HOW MANIPULABLE ARE FAIRNESS PERCEPTIONS? THE EFFECT OF ADDITIONAL ALTERNATIVES

Yoella Bereby-Meyer and Brit Grosskopf

ABSTRACT

In customer or labor markets raising prices or cutting wages is perceived as unfair if it results from the exploitation of shifts in demands. In a series of manipulations we show that adding an alternative to the original choice set alters the perception of fairness of the final outcome. Adding a worse alternative lowers the perception of unfairness, whereas adding a better alternative raises the perception of unfairness. These findings supplemented with existing experimental evidence cast doubt on purely outcome-based theories of fairness and suggest that fairness perceptions are highly manipulable.

1. INTRODUCTION

With the increasing use and recognition of experimental methods in economics, the traditional economic assumption that people are self-interested and seek to solely maximize their own monetary payoffs in social interactions seems not only stark but non-descriptive of how human beings actually behave. Ever since the first experiments on the ultimatum game (e.g. Güth et al., 1982) researchers are aware that considerations for fairness and factors such as trust and reciprocity affect behavior. In recent years attempts to model social preferences by augmenting

Inequality, Welfare and Income Distribution: Experimental Approaches
Research on Economic Inequality, Volume 11, 43–53

ISSN: 1049-2585/doi:10.1016/S1049-2585(04)11003-X

agents' utility functions with, for example, preferences for equity, reciprocity and relative payoffs have abound.[1]

The current research aims to show that the perception of fairness is affected by the perceived intentions behind agents' actions. These perceived intentions are prone to cognitive biases and can be easily manipulated by altering the set of alternatives an agent originally chooses from. We find that while keeping the outcome unchanged, it is sufficient to *mention* different sets of alternatives to shape perceived intentions and accordingly change perceived fairness to the worse or to the better. These results are strengthened by incorporating evidence from existing experiments with real stakes that similarly show that changing the set of alternatives, while keeping the outcome constant, affects economic behavior. Taken together, these findings suggest that the same economic situation might not only be perceived differently but can lead to very different economic behavior.

Our results have implications to models of social preferences. We will discuss them at the end of the paper, where we will also allude to the potential dangers that might result from the high manipulability of fairness perceptions.

Empirical evidence regarding the importance and robustness of fairness consideration for economic behavior is plentiful. One game that has been studied extensively in this context is the ultimatum game (see Roth, 1995, for a survey). The ultimatum game is a two-player game. One player (the proposer), who is randomly chosen, receives a fixed amount of money that she needs to divide between herself and the other player. The other player (the responder) has to decide whether to accept or reject the proposed division. If he accepts the money is divided accordingly, if he rejects both players do not receive anything.

According to standard economic theory, the responder should accept any proposal greater than zero, and therefore the unique subgame perfect equilibrium prediction is that the proposer offers the smallest possible amount. Experimental evidence does not support this prediction. It rather shows that individuals incorporate fairness considerations into their offers and acceptance or rejection decisions. The average offer to the responder is usually more than 30% of the available pie. In addition, responders usually reject profitable but "unfair" offers (e.g. Bolton & Zwick, 1995; Güth et al., 1982).

To account for this deviation from standard economic theory, Rabin (1993) suggested the concept of a fairness equilibrium that is based on the premise that people are motivated to help those who help them and hurt those who hurt them. Models of this type, known also as reciprocity-based models, assume that people are motivated not only by their final outcomes, but also by the way the outcome has been achieved. Players care about intentions behind actions and may be willing to sacrifice material payoff to reciprocate, i.e. reward fair behavior and punish unfair

behavior (see for example Bereby-Meyer & Niederle, forthcoming; Dufwenberg & Kirchsteiger, 1998; Falk & Fischbacher, 1999).[2]

Fairness considerations are important in many domains. For example, customers suspecting a supplier to treat them unfairly might feel angry and start searching for other alternatives. Anticipating this behavior causes firms not to raise prices, if this raise will be perceived as unfair. Similarly, fairness considerations inhibit employers from cutting wages during periods of high unemployment (Akerlof, 1982; Akerlof & Yellen, 1990; Bewley, 1998; Solow, 1980). The susceptibility of economic behavior to fairness issues makes the understanding of fairness norms an important issue. Kahneman et al. (1986) conducted a telephone survey that aimed to elicit community standards of fairness for the setting of prices and wages. They showed that the reference transaction, a relevant precedent that is characterized by a reference price or wage and by a positive reference profit to the firm, affects fairness perceptions. The behavior of a firm will be perceived as unfair if the firm will increase its profit by arbitrarily changing the reference price or wage (Bazerman, 1985). Similarly, consumers seem to grant special status to the manufacturer's list price, even if they do not expect to pay that amount. Exceeding that amount is perceived as unfair (Bazerman, 2002).

