

## Social Utility in Ultimatum Bargaining

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*In this article we will provide an overview of factors that influence the weight that self-interest and equity related motives receive in ultimatum bargaining. These factors are grouped into three main categories: factors relating to the context of the game, factors relating to the parties involved, and factors related to characteristics of the game. Results of the studies are discussed in relation to the concept of social utility. The authors point out possible omissions in the literature—especially the lack of interest for the behavior of recipients—and recommend directions for future research.*

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Ultimatums are everywhere. A woman in the train who tells her child to turn down the volume of a gameboy “or else . . .”; a police officer who tells a drunk driver to walk home if he wants to avoid his license being withdrawn—they are all instances of ultimatums. Other examples of ultimatums are the extension of a hand for a handshake (we all know the negative consequences for both parties if the offer is rejected), and others before us (e.g., Thaler, 1992) have argued that even the prices of products are actually ultimatums. A price may be seen as a proposal for a certain division of outcomes for both parties (i.e., a certain amount of money for the seller, the product for the buyer). The recipient of the price-proposal has to choose between either accepting the proposal (i.e., buying) or rejecting it (i.e., not buying). These examples illustrate that in an ultimatum situation, one person makes a certain proposal and offers the other the opportunity to either go along with the proposal or not. In most instances, rejection of the proposal leads to less

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desirable outcomes for at least one of the (but usually both) parties than does acceptance.

The daily situations we just described, although they are very different in many respects, share some very distinctive features: They involve two parties, one who makes a certain proposal, and another one who has to respond to it by either accepting or rejecting the proposal. As such, these situations involve a certain division of outcomes and they involve some kind of communication between the two parties. Because of these features, ultimatum situations are of great relevance to researchers who are interested in human decision-making in social situations, i.e., in *social decision-making*.

### THE ULTIMATUM GAME

To capture the most important features of daily life ultimatums and to be able to conduct research into behavior in these kinds of situations, Güth *et al.* (1982) developed the ultimatum game. In the standard ultimatum game two players have to divide a certain amount of money between them. One player is the allocator and proposes a division of the money; the other is the recipient and can either accept or reject the proposed division. If the recipient accepts, the money is divided as proposed. If the recipient rejects, however, both players receive nothing. This game efficiently captures all the features mentioned earlier: It involves two players or parties, one that makes a proposition, to which the other has to respond by either going along with the proposal or refusing it.

With its simple structure, the ultimatum game is an attractive tool to assess the relative importance of self-interest and fairness considerations in social decision-making. More precisely, theories, such as game theory, that are based on the assumption that bargainers are rational and try to maximize their own outcome, predict that allocators would offer the recipient the smallest amount possible and that recipients would accept this offer. After all, if recipients are only interested in maximizing their own outcomes, they should realize that accepting even the smallest possible offer will yield them higher outcomes than the alternative of rejecting, because refusing would mean no outcomes at all. However, the question is: “Is this what really happens?”

This article will provide an overview of research that has been done using the ultimatum game and several related paradigms (such as dictator games, two-round ultimatum games, and delta ultimatum games). We will try to relate this research to the concept of social utility—the idea that the utility of outcomes not only depends on one’s own absolute outcomes, but also on the comparison between this outcome and the outcomes of relevant others. In presenting this research, we will try to give an overview of the field, and in addition will relate this to some of our own studies.

## RELATING EMPIRICAL RESULTS TO GAME THEORY

As for the allocators, the results of a number of studies clearly contradict game theoretic predictions. From the first ultimatum bargaining study (Güth *et al.*, 1982) onward, the modal offer was usually a 50–50 split of the pie. Over 25% of allocators made this proposal in the Güth *et al.* study, and 50–50 has been found to be the modal offer in many more subsequent studies (see also Camerer and Thaler, 1995). The average offer typically hovers between 30–40 percent of the pie, and offers of less than 10% of the total are very rarely observed (only 2 of 37 participants offered a very small amount in the Güth *et al.* study). Only a small percentage (less than 1%) of allocators offers an amount that comes close to game theoretic predictions (Güth, 1995; see for reviews also Camerer and Thaler, 1995; Güth and Tietz, 1990; Roth, 1988; Thaler, 1988). This seems to indicate that game theory does not do very well as a predictive tool for behavior in ultimatum game bargaining. Ultimatum bargainers do not behave in a rational, outcome maximizing manner. In fact, the ultimatum game has even been referred to as a paradigm that “is beginning to upstage the PDG [Prisoner’s Dilemma Game] in the freak show of human irrationality” (Colman, *in press*).

