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Fairness and Persuasion

How Stakeholder Communication Affects Impartial Decision Making*

Marco Kleine[†§] **Pascal Langenbach**[†] **Lilia Zhurakhovska**[†+#]

Abstract

We study experimentally whether and to what extent impartial decision makers are influenced by stakeholders' fairness opinions in an allocation decision. The setting allows for different focal fairness rules to be considered. We compare *communication* treatments, in which one of the stakeholders states his or her opinion prior to the allocation decision, to a *baseline* without communication opportunities. We find that stakeholders who state their opinion in the *communication* treatments are allocated significantly less money than their counterparts in the *baseline*. Asymmetric reactions to the statements appear to be the driving force behind this result: impartial decision makers deviate from their initial fairness judgment and follow stakeholders' opinions only if the requests are moderate; they largely ignore high monetary claims. Our results contribute to understanding the underlying processes that may affect the decisions of judges, juries, arbitrators, referees, or other impartial decision makers in interaction with stakeholders.

Key words: fairness, norms, communication, impartial decision maker, influence, persuasion, laboratory experiment

JEL: C91, D02, D03, D63, K40

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I. Introduction

Impartial judgment and decision making ideally requires the incorporation of all relevant information before a decision is made. Consider, for instance, judges, juries, arbitrators, referees, or even parents who have to settle a conflict between their children. Often, these impartial decision makers receive statements from stakeholders who are affected by the decision. It is important to understand how decision makers incorporate these statements into their decision making. The statements can include factual information about the situation at hand, as well as normative judgments, i.e., stakeholders' opinions about a "right" or "fair" decision. Obviously, decision makers should integrate additional facts they learn from stakeholders' statements. How they deal with potentially biased factual information depends on how they assess stakeholders' credibility and honesty. In this study, we focus solely on the effects of stakeholders' fairness judgments on decisions. Fairness opinions often lie beyond an objective "correct" or "incorrect" taxonomy. Decision makers therefore have some discretion how to assess a situation normatively. There are two potential ways in which decision makers might react to stakeholders' statements: on the one hand, stakeholders' fairness opinions could be regarded as valid additional information and could affect the decision making (Mohlin and Johannesson 2008, Hole 2011) if decision makers believe that stakeholders truly reveal their own fairness considerations. On the other hand, the statements of stakeholders are likely to be biased by self-interest (e.g., Konow 2000, Babcock and Loewenstein 1997). Consequently, impartial decision makers might be cautious about incorporating these opinions in their decisions.

We report results on a laboratory experiment that studies the influence of stakeholders' fairness statements on allocation decisions by an impartial decision maker.[1] At the beginning of the experiment, two stakeholders produce an amount of money in a real-effort task. In the next step, the decision maker allocates this money between two stakeholders in a fair way. Competing focal fairness rules may apply to this decision as the workload and piece rate of the real-effort task differ between stakeholders. In the treatments, we vary the ability of one of the stakeholders to communicate her opinion about a fair allocation towards the impartial decision maker prior to the allocation decision. In the *communication* treatments, the stakeholder who has the higher workload and the higher piece rate sends a message to the impartial decisions maker. In the *baseline*, no communication is allowed.

Surprisingly, stakeholders who state their opinion in the *communication* treatments are allocated significantly less money than their counterparts in the same role in the *baseline*. Impartial decision makers are indeed influenced in their fairness decisions by statements of

[1] This paper independently analyzes the results of the first part of a larger experimental setting presented in Kleine et al. (2013).

stakeholders. They are mostly persuaded to follow stakeholders' opinions when the content of statements is moderate. By contrast, rather high monetary claims rarely influence the decision.

Previous studies on the influence of stakeholders' communication on allocation decisions have exclusively focused on interactions between self-interested parties. Using the standard dictator game setting, these studies mostly find that allowing receivers to send a request to decision makers increases the amount allocated to the receivers (Andreoni and Rao 2011, Mohlin and Johannesson 2008, Yamamori et al. 2008). Yet, communication may lead to lower transfers if requests are above the equal split (Rankin 2006). To the best of our knowledge, we are the first to study experimentally the influence of communication towards an impartial decision maker in an allocation task. Contrary to studies with self-interested decision makers, we find that requests, overall, reduce the amounts allocated to the stakeholders who state their opinion and that this effect can particularly be attributed to the decision makers' reactions to moderate requests.