The reference transaction and the list price act as a reference point for assessments of fairness. Outcomes above the reference point are perceived as fairer and outcomes below the reference point are perceived as less fair.

In the current research we suggest that the reference point according to which people evaluate fairness, i.e. the reference transaction, can be manipulated by enlarging the set of possible alternatives that describe what *could have* been a possible outcome.

In line with intentionality-based models we suggest that the way the outcome has been achieved forms perceived intentions and affects the perception of fairness. If the additional ex-ante feasible outcome is worse than the current outcome, the current outcome will be perceived as a gain and consequently as a kind behavior. If the additional ex-ante feasible outcome is better than the current outcome, it will be perceived as a loss and consequently as a mean behavior even if the final outcome does not differ in the two situations.

In the experiment reported below we gave participants hypothetical scenarios similar to Kahneman et al. (1986). We asked the participants to evaluate the fairness of the different actions that were described. Without changing the final outcomes we mentioned an action that could have been taken: for example, a 3% reduction in wages that could have been a reduction of 5%. We found an increase or a decrease in the perception of fairness by just mentioning a worse outcome that could have been obtained. This feasible but yet not obtained outcome seems to have served as the reference point relative to which fairness and the perceived

kindness of the firm were evaluated. Our findings are additional evidence that people do not evaluate the utility of alternatives based on final outcomes, as was expected by once standard economic theory, but rather are affected by the way the outcome is presented to them.

2. THE EXPERIMENT

2.1. Participants

Two hundred and forty-nine undergraduate students participated in this study. One hundred and ninety-two were recruited from the Boston area (Harvard, MIT, BU) and fifty-seven from Ben-Gurion University, Israel. We ran the experimental sessions in Boston and at Ben-Gurion University respectively.

2.2. Apparatus and Procedure

The experiment was conducted in a classroom setting. Participants were told that they were about to participate in a study on decision-making, and were asked to give their fairness evaluation to scenarios like the one that is described below (for all other scenarios see the Appendix):

> A small company employs several workers and has been paying them the average wage. There is severe unemployment in the area and the company could easily replace its current employees with equally skilled workers at a lower wage. The company has been making money. The owners considered reducing current hourly wages by 5%. Finally it was decided to reduce the hourly wages by 3%. How do you judge the decision of the company? Please indicate your judgment on a scale from 1 to 7, where 1 refers to 'not fair at all' and 7 means 'extremely fair'.

Two factors were manipulated:

(1) *Outcome*: *the direction of change that was either negative or positive*. When the direction of change was negative, the change resulted in an outcome reduction (e.g. wage cut) and when the direction of change was positive, the change resulted in an outcome growth (e.g. wage increase).
(2) *Additional alternative*: *an additional alternative that was either mentioned or not*. When an additional alternative was mentioned, it was stated that the decrease (or increase) could have been 5% but eventually was 3%. When the additional alternative was not mentioned, only the decrease (or increase) of 3% was mentioned.

In addition, two types of scenarios were given in each condition.

Scenario A: The scenario described a decision concerning wages (see Appendix, examples A1 and A2).

Scenario B: The scenario described a decision concerning consumer prices (see Appendix, examples B1 and B2).

Participants of each subject pool were randomly assigned to the 8 experimental conditions of the 2 × 2 × 2 design (2 "directions of change" × 2 "with or without an additional alternative" × 2 "types of scenarios"). The number of participants in each condition ranged from 12 to 16.

3. EXPERIMENTAL RESULTS

Figure 1 presents the mean of the observed fairness perception as a function of the outcome and the addition of an alternative. The presence of an additional alternative raises perceived fairness in the case of negative outcomes and lowers perceived fairness in the case of positive outcomes.