Trying to save at least some of the descriptive validity of game theory, Binmore *et al.* (1985) used a 2-period ultimatum game in which rejections of the first offer would lead to a second ultimatum game in which the roles of allocator and recipient were reversed and the total pie was reduced to 25% of its original size. In this experiment, allocators did seem to offer near-equilibrium offers in the second period, which might indicate that game theory as a predictive tool had been saved. However, results for the first round showed that 50–50 was still the modal offer. Moreover, this study has been criticized for two important reasons. First of all, the setup of the study raised the equilibrium of the game to 25% of the pie. Accepting the equilibrium offer, therefore, left the recipient in this game with a much higher outcome than recipients in standard ultimatum games would receive upon acceptance of the equilibrium offer. Secondly, Binmore *et al.* instructed their participants to behave in an outcome maximizing way: “How do we want you to play? YOU WILL BE DOING US A FAVOUR IF YOU SIMPLY SET OUT TO MAXIMIZE YOUR WINNINGS” (as cited in Thaler, 1992). Later experiments by Güth and Tietz (1988) using a similar two-stage design, showed that the findings of the Binmore *et al.* study were probably due to the specific size of the reduction of the pie in the second round. Indeed, Güth and Tietz used 10% and 90% instead of the 25% that Binmore *et al.* used, and found hardly any outcomes that corresponded with game theoretic predictions. It may be concluded that allocators do not seem to behave according to game theoretic predictions—they make offers that are substantially higher than the equilibrium for the ultimatum game. The assumption that allocators care only for their own outcomes and not about the outcomes of the other player is contradicted by empirical results. In fact,

we learn from the studies above that allocators do give heed to the outcomes of recipients.

But what do we know about recipients? Are they only interested in maximizing their own outcome? Several studies show that recipients often reject substantial offers if the offers are unfair (Camerer and Thaler, 1995). Offers of less than 20% of the pie are frequently rejected. Even when the total amount to divide was raised, as Hofmann *et al.* (1996a) did, from the usual \$10 to \$100, a substantial part of unfair offers were rejected. Forty percent of the recipients in their experiment rejected a 70–30 offer, giving up \$30 to punish an unfair allocator. It is important to note that these rejections of unfair offers cannot be the result of fear of retaliation or other tactical considerations, because recipients in traditional ultimatum games have the last word: The game ends after their decision. It appears that rejections of unfair offers by recipients are probably motivated by concerns that are primarily related to fairness and interpersonal comparisons and less to self-interest.

### THE SOCIAL UTILITY MODEL

What emerges from the research described earlier is that both parties in an ultimatum game take into account not only their own outcomes, as game theory would predict, but are also concerned with the outcomes of the other party. For the proposer, making a proposal means considering the outcomes for both him/herself and for the person responding to the ultimatum. Allocators may sometimes assign positive utility to the other player's outcomes. But even if allocators were only interested in maximizing their own outcomes, they should take into account the fact that recipients consider fairness as important. Allocators are therefore forced to take the other player's outcomes into account. For the recipient, deciding whether to accept or reject the proposal always means thinking about both own and other's outcomes. It can thus be concluded that for both players in the ultimatum game, both their own and the other player's outcomes are of importance.

The idea that both own outcomes and the outcomes of others may play a role in social decision-making has been captured in the social utility model. The social utility model gives a simple but elegant insight in social decision-making (Blount, 1995; De Dreu *et al.*, 1994; Loewenstein *et al.*, 1989; Messick and Sentis, 1985; Van Dijk and Vermunt, 2000). It distinguishes between two sources of outcome utility in distributive decision-making in social situations: An absolute payoff component and a comparative component. According to the social utility model, these two components generate the utility of a decision outcome. The first, the *absolute payoff component*, reflects the utility people get from their own absolute outcomes, independent of other peoples' outcomes. This component may more specifically be seen as associated with one's own possible decision outcomes. The decision-maker should prefer the alternative that has the highest outcome.

This component may be interpreted as an inclination to act in a self-interested manner.

The *comparative component* reflects the utility people derive from their own outcome in relation to the outcomes of others. This component has a more social nature and depends on the comparison of one's own outcome to the outcomes of relevant others. This latter component may be interpreted as a taste for (among other things) fair distributions, reflecting the preference people have for equitable distributions (cf. Bethwaite and Tompkinson, 1996; Kahneman *et al.*, 1986; Loewenstein *et al.*, 1989; Messick, 1995; Messick and Sentis, 1985). It should be noted that with fairness, we mean fairness as defined by equity. In case of the ultimatum bargaining game, an equitable outcome for both parties would be a 50–50 split of the pie, since according to equity theory, people prefer outcomes to be distributed in proportion to their inputs. In the case of equal inputs by allocators and recipients—the standard situation in research on Ultimatum games—people are expected to prefer an equal distribution of the outcomes.

Therefore, in an ultimatum game, two forces may be at work, one pulling the players in the direction of getting as much for themselves as possible, and another one pulling them in the direction of a 50–50 split. One of the aims of this paper is to give an overview of research that has been done into factors that affect the relative importance of both components of the model in ultimatum bargaining. In this article, we will try to characterize the effects of different factors and classify them into three categories that relate to three distinct features of any negotiation situation: The *context*, the *relevant parties* (and their respective relations), and the *characteristics of the specific game*.

## CONTEXT

As Camerer and Thaler (1995) argue, participants in interpersonal experiments like the ultimatum game may be influenced by all kinds of contextual factors: The wording of the instructions, the identity of the experimenter, whether the experiment is thought to be “economics” or “psychology,” and so on. Here we describe contextual factors that have been found to influence ultimatum bargaining behavior.