We further contribute to the economic literature on impartial decision making which addresses questions of distributive justice (e.g., Konow 2000, Dickinson and Tiefenthaler 2002, Engelmann and Strobel 2004, Fehr et al. 2006). These studies have generally aimed at inferring subjects' "true" fairness preferences in the absence of material self-interest. We focus on the question under which conditions and to what extent fairness judgments by impartial decision makers are subject to stakeholders' influence. Closest to our study, Chavanne et al. (2010) are interested in whether impartial decision makers are influenced in their decisions by shared experience with stakeholders.

A natural environment of impartial decision making is legal adjudication. Hence, our results also tie to the empirical legal literature on how psychological and social factors influence legal decision making (see, e.g., Guthrie et al. 2001, 2007, Vidmar 2011). The influence of communication between self-interested parties and judges or juries has also been investigated through the application of vignette studies or the study of judicial decision making in the field. Some authors find mixed evidence on the effect of stakeholders' apologies on judges' decisions (Robbenholt and Lawless 2013, Rachlinski et al. 2013). Diamond et al. (2011) have empirically studied the effect of attorneys' damage requests on jury decisions. The authors conclude that "jurors were critical consumers of attorney suggestions" (p. 148). Our laboratory results are well in line with this observation. Impartial decision makers seem to take the potential self-interested nature of claims into consideration. We further show that such a critical incorporation of requests may even lead to less favorable decisions for those who state their opinion.

The remainder of the paper is structured as follows: in Section II, we present the experimental design and procedures. Section III is dedicated to the results. In Section IV, we discuss potential mechanisms through which impartial decision makers could be influenced; in section V, we conclude.

II. Experimental Design and Procedures

The whole experiment consists of three parts and post-experimental measures. The focus of this paper is on the decisions by the impartial decision maker in the first part of the experiment. Hence, the design section in this paper exclusively refers to this part. In the first part, subjects know that there will be several parts of the experiment, but they only receive information about the content of these parts immediately before playing the relevant part. This way decisions in the first part cannot be influenced systematically by the content of the later parts. For the subsequent parts, we refer to Kleine et al. (2013).

Participants play a three-person allocation game with an impartial decision maker. At the beginning of the experiment, participants are assigned one of three roles: the impartial decision maker in the role of player A and the stakeholders as players X and Y. Player A receives a flat payment of €5 and does not benefit from the allocation decision. The experiment consists of four steps that are summarized in Table 1.[2]

Table 1

Summary of the experimental design

Step 1: Real-effort task by players X and Y with asymmetric workload and piece rate
Step 2: All players indicate "fair" allocation of earnings from real-effort task in private
Step 3: ***Treatment variation:*** *player X sends/ does not send a message to player A* - *baseline:* no message - *narrow communication*: numerical statement about a fair allocation - *broad communication:* numerical statement about a fair allocation plus written message
Step 4: Allocation decision by impartial player A

[2] See section VI (Appendix) for an English translation of the instructions of the first part of the experiment.

Step 1:

Players X and Y produce 2000 experimental currency units (ECU) in a real-effort task. They have to count zeroes in a table of zeroes and ones (see Abeler et al. 2011). Due to an asymmetric workload (each player X has to solve 12 tables, whereas each player Y has to solve 4) and an asymmetric piece-rate (each player X produces 150 ECU per task, whereas each player Y produces 50 ECU per task), player X contributes 1800 ECU and player Y contributes 200 ECU to the total amount of 2000 ECU. These asymmetries support different focal fairness rules, according to which the total amount could be allocated between players X and Y. Thereby, we aim at implementing a potential normative conflict between players (cf. Reuben and Riedl 2013, Nikiforakis et al. 2012). Allocations of 1000 ECU for both players are supported by the focal fairness rule of equality; 1500 ECU for player X and 500 ECU for player Y by an input equity notion of fairness (as player X have to solve three times more tables than players Y); and 1800 ECU for player X and 200 ECU for player Y by an output equity notion of fairness (as players X produce nine times more ECU than players Y).

