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MORAL PROPERTY RIGHTS IN BARGAINING WITH INFEASIBLE CLAIMS*

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Abstract

In many business transactions, in labor-management relations, in international conflicts, and welfare state reforms bargainers hold strong entitlements that are often generated by claims that are not feasible any more. These entitlements seem to shape negotiation behavior considerably. By using the novel setup of a 'bargaining with claims' experiment we provide new systematic evidence tracking the influence of entitlements and obligations through the whole bargaining process. We find strong entitlement effects that shape opening offers, bargaining duration, concessions and (dis-)agreements. We argue that entitlements constitute a 'moral property right' that is influential independent of negotiators' legal property rights.

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Keywords: Moral property rights, entitlements, fairness judgments, bargaining with claims, self-serving bias, experiment

I. Introduction

In many negotiations bargainers bring strong entitlements to the bargaining table. These entitlements are often rooted in historical claims, custom, or the status quo (see e.g. Kahneman et al. [1986], Zajac [1995]). Entitlements seem to matter in business relations, in wage arbitration, wage setting, corporate mergers, nuptial breakups, peace treaties and many other situations where people need to bargain.[1]

Yet, in many of these negotiations entitlements are inconsistent. The long-lasting Israeli-Palestinian conflict is a prominent example where infeasible claims - in this case on pieces of land - shape entitlements (e.g. Feith [1993]). There is also evidence that the welfare state has generated important entitlements of different groups that under changed economic conditions may be inconsistent but determine attitudes on necessary reforms (e.g., Romer [1996]; Boeri et al. [2001]). Inconsistent entitlements that are often based on infeasible claims also seem to influence wage negotiations in companies under economic strain.

To our knowledge there is no systematic investigation yet on how infeasible claims actually influence entitlements and negotiations. In this paper we take up this issue and provide comprehensive evidence on the influence of infeasible claims on negotiations. We do this by way of controlled laboratory experiments investigating a bargaining problem with infeasible claims and the derived entitlements. For the purposes of our paper Schlicht [1998, p. 24] provides a very succinct definition of an entitlement, and its counterpart, an obligation:

> "Entitlements are rights, as perceived by the individual. They are not, however, abstract legal rights. Rather they denote the *subjectively perceived rights* that go along with a motivational disposition to defend them. Obligations are the counterparts of entitlements. They refer to claims of others that are *subjectively accepted*, and go along with a motivational disposition to respect these claims" (italics added).

[1] The importance of entitlements extends beyond these examples. In the context of market transactions, Kahneman et al. [1986] were among the first to note the relevance of historical transactions for setting a reference point in what they call the "principle of *dual entitlement*, which governs community standards of fairness: Transactors have an entitlement to the terms of the reference transaction, and firms are entitled to their reference profit" (italics in original). Kachelmeier et al. [1991] and Franciosi et al. [1995] dwelt on this idea and examined the consequences of entitlements in multi-period posted-bid and posted-offer market experiments with taxation.

To study the role of entitlements in negotiations we introduce an experimental two-person 'bargaining with infeasible claims' setup. It is inspired by the class of 'bargaining problems with claims' mainly studied in game theory. A bargaining problem with claims is a standard bargaining problem enriched with a 'claims point', i.e., a claim on a certain share of the pie that lies *outside* the feasible bargaining set (see O'Neill [1982] for the seminal paper on such problems).

Chun and Thomson [1992, p. 20] characterize the meaning of claims by an example of a labor-management negotiation: "(...) labor and management come to the negotiation table with certain expectations, or with certain claims. (...) the claims may represent commitments made to the agents in earlier negotiations which, because of changes in the industry that may have adversely affected the feasible set of the firm, cannot all be honored any more".

A recent prominent example for the relevance of entitlements in bargaining in the business arena are the wage cut negotiations between United Airlines and the unions representing its employees in Fall 2002 and Spring 2003. These negotiations were necessary because of the threat of bankruptcy United Airlines was facing at this time. They led to (temporary) wage cuts that were quite different for different groups of employees. It ranged from 29 percent for the high-salary pilots to 9 percent for the relatively low-paid flight attendants (Corfman and Schmeltzer [2002]).

In our experiment we model the bargaining problem with claims as follows. Subjects first acquire claims in a competitive task. With a certain probability these claims are actually paid out to the subjects. With the remaining probability the acquired claims are *not feasible* any more and subjects have to negotiate an agreement in a completely symmetric free-form bargaining over a computer net. In case they fail to reach an agreement, they earn nothing.

In this research we are interested in the entitlements people derive from infeasible claims and how these entitlements influence negotiations. The claims are the *granted* shares of the pie, in case the claims are feasible. By contrast, in line with Schlicht's definition, we refer to entitlements as the *subjective judgments* of bargainers about what their fair share of the remaining pie is, in case the claims are infeasible. To learn about the entitlements bargainers derive from the infeasible claims negotiators are asked *in private* what they think a fair settlement from the vantage point of a neutral arbitrator is, before they start to bargain.

This research design allows us to study several important issues. First, we can investigate which entitlements bargainers actually derive from the infeasible claims. Previous research suggests that entitlements are likely to be self-servingly biased (e.g. Babcock and Loewenstein [1997]). Second, since entitlements are subjectively held fairness judgments, which may be self-servingly biased, it is likely that they cannot be satisfied without some curtailment by at least one bargaining party. Our experimental design allows us to track the impact of entitlements through the whole negotiation process – from the opening offers, the concessions and bargaining duration, to the reached agreements, and disagreements.

Our main results are as follows. First, entitlements as measured by elicited fairness judgments are highly correlated with the claim earned in the first part of the experiment. Quite surprisingly - and in contrast to previous literature - fairness judgments are only modestly self-servingly biased. Second, we show that entitlements influence the whole bargaining process: We find that (i) *opening offers* are strongly correlated with the entitlements and obligations; (ii) tensions in entitlements held by the negotiators tend to prolong negotiations and are a significant reason for the often-observed '*deadline effect*' of last-minute agreements; (iii) entitlements shape the *concessions* that are necessary to strike an agreement; and (iv) reached *agreements* are highly correlated with the entitlements and obligations.

Our result that the agreements are strongly skewed away from the equal division is in stark contrast to previous symmetric free-form bargaining experiments without claims. There almost unanimously the equal split was implemented (see e.g. Nydegger and Owen [1975]).

Theoretically, the free-form bargaining game with claims exhibits many possible outcomes. Axiomatic analyses provide arguments for several solutions each giving different outcomes for the same claims (see Thomson [2003] for an overview). When viewing (the last few seconds of) the free-form bargaining as a Nash-demand game every efficient allocation of the surplus can be sustained by a non-cooperative Nash equilibrium. Because there are many equilibrium outcomes many variables can provide a correlation device that promotes agreements and influences how the surplus is shared. Our study is the first to show that entitlements derived from infeasible claims are an effective device that strongly and systematically influences the whole negotiation process. Our findings suggest that entitlements constitute a *moral property right* that exists *independently* of the legal property rights.

II. Experimental Setup

The main purpose of our study is to investigate how entitlements derived from infeasible claims shape negotiations. Therefore, our experimental design consists of three ingredients: (i) negotiations in a 'bargaining with claims' experiment, (ii) the implementation of claims, and (iii) the measurement of entitlements. A sample copy of the instructions is available at http://www1.fee.uva.nl/creed/pdffiles/InstrToMPRBIC.pdf.