### Framing the Game

An example of a study which shows that changing the wording of the instructions may influence ultimatum bargaining behavior is a study by Hoffman *et al.* (1994). In their study they either presented the game as a standard ultimatum bargaining game or as a buyer–seller exchange. Allocators in the buyer–seller ultimatum game tended to make lower offers than in the standard ultimatum game.

This may be because they consider focusing on increasing their own outcomes as more legitimate in a buyer–seller setting than in a standard game.

Another way in which the presentation of the bargaining situation may influence bargaining behavior is investigated in a study by Larrick and Blount (1997). In their article, they compared decision making in social dilemma games and ultimatum games and focused on the differences between the required procedures in these games, claiming an amount from a common resource in a social dilemma game and either proposing (for players 1) or accepting or rejecting (for players 2) in an ultimatum game. They found that players in social dilemma games were more generous, even though the games in their study were structurally equivalent. It seems that the players in the ultimatum bargaining situation give more weight to the own outcome component of the social utility model.

### Pie size

The size of the amount that is to be divided between the players may also be of importance. As some economists would argue, people will behave rationally as long as the amounts involved are large enough. In terms of the social utility model, this would mean players place great weight on the absolute payoff component. Research has been done to study this conjecture and results seem to point in the direction of a disconfirmation of this reasoning: Both Roth *et al.* (1991), using \$10 and \$30, and Hofmann *et al.* (1996a), using \$10 and \$100 found no differences in offers between high- and low-stakes experiments. In an attempt to examine what happens if the stakes involved are very high, some studies have been done using participants in both Indonesia and the Slovak Republic (Cameron, 1999, and Slonim and Roth, 1998, respectively). The high stakes conditions in these studies used pie sizes varying from over a week's wage in the Slovak Republic to roughly three times an average monthly wage for the participants in Indonesia. The low stakes conditions in these studies used amounts that were much smaller: About two days wage in Indonesia and a few hour's wage in the Slovak Republic. Results showed no differences in offers between the games with high stakes and games with low stakes. It should be noted that although no differences in allocator behavior were found in the studies mentioned above, in many of them (e.g., Cameron, 1999; Slonim and Roth, 1998) there was an effect of pie size on the behavior of recipients. When the stakes were raised, they were usually more inclined to accept a certain proportion of the stakes. Although some argue strongly in favor of the hypothesis that pie size does not matter in ultimatum bargaining (e.g., Camerer and Thaler, 1995), and results show that allocators do make similar proposals in high- and low stakes ultimatum games, the picture is different for recipients. Recipients do seem to respond to pie size and may accept unfair offers more easily when the stakes are high. Because of this, the high stakes games tend to have a lower probability of ending in disagreement. Thus, the picture about recipient behavior is not quite

clear yet and therefore still needs to be looked at more carefully. However, on the basis of the available evidence, we do consider it premature to conclude that bargainers focus more on the own outcome component of the social utility model when large stakes are involved.

### Real Versus Hypothetical

A related topic of discussion between psychologists and economists is whether or not games involving hypothetical incentives have the same general results as games that involve real incentives. Although it may seem that this question can easily be solved by empirical data, it appears that the field has not reached an agreement about this issue (although some psychologists and some economists may claim that this question has been solved; with opposing results, that is). In the study in Indonesia, Cameron (1999) also added a condition in which a hypothetical amount had to be divided. Allocator offers were again similar regardless of whether real (and very substantial) pies or hypothetical ones were involved. Recipients, however, did seem to differentiate between real and hypothetical offers: They rejected substantially more offers when hypothetical pies were involved. Forsythe *et al.* (1994) also compared real and hypothetical offers in ultimatum and dictator games. The dictator game is a modification of the ultimatum game in which the recipient cannot refuse the offer, money is always distributed as the allocator proposes. Forsythe *et al.* found no differences for allocators and recipients in ultimatum games, but did find that dictators made higher offers when the stakes were hypothetical. The above seems to indicate that for allocators differences in offer behavior are found in dictator games, but that the data from ultimatum games are less conclusive. For recipients, it does seem to matter whether or not the offer is real or not. Indeed, they show higher acceptance rates when the offer is real. Although the evidence is quite mixed, it seems that recipients give more weight to the own payoff component when they play for real money than when they play for hypothetical money. The picture for allocators, however, remains very unclear.

### Cultural Differences

A factor that may also influence the weighing of the two components in ultimatum bargaining is culture. Earlier work in this area indicated that differences between cultures in ultimatum bargaining were quite small (Cameron, 1999; Roth *et al.*, 1991), although not completely absent. In the Roth *et al.* study, people in the U.S., Yugoslavia, Japan, and Israel played the ultimatum game in similar ways, with (first round) offers in Japan and Israel being slightly lower than in the U.S. and Yugoslavia samples. Over multiple rounds differences did not reach significance. Moreover, Cameron (1999) found offers in Indonesia to be similar to offers

typically found in U.S. studies. However, a recent article by Henrich *et al.* (2003, see also Camerer, 2003) showed that some cultures do exist in which the behavior of both players really differs from the behavior found in the studies mentioned above. On the one side, people from a small Peruvian tribe in the Amazon, called the Machiguenga, made substantially lower offers than are usually found ( $M = .26$  of the pie), and had a very high rejection rate, whereas the Lamelara of Indonesia, on average, offered more than half of the share ( $M = .58$ )! Even more interesting is that 37% of these Lamelara offers resulted in refusal by the recipient. Explanations for these cultural differences remain quite tentative and seem to require more research, before a clear idea of the reasons underlying these differences can be developed.

