

Econ 211

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Reciprocity

Motivating Evidence

- ▶ Recall dictator game from Forsythe et al (1994)
- ▶ What if we allow recipient to have some say in the matter?
 - ▶ 45 additional subjects drawn from same overall population
 - ▶ As before, one player proposes at division of a \$5 endowment
 - ▶ New treatment: recipient can either accept or reject the offer
 - ▶ If reject, they both get \$0
 - ▶ This is called the *ultimatum game*
- ▶ Expected results from classical preferences?

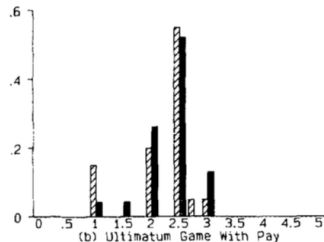
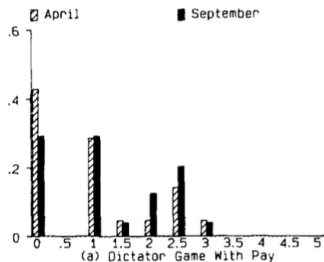
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- ▶ Expected results from classical preferences?
 - ▶ Selfish responders should never reject a non-zero offer
 - ▶ Knowing this, proposer should offer smallest non-zero amount

Ultimatum Game: Responder Behavior

- ▶ Rejections do happen, though not very often
 - ▶ 8 out of 45 (18%) of offers were rejected in total
- ▶ Rejection likelihood increases as offers get smaller
 - ▶ No offers of \$2.50 (ie 50% of pie) or higher were rejected
 - ▶ 5 of 6 (83%) of offers less than \$2.00 were rejected
- ▶ Rejection is a form of *costly punishment*

Ultimatum Game: Proposer Behavior



- ▶ Proposals below \$2.00 extremely rare
- ▶ Stronger peak at \$2.50 (50-50 split)
- ▶ So rejections are rare because low offers are rare

Explaining Rejections

- ▶ Recall Fehr-Schmidt model from last lecture:

$$U(x_1, x_2) = \begin{cases} x_1 - \beta(x_2 - x_1) & \text{if } x_1 \leq x_2 \\ x_1 - \alpha(x_1 - x_2) & \text{if } x_1 > x_2 \end{cases}$$

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- ▶ Responder's desire for equity leads to decision that decreases both players' payoffs

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 - ▶ Set equal to zero to find $x = \frac{5\beta}{1+2\beta}$
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 - ▶ Eg, if $\beta = 1$, switch at \$1.67
- ▶ If we observe switch from rejecting to accepting at offer x , what can we say about β ?
 - ▶ Use $x - \beta(5 - x - x) = 0$, but solve for β
 - ▶ Solve to find $\beta = \frac{x}{5-2x}$
 - ▶ Eg, if someone will accept any offer bigger than \$1.50, they must have $\beta = 0.75$

The Trust Game

- ▶ The ultimatum game is fairly limited in that it only allows the responder a binary choice: accept or punish
- ▶ What if we allow responder more variety in their choice, so they can not only punish, but also reward?

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- ▶ What if we allow responder more variety in their choice, so they can not only punish, but also reward?
- ▶ The *trust game* accomplishes this
 - ▶ One player, the *trustor* starts out with $\$X$
 - ▶ Passes some amount $\$I \in [0, \$X]$ to other player, the *trustee* (so far, just like dictator/ultimatum)
 - ▶ Trustee gets $R \cdot \$I$ for $R > 1$, ie the passed amount is multiplied by interest rate R before trustee receives it
 - ▶ Trustee then can return some amount $\$P \in [0, R \cdot \$I]$ to trustor
- ▶ We say amount passed indicates how *trusting* the trustor is, and the amount passed back indicates how *trustworthy* the trustee is

Trust Game: Evidence

- ▶ Berg et al (1995)
- ▶ Trustors start with \$10
- ▶ Trustors and trustees in different rooms
- ▶ $R = 3$, ie if trustor passes \$1 it becomes \$3 for trustee

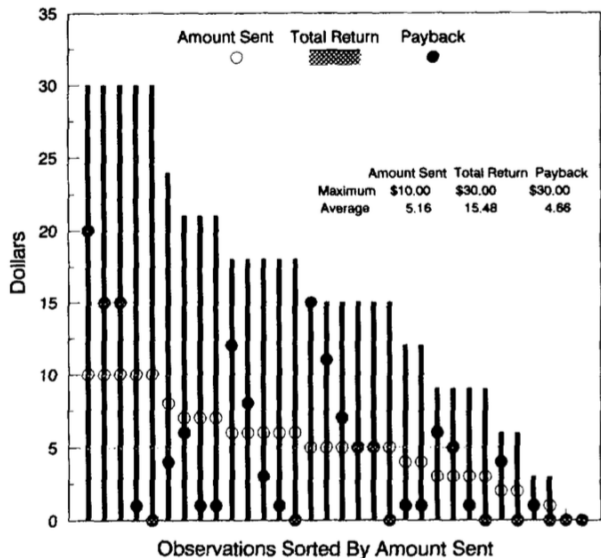
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- ▶ Expected classical results?
 - ▶ Purely selfish trustees should return nothing
 - ▶ Therefore purely selfish trustors should pass nothing

Trust Game: Results



Explaining Trustee Behavior

- ▶ Let $\beta = 1$ and $\alpha = \frac{3}{4}$ in Fehr-Schmidt model for trustee
- ▶ How much will trustee pass back if trustor passes \$10?

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 - ▶ Splitting equally (\$15 each) is optimal for trustee, since keeping any additional dollar beyond this point would cause *two* dollars worth of inequality
 - ▶ So pass back rate is 50%

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- ▶ How much will trustee pass back if trustor passes \$1?
 - ▶ Note there is \$12 total now
 - ▶ Note also that equality is not possible
 - ▶ Trustee will try to minimize inequality as much as possible, meaning they do not pass anything back
 - ▶ Pass back rate is 0%

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 - ▶ Therefore average trustor would have been better off passing nothing
- ▶ Any limitations to design?
 - ▶ Trustees see amount passed, then make just one decision
 - ▶ Would be better to use *strategy method*
 - ▶ Trustee tells experimenter what they would pass back for every possible level of income, before seeing actual pass made by trustor