A. Features of the Experimental Design

The 'bargaining with claims' environment. At the beginning of the experiment subjects were randomly and anonymously paired and introduced to the bargaining problem. To make the experimental task cognitively easy and to enhance the perceived symmetry of bargaining roles, we cast the bargaining as one between two 'heads of departments' in a hypothetical firm that consists of two departments. Subjects were told that in this firm the total budget available for both salaries is 2490 'points'. (In the experiments 10 points were worth € 0.18. Hence, the salary budget was worth € 18.10 (≈ $ 18.00). The instructions said that the firm's previous policy always has been to grant the better-performing head of department a higher share of the total salary budget (1660 points) than the lower-performing head of department (830 points). However, there is now the *possibility* that – due to exogenous factors beyond the control of the firm – economic conditions for the firm become worse and the salary budget will have to be cut to 2050 points. The firm states that, should this case materialize, it will not impose any sharing of the new salary budget onto the managers. Instead the firm asks the heads of departments to bargain among themselves to reach an agreement of how to split the new salary budget. If they reach an agreement it is implemented and each head of department will receive the agreed share. The subjects were also told that they are 'fired', i.e., will not earn any money in the experiment except the promised show-up fee, should they fail to reach an agreement.

In case the salary budget does not shrink, the bargaining partners are paid according to the previous wage policy: the manager with the better performance will receive a salary of 1660 points, whereas the manager with the inferior performance will receive a salary of 830 points. Whether the salary budget is 2490 or 2050 is determined by chance.

Notice that this story — in the case where the salary budget shrinks — depicts a bargaining with infeasible claims problem. In the case where the smaller salary budget

becomes relevant, the sum of both 'claims' (read 'historically implemented sharing of the salary budget') lies outside the bargaining set. The disagreement payoff of the bargaining problem is $(0, 0)$.

The implementation of claims. In the experiments we explained the 'performance measurement' as follows:

> "In this experiment performance will be measured with a **general knowledge quiz**. The department head who gives correct answers to a greater number of questions than the other department head has shown the better performance, and has therefore, given the firm's previous policy, earned a salary claim of 1660 points. The department head with the lower performance previously received a salary of 830 points."

The 'general knowledge quiz' consisted of sixteen questions from a variety of fields, including astronomy, history, sports, music, politics, etc. We were very careful to select questions that students with a high school degree should in principle be able to answer, and that subjects would recognize as testing their high school knowledge. The knowledge quiz was a multiple choice test with five possible choices and only one correct answer. All subjects had to answer the same questions. They had eight minutes to answer the questions. Subjects were informed about this.

After the quiz we told the subjects which of the two bargaining partners did better in the knowledge quiz. We only informed them about the *rank* of their performance and not about the actual number of correct answers. Apart from simplicity reasons, we wanted to hold the claims constant across subjects and between bargaining pairs.

Recall from the description of our bargaining problem that a chance move determined whether the salary budget shrank to 2050 points or stayed at 2490 points, where the latter outcome implied that the claims according to the knowledge quiz were actually paid out. In the experiment the chance move was implemented as follows. After subjects were informed about the rank of their performance, each bargaining partner in a dyad had to roll a six-sided die. It was explained that the claims would be actually paid out if the sum of the numbers of both dice was greater or equal to eleven. If the sum of the dice numbers was smaller than 11, the bargaining partners had to bargain over how to split the new salary budget of 2050 points.

The reason why we implemented this chance procedure was to make the claims a potential payment in the experiment. This gave the subjects an incentive to see the

knowledge quiz as an important part of the experiment. On the other hand, our main research interest is to investigate the impact of perceived entitlements on bargaining outcomes. Therefore, we set the probability that bargaining actually had to take place to 11/12.

Measurement of entitlements. All subjects in the experiment had to answer the following question (adapted from Babcock et al. [1995]):

> "According to your opinion, what would — in case of the bad economic condition for the firm — be a 'fair' distribution of the salaries from the vantage point of a non-involved **neutral arbitrator**? (Please use **exact amounts**; no intervals! **The amounts have to sum up to 2050 points!**)" (*emphasis in original.*)

In the remainder we will refer to this question as the 'arbitrator question'. The fairness judgments we receive as answers to this arbitrator question inform us on the perceived entitlements and obligations of our subjects. In the results part of the paper, we will link the fairness judgments to the negotiation behavior.

B. Experimental Procedures

Table 1 summarizes the sequence of events. After subjects arrived at the lab, we randomly allocated them to computer booths, which were located in two different rooms. Each subject's bargaining partner always was in the other room. Subjects first read the experimental instructions that introduced them to the bargaining problem and the performance measurement. After subjects had finished reading the instructions they answered the knowledge quiz and rolled the dice in front of an experimenter to determine whether the claims would be paid out or whether they would have to bargain over 2050 points. In case the dice determined that the claims will be paid out, we told the pairs to bargain hypothetically over the sharing of 2050 points. We ensured the subjects that they would receive their claims irrespective of the outcome in the hypothetical bargaining. (Actually, only one pair had to bargain hypothetically.) We announced the arbitrator question just before the start of the negotiations. We told the subjects that no other participant of the experiment would be informed about their answer to this arbitrator question.

The bargaining was free-form, i.e., there was no fixed bargaining protocol (see, e.g., Roth and Murnighan [1982]). Bargaining was conducted over a local area network with

Table 1 — Sequence of Events

1.	Reading of instructions
2.	Quiz determines claims and subjects are informed about them (1660 points for "winner", 830 points for "loser")
3.	Nature determines whether claims are paid out or if bargaining over 2050 points takes place
4.	Arbitrator question
5.	Free-form bargaining over 2050 points (max. 900 sec.)
6.	Post-experimental questionnaire
# of pairs	45

the help of the experimental software "Rabbit" (Brandel [1998]). The negotiators were allowed to make any (non-negative) proposal as long as the sum of shares was smaller or equal to 2050 points. Subjects also had the possibility to send messages along with a proposal (as long as these messages did not contain threats or reveal the identity of the sender, which was checked by an experimenter). Mere messages without a proposal were not possible. The negotiators had 15 minutes to reach an agreement. In case of an impasse subjects earned nothing except their show-up fee. Hence, the 'threat point' in this experiment was $(0, 0)$. Random pairing, anonymity, duration and disagreement payoffs were common knowledge.

One reason for choosing free-form bargaining with a symmetric threat point was that it made the bargaining partners *strategically equal*. By avoiding obvious 'first (or last) mover advantages' as well as any other exogenously induced strategic differences the potential that strategic effects confound possible entitlement effects was minimized.[2] In addition, compared to a strict bargaining protocol free-form bargaining gives more freedom to the negotiators, e.g. in the timing and the number of offers. This makes it easier to observe potential entitlement-specific behavioral patterns during the bargaining process.

After the bargaining we administered a questionnaire which asked the subjects a couple of questions about their socio-economic characteristics, their motives in the experiment, and their attitudes towards the quiz and the claims.

[2]For a study that looks at a situation where one party is in a stronger position than the other, see e.g. Zwick and Chen [1999].

We conducted the experiments in the computerized lab of the Institute for Advanced Studies in Vienna. Ninety subjects participated in eight experimental sessions. Our subjects were first year undergraduate students of law, business administration and computer science. Each session lasted approximately 75 minutes. The average earning (including a show-up fee of € 5.10) per subject was approximately € 12.50 (≈ $ 12.30).

III. Results

We will first set the stage by presenting the results of the fairness judgments according to the arbitrator question. Then we will move on to the bargaining process (opening offers, bargaining duration, and concessions) and the agreements and disagreements as a function of the entitlements.