In order to test the significance of this effect, we ran a linear regression on the perception of fairness as the dependent variable and the outcome, the mentioning of an additional alternative and the interaction between the outcome and the mentioning of an additional alternative as independent variables.[3,4] *Outcome*

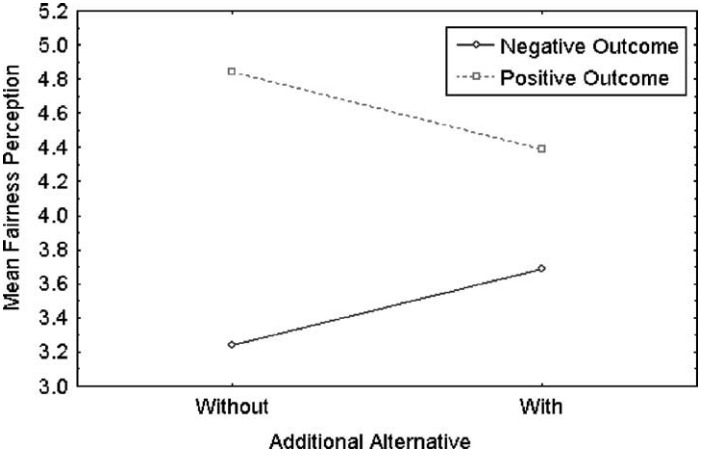

Fig. 1. Observed Mean Fairness Perception as a Function of the Outcome and the Presence of an Additional Alternative.

Table 1. Linear Regression Results.

Variables	Coefficients ($t_{(244)}$, p-Value[a])
Constant	2.07 (3.9, 0.005)
Outcome positive for evaluator	1.6 (5.74, 0.001)
With additional alternative	0.45 (1.58, 0.05)
Outcome × Additional Alternative	−0.9 (−2.27, 0.01)
# Observations	249
$R^2 = 0.14$, $F(3,245) = 13.07$	$p < 0.0001$

[a] The p-value refers to a one-tailed test.

positive for evaluator equals 1 for a positive change and 0 for a negative change. *With additional alternative* equals 1 when mentioned and 0 when not. Table 1 presents the results of the linear regression.

As can be seen in Table 1, we find a significant effect for the outcome, i.e. the direction of change. The coefficient of 1.6 indicates that positive outcomes are perceived as fairer than negative outcomes. However, more importantly, we observe a significant interaction between the outcome and the addition of an alternative. Perceived fairness increases when a worse alternative is mentioned ($t(125) = 1.62$, $p = 0.05$) and decreases when a better alternative is mentioned ($t(118) = -1.71$, $p < 0.044$). These findings illustrate that the same outcome can be judged as fair or unfair depending on the set of available alternatives it was chosen from.

One possible limitation of our study is its hypothetical nature – we did not test choice behavior with performance-based monetary payments. Yet there is evidence that responses to hypothetical questions are often consistent with actual behavior (e.g. Lichtenstein & Slovic, 1973 on preference reversal; Grether, 1980 on probabilistic reasoning).[5]

For an inference about consequences of fairness perceptions and resulting choice behavior we enrich our study with existing experimental evidence that used performance-based incentive pay and combine the results of the two approaches in a later section.

3.1. How Does the Perception of Fairness Affect Actual Choice Behavior?

The following section briefly reviews experimental evidence of choices in games. These experiments show that the set of alternatives that are available to the proposer in ultimatum games affects responder's choice behavior.

Mini-ultimatum games have been quite popular in studying rejections of profitable but "unfair" offers in the ultimatum game. In a mini-ultimatum game the choice set of the proposer is artificially constrained. Its structure allows for a clearer separation of outcomes of different types and the control over players' perceptions and expectations is increased. But clearly, these studies only examine subjects' choices and not their thought processes, i.e. their judgment.

The study that best complements our hypothetical scenarios on players' judgment of fairness is Brandts and Solà (2001). They analyze whether a benchmark split of (320,80) – with (proposer, responder) payoffs – is more or less acceptable depending on what the only other possible choice of the proposer was. They find that the benchmark split of (320,80) has a higher rate of acceptance (hardly ever was rejected), when the only other choice was (350,50), i.e. if the proposer chose the "fairer" of the two "unfair" options, than when the proposer could have split the pie equally, i.e. (200,200). If the other option available to the proposer was a split of (100,300) then the rejection rates of the benchmark split (320,80) increase even further.[6] Similarly, Nelson (2002) finds that an offer of \$4 in a \$20 ultimatum game has a higher probability of being accepted if \$4 is the highest possible offer (mini-ultimatum game) compared to when \$20 is the highest possible offer (full-blown ultimatum game). Falk et al. (2003) show in mini-ultimatum games that the unequal offer of (8,2) has a higher probability of being rejected if the proposer could have proposed an equal offer (5,5) than if the proposer could have proposed only an even more unequal offer, e.g. (10,0).[7]

All these experimental findings suggest that the acceptability of an offer is affected by the set of available offers. Depending on the available set of alternatives for the proposer, identical offers signal different intentions of the proposer and consequently are being accepted or rejected differently.