Step 2:

After completing the real-effort task, all three players indicate in private which allocation of the total amount between player X and player Y they consider as fair (referred to in the following as the "initial fairness judgment"). It is made explicit that this indication will not be communicated to any player and has no payoff consequences. By comparing player A's initial fairness judgment with her actual allocation decision, we are able to analyze the direct impact of stakeholders' opinions on impartial decision making.

Step 3:

This step is subject to our treatment variation. In the *communication* treatments, player X is given the opportunity to communicate her opinion about a fair allocation of the 2000 ECU towards the decision maker, player A. In the *narrow communication* treatment, this message is restricted to the indication of the allocation in form of numbers. In the *broad communication* treatment, player X can additionally send a written message of any content to player A (limited to 800 characters). Subjects are explicitly told that they are not allowed to convey any information about their identity. No communication takes place in the *baseline*. Players A and Y do not communicate in any treatment.[3]

Step 4:

Player A is asked to allocate the 2000 ECU between players X and Y "in a fair way". She has to choose one out of 21 possible allocations. In increments of 100 ECU, these possible allocations range from allocating everything to player X and nothing to player Y to the other extreme of allocating nothing to player X and everything to player Y.

The experiment was conducted in two waves in May and June 2012 and in March 2013 at the Cologne Laboratory for Economic Research using z-tree (Fischbacher 2007).[4] 444 participants were recruited via ORSEE (Greiner 2004) from the subject pool of the laboratory. We collected 59 independent observations for the *baseline*, 58 independent observations for the *narrow communication* treatment, and 30 independent observations for the *broad communication* treatment. One independent observation was excluded from the analysis of the *narrow communication* treatment, as one subject registered with different accounts and therefore erroneously participated in the *baseline* as well as in the *narrow communication* treatment. Participants were mainly students (53% female) from different fields with a mean age of 24.96 (SD=5.58). The sessions lasted approximately 90 minutes on average. The experimental currency was converted into Euro (2 ECU = 0.01 EUR) at the end of the experiment and paid out in cash. Participants earned on average 15.33 EUR[5] (SD=3.15), including a show-up fee of 4 EUR.[6]

III. Results

We start by presenting the treatment differences in allocations to players X. Figure 1 illustrates the empirical cumulative distributions of allocations to players X by treatments. Players A almost exclusively allocate amounts consistent with focal fairness rules (or compromises between the rules) as the vast majority of the allocations to players X range between 1000 and

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[3] We restrict the voice opportunity to player X, as this allows us to study the mere effect of the influence of one opinion. If player Y also had this possibility, we would have introduced complexity to the setting, which would have complicated identification. Yet, we deem the influence of competing opinions on impartial decision makers to be interesting for potential future research. Communication from an impartial decision maker to the stakeholders is another interesting subject for research, albeit beyond the scope of this paper (see, e.g., Engel and Zhurakhovska 2013a).

[4] Results are not significantly different across waves, so that we pool the data of the two waves.

[5] 15.33 EUR corresponded to 19.13 USD in May/June 2012 and 19.94 USD in March 2013.