For convenience, we will in the remainder of the paper refer to the subject with the claim of 1660 (830) as the 'winner' ('loser') of the performance quiz. Moreover, we will adopt the convention to express all allocations in 'winner shares', i.e. the share of the total pie of 2050 that goes to the 'winner' of the quiz, regardless whether this proposed allocation was made by a winner or a loser.

A. The entitlements

There are at least three perspectives that might shape entitlements. First, normative bargaining theory suggests many solutions for our bargaining problem with claims (see Thomson [2003]). For instance, the solution concept "constrained equal award" proposes that the loser receives her whole claim and the winner has to bear the whole reduction of the pie. Another proposed solution is the "constrained equal loss" where the loser bears a disproportionately large share of the reduction of the pie. According to the "proportional rule", which is for instance predicted by the "accountability principle" (Konow [2000]), the winner is entitled to a share of 2/3. According to the Talmud solution, the winner would be entitled to 60.7 percent and the loser to 39.3 percent.[3] If negotiators perceive the claims as irrelevant the "equal split" would result.[4]

[3]The Talmud rule (see, e.g., Aumann and Maschler [1985]) is based on the idea that first the portions that are not under dispute are allocated. That is, the winner does not claim more than 1660 (out of the 2050) and the loser does not claim more than 830 (out of 2050). Hence, the winner concedes 390 to the loser, whereas the loser concedes 1220 to the winner. The remaining amount (2050 - 390 - 1220 = 50) is split equally. Therefore, the final allocation to the winner is 1220 + 25 = 1245, which is 60.7 percent of the feasible pie.

[4]For an extensive recent survey on a positive analysis of various justice theories, see Konow [2003].

Table 2 —Summary Statistics of Fairness Judgments

	Arbitrator question		
Definition	"According to your opinion, what would be a 'fair' distribution of salaries from the vantage point of a non-involved **neutral arbitrator**?"		
Variable	Fair distribution (in 'winner share')		
Admissible range	0 to 100 percent		
		N=90	
		Mean	Std. dev.
	Winner	64.0	6.21
	Loser	61.6	6.78
	Combined	62.8	6.58
	Difference	2.5* (0.078)#	

Note: * significance at the 10%-level; # t-test: p-value in parentheses, two-sided test.

Second, entitlements can also be *role-specific*. Winners and losers may arrive at different fairness judgments, i.e. their perceptions are self-servingly biased. For example, it is well known from psychological research that people tend to attribute their success to their skill but believe that failures are largely due to bad luck (see Zuckerman [1979]). Likewise, a large literature indicates that people tend to view as fair what benefits them.[5]

Third, from research in cognitive psychology it is well known that people can entertain multiple representations of the same fact. One representation of entitlements could be that they refer to the historical claims, expressed in nominal terms. This is a possibility, since many people suffer from money illusion also in the context of justice evaluations (Kahneman et al. [1986]; Shafir et al. [1997]). Another representation of entitlements might be that people employ proportionality or some other normative rule to the new budget set and recalculate their entitlements for the lower budget. Both representations are consistent with our view of entitlements, since we see entitlements as subjectively perceived rights. These rights might focus on proportionality or any other normative rule, or on the historical claims.

Thus, there are many competing hypotheses about people's perceived entitlements. Our first main result records the evidence.

[5]Evidence for such a self-serving bias has been produced in tightly controlled laboratory experiments (Babcock and Loewenstein [1997], Camerer and Loewenstein [1993]) but also in field studies (Babcock et al. [1996]) and in survey studies (Dahl and Ransom [1999]).

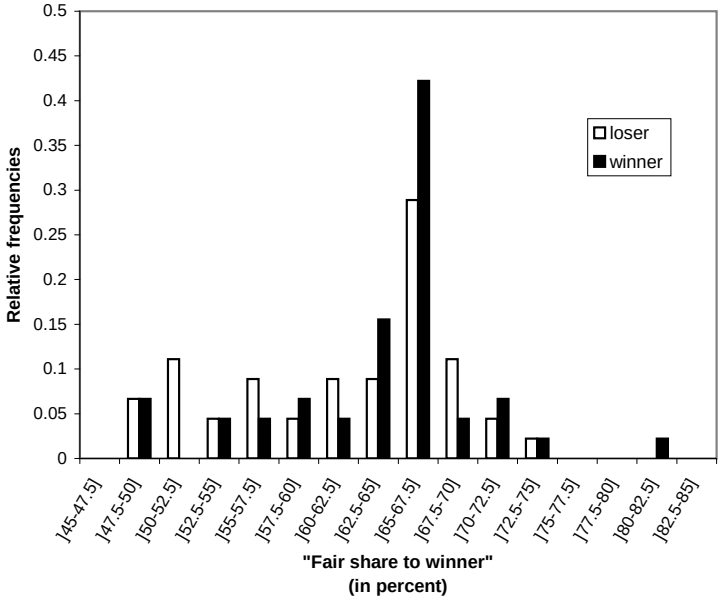


FIGURE 1. DISTRIBUTION OF FAIRNESS JUDGMENTS

Result 1. *We find clear evidence for asymmetric entitlements, with the proportional split according to the infeasile claims being the empirically predominant fairness judgment. We find a surprisingly small self-serving bias, i.e. fairness judgments are only weakly role-dependent.*

Table 2 and Figure 1 show that the average judgment of the fair settlement is strongly skewed away from the equal split toward the proportional split. The average perceived fair share was 62.8 percent. The fairness judgments do not differ according to gender, age, income, and field of study of the respondents (all p-values are at least 0.20). As Figure 1 shows, only a few people thought that the equal split is the fair settlement in the eyes of an arbitrator; almost all people believed that a fair division entitles the winner to considerably more than half of the surplus. The modal judgment is that the fair sharing is a split of the reduced pie in proportion to the claims. A test of proportions confirms that the fraction of people who believed that the proportional split is fair is significantly higher than the share of people who considered the equal split as being fair ($p < 0.001$, two-sided). Thus there can be no doubt that our subjects derived a strong entitlement from the infeasible claims.

Figure 1 and Table 2 also show some differences in fairness judgments between winners and losers. On average the winners thought that the fair share to the winner according to the arbitrator question is 64.0 percent, whereas the losers thought that

on average the fair share is 61.6 percent. This relatively small difference in fairness judgments is only marginally significant ($p = 0.078$, two-sided t-test) and suggests a surprisingly weak self-serving bias. The self-serving bias seems to be much smaller than previously observed (e.g., Babcock et al. [1995]). It also indicates an important role for losers' obligations, the counterpart of winners' entitlements.

Interestingly, the winner's entitlement is closest to the proportional rule, whereas the loser's entitlement corresponds very closely to the Talmud solution, which grants the loser 39.3 percent and the winner 60.7 percent.

