Inequality aversion theory and empirical evidence

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Agenda

• Background of the IA theory
• Definition of inequality aversion
• Reasons of aversion to inequality
• Fehr&Schmidt’s model
• Empirical Examples
• Criticism
• Conclusion
Background of the IA theory

- Rational principle
- The 20th century – game theory (assumes that players care only about their own material payoffs)
- humans do not behave always in a rational way with regard to maximizing their profits
- Inequity aversion is not a new phenomenon present in a literature it has already been discussed by sociologists, such as: Gouldner (1960), Goranson and Berkowitz (1966)
- Atkinson’s approach (1970) – inequality aversion is measured by the amount society is willing to give up in order to achieve a more egalitarian distribution of income
- Fehr & Schmidt IA model assumes that individuals are interested not only in their gains, but also in others’ gains
- Bolton and Ockenfels’s Theory of Equity, Reciprocity and Competition (ERC)
Definition of Inequality Aversion

- “Inequity aversion means that people are willing to give up some material payoffs in order to achieve more equitable outcomes. Inequity averse responders prefer to reject small offers in the ultimatum game and the proposers anticipating this, make higher offers” (M. Montero:2007)
Interpreting inequality aversion parameter

- the degree of inequality aversion is measured by the amount society is willing to give up in order to achieve a more egalitarian distribution of income; that is, the more convex the overall social indifference curve, the more averse the society is.
- How much commission would we pay to Robin Hood to transfer $1 from rich to poor?
- Rich man $R$ gets five times the income of the poor man $P$. The degree of inequality is constituted by the amount of income we are willing to let $R$ give up to give dollar to $P$. In this case we will give $5\varepsilon$ by $R$ to make $1$ transfer to $P$. For instance if $\varepsilon = 0$ we will only take $1$ from $R$ to give a dollar to $P$. If $\varepsilon = \frac{1}{2}$ we will take $2.24$ from $R$ to give $1$ to $P$. If $\varepsilon = 2$ we will let $R$ give up $25$ to give $1$ to $P$. Concluding, the more averse to the inequality we are the higher the value of $\varepsilon$, and the more we are willing to let $R$ to give up to influence the coveted transfer to $P$. 
Fehr & Schmidt’s model

- Humans are sensitive to inequities in favor of them and to those inequities which are against them
- Inequity adverse individuals do not care about their own payoff, but also how payoff are distributed among their mates
- Individuals make decisions so as to minimize inequity in outcomes
- Inequitable distributions cause disutility. This disutility from inequitable distributions may outweigh the utility created by personal payoffs.
Fehr&Schmidt’s model

• Inequity is divided into: “disadvantageous” inequity (the one that harms the actor) “advantageous” inequity (the one that harms another part)
• Disadvantageous inequity manifests that people are willing to sacrifice a potential gain to block another individual from receiving a superior reward
Fehr&Schmidt’s model

Specifically, consider a setting with individuals \{1,2,...,n\} who receive pecuniary outcomes \(x_i\). Then the utility to person \(j\) would be given by

\[
U_j(\{x_i\}) = x_j + \frac{\alpha}{n - 1} \cdot \Sigma \max(x_j - x_i, 0) + \frac{\beta}{n - 1} \cdot \Sigma \max(x_i - x_j, 0)
\]

where \(\alpha\) parameterizes the distaste for disadvantageous inequality in the first nonstandard term (envy of being poorer), and \(\beta\) parameterizes the distaste for advantageous inequality in the final term (discomfort of being better off).

The utility function is normalized by the factor \(n - 1\), where \(n\) is the size of the population.

The utility function allows an individual to behave altruistically or spitefully depending on the distribution of payoffs.
Fehr & Schmidt’s model

- A person is altruistic to others if her payoffs are above an equitable benchmark and is envious of the others if their payoffs exceed that benchmark.

- People compare themselves with others in their group (and with the other party in a two-person relationship) by using a benchmark of equality of distribution.

