

# Minimally acceptable altruism and the ultimatum game

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## Abstract

I suppose that people react with anger when others show themselves not to be minimally altruistic. With heterogeneous agents, this can account for the experimental results of ultimatum and dictator games. Moreover, it can account for the surprisingly large fraction of individuals who offer an even split with parameter values that are more plausible than those that are required to explain outcomes in these experiments with the models of Levine [Levine, D.K., 1998. Modeling altruism and spitefulness in experiments. *Review of Economic Dynamics* 1, 593–622], Fehr and Schmidt [Fehr, E., Schmidt, K.M., 1999. A theory of fairness, competition and cooperation. *Quarterly Journal of Economics* 114, 817–868], Dickinson [Dickinson, D.L., 2000. Ultimatum decision making: a test of reciprocal kindness. *Theory and Decision* 48, 151–177] and Bolton and Ockenfels [Bolton, G.E., Ockenfels, A., 2000. ERC: a theory of equity, reciprocity, and competition. *American Economic Review* 90, 166–193].

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This paper presents a model of individual preferences where individuals are mildly altruistic towards others while also expecting others to be mildly altruistic. If an individual encounters evidence that another is less altruistic than he finds acceptable, he becomes angry and derives pleasure from harming the excessively selfish individual. These preferences are shown to be capable of explaining the experimental outcomes of the ultimatum game of Güth et al. (1982) as well as those of an important variant, namely the dictator game of Forsythe et al. (1994). The main advantage of the model proposed here is that, unlike other models of social preferences that

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have been proposed to explain these experiments, it does not lead individuals to take unrealistic actions outside these experimental settings.

Because the experimental outcomes of ultimatum and dictator games are in such sharp conflict with the predictions of standard economic models, many experimental variations have been considered, and this experimental literature is vast. Still, it is worth recalling the settings and some of the findings. Both games involve two players. The first player, who is called the proposer, offers to split a pie with the second, who is called the responder. In the ultimatum game, the responder can either accept or reject the proposer's offer. If the responder rejects it, neither player gets anything. Otherwise, the pie is split in the way suggested by the proposer. In the dictator game, the responder must passively accept the proposer's offer.

The modal offer in the ultimatum game is to split the pie 50–50. The actual fraction of even splits varies somewhat from experiment to experiment, and sometimes varies across rounds of play within a given experiment. In Forsythe et al., about half the proposers offer an even split while Levine (1998) reports that about 28 percent of proposers offered an even split in the late rounds of the Roth et al. (1991) experiments. Splits that are less favorable to responders are often rejected. In several experiments (see Fig. 6 of Roth et al. as well as Harrison and McCabe, 1996), such rejections are so common that average earnings of proposers actually decline as they make offers that are less favorable to responders. With this behavior of responders, proposers should offer even splits if they wish to maximize their own expected payoffs. However, even in experiments where proposers earn less by making less generous offers and even after subjects have learned the game by playing it several times, some proposers make less generous offers.<sup>1</sup> In the dictator game, expected monetary payoffs obviously rise when less generous offers are made. Not surprisingly, this implies that offers of even splits are observed less frequently. Still, Forsythe et al. report that about 20 percent of their proposers in the dictator game offered even splits.

The model presented below is closely related to Levine who also supposes that agents' altruism for others depends on their assessment of how altruistic others are in return. Unlike Levine, an agent's altruism is not assumed to depend linearly on that agent's perception of the altruism of the person he is interacting with. This allows the model to avoid Levine's conclusion that most people derive pleasure from seeing others suffer. His baseline parameters imply that 72 percent of the population would be willing to give up more than 25 cents to ensure that a stranger loses a dollar while 20 percent are ready to give up over 95 cents to bring about this outcome. In his model, this nastiness (or spitefulness) is important because it explains both why many responders reject uneven offers and why some proposers reduce their expected earnings by making offers that are less generous than even splits.

One difficulty with the preferences implied by Levine's analysis is that, given the limitations of actual law enforcement institutions, they ought to lead to massive amounts of vandalism. The experimental evidence in other games also casts doubt on the ubiquitousness of spite. Using variants of dictator games, Charness and Rabin (2002) show that most people would actually sacrifice some of their own resources to induce small gains by others whereas essentially no one is willing to sacrifice significantly to hurt others. They show, in particular, that 73 percent of their subjects are willing to give up 100 of their units to cause another agent to gain 400. Not only would all the agents in Levine turn this down, because even his altruists are not sufficiently altruistic for this, but 20 percent of his agents prefer an outcome where they and another player both receive

<sup>1</sup> It should be noted, however, that in most of the ultimatum experiments in primitive societies reported by Henrich et al. (2004, p. 25), the offer that maximizes the income of the proposer is usually below both the mean offer and the 50–50 split. Thus, in these societies, the even splits that are commonly observed constitute generous offers.

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