Time Preference and Inequity Aversion

An examination on how people view fairness throughout time.

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Background

Inequity Aversion

- Modeled by Fehr and Schmidt (1999)
- Captures the utility people experience when payoffs are deviate from person to person

$$U_i(x) = x_i - \alpha_i \max\{x_j - x_i, 0\} - \beta_i \max\{x_i - x_j, 0\}$$
$$i \neq j, \beta_i \leq \alpha_i$$

- α_i Parameter – "how much I dislike having less than someone else"
- β_i Parameter – "how much I dislike having more than someone else"

Time Preference

- Time Preference – How people value payoffs across time periods
- Exponential Discounted Utility developed by Samuelson (1937)
- Measures how time affects an individual's valuation

$$U(x,t) = \sum_{t=0}^{T} \delta^t u(x)$$

- "How important is $10 to me next week as opposed to $10 a month from now"

The Ultimatum Game

- Experimental "game" used to evaluate fairness preferences
- Procedure:
  - Two players: Proposer and Responder
  - Proposer is given an initial endowment
  - Proposer acts first by offering an amount to the Responder
  - Responder can either accept or reject the offer
    - If Responder accepts, the Responder gets however much was offered, while the Proposer receives the endowment minus the offer
    - If Responder rejects, game terminates and both players receive nothing

The Models

Nominal Discounter Model

$$U_i(x,t) = \delta^t u(x_i) - \alpha_i \max\{x_j - x_i, 0\} - \beta_i \max\{x_i - x_j, 0\}$$
$$i \neq j, \alpha_i \geq \beta_i$$

Difference Discounter Model

$$U_i(x,t) = \delta^t u(x_i) - \alpha_i \max\{\delta^t x_j - \delta^t x_i, 0\} - \beta_i \max\{\delta^t x_i - \delta^t x_j, 0\}$$
$$i \neq j, \alpha_i \geq \beta_i$$

Methodology

Modified Ultimatum Game

- Proposer is given a $25 endowment
- Both Proposer and Responder are informed of payoff timings
- Simultaneously (and anonymously)
  - Proposer submits an offer
  - Responder submits a Minimum Acceptable Offer (MAO)
- If the offered amount is greater than the MAO, the proposal is automatically accepted and experiment moves forward
- If the offered amount is less than the MAO, the proposal is automatically rejected and experiment moves forward
- Subjects are informed of the results at the end of the experiment
- Each subject will play as a Proposer and a Responder

Timing Environments

- Subjects encounter four different timing environments
- In each environment, subjects play the Modified Ultimatum Game

Environment	*Proposer*	*Responder*
E1	Immediately	Immediately
E2	7 Days from Today	Immediately
E3	Immediately	7 Days from Today
E4	7 Days from Today	7 Days from Today

Theoretical Predictions

Treatment	*NIA*	*DIA*
T00	$\frac{10\alpha}{1+2\alpha}$	$\frac{10\alpha}{1+2\alpha}$
T10	$\frac{10\alpha}{1+2\alpha}$	$\frac{10\alpha\delta}{1+\alpha(1+\delta)}$
T01	$\frac{10\alpha}{\delta+2\alpha}$	$\frac{10\alpha}{\delta+\alpha(1+\delta)}$
T11	$\frac{10\alpha}{\delta+2\alpha}$	$\frac{10\alpha}{1+2\alpha}$

- Comparing the MAO's of our model…

Nominal Predictions

- T00 < T11
- T00 = T10
- T01 = T11

Discounted Predictions

- T00 = T11
- T00 > T10
- T01 > T11

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References

- Fehr, E., & Schmidt, K. M. (1999). A Theory of Fairness, Competition, and Cooperation. The Quarterly Journal of Economics, 114(3), 817–868. http://www.jstor.org/stable/2586885
- Samuelson, P. A. (1937). A Note on Measurement of Utility. The Review of Economic Studies, 4(2), 155–161. https://doi.org/10.2307/2967612
- Camerer, C., & Thaler, R. H. (1995). Anomalies: Ultimatums, Dictators and Manners. The Journal of Economic Perspectives, 9(2), 209–219. https://doi.org/10.1257/jep.9.2.209