$12 per hour.

Treatment noGift: Workers paid \$12 per hour (n=10).

Treatment Gift: Workers paid \$20 per hour (n=9).

Experiment 2: Students were recruited to a door-to-door fundraising drive to support a Natural Hazards Mitigation Research Center. All solicitors were told that they would get paid \$10 per hour for 6 hours of work.

Treatment noGift: Solicitors paid \$10 per hour (n=10).

Treatment Gift: Solicitors paid \$20 per hour (n=13).

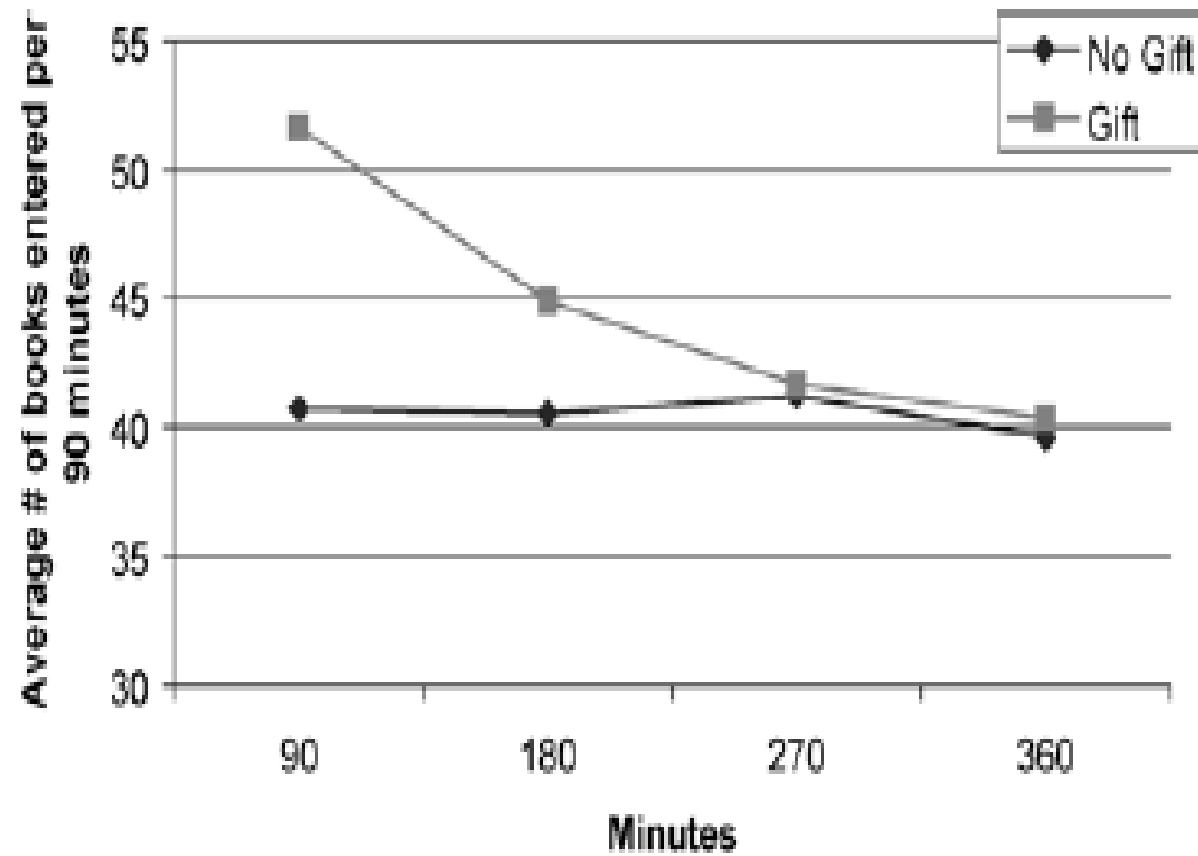


FIGURE 1.—Average books logged per time period.