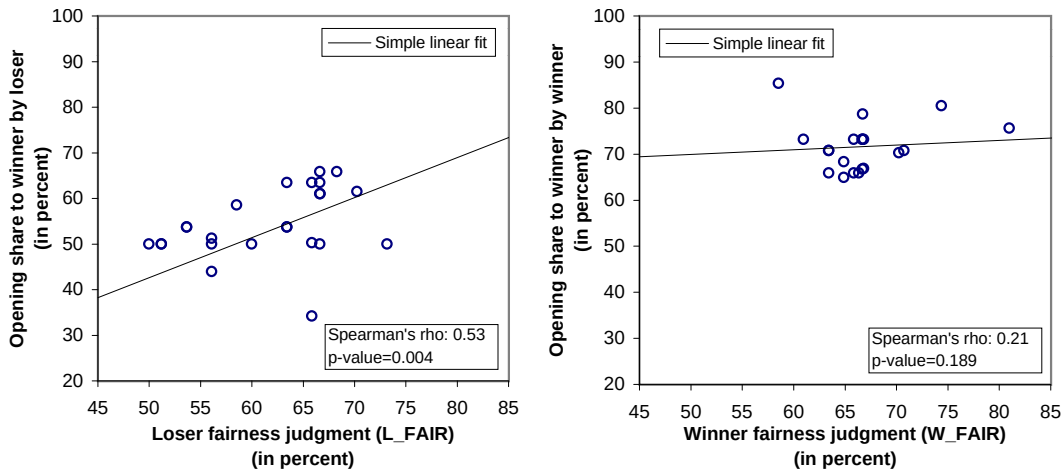
B. The Role of Entitlements in the Bargaining Process

Although it is remarkable that *losers* thought they are entitled to less than 40 percent, one may object that such fairness judgments are vacuous statements. Moreover, the definitions of entitlements and obligations demand that people have a motivational disposition to defend or respect them. Put differently, entitlement effects in bargaining require that we should find a correlation between the fairness judgments and negotiation behavior. Yet, for at least three reasons finding such correlations is not straightforward. First, it must be the case that fairness judgments are not only cheap talk but that negotiators actually feel committed to their entitlements and express this in their bargaining behavior. In other words, the entitlements (as elicited by the fairness judgments) should serve as an anchor (Tversky and Kahneman [1974]) for negotiation behavior. Second, negotiators may have to compromise on their entitlements if they want to avoid an impasse, which may weaken a correlation even if people feel committed to their entitlements. Third, bargaining tactics, like toughness or stubbornness, might undermine any entitlement effect.

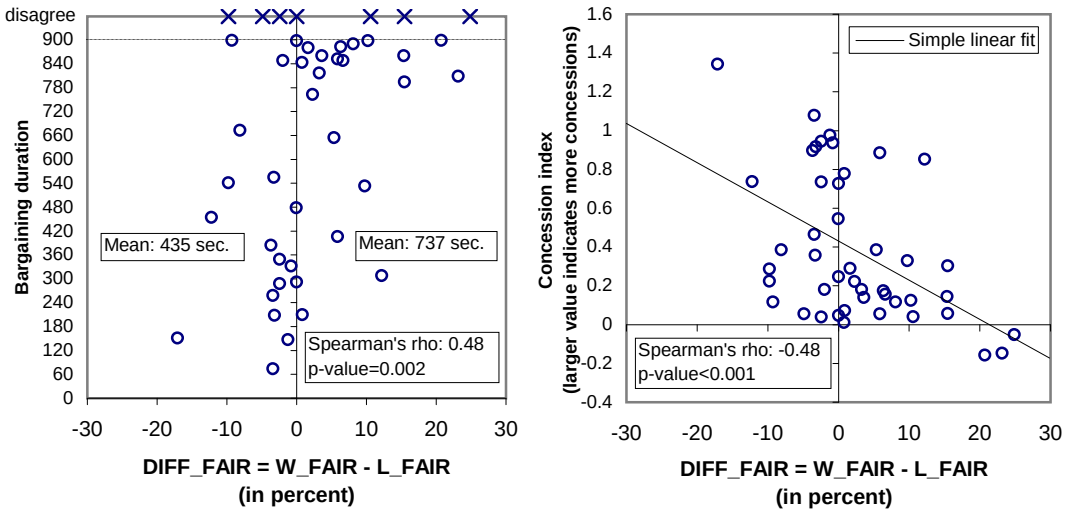
If fairness judgments matter, we expect that they influence the negotiation process as follows: (i) the opening offers of both winners and losers are positively correlated with their respective fairness judgments and (ii) the larger the difference in fairness judgments between losers and winners is, the longer it takes to reach an agreement and the smaller are the concessions made during the bargaining process.

Figure 2 and the statistical analyses reported in Tables 4 - 6 in the Appendix provide the support for our second result:

Result 2. *Fairness judgments are statistically significantly correlated with (i) opening offers, (ii) bargaining duration, and (iii) concession behavior.*



(a) Opening Offers



(b) Bargaining Duration (c) Concession Behavior

Figure 2. Bargaining Behavior is influenced by the Fairness Judgments

We will now discuss the support for results (i) to (iii) in turn.

Opening offers. Figure 2(a) depicts – separately for losers and winners – the opening share to the winner (defined as the very first offer) of a subject who has made an opening offer as a function of this subject's fairness judgment. As the scatter-plot demonstrates and the Spearman rank correlation verifies, there is a highly significantly positive correlation between the fairness judgments of losers and the losers' opening

shares to the winner.[6] While losers exhibit a considerable variation in their fairness judgments and opening offers, the fairness judgments of winners who made an opening offer cluster around the proportional split (leading to an insignificant correlation). Accordingly, winners tend to ask for the proportional split or more.

Figure 2(a) also shows that the opening offers depended on who was making them (the difference in opening offers between losers and winners is highly significant (one-sided Mann-Whitney test; $p < 0.01$)). The observation that fairness judgments have significantly influenced the opening offers allows us to separate the entitlement effect in the opening offers from a strategic offer effect. On average, winners who made an opening offer thought that a winner share of 66.7 percent is fair and actually asked for 71.6 percent; losers who made an opening offer judged a share of 61.1 percent as fair and offered only 52.4 percent. Thus, the strategic offer effect amounts to 4.9 percentage points for winners and to 8.8 percentage points for losers. Both effects are highly significant according to Wilcoxon signed rank tests that compare opening offers and fairness judgments ($p < 0.01$). Yet, the *magnitude* of the strategic offer effect is not role dependent ($p = 0.132$, one-sided Mann-Whitney test).

Bargaining Duration and Concession Behavior. It is natural to look at bargaining duration as a function of the *tension* in fairness judgments. Figure 2(b) plots the bargaining duration against the difference in fairness judgments between a winner and a loser (i.e., DIFF_FAIR = W_FAIR − L_FAIR).[7]

The figure nicely shows that there is a significantly positive correlation between the tension in fairness judgments in a bargaining dyad, and the bargaining duration (in Figure 2(b) "×" denote disagreements; they are, however, excluded in the calculation of correlations). We corroborate this observation with several robustness checks in a Tobit regression analysis, which can be found in the Appendix.

[6] Due to distorting graphical scale effects, Figure 2(a) does not contain the 'outlier' (50, 2.4). In the calculation of the Spearman rank correlation coefficient reported in the figure, the outlier is included, however. The positive correlation also holds if we remove it: $\rho = 0.47; p = 0.011$. These findings are also corroborated by a Tobit regression analysis, which can be found in Table 4 in the Appendix.

[7] Note that this measure may become negative if the loser would give more to the winner than the winner according to the arbitrator question. We interpret this as observing no tension in the bargaining dyad. Notice further that a positive difference in fairness judgments is equivalent to having inconsistent entitlements (which sum up to more than 100 percent) whenever the loser grants the winner at least 50 percent of the pie.

On average it took negotiators 590 seconds to reach an agreement. Bargaining pairs with a negative tension in their fairness judgments reached an agreement in 435 seconds, whereas pairs with inconsistent entitlements (i.e., DIFF_FAIR > 0) needed 737 seconds to strike an agreement. The difference is more than five minutes and highly significant according to a Mann-Whitney test ($p < 0.002$, one-sided).