4. DISCUSSION

The findings of this study suggest that fairness perceptions are affected by the intentions of the agents and are manipulable. Complemented by the existing experimental evidence that fairness perceptions severely affect choice behavior, this is of great economic interest.

Consistent with intentionality-based models we have shown that the way the outcome has been achieved forms perceived intentions and consequently affects fairness perception. Mentioning a worse possible outcome causes the current outcome to be perceived as a gain and consequently as a kind action, while mentioning a better possible outcome causes the current outcome to be perceived

as a loss and consequently as a mean action. In both cases the ex-ante feasible alternative does not affect the final outcome, but nevertheless affects the fairness perception. This shows how highly manipulable the fairness perceptions of the final outcomes are.

Our results are not restricted to changes in fairness perception only. Experimental research on bargaining has shown that agents are likely to act upon their perception of fairness. Responders in a an ultimatum game accept or reject similar offers differently depending on what the proposer could have done, i.e. what alternatives the proposer was choosing from.

Taken together these results suggest that fairness models should take into account that people value the intentions behind actions besides having preferences over final outcomes and equitable distributions. Identical actions – depending on the alternatives available – are likely to signal different intentions of the other party and consequently may lead to a different choice. Therefore, more complex models of social preferences have to take the set of available actions into account.

The fact that choices are dependent on the set of possible alternatives gives also rise to abuses and arbitrary manipulations. Justifications as to how a certain decision came about seem to play an important role in evaluating a decision. Consequently, it might be in the interest of one party to distort the set of available alternatives in order to make the final outcome seem fairer, especially when the available choice set is not directly observable. For example, universities that are currently suffering severe budget cuts may find much more support from staff and faculty if they exaggerated the budget situation, i.e. announce intended salary cuts, and then decide to cut costs in a slightly more moderate way. Sellers may have no incentive to update list prices when prices are falling, since customers will perceive a bigger discount as a kinder act.

NOTES

1. We will discuss models that incorporate social preferences in more detail later in the paper.

2. Another class of fairness models, known as outcome-based models, is concerned with the distribution of payoffs. Fair is defined not only in terms of absolute income but also in terms of the relative share. In order to reduce payoff inequality a player may reduce her payoff if this leads to a greater reduction in the other players' payoff. A player would, however, never sacrifice to increase payoff inequality (see Bolton & Ockenfels, 2000; Fehr & Schmidt, 1999). However, Charness and Grosskopf (2001) and Charness and Rabin (2002) find that people are willing to sacrifice money to achieve efficiency, even when this increases payoff inequality.

3. The effect of the subject pool and its interaction with the other predictors were found insignificant. Therefore we analyze the data pooled from both subject pools.

4. In order to examine whether there are differences in the way the additional alternative affects perceived fairness in the different scenarios, we ran for each type of outcome (decrease/increase) a linear regression on the fairness perception as the dependent variable and the type of scenarios, the mentioning of an additional alternative and the interaction between them as the predicting variables. In both regressions no significant interaction was found. This indicates that the type of scenario did not alter the influence of the additional alternative. As a consequence, the analysis was done with the pooled data of both scenarios.

5. For surveys on experimental procedures and on whether actually paying subjects in experiments alters their behavior see Camerer and Hogarth (1999) and Hertwig and Ortmann (2003).

6. The observed rejection rates are 0.0333, 0.2183 and 0.3492 respectively.

7. Güth et al. (2001) show that almost equal splits instead of equal splits evoke very different behavior on both, the proposers' and the responders' side.

REFERENCES

Akerlof, G. (1982). Labor contracts as partial gift exchange. *Quarterly Journal of Economics*, *97*, 543–569.

Akerlof, G., & Yellen, J. (1990). The fair wage-effort hypothesis and unemployment. *Quarterly Journal of Economics*, *105*, 255–283.

Bazerman, M. H. (1985). Norms of distributive justice in interest arbitration. *Industrial and Labor Relations Review*, *38*, 558–570.

Bazerman, M. H. (2002). *Judgment in managerial decision making* (5th ed., 1998). Wiley.

