Topic 3: Social preferences and fairness

Are we perfectly selfish and self-centered? If not, does it affect economic analysis? How to take it into account?

Focus: Descriptive analysis

Examples

- Will monitoring workers’ effort increase or reduce effort?
- Can a generous welfare state be sustained?
- Why do some people buy climate tickets?

- Overview readings:
  – Fehr and Fischbacher (2002)
  – Sobel (2005)
Today’s lecture

• Experimental economics
  – Some well-known games
  – Some general results
  – Focus: Social preferences
• Readings:
  – Camerer (2003), pp. 43-100

A thought experiment

• Assume: You receive 100 kr
• Your task: Propose how to share the 100 kr between yourself and another person, B
  – Then, your proposal is communicated to B
  – Full anonymity
• B’s choice: Accept or refuse
  – If accept: Both get the amounts you proposed.
  – If reject: Both get nothing.
• Write down:
  – What is your proposal to B?
  – If you were, instead, B, would you have accepted:
    50 øre? 15kr? 30 kr? 50 kr? 60 kr?
History of experimental economics

• Early contributions
  – Thurstone (1931): Determination of individual indifference curves
  – Chamberlin (1948): Classroom experiments
  – Early sixties: Vernon Smith launches first lab (Purdue Univ.) Introduction of salient payments, repetition, realistic market institutions.
  – Other early contributors, 1960’s: Reinhard Selten, James Friedman
• 70’s: Consolidation, common methodology
• 80’s: Field takes off
• 2000 onwards: Field explodes
• Topics studied:
  – Oligopoly, auctions, antitrust remedies, bargaining, monitoring of workers, PD games, trust, voluntary contributions to public goods, risk aversion, money illusion…
(Source: Kagel and Roth 1995)

Lab and field experiments

• Laboratory experiments
  – Controlled environment
  – Voluntary participants
  – Real incentives: monetary payment
  – Baseline case vs treatment cases: Change one variable
• Field experiments
  – Naturally occurring environment
  – Unknowing participants
  – Real incentives
  – Baseline case vs treatment cases: Change one variable – but: natural variation may occur
  – Example: Effect on charitable giving of solicitation methods (Lange et al.)
Economic vs. psychological experiments

• Cognitive and social psychology:
  – Experiments from ca. 1900
• Differences in methodology:
  – Payment
  – Deception

The dictator game

• $A$: Dictator
• $B$: Recipient
• $A$ gets amount $X$ (ex. 100 NOK), decides how to allocate $X$ between $A$ and $B$
• $B$: Passive recipient
  $X = x_A + x_B$
  Let $s = B$’s share of $X$ as proposed by $A$
  Let $x_i = i$’s actual outcome
• If $A$ cares only about his own monetary payoff: Which $s$ will he choose? (anonymity)
Experimental findings, dictator game

• Typical results (see Camerer 2003):
  – Average offer \( s \approx 0.2 \)
  – Offers of 0 and 0.4 – 0.5 most common

• The following tend to increase \( s \):
  – Non-anonymity
  – “Identifiable victim” (recipient has been determined)
  – “Deserving” recipient (e.g. Red Cross)

• The following tend to decrease \( s \):
  – ”Earned” initial amount
  – Option to ”pass”

The ultimatum game

• Like dictator game, but \( B \) can reject \( A \)’s offer
  – If \( B \) rejects: Both get zero.
  – If \( B \) accepts: Each gets the amount proposed by \( A \).
    1. \( A \) gets \( X \)
    2. \( A \) offers \( B \) a share \( s \)
    3. \( B \) accepts or rejects
    4. If accept, \( x_A = (1-s)X \) and \( x_B = sX \).
       If reject, \( x_A = x_B = 0 \).