Our findings also shed new light on the often observed 'deadline effect' in bargaining (Roth et al. [1988]). As in many related previous bargaining experiments most agreements in our experiment were reached in the very last minute; up to the last minute agreement times are roughly uniformly distributed. Inconsistent fairness judgments were a major determinant of the deadline effect in our experiments. On average, DIFF_FAIR of all pairs who reached an agreement in the very last minute was 5.2 percentage points; the average DIFF_FAIR of agreements prior to the last minute was only 0.3 percentage points. This difference is significant according to a Mann-Whitney test ($p = 0.015$, one-sided). Although there may exist strategic reasons to delay the negotiations (e.g., Fershtman and Seidmann [1993]) our results show that delay is significantly affected by differences in fairness judgments. Thus, tension in entitlements is an independent cause of delay. This also holds if we control for the difference in opening offers (see the regression model in the Appendix).

As we have seen, opening offers of losers and winners are on average rather far apart from each other. Thus, *concessions* are necessary to reach an agreement. To be able to relate concessions to fairness judgments we need to develop a statistic that captures concession behavior. To our knowledge, no concession indices exist yet that take the peculiarities of concessions in free-from bargaining into account. We therefore developed indices that measure concession behavior.

In general, a concession can be seen as an offer that makes the opponent better off. However, the same absolute concession can be perceived as small, when the standing offers are far apart, or generous, when the standing offers are close to each other. Furthermore, concession behavior can also be weighted along the time dimension. Someone who is willing to give in early in the negotiation might be seen as more compromising and less tough than someone who concedes the same amount only if an impasse is imminent.

The 'magnitude' of a concession depends on the 'current bargaining area', which we define as the difference in standing offers of the two negotiators. Since it is in the nature of concessions that they reduce the bargaining area it is obvious that the same absolute concession can actually be large or small. Therefore, we normalize concessions

by the current bargaining area. This gives us the *relative concession* as one measure of concession behavior. In the following we will investigate three individual statistics of the concession behavior of a negotiator: (i) the *average relative concession*, (ii) the *average concession time*, i.e., the average point in time a negotiator made a concession, and (iii) the *average time-weighted relative concession*, i.e., a combination of the average relative concession and the average concession time.[8]

We expect that the difference in fairness judgments will influence individual concessions. However, previous research suggests that concession behavior is to some extent reciprocal, i.e., concessions made by one negotiator also depend on concessions made by the opponent (see, e.g., Kuon and Uhlich [1993]; and Hennig-Schmidt [1999]). We find indeed that concessions, and concession times, are significantly correlated between negotiators. To cope with this problem, we restrict our analysis to pairs of bargainers by taking for each pair the *sum* of the particular individual concession statistics as the relevant unit of observation.

We conjecture that the larger the difference in fairness judgments is the smaller concessions will be and/or the later they will occur. We expect, therefore, in statistical terms at the pair level that (i) the *sum of average relative concessions* is negatively

[8]The exact definitions are as follows. A *relative concession of a winner* is defined as the difference between a winner's standing offer (in winner share) and his new offer (in winner share) divided by the current bargaining area. The current bargaining area is given by the difference between the standing offer of the winner (as winner share) and the standing offer of the loser (as winner share). A *relative concession of a loser* is defined analogously. For example, if the standing offers of a winner and a loser are 0.7 and 0.5, resp. (i.e., the current bargaining area is 0.2), and the winner now demands only 0.6 for himself, then the absolute concession is 0.1 and the relative concession is 0.5 ($= 0.1/0.2$). The magnitude of 0.5 can be interpreted as going halfway toward an agreement. The initial bargaining area is assumed to be the difference in claims (i.e., $(1660 - 830)/2050 \approx 0.4$). A concession leading to a new offer that precisely matches the opponent's standing offer gives a relative concession of 1. Therefore, an acceptance is calculated as a relative concession of 1. The summary statistics *average relative concession* of a bargainer is just the average of all his relative concessions made during the bargaining process.

The *average concession time* of a bargainer is defined as the sum of concession times divided by the number of concessions.

A *time-weighted relative concession* is a relative concession (as defined above) multiplied with ($901 - time\ of\ concession$) if the concession is positive and multiplied with $time\ of\ concession$ if the concession is negative, respectively. This measure has the property that a given positive (negative) relative concession gets the less (more) weight the later the concession is made. The statistics we use is the *average* of all time-weighted relative concessions of a negotiator.

correlated with DIFF_FAIR, (ii) the *sum of average concession times* is positively correlated with DIFF_FAIR and (iii) the *sum of average time-weighted relative concessions* is negatively correlated with DIFF_FAIR.

The Spearman rank order correlations (one-sided tests) support these hypotheses: They are (i) -0.28 ($p < 0.05$), (ii) 0.49 ($p < 0.001$) and (iii) -0.48 ($p < 0.001$), respectively. Figure 2(c) illustrates the connection between DIFF_FAIR and concession behavior for our most encompassing concession statistics, the *sum of average time-weighted relative concessions*, which for brevity we call "concession index" in the figure. According to this measure a given relative concession is weighted less the later the concession is made. Thus, a larger value of this concession index corresponds to a higher willingness to concede. The figure nicely shows that pairs with a low concession index also strongly disagree on what a fair division of the surplus is (lower right part of the figure). Conversely, pairs who do not differ in their fairness judgments are those which also make relatively large and early concessions (upper left part).[9] All our results are corroborated by regression analyses (see the Appendix).

Thus, the greater the tension with respect to fairness judgments in a bargaining pair the later concessions are made and the smaller concessions are. These findings also provide an explanation why we observe a significant relationship between fairness judgments and bargaining duration.

C. Entitlements and Agreements

The ultimate interest in a negotiation is to reach an agreement. In previous symmetric free-form bargaining experiments with zero conflict payoffs almost unanimously an exact *equal split* of the surplus has been observed (see, e.g., Nydegger and Owen [1975]). If the *infeasible claims* influence the entitlements and thereby the terms of agreement, then the distribution of agreements should be skewed away from the equal split.

In this case, there should also be a correlation of reached agreements with the fairness judgments. We expect that in a pair the agreed share to the winner is positively correlated with the fairness judgments of a winner and the fairness judgment of a loser. The rationale for this hypothesis is that the more any of the bargainers in a pair would give to the winner according to the arbitrator question, the 'easier' it should be to agree on a higher winner share.

[9] The correlation result is robust with respect to the 'outlier' in the left upper part of the figure. Without this data point Spearman's rho becomes -0.44 with a one-sided p-value of 0.0015.

Our third result establishes the influence of the fairness judgments in shaping the agreements.

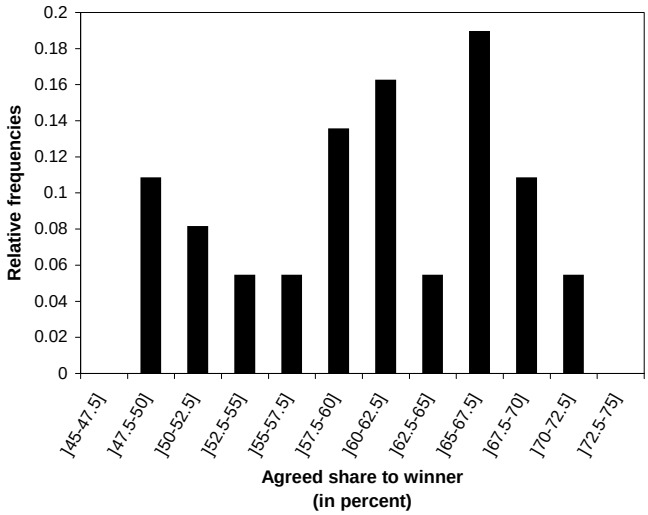
Result 3. *(i) We find a strong entitlement effect in the agreements: On average the agreed share to the winner is 60.5 percent. (ii) The fairness judgments of winners and losers are highly significantly positively correlated with the agreements. (iii) Our results suggest that disagreements are indirectly related to the fairness judgments.*

Figure 3 provides graphical support for our results 3(i) and 3(ii). Figure 3(a) shows the distribution of agreements in the experiment. It provides strong evidence for an entitlement effect in the reached agreements. The distribution of agreements is highly significantly skewed away from the equal split ($p < 0.0001$, t-test, one-sided). Only 11 percent of the agreements implemented the equal split. The most common agreements occurred at 67 percent, i.e., the proportional split according to the claims.[10] We even observe agreements above the proportional split. The mean agreed share to the winner was 60.5 percent, which comes very close to the Talmud solution that grants the winner 60.7 percent. In our view, this provides strong evidence for an entitlement effect in the agreements.