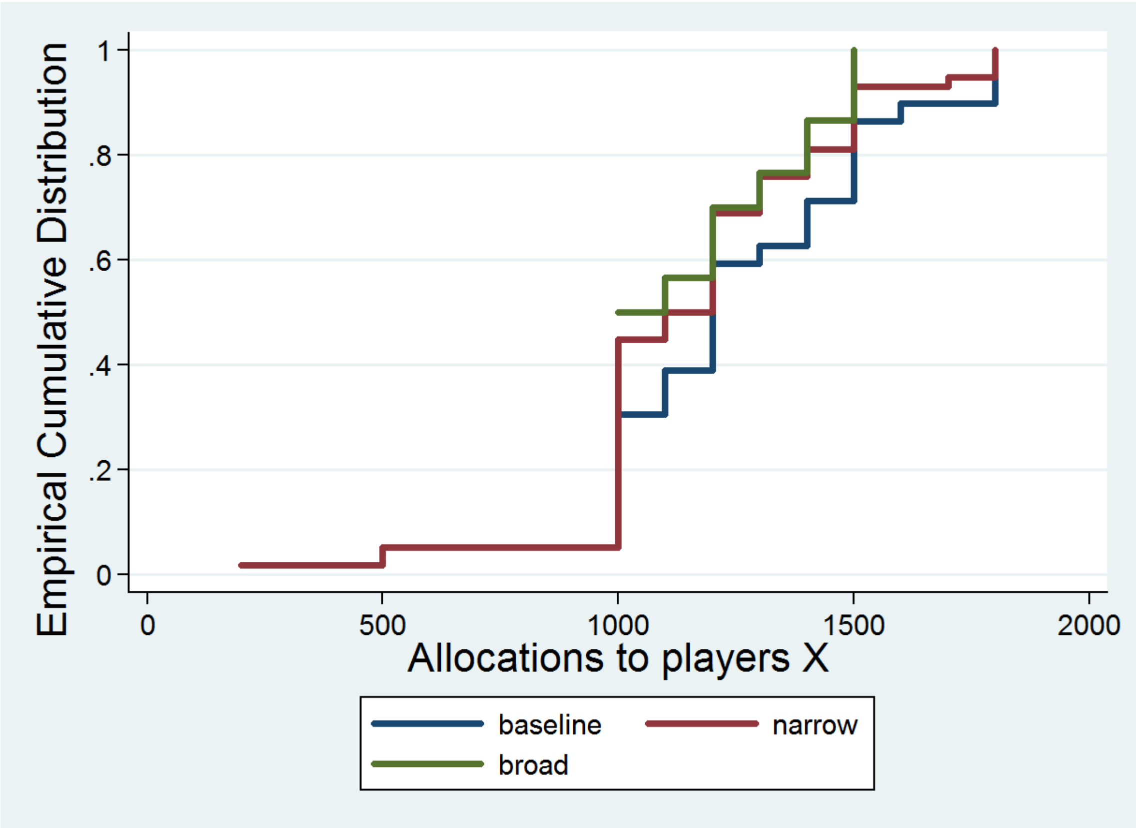
[6] Earnings and duration of the experiment refer to the whole experimental session including the subsequent parts that are not relevant for this paper.

1800 ECU.[7] The equal split is the modal choice in all treatments. Most interestingly for our research question, players A allocate less money to players X who have stated their opinion than to those players X in the *baseline*. On average, players A allocate 1271 ECU (sd=261.989) to players X in the *baseline*, but only 1167 ECU (sd=295.81) in the *narrow communication* treatment and 1160 ECU (sd=192.26) in the *broad communication* treatment. These differences are statistically significant (Mann-Whitney tests – *narrow* vs. *baseline*: $|z|=1.763$, $p=0.0779$, *broad* vs. *baseline*: $|z|=1.940$, $p=0.0524$).[8] The negative effect of communication on allocations to players X is also confirmed by a parametric test (Model 1 in Table 2). Hence, we state our main result as follows:

Result 1: Players A allocate significantly less money to players X in the *communication* treatments than in the *baseline*.

Figure 1

Allocations to players X (in ECU) by treatment



[7] Hence, these results support the notion that impartial decision makers make reasonable decisions and try "to live up to the expectations of their office" (Engel and Zhurakhovska 2013b, p. 17), although not motivated by monetary self-interest. Engel and Zhurakhovska (2013b) come to very similar conclusions when studying punishment behavior of impartial decision makers in a public goods game. Moreover, the variation in allocation decisions is well in line with Frohlich and Oppenheimer (2004) and Cappelen et al. (2007) who find a substantial heterogeneity in fairness ideals when several focal fairness rules could apply.

[8] See also Kleine et al. (2013) for a cursory analysis of the allocations made by player A in the first wave of the experiment.

Table 2

Treatment effects on allocations to players X

	OLS regressions Dependent variable: Allocations to players X	
	Model 1	Model 2
Narrow	-103.95** (51.78)	-65.09* (35.63)
Broad	-111.18** (48.82)	-111.29** (49.47)
Initial fairness judgment		0.59*** (0.08)
Constant	1271.19*** (34.38)	508.27*** (105.39)
N	147	147
P model	0.04	<0.001
R^2	0.04	0.44

OLS regressions. Robust standard errors are presented in parentheses. The *narrow* dummy equals 1 for all observations of the *narrow communication* treatment, the *broad* dummy equals 1 for all observations of the *broad communication* treatment, *initial fairness judgment* controls for initial fairness judgments by players A. Significance at the 10%, 5%, and 1% level is denoted by *, **, and ***, respectively.