### Emotion

Emotions may have large influences on bargaining behavior. As has been argued before (e.g., Pillutla and Murnighan, 1996), affect seems to be an important factor in ultimatum recipient behavior. In their article, Pillutla and Murnighan varied the amount of information the players in ultimatum games had about the total pie size and the outside options of the recipients. When both players were completely informed about pie size and outside options, reports of unfairness were boosted and anger led to many rejections of unfair offers. As they stated: "offers must be perceived as unfair before people make strong attributions, get angry, and deny both themselves and offerers objective benefits" (pp. 220). As Bosman *et al.* (2003) have shown, this anger may diminish over time, leading recipients to be more prepared to accept unfair offers after a period of time has passed. All these findings suggest that angry participants seem to care less about their own outcomes.

A specific emotion that has been extensively studied in relation to decision-making is regret. Anticipated regret in particular may affect offers in ultimatum bargaining games. Zeelenberg and Beattie (1997) had participants play ultimatum games in which they manipulated the anticipation of regret. Anticipated regret was manipulated by telling the allocators before they made their offer that they would receive information about the recipient's minimal acceptable offer after they had made this offer. Allocators in the control condition only expected accept/reject information. Zeelenberg and Beattie argued that when allocators knew they would receive feedback about the recipient's minimal acceptable offer, this would make them more aware of the possibility that they might feel regret after making an offer that is slightly lower than the recipient's minimal acceptable amount. Indeed, Zeelenberg and Beattie found exactly that: Offers were higher when allocators expected feedback about the minimal acceptable offer of the recipients. In the same article, Zeelenberg and Beattie also show that actually receiving this information about the minimal acceptable offer and



feeling actual regret, causes allocators to make higher offers in ensuing ultimatum games.

## THE RELEVANT PARTIES

As we mentioned earlier, not only contextual factors may influence the weight that is attached to the components of the social utility model. Another category of factors that influence the relative weighting of both components of the social utility model are characteristics of the two sides involved in the ultimatum game.

### Social Distance

One important characteristic of the relevant parties which may affect behavior in ultimatum and dictator games is social distance. Several studies have shown that decreasing the social distance between allocators, recipients, and experimenters increases allocator offers in dictator games (Bohnet and Frey, 1996; Hofmann *et al.*, 1996b), and in ultimatum games (Bolton and Zwick, 1995; Eckel and Grossman, 1996). It has been shown that decreasing the social distance between the two players by either having the allocator and recipient look at each other or by having them communicate before they went into the experiment, and even by making the allocator aware of the identity of the recipient but not the other way around, influenced the offers allocators made (Bohnet and Frey, 1996). Thus, the larger the social distance, the lower the offers. Bolton and Zwick (1995) also showed that recipients were more inclined to accept low offers when they were completely anonymous to both the other player and the experimenter. It seems clear that varying the social distance between the players affects the weighing of the two components of the social utility model: Equity becomes more important as social distance decreases, whereas players focus more on their own self-interest as the distance increases.

### Entitlement

Several studies have shown that, compared to games in which the players are randomly assigned to their positions, offers go down if allocators have either “earned” or won their position in the game or if they in any other way feel more entitled to the role they have been assigned to (e.g., Güth and Tietz, 1986; Hoffman *et al.*, 1994; Hoffman and Spitzer, 1982). For instance, in the study by Güth and Tietz (1986) the allocators “earned” their position as allocator by first playing an auction. These allocators could keep whatever they won in the ultimatum game, minus the auction fee. Allocators dramatically reduced the number of 50–50 offers,

giving more weight to the absolute payoff component of the social utility model, thus trying to serve their own self-interest.

### Power Differences

Other studies also show that allocators are willing to use any advantage they have to increase their own outcome. In a study by Suleiman (1996), the dependency relation between allocator and recipient was varied by modifying the ultimatum game. Suleiman added a discount factor  $\delta$  ( $0 < \delta < 1$ ) to the ultimatum game. In this "delta game" rejection of the allocator's offer by the recipient led to a multiplication of the original offer by  $\delta$ . This means that, for example, in case of a  $\delta$  of .5 and an offer of 60–40, rejection leads to a multiplication of the offered outcomes for both players by a factor .5, resulting in a 30–20 division. An interesting feature of this game is that the delta game is identical to the ultimatum game when  $\delta = 0$  (rejection leads to an outcome of 0 for either player), and that it is identical to a dictator game when  $\delta = 1$  (whatever the response of the recipient, the allocation remains the same). Therefore, all games with a  $\delta$  between 0 and 1 cover the continuum between ultimatum games (in which the recipient has substantive power), and dictator games (in which the recipient has no power at all). This study showed that, as Suleiman concludes, an increase in relative power for the allocator led to lower offers. The higher the delta (i.e., the less power the recipient had), the lower the offers made by the allocator. More powerful allocators used their advantage and served their own self-interest by offering lower amounts to less powerful recipients.