• If both care only about their own material payoff: What will they do? (anonymity, one-shot)?
Self-interested utility maximers

• Assume 50 øre is the lowest strictly positive amount
• A self-interested B will strictly prefer to accept any strictly positive offer
• Foreseeing this, A will never offer more than 50 øre
• If A offers 50 øre, B will accept
• If A offers 0, B may still accept (has nothing to gain by refusing)
• Prediction: Minimal offers, minimal rejections

The self-interest model (benchmark)

• Money – to myself – is all that counts
  – (Or: If other things count, they are kept fixed in the lab)
• Person i cares only about her own income \( W_i \):
  (1) \( U_i = u_i(W_i) = u_i(F_i + x_i) \)
  where \( F_i \) = i’s exogenous (other) income,
  \( x_i \) = the material payoff of person i from the experiment
  \( u'_i > 0 \) and \( u''_i \leq 0 \)
• What is i’s benefit from the experiment?
• Differentiating (1):
  \( dU_i = u'_i dW_i = u'_i x_i \)
• Marginal \( x_i \): i’s benefit is proportional to \( x_i \)
Equilibria: UG with self-interested players

- **Nash equilibrium:**
  - Set of strategies such that no player can profitably deviate from her strategy, given the strategies of the other players.

- **Subgame perfect Nash equilibrium:**
  - Eliminates Nash equilibria in which players’ threats are not credible.
  - Hint: backward induction!

- **Example:** \( \{ s = 0.3, \text{accept any } s \geq 0.3 \} \)
  - NE, not SPNE
  - B’s strategy to reject any offer below 30 percent is not credible
  - If offered 10 percent, a self-interested B would prefer to accept!

- **SPNE in ultimatum game with self-interested players:**
  - If 50 øre \((s=0.005)\) is the smallest strictly positive amount:
    - \( \{ s = 0.005, \text{accept any } s > 0 \} \) is a SPNE
    - \( \{ s = 0, \text{accept any } s \geq 0 \} \) is a SPNE
  - If \( s \) is continuous:
    - \( \{ s = 0, \text{accept any } s \geq 0 \} \) is the only SPNE.

- Did you propose more than 50 øre?

- Did you reject any offers?
Findings, ultimatum games

• Typical result (Camerer 2003):
  – Average offer about 0.4
  – Offers of 0.5 very common
  – About half of offers < 0.2 are rejected

• Results robust to
  – high stakes (up to several months’ wage)
  – experience

• Varies with
  – age
  – culture

Cross-cultural studies

• Henrich et al. (2001): Ultimatum games in 17 small-scale societies, 5 continents
  – Average offers: 0.26 to 0.58
  – Rejection of small offers: Varies substantially
  – No economy displays both average offers and rejection rates close to zero
  – More market integration: higher offers
  – More economies of scale in local economy: higher offers
  – Average offers above 0.5:
    • 0.51 (Ache, Paraguay), 0.58 (Lamelara, Indonesia)
    • Norms of potlatch/competitive gift-giving
    • ”Hyper-fair” offers: Frequently rejected
"At a conference at Penn years ago, several of us discussed how much we’d offer from a $1 million stake. As I recall, Al Roth said he’d offer something like $400,000, below the equal split but well above the self-interest equilibrium. Bob Aumann said, ”Al, you must be rich! I’d offer $500,000.” (Camerer 2003, p.61)

• Puzzle 1: Why do proposers share?
• Puzzle 2: Why do responders reject?

Competition in ultimatum games
• Real-world parallell, UG: one seller, one buyer
• Proposer competition: one seller, many buyers
  – Several proposers make offers to a single responder
  – Responder accepts the highest offer
  – Proposers whose offers are not accepted get 0
  – Result (after some repetition): Almost all proposers offer \( s \approx 1 \)
  – Responder gets almost everything
• Responder competition: one buyer, many sellers
  – One proposer makes offer \( s \). If every responder rejects, all receive 0. If at least one responder accepts, one accepting responder is drawn randomly and receives a share \( s \), while proposer receives a share \( (1-s) \).
  – Results (after some repetition): \( s \approx 0 \)
  – Proposer gets almost everything

- Individuals often violate rational standard rational choice assumptions in the lab.
- Still, market institutions (e.g. competition, repetition) often produce outcomes consistent with standard theory.
- The market may work efficiently even if its participants’ cognitive abilities are limited.  
  - "(...) prices and allocations converge quickly to the neighborhood of the predicted rational expectations competitive equilibrium," even if "subjects are not aware that they are achieving maximum profits collectively and individually, and, in fact, deny this when asked (...). When asked what strategies they used, they are unable to convey insight to the experimenter" (p.880-881).
- We need to test individuals acting within institutions.