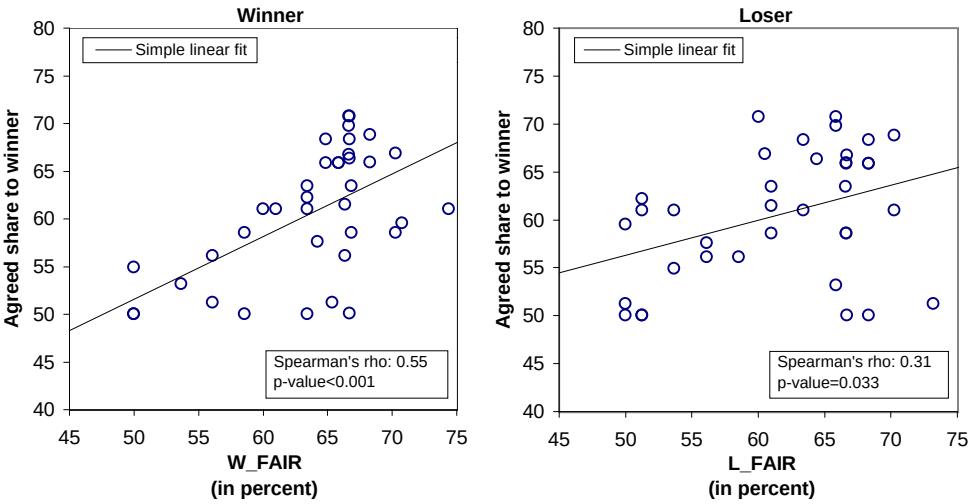
Figure 3(b) depicts the correlation of reached agreements and the fairness judgments. The results are consistent with all our previous observations. We find a strongly positive correlation between fairness judgments of winners and losers and the agreed share to the winner. The Spearman rank correlation between the fairness judgment of a winner and the reached agreement is positive and highly significant ($\rho = 0.55, p < 0.001$, one-sided test); for the loser it is as well significantly positive ($\rho = 0.31, p = 0.033$, one-sided test). The robust Tobit estimates that are reported in Table 7 of the Appendix strengthen these findings. Thus, fairness judgments not only significantly shape the bargaining process, but agreements as well.

Additional evidence for the importance of entitlements comes from the messages that could be sent along with proposals. From the total of 406 proposals 287 were accompanied by some message. Most of them contained text like "I want more" or "Your

[10]The reader might ask how robust this result is to different claims. For the sake of not overburdening the analysis of entitlements in bargaining we have in this paper refrained from manipulating claims levels. Yet, in Gächter and Riedl [2004] we investigate the impact of different claims levels on normative judgments and actual negotiations in a slightly different context. We find that by and large the proportional rule explains the data well.



(a) Distribution of Agreements



(b) Agreements are influenced by the Fairness Judgments

Figure 3. Agreements

offer was too small". However, seventy messages contained text with arguments explicitly referring to fairness considerations and/or entitlements and obligations. Forty-two of these messages were sent by winners and 28 by losers. In 33 cases winners argued for unequal divisions near the proportional split because of better performance and performance-based fairness considerations. Interestingly, in almost fifty percent of the cases losers also argued along these lines. (Though their proposed winner share was

mostly smaller than the winner share demanded by the winner.) The other half of the classified loser messages contained arguments in favor of the equal split. In contrast, only four of the 33 messages of winners contained such arguments. In our view, this supports the conclusion that winners' bargaining behavior was strongly influenced by entitlements derived from the infeasible claims. Furthermore, it seems that a non-negligible part of losers actually felt obliged to concede the winners significantly more than half of the pie.

An important issue in the study of negotiations is the explanation of *disagreements*. In our experiment we observed a total of 7 disagreements (16 percent of all bargaining encounters). Although the percentage of disagreements is completely in line with previous findings (see Roth et al. [1988]), in absolute terms they are still a few cases in number. We can therefore only sketch possible determinants of disagreements.

In accord with our previous analyses we expect that bargaining pairs which disagreed are characterized by larger differences in fairness judgments than the pairs which reached an agreement. Indeed the difference in fairness judgments is lower for pairs which found a settlement than for those which did not (2 and 4.8 percentage points, resp.). Yet, since this difference is statistically not significant ($p = 0.380$, one-sided Mann-Whitney test) we cannot claim to detect a *direct* influence of the differences in fairness judgments on the disagreements (see also Figure 2(b)).

A further analysis, however, shows that the difference in first offers is significantly lower for agreements than for disagreements. The difference in first offers of winner shares of pairs who reached an agreement is 13.7 percentage points, whereas for pairs which did not reach an agreement it is 27.6 percentage points. This difference is highly significant according to a Mann-Whitney test ($p = 0.003$, one-sided). Furthermore, the average concession time is significantly lower for agreements than for disagreements. The average relative concession, and the average time-weighted relative concession are significantly larger for agreements than for disagreements (all $p-$values < 0.001, one-sided Mann-Whitney test). Together with our previous findings that both opening offers and concession behavior are significantly influenced by the fairness judgments this establishes an indirect relation of the fairness judgments with the settlement rates.

Another interesting question is whether the entitlements actually paid off, given that they might have led to bargaining impasse and zero payoffs. A calculation of Spearman rank order correlations between final payoffs (including the zero disagreement payoffs) and the fairness judgments reveals a significantly positive correlation of the winners' final payoff with their fairness judgments ($\rho = 0.33$; $p = 0.014$, one-sided). For losers

the correlation between the final payoff and fairness judgments (in 'winner share') is weakly significantly negative ($\rho = -0.204$; $p = 0.092$, one-sided). Thus, in our experiment entitlements did pay off – at least for winners.

IV. The Role of the Self-Serving Bias in the Entitlements

Entitlements and obligations by negotiators are grounded in what they perceive as being a 'fair' agreement. In our experiment the fairness judgments of losers were lower than those of the winners, which suggests the existence of a self-serving bias among our bargainers (see Table 2). However, the difference is surprisingly small in magnitude and only weakly significant. We find this to be a surprising result, given (i) the findings of previous research, and (ii) the existence of possible multiple focal points of our bargaining problem (see also Camerer and Loewenstein [1993] and Babcock and Loewenstein [1997]). It seems that the *perceived* entitlements and obligations in our bargaining with claims experiment were strong enough to weaken any self-serving bias considerably. This holds especially for the losers who largely did *not* think that the equal split is fair. A speculative explanation for this might be that we provided the subjects with an explicit statement of the relevant precedent, i.e. the historical claims. Since self-servingly biased fairness considerations increase the likelihood of bargaining impasse (Babcock et al. [1995]), precedents that presumably reinforce a common understanding of entitlements might be a means to reduce disagreements in negotiations.