Inspired by a rise in offers for the allocators in the dictator conditions ( $\delta = 1$ ) of the Suleiman (1996) study, Handgraaf *et al.* (2002) used this game to investigate ultimatum bargaining behavior near the extremes of the delta continuum. Results showed that the average offer decreased as delta increased for  $\delta < 1$ . This supports the reasoning that a larger power difference between allocator and recipient leads to lower offers. However, they also found that, compared to the situation when  $\delta = .9$ , the average offer increased when  $\delta = 1$ . Handgraaf *et al.* argued that allocators focused on maximizing their own outcome, as long as the recipient had some retaliatory power (however small this power may have been). When the recipients were completely powerless, however, allocators gave more weight to the comparative component of the social utility model: They made more equitable offers. The difference between these two situations manifested itself in higher offers for powerless recipients than for recipients with very limited power. A possible explanation for this finding may be that an allocator will assess the situation differently when there is a recipient who may retaliate, however insignificant this retaliation may be, than when the recipient is powerless. When retaliation is possible, allocators try to serve their own self-interest, whereas when the recipient is powerless, they focus more on equity.

### Informational Asymmetry

As Kagel *et al.* (1996) have shown, seemingly fair offers may actually reflect a motivation to maximize own outcomes. In their study, participants were allocators in an ultimatum game in which the chips that were to be divided had greater monetary value for the allocator than for the recipient. The results showed that when allocators played against recipients who were not informed about this differential value, they often proposed a 50–50 division of the chips, resulting in an unfair monetary outcome. In this way, allocators increased their own outcomes without fear of rejection (similar results were obtained by Croson, 1996; Pillutla and Murnighan, 1995; Straub and Murnighan, 1995; Van Dijk and Vermunt, 2000; see also Camerer and Thaler, 1995).

### Previous Behavior

Information about previous behavior of the other player may also affect the weighing of the components of the social utility model by ultimatum bargainers. Of course, this type of information usually results from playing more than one round of ultimatum bargaining against the same opponent. A substantial body of research has been devoted to repeated ultimatum bargaining (e.g., Neelin *et al.*, 1988; Ochs and Roth, 1989; Slonim and Roth, 1998; see also Thaler, 1992). On many occasions the reason to study repetition was that having participants play repeated rounds is considered more appropriate in experimental economics (for a discussion of this topic, see Camerer and Loewenstein, *in press*). In other experiments the aim was to see whether players in repeated games would make offers that come closer to the equilibrium offer as proposed by game theory. The idea behind this is that players learn to play the game and behave more according to game theoretic predictions as they get more experienced. Most of these studies show that this is not the case. In most repeated games allocators make offers which are still much higher than game theory would predict, and recipients reject more than they should.

In yet other studies the aim of repetition was to investigate whether players develop super game strategies, strategies that aim to play optimally over multiple rounds instead of just one round. It seems to us that this may be a useful approach that may lead to more insight into why so many equitable offers are being made in ultimatum games and why so many inequitable offers are being rejected. Research on repeated ultimatum bargaining has shown that, for one thing, the players whose behavior does go in the direction of game theoretic predictions (i.e., who make low offers, and/or accept low offers) do not fare very well over repeated games. In the study by Ochs and Roth (1989) for instance, these players earned the least. Several processes may be at play in these studies. First of all, making an offer that is low (as game theory would prescribe) means increasing the probability that it will be rejected, and therefore this may lead to lower overall outcomes.

Furthermore, accepting low offers may earn players the reputation that they are likely to accept low offers. This reputation may induce allocators to reason that low offers will be considered acceptable in the future. Obviously, the latter point is only of importance when the games are either repeated against the same opponent, or when other players' previous behaviors are known. In their 1986 study, Kahneman *et al.* had students play an ultimatum game in which they had to divide \$20 between themselves and an anonymous recipient. The students could either offer \$10–\$10 or \$18–\$2 (in their own advantage) to the recipients. After playing this game, they got the chance to either share \$12 evenly with someone who had just offered the \$18–\$2 split, or share \$10 evenly with someone who had just made the \$10–\$10 offer. Participants clearly favored sharing with the person that had previously made a fair offer, even if this resulted in a lower outcome for themselves.

It seems that reputation may be an important factor in repeated ultimatum bargaining in two major ways. First of all, players may adjust their behavior to the other player's reputation when they play the game. Secondly, players may be very concerned about building a reputation, and therefore adjust their behavior in such a way as to gain the desired reputation. This latter approach may be a good super game strategy, because, as Nowak *et al.* (2000) argue, adding a factor reputation to the parameters of a computer simulation of repeated ultimatum bargaining, actually leads to an advantage for players who behave in an equitable manner. This may explain why many bargainers seem to assign less weight to the own outcome component of the social utility model than game theory would predict.