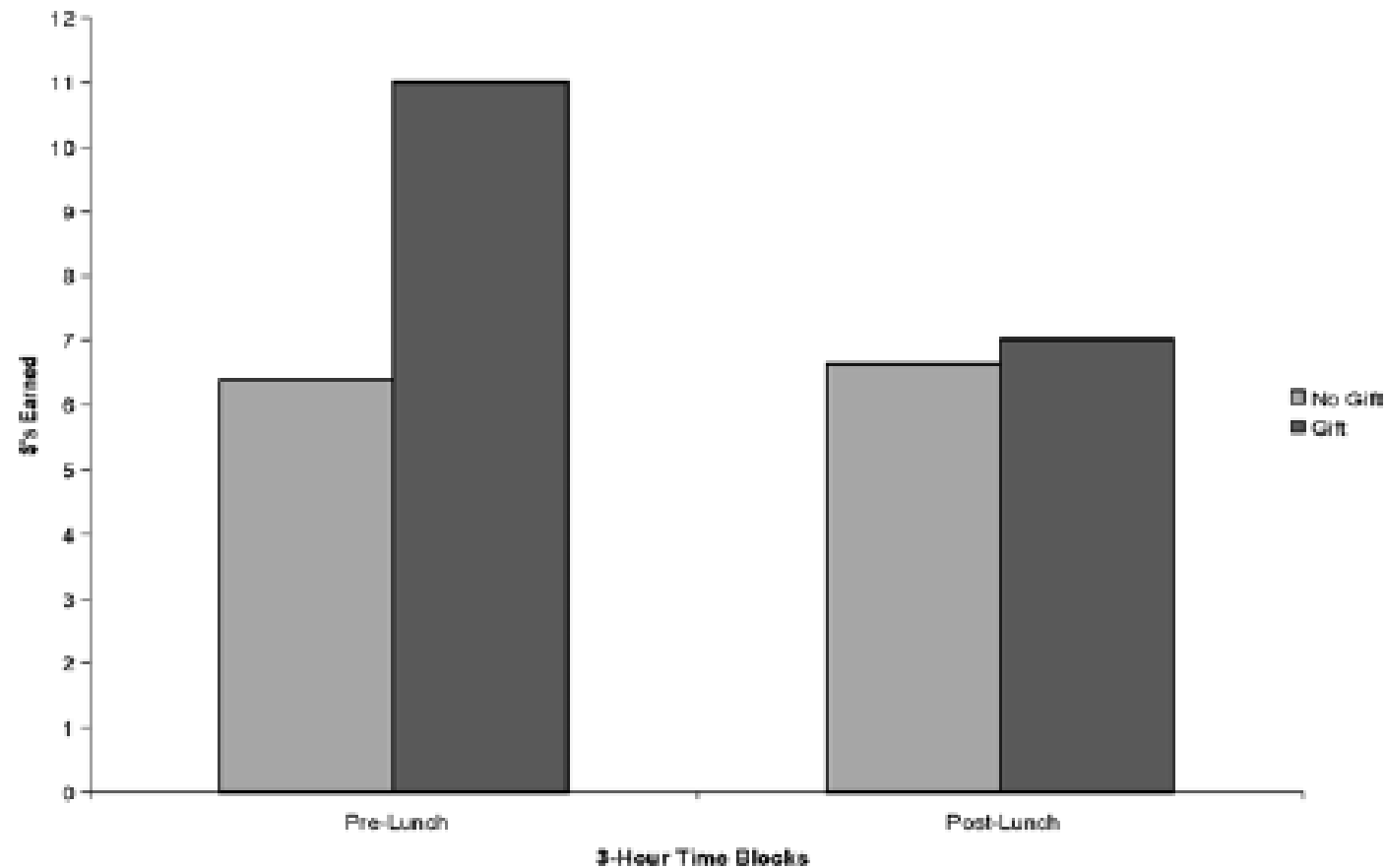


FIGURE 2.—Average earnings by 3-hour block.

TABLE III
SUMMARY STATISTICS—AVERAGE EARNINGS BY TREATMENT^a

	<i>NoGift</i>	<i>Gift</i>	Difference
Hour 1	6.6 (2.271)	10.00 (2.23)	-4.4
Hour 2	9.6 (3.572)	15.00 (3.95)	-5.4
Hour 3	3.00 (0.789)	8.00 (2.069)	-5.00**
Hour 4	5.40 (1.507)	7.846 (1.506)	-2.446
Hour 5	9.20 (2.08)	6.769 (0.856)	2.431
Hour 6	5.30 (2.547)	6.461 (1.483)	-1.161
Prelunch per hour (hours 1-3)	6.40 (1.803)	11.00 (1.443)	-4.6**
Postlunch per hour (hours 4-6)	6.633 (1.389)	7.026 (0.787)	-0.392
Entire day per hour (hours 1-6)	6.516 (1.474)	9.013 (0.814)	-2.496*
Number of solicitors	10	13	