The knowledge of one's role when making the fairness judgment may nevertheless have influenced judgments, and hence negotiation behavior. This raises the question to what extent the timing of our 'arbitrator question' affects stated fairness judgments and bargaining behavior. To test that we ran a control experiment - with another 44 subjects (22 pairs) - where fairness judgments were made behind the 'veil of ignorance'. This experiment was an exact copy of the experiment of our main condition, with one important exception. In the control experiment subjects had to answer the arbitrator question *before* they knew whether they would be the winner or the loser of the performance quiz. Actually, the arbitrator question was asked right after reading the instructions and *before* performing the knowledge quiz (this procedure is adapted from Babcock et al. [1995]). Note that in this setting fairness judgments can by definition not be self-servingly biased.

We summarize the findings of this control experiment in the following result.

Result 4. *If subjects assess fairness before they know their role in the negotiations, the fairness judgments of ex post winners and losers do not differ. Furthermore, in stark contrast to our main condition, the fairness judgments made behind the 'veil of ignorance' cannot explain the variation in bargaining behavior in any phase of the negotiations. The average bargaining behavior is similar as in our main condition.*

Table 3 provides the support for the results of the control condition. It documents the Spearman rank order correlations for each of our bargaining statistics with the relevant fairness judgment measures (see also the note at the bottom of the table). For the sake of comparisons, this table also summarizes the means (and standard deviations) of the main condition, as well as the control condition. In the last column we report the p-values of statistical comparisons of the main condition with the control condition.

The most important findings are as follows. First, fairness judgments are very similarly distributed in the control experiment as in the main experiment (Kolmogorov-Smirnov test, $p = 0.728$). Second, as expected, fairness judgments of *ex post* winners and losers are virtually the same ($p = 0.804$, two-sided Mann-Whitney test) and lie between the fairness judgments of winners and losers in our main condition. Third, in stark contrast to our main condition, fairness judgments made behind the 'veil of ignorance' do *not* explain the *variation* in bargaining behavior (see column 'Correlation' of Table 3). Not a single correlation of a particular bargaining statistics with the respective fairness judgment is significant at the conventional levels. Since fairness judgments are identically distributed in our control experiment as in our main experiment this lack of correlation is unlikely to be due to a lack in variation of fairness judgments. Fourth, there are no treatment differences between the *levels* of our variables of bargaining behavior in our main condition and the control condition. The only possible exception is bargaining duration, which was weakly significantly longer in the control condition than in the main condition.

The agreements are of particular interest. As in our main condition we also find a strong entitlement effect in our control condition. The mean agreed share to the winner is 62.3 percent and not significantly different from the 60.5 percent observed in our main condition ($p = 0.495$, two-sided Mann-Whitney test). Although there is no correlation between the *variation* in fairness judgments and the variance of the reached agreements, notice that the *levels* of agreement and fairness judgments correspond closely.

Table 3 — Summary statistics and correlations with fairness judgment (Main condition and control condition)

	Main condition		Control condition			Comparison of main and control condition p-values
	Mean (Std. dev.)	N	Mean (Std. dev.)	N	Correlation	
Fairness judgments (in percent)						
Winner	64.0 (6.2)	45	61.8 (7.1)	22		0.287[d]
Loser	61.6 (6.8)	45	62.3 (6.6)	22		0.634[d]
Opening offers (in percent)						
Winner	71.6 (5.4)	20	70.8 (10.5)	12	-0.21[a]	0.327[d]
Loser	52.4 (12.8)	25	54.3 (4.4)	10	0.00[b]	0.970[d]
Bargaining duration (in seconds)	590 (278)	37	718 (228)	17	0.30[c]	0.061[d]
Sum of average						
relative concessions	0.614 (0.452)	44	0.537 (0.388)	22	-0.14[c]	0.496[d]
concession times	767 (336)	44	872 (251)	22	0.07[c]	0.237[d]
time-weighted relative concessions	0.389 (0.377)	44	0.286 (0.336)	22	-0.10[c]	0.334[d]
Agreements (in percent)	60.5 (6.7)	37	62.3 (4.2)	17	-0.29[a]	0.495[d]
					0.32[b]	
				17		
Disagreement rate (in percent)	15.9	44	22.7	22		0.515[e]
Final payoffs (in percent)						
Winner	50.9 (23.2)	44	48.1 (27.0)	22	-0.00[a]	0.962[d]
Loser	33.2 (15.8)	44	29.1 (16.6)	22	0.05[b]	0.342[d]

Note: Correlation statistics are Spearman's rho; [a] correlation with winner fairness judgment (W_FAIR), [b] correlation with loser fairness judgment (L_FAIR); [c] correlation with difference in fairness judgments (DIFF_FAIR=W_FAIR-L_FAIR); all correlations are insignificant; one-sided tests. [d] two-sided Mann-Whitney tests; [e] two-sided Fisher's exact test.

The observations summarized in Results 2 to 4 that (i) with role knowledge fairness judgments and negotiation behavior are highly significantly correlated; (ii) without role knowledge the fairness judgments cannot explain the variation in bargaining behavior; and (iii) the average negotiation behavior in our control experiment is not statistically significantly different from the main experiment seem to be puzzling at first sight. However, research on the 'hot-cold empathy gap' which is a pervasive phenomenon

in decision-making (see, e.g., Loewenstein [2000]) suggests an explanation. Being in the 'hot state' of knowing one's economic position when making a fairness judgment may lead to a (subconscious) commitment to the stated fairness assessments, which may be reinforced by a self-serving bias. These feelings of commitment to (biased) fairness judgments are likely to shape behavior. This explains why bargaining behavior is strongly correlated with stated fairness judgments in our main condition (Results 2 and 3). In our control condition negotiators made their fairness judgments in the 'cold state' of not yet knowing their role. The 'cold' fairness judgments may have led to an insufficiently strong commitment to influence bargaining behavior. Once bargainers learned their claims and moved into the 'hot state' of knowing their economic position, they may have *reassessed* their fairness judgments and gotten anchored on them in a similar way as the subjects of our main condition.

V. Concluding Remarks

There can be no doubt that subjects in our experiments derived a 'moral property right' from the claims they have earned.[11] By letting subjects negotiate in a situation where they were confronted with infeasible claims, we created a testbed for studying entitlements and obligations, which are not abstract legal rights or liabilities. The claims were economically irrelevant and yet they instilled in our subjects a subjectively perceived right or obligation. This is reflected in the fairness judgments. Moreover, as the negotiation behavior shows, subjects with the high claim were willing to defend their moral property rights and subjects with the low claim largely felt obliged to accept them. Our results indicate that the entitlements expressed by negotiators are not only used for strategic purposes but bear a close relationship to what negotiators believe and actually do. Fairness is not just a smoke-screen to advance self-interest.

Our findings suggest an interesting relation between 'legal' and 'moral' property rights. Legal property rights are crucial for the usual Coasean reasons.[12] Since the legal

[11] In this sense our study extends earlier research on entitlements. For instance, Güth and Tietz [1985], Hoffman and Spitzer [1985], and Hoffman et al. [1994] investigated how role assignment (earned or randomly assigned) influenced allocation decisions in ultimatum and dictator games. Babcock et al. [1995] examined the role of self-servingly biased entitlements in bargaining. For a discussion of experiments on entitlements see Camerer [2003]. None of these studies investigated entitlements derived from infeasible claims.

[12] For experimental evidence on this see e.g., Harrison and McKee [1985]; Hoffman and Spitzer [1985]; Croson and Johnston [2000].

property were the same for the bargaining partners, our results show that entitlements constitute a moral property right that also exists irrespective of the legal rights. Thus, in negotiations bargainers will also put their moral property rights on the bargaining table and this will strongly influence the bargaining process and outcome.

