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On competing rewards standards—an experimental study of ultimatum bargaining

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Abstract

In the tradition of earlier experimental studies, this paper introduces competing reward standards by letting parties bargain over the distribution of chips. The monetary equivalents of a chip for the bargaining parties can be equal (no competing rewards) or different (competing rewards). The ultimatum game is used as a tool to learn about reward standards in an asymmetric procedure. A major effect of different monetary chip equivalents is observed only when the proposer has a higher chip value. Results are compared to those reported in [Games Econ. Behav. 13 (1966) 100], who used a different experimental design.

Keywords: Reward standards; Ultimatum bargaining; Asymmetric procedure

1. Introduction

Rewards standards measure how people perceive their success when performing a certain task. In interactive situations, such reward standards usually rely on commonly accepted views on what constitutes a reward and how to measure individual rewards. In experiments, competing reward standards can be easily introduced by allowing parties to bargain over the distribution of chips whose monetary equivalent (that is, the value of a chip) varies for different individuals. (See Nydegger and Own, 1974, for an early application.) The two competing rewards are then

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the amount of chips that an individual receives, and the monetary earning implied by the chip's assignment.

The original motivation for using this experimental method was to test experimentally basic axioms of game theoretic solutions (see Nydegger and Own, 1974, and Roth and Murnighan, 1982, who were mainly interested in testing the independence of bargaining results with respect to affine utility transformations as required, for instance, by Nash, 1953). Changing the positive monetary chip value actually amounts to a positive affine utility transformation and should not affect the game theoretic prediction (relying on such axioms). In this research tradition, competing reward standards are a convenient experimental method to challenge the empirical validity of a certain rationality requirement.

According to the hierarchical structure of the chips earnings versus the monetary earnings, equity theory (see Homans, 1961, for an early reference) would predict equal chip assignments when the monetary value of chips for individuals are not common knowledge. On the other hand, it predicts that monetary earnings will be equalized when values are commonly known, i.e., when the superior reward standard of monetary earnings is applicable (see Guth, 1988, 1994). This has been demonstrated most clearly by Nydegger and Own (1974) and subsequently by Roth and Malouf (1979). See Roth (1995) for a more comprehensive survey.

Whereas the above-mentioned studies were concerned with symmetric bargaining, e.g., the demand game of Nash (1953), the experiment reported in this paper has used the extremely asymmetric ultimatum game. In the ultimatum game, player 1 (the "proposer") first proposes how to split the total amount of chips. Then player 2 (the "responder") decides whether to accept or reject this proposal. If the responder accepts, then the proposal is implemented; otherwise, both players receive nothing. For players motivated purely by monetary considerations, the game theoretic solution implies that the proposer receives almost all the money. This is not the observed outcome in experiments. The deviation is usually attributed to "fairness" considerations (Roth, 1995).

Testing fairness in asymmetric bargaining games should not be perceived as a test of equity theory, since it is not claimed that equity considerations dominate all other, e.g., strategic considerations. What we therefore try to explore experimentally is the trade-off between fairness and strategic considerations. Moreover, the structure of the ultimatum game is such that players may develop different fairness standards depending on their role. We can thus explore whether and how relative strategic advantages will influence the standard on which one relies.

We report here the results of three different treatments: in treatment (2,1), the value of a chip for player 1 was twice its value for player 2; in treatment (1,1), they had a common value; in treatment (1,2), the value of a chip for player 2 was twice its value for player 1.

In treatment (2,1), player 1 may consider an equal chip-split as "fair" since it gives him a higher reward. On the other hand, the responder may consider an equal money-split as "fair," and for that reason be likely to reject an equal chip-split which he conceives as unfair. In the regular ultimatum game, the proposer, on average, typically claims a bit more than 50% of the cake (again, see the survey by Roth, 1995). In our case, the proposers claim a bit less in terms of the chips, but a much larger share of the money. We conclude that the average proposal is more in line with the equal chip-split than the money-split in this case. In treatment (1,1), both