^aCell observations give the mean and standard errors for the average earnings for solicitors in the nongift exchange and gift exchange treatments (columns 2 and 3, respectively). Column 4 provides the difference in average earnings between the solicitors in the nongift treatment and the earnings of solicitors in the gift treatments. The fourth column also indicates whether the difference is significant at the $p < 0.05$ level (**) or $p < 0.10$ level (*) using a nonparametric Wilcoxon test. For example, solicitors in the nongift treatment raised on average \$6.60 during the first hour of work, whereas solicitors receiving the gift earned an average of \$10.00 during this same hour.

Monetary Versus Non-Monetary Gifts in Labor Markets: (Kube et al., AER 2012)

Design: Recruited workers using posters on the campus of a German university. A one-time job for 3 hours with a pay of 12 Euros per hour. The work task was to catalogue the libraries of two professors at the university (to enter information about each book in an electronic database).

1st data-collection (gifts received before task unless otherwise stated):

Treatment "Baseline": Workers paid 12 euros per hour; no additional gift. N=17.

Treatment "Money": Workers paid 12 euros per hour; an additional gift of 7 euros (paid together with the wage after the task; but informed about the gift before the task). N=16.

Treatment "Bottle": Workers paid 12 euros per hour; received a gift-wrapped thermos bottle (priced at 7 euros, but price not mentioned). N=15.

Treatment "Pricetag": Workers paid 12 euros per hour; received a gift-wrapped thermos bottle, the price of the thermos bottle (7 euros) was mentioned and it was marked with a price tag. N=15.

2nd data collection (gifts received before task unless otherwise stated):

Treatment "Baseline": Workers paid 12 euros per hour; no additional gift. N=18. Pooled with first baseline treatment as no significant difference between them.

Treatment "MoneyUpfront": Workers paid 12 euros per hour; an additional gift of 7 euros. Pooled with "Money" treatment as no significant difference between them. N=18.

Treatment "Choice": Workers paid 12 euros per hour; could choose between receiving a 7 euro cash gift or the thermos bottle presented as in "Pricetag". N=22.

Treatment "Origami": Workers paid 12 euros per hour; received a gift-wrapped origami shirt made by a five euro bill and a two euro coin glued together on a plain postcard. N=18.

Data collection: Data collected in two "waves" (with randomisation of workers to treatments within each wave); Baseline, Money, Bottle and Price tag in the first wave and Baseline, MoneyUpfront, Choice and Origami in the second wave.



FIGURE 1. GIFTS IN KIND: BOTTLE AND ORIGAMI

Notes: The first photo on the left depicts how the bottle was presented. In treatment PriceTag the 7 euro price tag was left visible at the bottom of the bottle. The other two photos contain the 7 euro origami in and outside of the envelope.

TABLE 1— AVERAGE TREATMENT EFFECTS: NUMBER OF CHARACTERS ENTERED

	Baseline	Money	Bottle	PriceTag	Choice
Money	+5.2 percent				
Bottle	+24.8 percent ***	+18.7 percent **			
PriceTag	+21.4 percent ***	+15.5 percent **	−2.7 percent		
Choice	+24.5 percent ***	+18.4 percent **	−0.2 percent	+2.5 percent	
Origami	+29.3 percent ***	+23.0 percent **	+3.6 percent	+6.5 percent	+3.8 percent

Notes: This table reports average treatment effects (in percentage) for all treatment comparisons (i.e., treatments indicated in the first column are compared with those in the first row). The outcome variable is the number of characters entered as a performance measure. Significance levels from a nonparametric (two-sided) Wilcoxon rank sum test for the null hypothesis of equal output between treatments are denoted as follows:

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.

Experimental results (average number of characters entered); note that results are presented relative to the Baseline treatment (the two Baseline treatments pooled and Money and MoneyUpfront pooled). 82% of workers preferred the cash in the Choice treatment. Similar results if number of characters from correct entries used as productivity measure.