## Personality

Other factors that may influence the weight that is given to the components of the social utility model are factors related to the personality of the players. Players' social value orientation, for instance, may greatly influence the weights attached to fairness and own outcomes. Social value orientations are individual differences in how people evaluate outcomes for themselves and others in interdependent situations (Kuhlman and Marshello, 1975; Messick and McClintock, 1968). Many orientations can be distinguished, depending on the weight people assign to own and others' outcomes, but most people can be classified as being either a prosocial, competitor, or individualist (Van Lange, 1999). Prosocials tend to strive for maximizing joint outcomes and equality in outcomes. Individualists seek to maximize own outcome, regardless of other's outcome. Competitors are motivated to maximize the difference between outcomes for self and other. These latter two—individualists and competitors—are usually taken together and defined as proselfs (Van Lange and Kuhlman, 1994).

Previous research on this individual difference variable has convincingly demonstrated that prosocials exhibit more cooperative behavior than proselfs (e.g.,

Kramer *et al.*, 1986; Van Lange and Kuhlman, 1994). This observation suggests that social value orientations may affect the relative weight people place on self-interest and fairness in bargaining. In particular, it seems plausible that proselves are the ones assigning a positive weight to the self-interest component of the social utility model. The second component, described as a preference for equity, appears to be more related to the prosocial orientation. If so, this could mean that in the case of asymmetric information the “truly fair” distributions (i.e., distributions that compensate for the differential value of chips even if the recipient does not know that chips are worth more to the allocator) are predominantly made by prosocials. In more general terms this would mean that the “fear of rejection explanation,” which accounts for positive offers in the traditional ultimatum game (i.e., the game in which both the allocator and recipient possess the same information), mainly serves to explain the behavior of proselves. To examine this possibility, Van Dijk *et al.* (2003) designed two experimental studies in which they assessed the social value orientations of the allocators. They had participants play an ultimatum game in which information level was manipulated. Allocators believed that chips were worth twice as much to them as to the recipient (cf. Van Dijk and Vermunt, 2000). Half of the allocators were led to believe that the recipient knew about this differential value (i.e., symmetric information), whereas the other half learned that the recipient was unaware of this difference (i.e., asymmetric information). Results showed that proselves did adjust their offers to the alleged information level of the other player. As expected, they lowered their offer when they believed the recipient was unable to detect that chips were worth more to allocators than to recipients. The behavior of prosocials was not influenced by the information manipulation. They offered similar amounts in both the symmetric and asymmetric information conditions.

From this study, Van Dijk *et al.* (2003) conclude that the fear of rejection explanation as offered by Kagel *et al.* (1996; see also Pillutla and Murnighan, 1995) primarily seems to explain the behavior of about half the participants, i.e., the proselves. In line with their argument that the fear of rejection explanation may be relevant mainly for proselves and not so much for prosocials, they anticipated that proselves would also be more likely to adjust the level of their offers to the power of the recipient. As Suleiman (1996) showed, offers in delta ultimatum games tend to go down as the power difference between allocator and recipient becomes larger (i.e., as delta increases from 0 to .9 in this study). This is in agreement with the notion that positive allocations result from a fear of rejection. Van Dijk *et al.* anticipated that, analogous to their first study, this reasoning would only hold for proselves and not for prosocials. The second study of Van Dijk *et al.* does indeed support this conclusion. Results showed that only proselves were influenced by the power of the recipient. Proselfs offered less chips when the recipient could reduce the offer by only 10% ( $\delta = .9$ ) than when rejection implied neither player would receive anything ( $\delta = 0$ ), whereas prosocials offered similar amounts in

both conditions. Van Dijk *et al.* conclude that “It therefore seems appropriate to complement Camerer and Thaler’s (1995) conclusion that “self-interested behavior is alive and well, even in ultimatum games” with the notion that “other-interested behavior is not ready to be buried either.”

A similar reasoning may apply to a personality factor like empathy or Social Comparison Orientation (Gibbons and Buunk, 1999). Highly empathic people and people who have a high score on the Social Comparison Orientation Scale, have a natural inclination to care much about the comparative component of the social utility model. In fact, Batson *et al.* (1995) showed that feelings of empathy for a person who needs cheering up may lead players in social dilemma games to increase the outcomes of this individual at the cost of their own outcomes. It should be mentioned that research into personality factors using ultimatum bargaining as a paradigm is scarce, but might actually result in interesting insights about interactions between personality and other factors.

## **GAME CHARACTERISTICS**

A third group of factors that may influence the weighing of the components of the social utility model in ultimatum and dictator games, is the way the decision task for both players is structured.