Bereby-Meyer, Y., & Niederle, M. (forthcoming). Fairness in bargaining. *Journal of Economic Behaviour and Organization.*

Bewley, T. (1998). Why not cut pay? *European Economic Review*, *42*, 459–490.

Bolton, G., & Ockenfels, A. (2000). ERC: A theory of equity, reciprocity, and competition. *American Economic Review*, *90*, 166–193.

Bolton, G., & Zwick, R. (1995). Anonymity vs. punishment in ultimatum bargaining. *Games and Economic Behavior*, *10*, 95–121.

Brandts, J., & Solà, C. (2001). Reference points and negative reciprocity in simple sequential games. *Games and Economic Behavior*, *36*, 138–157.

Camerer, C., & Hogarth, R. M. (1999). The effects of financial incentives in experiments. *Journal of Risk and Uncertainty*, *19*, 7–49.

Charness, G., & Grosskopf, B. (2001). Relative payoffs and happiness: An experimental study. *Journal of Economic Behavior and Organization*, *45*, 301–328.

Charness, G., & Rabin, M. (2002). Understanding social preferences with simple tests. *Quarterly Journal of Economics*, *117*, 817–869.

Dufwenberg, M., & Kirchsteiger, G. (1998). A theory of sequential reciprocity. Mimeo.

Falk, A., Fehr, E., & Fischbacher, U. (2003). On the nature of fair behavior. *Economic Inquiry*, *41*(1), 20–26.

Fehr, E., & Schmidt, K. (1999). A theory of fairness, competition and cooperation. *Quarterly Journal of Economics*, *114*, 817–868.

Grether, D. M. (1980). Bayes rule as a descriptive model: The representativeness heuristics. *Quarterly Journal of Economic*, *95*, 537–557.

Güth, W., Huck, S., & Müller, W. (2001). The relevance of equal splits in ultimatum games. *Games and Economic Behavior*, *37*, 161–169.

Güth, W., Schmittberger, R., & Schwarze, B. (1982). An experimental analysis of ultimatum bargaining. *Journal of Economic Behavior and Organization*, *3*, 367–388.

Hertwig, R., & Ortmann, A. (2003). Economists' and psychologists' experimental practices: How they differ, why they differ, and how they could converge. In: I. Brocas & J. D. Carrillo (Eds), *The Psychology of Economic Decisions, Vol. 1: Rationality and Well-Being* (pp. 253–272). Oxford University Press.

Kahneman, D., Knetsch, J. L., & Thaler, R. (1986). Fairness as a constraint on profit seeking: Entitlements in the market. *American Economic Review*, *76*, 728–741.

Lichtenstein, S., & Slovic, P. (1973). Reversal of preferences between bids and choices in gambling decisions. *Journal of Experimental Psychology*, *101*, 16–20.

Nelson, W. R. (2002). Equity or intention: It is the thought that counts. *Journal of Economic Behavior & Organization*, *48*, 423–430.

Rabin, M. (1993). Incorporating fairness into game theory and economics. *American Economic Review*, *83*, 1281–1302.

Roth, A. E. (1995). Bargaining experiments. In: J. E. Kagel & A. E. Roth (Eds), *Handbook of Experimental Economics*. Princeton, NJ: Princeton University Press.

Solow, R. M. (1980). On theories of unemployment. *American Economic Review*, *70*, 1–11.

APPENDIX

The wording in parentheses refers to the version with the additional alternative. The two first scenarios refer to a positive outcome and the two last scenarios refer to a negative outcome.

A1. A computer company has been making moderate profit. Recently there has been inflation of 3%. As a consequence the company [considered raising the salary by 5% but in the end] decided to raise the salary of its workers by 3%.

B1. A cosmetic company has been making profit. Recently the price of raw materials used in the cosmetic production decreased by 3%. As a consequence the company [considered decreasing the price of its products by 5%. In the end they] decided to decrease the price of its products by 3%.

A2. A small company employs several workers and has been paying them the average wage. There is severe unemployment in the area and the company could easily replace its current employees with equally skilled workers at a lower wage. The company has been making money. As a consequence the company [considered reducing the current hourly wages by 5%. In the end they] decided to reduce the current hourly wages by 3%.

B2. A grocery store has several months supply of peanut butter in stock that it has on the shelves and in the storeroom. The current price of a peanut butter jar is $7. The owner hears that the wholesale price of peanut butter has increased and [she considered increasing the price on the current stock by 5% immediately. In the end] she immediately raised the price on the current stock by 3%.