**Purposes of experimental research**

- Testing the predictions of existing theories  
  - Is the subgame perfect equilibrium reached in UG?
- Generating new theories  
  - Unexplained regularities: look for explanations  
  - Do responders reject because they prefer 0 to 0.20?  
  - Or: a preference to punish the proposer?  
  - Test the new hypotheses  
  - Two-way interaction: Theory ↔ experiments
- Studying behavior when theory has little to say  
  - Testing which is strongest of counteracting effects
Trust games

- Trust game: "Two-way" dictator game where
  - B gives A the initial allocation
  - The more B gives A to share, the higher is their total
- B investor, A manager (cannot be monitored)
  1. B gets an initial amount X
  2. Gives T ≥ 0 of this to A. Keeps (X - T).
  3. Investment T yields return (1+r), so A earns (1+r)T
  4. A keeps Y of these earnings: Repays (1+r)T – Y to B.
  5. Final payoffs:
     \[ x_A = Y \]
     \[ x_B = X - T + (1+r)T - Y = X - Y + rT. \]
- T: measure of trust
- (1+r)T – Y: measure of trustworthiness
- Or: generosity?

The self-interest model: Predictions

- Anonymous one-shot game:
  - If both A and B care only for their own material payoff, what will they do?
- Backward induction
  - In stage 4, A will give nothing to B:
    \[ Y = (1+r)T. \] No trustworthiness.
  - Anticipating this, B will keep everything in stage 2
    \[ T = 0, \] no trust
Typical findings, trust games

- Subjects invest about half of their endowment
  - $T \approx X/2 > 0$
  - There is (some) trust
- Repayment about equal, or slightly less than, investment $T$
  - $(1+r)T - Y \approx T > 0$ (that is: $Y \approx rT$)
  - There is (some) trustworthiness
  - But: not quite enough to make investments pay (that would require repayments greater than investment)

Public good games

- Groups of anonymous subjects (e.g. 4)
- Each subject receives an amount of money, $e$
- Choice: Divide $e$ between oneself and the group
- Simultaneous choice
- All contributions to the group are multiplied by a factor $m$ (where $1 < m < N$), and then shared equally between the $N$ group members
- Contribution maximizing group payoff: $e$
- Contribution maximizing individual payoff, given others’ contribution (only NE): 0
Typical finding, public good games

- One-shot, and first stages of repeated trials:
  - Subjects generally contribute about 40-60 %
  - there are substantial contributions and free-riding
- Contributions decline with repetition
  - often rather dramatically
- If players can punish each other (at a cost)
  - Low contributors are punished
  - Average contributions stay high, and may increase
    (even to 100 percent, or close to 100 percent).


Public good games

- Note: Misprint in Camerer (2003, p. 45):
  - Endowment = e, contribution to group = c_i
  - Payoff to player i is
    \[ x_i = e_i - c_i + m \left( \sum_k c_k \right) \frac{1}{N} \]
  - Individual payoff maximized at c_i = 0, group payoff
    maximized at c_i = e if
    \[ 1 < m < N \]
  - (not m < (1/N) as claimed on p. 45. (correct expression
    on p. 103; see also Fehr and Schmidt 1999, p.836.)
Experiments on sharing, voluntary contributions, fairness and trust

• Compared to the predictions of the self-interest model, experiments find that people
  – share more
  – trust more
  – sanction more

• Sharing and sanctioning: conditional on others’ behavior, perceived intentions:
  – Kindness often repaid by kindness
  – Unfairness often repaid by (costly) sanctions

• Heterogeneity:
  – Some ”egoists”, few ”angels”, many ”reciprocators”

Next time

• Inequity aversion
• Readings:
  – Fehr and Schmidt (1999)
  – Camerer, C. (2003), pp. 101-104 (compendium)
  – Sobel (2005), pp 398-401