

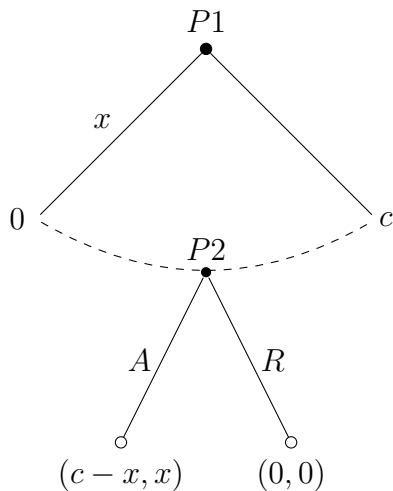
# MW24.2 Experimental Economics (SS2022)

## Ultimatum Bargaining

Olexandr Nikolaychuk

### Ultimatum Game

- \* Two players are splitting a pie of size  $c$ . The first player (also, the proposer or sender) *offers* the share  $x$ , s.t.  $0 \leq x \leq c$ , to the second player (also, the responder or receiver) who in turn, can either *accept* ( $A$ ) or *reject* ( $R$ ) the offer. The payoffs are  $(c - x, x)$  if the offer is accepted and  $(0, 0)$  if the offer is rejected [Güth et al., 1982].



- \* SPNE:  $\{x^* = \epsilon; A\}$  where  $\epsilon$  is the lowest (positive) amount possible

- \* usual experimental findings:

- average offer  $\sim 40\%$
- modal offer  $\sim 40 - 50\%$
- few offers of  $\leq 20\%$   
( $\sim 50\%$  rejected)

exa) Buyer with willingness-to-pay of 15 and seller with a production cost of 5 essentially, splitting the surplus of 10 between the two of them.

- \* the game represents the *final* stage of a bargaining process

$\Rightarrow$  is the SPNE “fair”?

$\Rightarrow$  what is a “fair” offer?

## Güth et al. [1982]

- \* ultimatum game with various pie sizes and subject experience levels
- ⇒ virtually all offers above one DM, average offer  $\sim 35\%$
- ⇒ few rejections (albeit more by experienced subjects) [Tables 4–5]
- \* consistency check [7 DM only]:
  - submit the offer/demand both as the proposer and recipient
  - ⇒ most exhibit more modest demands by offering 45% on average [Table 7]
  - ⇒ 15/37 consistent profiles; 5/37 conflicting profiles
  - ⇒ 7/15 consistent profiles suggest equal splits

## Related Games

### 1. Dictator game [Forsythe et al., 1994]

- ~ ultimatum sans the recipient move [technically, individual decision problem]
- \* if subjects are motivated by *fairness*, the distributions of offers/transfers should be the same between the two games
- ⇒ transfers are positive but *lower* in the dictator game
- ⇒ “fairness” is more pronounced when it’s free [Fig. 1]
- \*\* usually, it is found that  $\sim 60\%$  subjects transfer  $\sim 20\%$  of their endowment

### 2. Two-stage bargaining [Goeree and Holt, 2000]

- ~ ultimatum game played *twice* with the players *switching the roles*
- ~ usually, the pie shrinks from  $X$  to  $Y$
- ~ SPNE *outcome* is  $(X - Y; Y; \text{game over in stage 1})$
- \* compare SPNE and *egalitarian* predictions across seven treatments by varying the pie size in the second stage and fixed subject payments (endowments) [Table 1]
- ⇒ first stage offers turn out to be *negatively* related to the pie size in the second stage (also note the standard deviation) [Fig. 1]
- ⇒ 75% of initial offers accepted (as they tended to equalize the earnings)
- ⇒ data are roughly consistent with a model where people care about relative earnings

## Ultimatum Bargaining

- \* tension between self-centered and other-regarding concerns (“fairness”)
  - \* potential explanation of subject behavior:
    - altruism
    - reciprocity
    - inequality aversion
    - difficulty understanding the game (e.g., demand effects, focal points)
- } other-regarding concerns
- ⇒ rather susceptible to procedural details

### Demand effect ~ Bardsley [2008]<sup>1</sup>

- ⇒ 22/33 subjects give in the dictator game
- ⇒ 15/32 subjects give in the “taking” game

### Demand effect ~ Cherry et al. [2002]

- \* giving in dictator games could be due to the subjects dealing with “house money” and the experimenter watching
  - \* 3 main treatments: baseline, earned, and double blind earned endowment
- ⇒ transfers go down drastically [Fig. 1–2]

### Focal points ~ Binmore et al. [1985]

“...because they don’t know how to play the game”

- \* two-stage bargaining;  $c_1 = 100$  and  $c_2 = 25$
  - \* Game A recipients play as proposers in Game B
- ⇒ modal opening offers of ~50% (Game A) and ~25% (Game B) [Fig. 1]
- ⇒ recipients that saw low offers in Game A send low offers as proposers in Game B [Table 1] → it’s not about fairness!

- (!) the original instructions read<sup>2</sup>:  
“...You will be doing us a favour if you simply maximized your winnings”

---

<sup>1</sup>Nicholas Bardsley. Dictator game giving: altruism or artefact? *Experimental Economics*, 11 (2):122–133, 2008

Also, see the lecture on the experimenter demand effect.

<sup>2</sup>Again, see the lecture on the experimenter demand effect.



## Suggested Literature

- Charles A Holt. *Markets, games, & strategic behavior*. Boston Pearson Addison Wesley, 2007 [Chapter 23]
- Werner Güth, Rolf Schmittberger, and Bernd Schwarze. An experimental analysis of ultimatum bargaining. *Journal of Economic Behavior & Organization*, 3(4):367 – 388, 1982 [‘easy games’ only]
- Robert Forsythe, Joel L. Horowitz, N.E. Savin, and Martin Sefton. Fairness in simple bargaining experiments. *Games and Economic Behavior*, 6(3):347 – 369, 1994
- Jacob K. Goeree and Charles A. Holt. Asymmetric inequality aversion and noisy behavior in alternating-offer bargaining games. *European Economic Review*, 44(4–6):1079 – 1089, 2000
- Todd L. Cherry, Peter Frykblom, and Jason F. Shogren. Hardnose the dictator. *American Economic Review*, 92(4):1218–1221, September 2002
- K. Binmore, A. Shaked, and J. Sutton. Testing noncooperative bargaining theory: A preliminary study. *The American Economic Review*, 75(5):1178–1180, 1985
- \* Nagore Iriberry and Pedro Rey-Biel. Elicited beliefs and social information in modified dictator games: What do dictators believe other dictators do? *Quantitative Economics*, 4(3):515–547, 2013