### **Presence of Outside Options**

Introducing an outside option to the ultimatum game (i.e., giving one or both players the opportunity to receive endowments when no agreement is reached) may greatly influence the weights of equity and self-interest. Players may change their interpretation of what is equitable in the particular game, especially when the outside options imply uneven outcomes (see for instance Knez and Camerer, 1995). Furthermore, outside options may change the equilibrium of the game, which should lead to differential game theoretic predictions. One plausible prediction would be that when the recipient has a substantial outside option, this should lead to more rejection, as rejection of an offer is cheaper for recipients who will still receive some amount if they refuse. This reasoning, however, does imply that recipients fully take into account the amount they will receive upon rejection. In order to investigate whether this reasoning is actually valid, Handgraaf *et al.* (2003a) focused on the kind of decision recipients face. The authors argue that at first sight it would seem that recipients make a choice between two possible distributions: They can either accept the unfair distribution offered by the allocator or they can reject, which results in a 0–0 distribution. Although, in a formal sense, this adequately describes the decision a recipient makes, Handgraaf *et al.* argue that the specific way of presenting the recipient’s decision in traditional ultimatum

games focuses the recipient on the interpersonal component of the social utility model. After all, in a standard ultimatum game, the allocator makes an offer, and the recipient is subsequently asked to either accept or reject this offer. It is therefore mainly the proposed interpersonal division the recipient reacts to. The outside option, the 0–0 division (of which the recipient is aware, for the game has been thoroughly explained), is only present at an implicit level.

It is important to realize that in order to assess the comparative component of the social utility model in relation to an offer, an *interpersonal* comparison is required: Recipients need to compare the allocator's outcomes to their own outcomes. This comparison is fundamentally different from the comparison necessary for determining the absolute payoff component. In order to assess the situation in terms of self-interest, recipients need to focus on the comparison between their own outcomes when they accept and their own outcomes when they reject, i.e., an *intrapersonal* comparison.

When the recipient is asked to either accept or reject a proposed interpersonal division, the offer and its fairness characteristics are much more salient and easy to evaluate than the intrapersonal comparison component of the social utility model. The decision will therefore mainly be a reaction to the interpersonal (or comparative) characteristics of the offer. In their study, Handgraaf *et al.* (2003a) compared the reactions of recipients towards unfair offers in a standard ultimatum game with recipients' reactions to unfair offers when playing an ultimatum game in which their decision is presented as a clear choice between the two possible outcome distributions (i.e., either the unfair offer or the 0–0 outcome). Their findings showed that presenting the recipients with a choice made them more inclined to react positively to unfair offers, mainly because they focused more on the absolute outcome component of the social utility model. They furthermore showed that adding a substantial outcome upon rejection of the offer (i.e., an outcome which implies that some money is still divided when the offer is rejected) similarly made the intrapersonal comparison more salient, which lead to an increase in acceptance levels of unfair offers. Both transforming the recipient's decision into a choice and adding a nonzero outcome upon rejection increased the weight of the intrapersonal comparison, leading to an increase in acceptance levels (see also Blount and Bazerman, 1996).

### Outcome Comparability

As we have already argued, one important factor, especially for recipients, is whether or not the outcomes that may result from acceptance and rejection and the outcomes for allocator and recipient are easily comparable (Handgraaf *et al.*, 2003a). In a related paper, Handgraaf *et al.* (2002) focused on the comparability of decision outcomes. In two studies they showed that varying the comparability of the possible outcomes influenced the reactions of recipients towards the offer.

In one of the studies, for instance, they varied the comparability of the outcomes upon acceptance with the outcomes upon rejection. When these outcomes were less comparable, recipients primarily reacted to the fairness characteristics of the offer, resulting in more rejections of unfair offers. Moreover, results from these studies indicated that the relative importance of fairness and own outcome as well as the perceived fairness of the offer mediated between evaluability of components and acceptance rates.

With these studies, Handgraaf *et al.* (2002, 2003a) showed that the evaluability of both the intrapersonal (or absolute outcome) component and the interpersonal (or comparative or fairness) component of the social utility model may play a role in ultimatum game bargaining. When the intrapersonal comparison is relatively easy, recipients focus on the self-interest component of the social utility model, whereas when the interpersonal comparison is easy, they focus more on the equity component.

## TO CONCLUDE

In this paper we argued that the social utility model is a very appropriate framework from which to look at ultimatum bargaining behavior. With its focus on the tradeoff between an absolute outcome component, which may be interpreted as a taste for outcome maximization, and a comparative component, which may be interpreted as a taste for equity, it provides a good insight into motives that may influence the behavior of both players in these kinds of situations. In this paper we tried to give an overview of factors that may influence the weighting of these components. It should be noted that the current categorization into three groups (contextual factors, player characteristics, and game characteristics), is by no means the only possible structure. We do, however, feel that this characterization captures the three most important aspects of bargaining. The overview shows that ultimatum bargaining research has been (and still is) a fruitful research area, which offers insights into the motives that drive human behavior in bargaining situations. As a paradigm the ultimatum game is an ideal tool to investigate factors that are relevant to the weighing of equity and self-interest in bargaining and interactions between those factors in many different contexts.