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Appendix

Here we provide robustness tests with the help of robust Tobit regressions for our results presented in subsections III.B to III.C. We proceed in the same sequence as in the main text by reporting first the results concerning the bargaining process, i.e. opening offers, bargaining duration and concessions, followed by the results concerning the agreements. The regression results confirm the results stated in the main text.

Opening offers. The results reported in Table 4 confirm those provided in the main text (see Result 2 (i)). Like the Spearman rank order correlations the regression results show that the opening offers made by losers are are highly correlated with their fairness judgments. For winners the variation in fairness judgments cannot explain the variation in opening offers. Note, however, that the constant is with 0.648 close to the proportional split and almost the same as the average fairness judgments made by winners. This is a consequence of the fact that the winners' fairness judgments show relatively little variation and are clustered around the proportional split.

Table 4 — Explaining the Opening Offers
(robust Tobit estimates)

	Dependent variable: opening share to winner			
	Loser[&]		Winner	
Independent variables	Coefficient (Std.err.)	z-value	Coefficient (Std.err.)	z-value
Constant	0.286*** (0.105)	2.72	0.648*** (0.230)	2.82
L_FAIR	0.420** (0.187)	2.25		
W_FAIR			0.102 (0.337)	0.30
Log-L	29.9		30.6	
Wald χ^2	5.08[‡]		0.09	
N	24		20	

Note: [&] The outlier $(0.5, 0.024)$ has been removed. *** significance at the 1%-level,** at the 5%-level, and * at the 10%-level; one-sided tests. [‡] significance at the 5%-level; two-sided tests. Robust standard errors in parentheses.

Bargaining duration. The result of regression model 1 in Table 5 resembles the Spearman rank order statistics in the main text. The regression outcome confirms that a

higher difference (i.e. tension) in fairness judgments between the winner and the loser in a bargaining pair significantly increases the time till an agreement is reached ($p < 0.01$, one-sided). Model 2 shows that this result is robust when taking the difference in first offers (i.e., the difference in the opening offer and the first counter offer) into account. Both the difference in first offers and the difference in fairness judgments signifcantly increase the bargaining duration ($p < 0.01$ in both cases, one-sided tests). In Model 3 we investigate how the fairness judgment of the loser and the winner seperately influence bargaining duration (again accounting for the difference in first offers). The hypotheses are that the more the loser would give to the winner according to the arbitrator question the faster an agreement is reached. The more the winner would give to the winner according to the arbitrator question the longer it will take to reach an agreement. As the results for Model 3 show both hypotheses are confirmed ($p = 0.10$ and $p < 0.01$ for L_FAIR and W_FAIR, respectively). Interestingly the fairness judgment of the winner has a much stronger impact on bargaining duration than that of the loser.

Table 5 — Explaining Bargaining Duration
(robust Tobit estimates)

	Dependent variable: agreement time					
	Model 1		Model 2		Model 3	
Independent variables	Coefficient (Std.err.)	z-value	Coefficient (Std.err.)	z-value	Coefficient (Std.err.)	z-value
Constant	559.9^{***} (43.3)	12.93	436.8^{***} (51.8)	8.43	-282.3 (381.0)	-0.74
DIFF_FAIR	1486.9^{***} (373.8)	3.98	1228.3^{***} (326.1)	3.77		
L_FAIR					-743.2^{*} (451.9)	-1.65
W_FAIR					1869.9^{***} (429.4)	4.36
DIFF_FIRST			935.3^{***} (284.0)	3.29	1024.1^{***} (225.4)	4.54
Log-L	-255.8		-249.2		-248.0	
Wald χ^2	$15.82^{\ddagger}$		$34.77^{\ddagger}$		$46.52^{\ddagger}$	
N	37		37		37	

Note: *** significance at the 1%-level, ** at the 5%-level, and * at the 10%-level; one-sided tests.
‡ significance at the 1%-level; two-sided tests. Robust standard errors in parentheses.

Concession behavior. Table 6 corroborates the findings reported in the main text. For all our concession statistics - *sum of average relative concessions* (Model 1), *sum of average concession times* (Models 2(a) and 2(b)), and *sum of average time-weighted*

relative concessions (Model 3) - the difference in fairness judgments (DIFF_FAIR) in a dyad has the 'right' sign and is highly significant ($p < 0.01$ in all cases, one-sided tests). Hence, our regression results confirm that the higher the tension in a bargaining pair the smaller concessions are and the later concessions are made. In principle it is possible that concession behavior is also influenced by the first offers. The greater the difference is the more concessions have to be made and/or the larger the concessions have to be to reach an agreement. Our definition of relative concessions accounts for that (see footnote 8). However, it may be the case that the timing of concessions is influenced by the first offers. Therefore, in Model 2(b) we control for the difference in first offers. The result shows that (i) the difference in fairness judgments stays highly significant and (ii) that the difference in first offers indeed has a significant (positive) impact on the concession time ($p < 0.01$ in both cases, one-sided tests).

Table 6 — Explaining Concessions
(robust Tobit estimates)

	Dependent variables:							
	Sum of average relative concessions		Sum of average concession times				Sum of average time-weighted relative concessions	
	Model 1		Model 2a		Model 2b		Model 3	
Independent variables	Coefficient (Std.err.)	z-value	Coefficient (Std.err.)	z-value	Coefficient (Std.err.)	z-value	Coefficient (Std.err.)	z-value
Constant	0.656^{***}	9.22	722.9^{***}	15.53	561.8^{***}	9.46	0.440^{***}	7.87
	(0.071)		(46.6)		(59.4)		(0.056)	
DIFF_FAIR	-1.677^{***}	-2.56	1779.5^{***}	4.38	1580.7^{***}	4.66	-2.034^{***}	-4.02
	(0.656)		(406.5)		(339.1)		(0.506)	
DIFF_FIRST					1042.1^{***}	4.28		
					(243.7)			
Log-L	-24.2		-311.9		-304.6		-12.8	
Wald χ^2	$6.54^{\dagger}$		$19.16^{\ddagger}$		$43.42^{\ddagger}$		$16.19^{\ddagger}$	
N	44		44		44		44	

Note: For the exact definition of the dependent variables see footnote 8. *** significance at the 1%-level, ** at the 5%-level, and * at the 10%-level; one-sided tests. ‡ significance at the 1%-level and † at the 5%-level; two-sided tests. Robust standard errors in parentheses.

Agreements. In the main text we found with the help of Spearman rank order statistics that the fairness jugdments of losers and winners are significantly positively correlated with the agreement (in winner share) reached in a bargaining pair. The regression results shown in Table 7 corroborate this finding.[13] The fairness judgment of losers as well as the fairness judgment of winners exhibit a highly significantly positive coefficient ($p < 0.01$ for both variables, one-sided tests).

Table 7 — Explaining Agreements
(robust Tobit estimates)

	Dependent variable: agreed winner share	
Independent variables	Coefficient (Std.err.)	z-value
Constant	0.022 (0.084)	0.26
L_FAIR	0.309*** (0.130)	2.38
W_FAIR	0.618*** (0.121)	5.10
Log-L	59.0	
Wald χ^2	50.62‡	
N	37	

Note: *** significance at the 1%-level, one-sided tests. ‡ significance at the 1%-level; two-sided tests. Robust standard errors in parentheses.

[13] In the table L_FAIR represents the losers' fairness judgment and W_FAIR the winners' fairness judgment (both in winner shares).