- Fehr and Schmidt’s work complements by evolutionary theorists that an evolutionary basis exists for what they label “moralistic reciprocity” as distinguished from simple reciprocity.
Fehr & Schmidt’s model

- **Reciprocity** means that individuals respond cooperatively to generous acts, and, conversely, punish non-cooperative behavior.
- **Moralistic reciprocity** embodies a willingness to punish defectors in ways that include social ostracism, reduced status, a withdrawal from relationships.
- **In the simple form of reciprocity**, punishment for defection takes the forms of withdrawal of future cooperation (e.g., if you cheat, I will not deal with you anymore).
- Moralistic reciprocity refers to more elaborate forms of punishment, including social ostracism, reduced status, fewer friends, and fewer mating opportunities.
- Evolutionary theorists argue that **simple reciprocity** cannot support large-scale human cooperation.
- Withholding cooperation is too crude a mechanism to maintain cooperation in large groups. But **moralistic reciprocity** offers a more plausible basis for establishing large-scale patterns of cooperation because it provides many more ways that cooperators can punish defectors.
Fehr&Schmidt’s model

- three key findings of a substantial body of experimental evidence in IA theory
- Many people behave in a **reciprocal manner** that deviates from purely self-interested behavior.
- **Reciprocity** means that individuals respond cooperatively to generous acts, and, conversely, punish noncooperative behavior.
- the individuals will repay generosity and punish selfishness in interactions with complete strangers even if doing so is costly for them and gives neither present nor future material rewards.
- the observed preference for reciprocity is **heterogeneous**. (Some people exhibit reciprocal behavior and others are selfish)
- Taking all the experimental data together – gathered from diverse countries and cultures – the fraction of reciprocally fair subjects ranges from 40 to 60 percent, as does the fraction of subjects who are selfish.
- the evidence indicates that roughly half of us are fair and the other half are self-interested.
Fehr and Schmidt – experiments’ analysis

• 1. Market with Proposers’ Competition, [Roth, Prasnikar, Okuno-Fujiwara, and Zamir 1991].
   A number of proposers make offers to a single responder who is restricted to accept (or reject) the highest offer. One of the proposers who made the highest offer is chosen at random to divide the surplus with the responder. The outcome in the experiment was the competitive one, the proposers offered all the surplus to the responder.

   A proposer makes a single offer to a number of responders. Among those who accepted the offer a random responder is chosen to divide the surplus with the proposer. In the experiment about 80% of the responders were willing to accept any offer.
Fehr and Schmidt – experiments’ analysis

• 3. Public Good Games without Punishment.
   In these games a number of identical individuals with income $y$ may contribute part of their income towards a public good. A player may contribute an amount $g$ of his income, which becomes an amount $ag$ ($a < 1$) of the public good and is enjoyed by all, including himself. In the experiments about 73% did not contribute at all.

• 4. Public Good Game with Punishment, [Fehr and Gächter 2000].
   This game is like the public good game without punishment, with an additional last stage in which individuals may punish others with a cost to themselves. In this experiment about 80% of the individuals contributed all their income in the first stage.
Criticism of Fehr&Schmidt’s model

• it provides no deeper understanding of why and when people exhibit other-regarding preferences.
• Fehr and Schmidt estimated the preferences only of an average subject, which neglected any individual heterogeneity.
Empirical evidence – Research

• The IA theory as a basis of many experiments and games
• „Economists versus Noneconomists”
• Participants (undergraduate students of Economics and other non-economics faculties)
• Aim of the research
• Methods
Empirical evidence – Research

• Majority of economists prefer efficiency over equity, various groups of noneconomists, show the opposite pattern.

• Result: On average, more than 50 percent of the noneconomists prefer the most egalitarian (the least efficient) distribution, while the probability of an economist choosing this allocation is 25 percentage points lower.
Empirical evidence – Research

• The research was extended, due to the question raised whether there are other subject characteristics such as gender or political attitudes that affect the preferences for efficiency versus equality.

• Results: Women are more equality egalitarian than man. However, the dominance of equality over efficiency is unrelated to political attitudes.
Summary

- the inequity-aversion model by Fehr and Schmidt (1999) constitutes a major theoretical contribution to studies connected to fairness and reciprocity.
- it states that the utility function of a subject not only is influenced by her own revenue, but also by envy and altruism.
- unfair distribution of resources among subjects results in disutility for inequity-averse people.
Summary

• The theoretical results of this model are consistent with a lot of experimental results (i.e. in power to take games, public good games and so on).

• The model gives surprisingly accurate predictions across many bargaining, market and social dilemma games.

• The phenomenon of aversion to inequality seems to be important in the globalized working environment because it can be a kind of stabilizer of cooperation.
Sources

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