## Context

As we have shown above, a lot of research has already been done into the effects of contextual factors such as framing, pie size, and culture. These studies have been very informative, but we do consider two factors to be undervalued in the field. First of all, as we already argued, the way bargaining situations in general are being framed (for instance, as either an ethical or a business decision)



by the actors may have a great impact on subsequent bargaining behavior. Some research has been done in this direction, but in general there seems to be a lack of understanding of how contextual factors may influence the way people perceive a situation, and how this may lead to differential bargaining outcomes.

Secondly, we believe that the role of emotions in bargaining situations has not yet received the attention it deserves. As has been shown in the few studies that have been done in this area, emotions may have profound impact on bargaining (e.g., Pillutla and Murnighan, 1996). We consider this a shame, because (unlike some economists might argue) emotions play an important role in daily decisions about purchases, investments, and other (economic) behavior.

### Player Characteristics

Clearly, characteristics of the actors involved in a bargaining situation may exert great influence on the bargaining behavior. Factors like social distance between the relevant parties, the extent to which people are considered to be entitled to certain outcomes, the amount of power and information each party has, as well as previous behavior and the personality of the relevant parties have been shown to exert great influence on bargaining. The latter one, personality, may actually shed new light onto old results because, as Van Dijk *et al.* (2003) argue, some conclusions from earlier studies may be based on the behavior of only part of all participants, and it may well be that some of these conclusions are not valid for a large fraction of people.

Interestingly, when digging into the literature on ultimatum bargaining, we noticed that a strong bias exists towards research and theorizing about allocators. Although many studies (especially in the field of experimental economics) use real bargaining situations with real allocators and recipients, theorizing seems to focus mainly on the behavior of the allocators under study. The results that reflect on recipients are usually mentioned only as some kind of afterthought and are often not elaborated upon extensively. We consider this a missed opportunity, because the behavior of recipients may be especially informative about the weighing of the two components of the social utility model, as strategic motives cannot play a role for players who make the final move in the ultimatum game (see Handgraaf *et al.*, 2003a, for instance). Moreover, recipients that reject unfair offers are clearly reacting to the unfairness of the offer, and we therefore argue that rejections may be especially informative with regard to the reasons why fairness considerations are so important. In this light, it may be interesting to examine whether the fear of rejection (an important motivator of allocator behavior) of allocators is correct. After all, the “fear of rejection” explanation that is often given as the (rational) reason for positive allocator offers, does not present a strong idea about the circumstances under which this fear is or is not justified. It may be interesting to take a closer look at factors that influence rejection likelihood. To answer questions like these,

it is necessary to take a closer look at recipient behavior, data for which are often available, but sometimes ignored.

### Game Characteristics

As we argued, some specific characteristics, such as the presence and comparability of outside options, and more generally the rules of the game, may have profound effect on the weighing of self-interest and the comparative component of the social utility model within bargaining situations. Of course it should always be kept in mind that the rules of the game by themselves should not be the subject of research, as the game itself has been invented for experimental purposes. Nevertheless, we do think the changing of some of the rules may reveal deeper underlying causes of behavior.

A fruitful approach may be to follow the lead of Larrick and Blount (1997) and compare bargaining behavior in different games (they compared the behavior of players in ultimatum games to the behavior of players in social dilemma games). Some of the differences and similarities may be very informative in finding the underlying reasons for differences in behavior from one game to another, but also for the explanation of differential behavior within one specific paradigm.

One striking feature of the literature that we feel we have to mention here is the fact that in many of the studies reported, results show binominal distributions for allocator offers. Usually there is a peak at 50–50 (the modal offer in many studies) and another, slightly less steep one somewhere between 0–0 and 50–50. The location of this second peak may be dependent on factors like the ones we summarized. It seems to us that the information that these exact distributions yield is not always taken into account in the conclusions that are drawn from results. For one thing, the fact that there is a binominal distribution with a peak around the equitable offer and another peak around some (we would guess) ideal strategic offer, may be considered supportive of the idea that both equity and outcome maximizing (as revealed in the peak around the offer allocators collectively consider strategically smart) are important motivators.

Moreover, many researchers discuss their results in terms of increases of mean offers, whereas we, from our own experience, know that it is usually not an increase or decrease in offers that accounts for the change in average offers, but rather an increase or decrease of the number of allocators that offer the equitable distribution. We consider it a missed opportunity that much of this frequency data is ignored in the field. Means often go up because the number of equitable proposals increases, not because offers in general tend to rise. We would therefore recommend that researchers take a close look at the exact frequency distribution, rather than restrict themselves to the less informative mean scores. It might, for instance, be very informative to distinguish differential ways via which certain factors can influence allocator behavior. It might well be the case that some factors tend to

influence all offers in a certain direction, whereas others may mainly influence the frequency with which 50–50 offers are made. Both would have a similar effect on the mean offer, so in order to be able to distinguish between these differential effects it is necessary to take a closer look at the frequency distributions. It appears to us that the data may usually be even richer and more informative than they are portrayed to be. Both doing more research and taking a closer look at the exact results may teach us even more than we have already learned about the “freak show of human irrationality” (Colman, in press) called the ultimatum game.

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