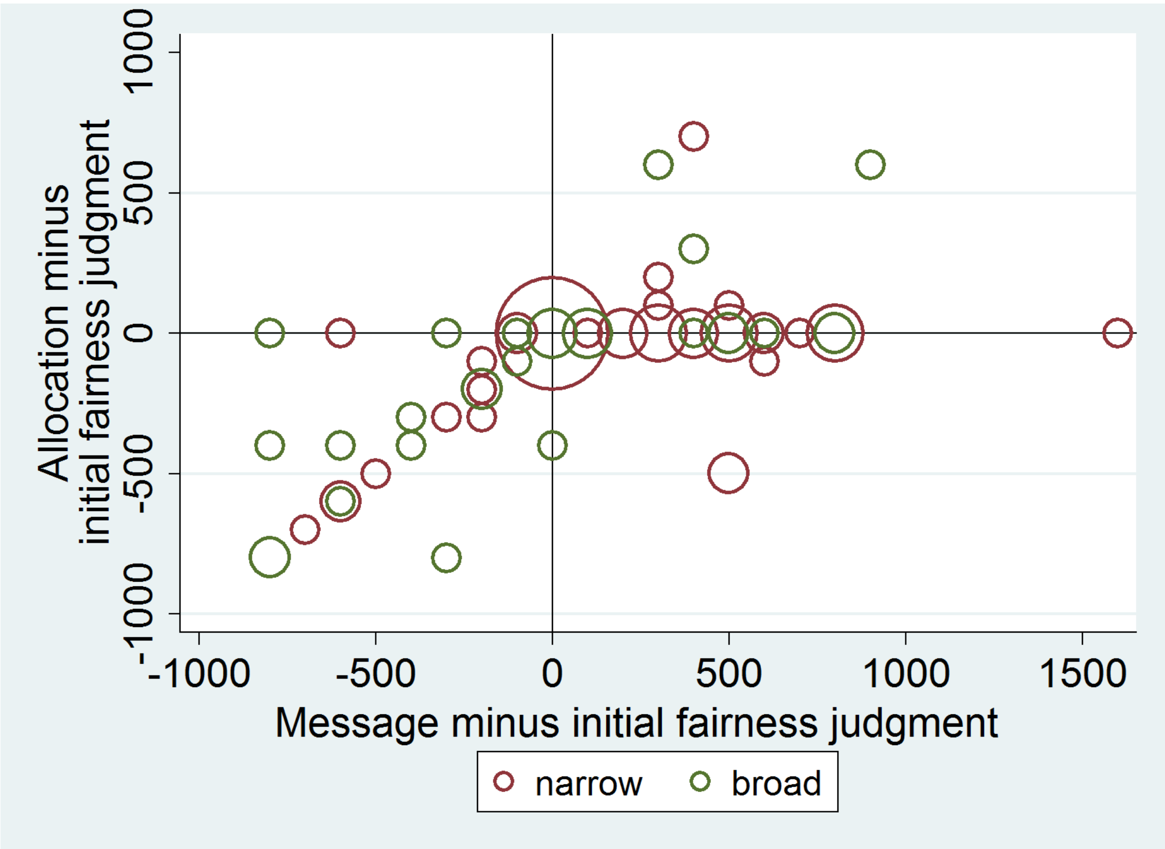
We now turn our analysis to the underlying reasons for this negative communication effect on allocations to players X. First, we compare the initial fairness judgments by players A across the treatments. We can thereby rule out that ex ante differences in players A's initial fairness judgments between treatments (either by chance or by an incorporation of expected potential messages in the *communication* treatments) are driving the result. It turns out that average initial fairness judgments are statistically not significantly different between the *communication* treatments and the *baseline* (mean *baseline*: 1289 ECU, sd=263.72; mean *narrow*: 1224.14 ECU, sd=288.56; mean *broad*: 1290 ECU, sd=330.46; Mann Whitney tests – *baseline* vs. *broad*: |z|= 0.230, p=0.8182, *baseline* vs. *narrow*: |z|=1.196, p=0.2317). Moreover, on the basis of a parametric analysis, differences in allocation between treatments remain significant even when controlling for initial fairness judgments (Model 2 in Table 2). Additionally, in the *baseline*, there are no systematic differences between initial fairness judgments and actual allocations (mean deviations: -18.64 ECU, Wilcoxon signed-rank test: |z|=0.846, p=0.3973), whereas players A in the *communication* treatments allocate significantly lower amounts to players X than initially considered as fair (*narrow*: mean deviation: - 56.90 ECU, Wilcoxon signed-rank test: |z|=1.872, p=0.0612; *broad*: mean deviation: - 130.00 ECU, Wilcoxon signed-rank test:

|z|=2.230, p=0.0257). We therefore infer that direct reactions to messages are the main causing of the treatment differences.

In order to obtain a better understanding of the potential underlying mechanisms that lead to this Result 1, we examine to which kind of messages players A react by deviating from their initial fairness judgment. We focus on the numerical content of the messages, as this content is comparable across *communication* treatments and the requested amount seems to capture the essential part of the influence of the messages on the actual allocation decisions. The content of the messages can be summarized as follows: on average, players X claim 1405 ECU for themselves (sd=282.48) in the *narrow communication* treatment and 1260 ECU (sd=352.92) in the *broad communication* treatment. If players X can only send a numerical statement, these statements are weakly significantly "more aggressive" compared to the situation in which players X can additionally send a free form text message (Mann Whitney test – *narrow* vs. *broad*: |z|=1.790, p=0.0734). Yet, reaction patterns by players A are very similar across the *communication* treatments.

Figure 2

Influence of messages on decisions by players A



Message minus initial fairness judgment is the requested amount by player X minus the initial fairness judgment by player A (in ECU); *Allocation minus initial fairness judgment* is the actual allocation to player X minus the initial fairness judgment by player A (in ECU).

The scatter plot in Figure 2 shows how players A deviate from their initial fairness judgment (y-axis) in reaction to differences between their initial fairness judgment and the requested allocation from players X (x-axis). In both *communication* treatments, some players A are confronted with requests below their initial fairness judgment and some with requests equal to or above their initial fairness judgment. Descriptively, when players X request a higher amount than initially considered as fair by players A (i.e., for values greater than 0 on the x-axis), some players A decide to (partly) follow the suggestion and only few punish high requests by reducing the allocation to players X. However, when receiving such requests, the vast majority of players A do not deviate from the initial fairness judgment. By contrast, when receiving requests by players X that are lower than the initial fairness judgment, only few players A stick to their initial fairness judgment and the majority reduce the allocation to players X.

We separately test the influence of claims above and below the initial fairness judgments of players A using the Spearman rank test. When claims are above the initial fairness judgment, there is no significant correlation between the deviation of the requests from the initial fairness judgment and the deviation of the allocations from the initial fairness judgment (Spearman's Rho – *narrow* (N=30): r_S=-0.2332, p=0.2149, *broad* (N=12); r_S=0.1352, p=0.6753). On the contrary, the deviation of requests from the initial fairness judgment and the deviation of allocations from the initial fairness judgment are positively correlated when these requests are below the initial fairness judgments of players A (Spearman's Rho – *narrow* (N=12): r_S= 0.6582, p= 0.0200, *broad* (N=14); r_S=0.5215, p=0.0558).[9] Consequently, we state our second result as follows:

> **Result 2:** Players A are systematically influenced by messages of players X and follow these suggestions when the requested amount is below the amount players A initially considered as fair. They are not influenced if the requested amount is above their initial fairness judgment.

IV. Mechanisms of Stakeholders' Influence

In this section, we discuss the potential mechanisms why and how impartial decision makers could be influenced by stakeholders' statements. As a starting point, we relate our results to the cognitive dissonance model by Konow (2000), which also makes predictions about impartial decision making. In line with Konow (2000), we assume that impartial decision makers have

[9] Even if we pool the data from the *narrow communications* treatment and the *broad communication* treatment, we do not observe a correlation for situations, in which claims by players X are above the initial fairness judgments of players A (Spearman's Rho – (N=42): r_S= 0.1028, p= 0.5170). Obviously, our result for the strong positive correlation in situations where the claims by players X are below the initial fairness judgments of players A (Spearman's Rho – (N=26): r_S= 0.6586, p= 0.0003) is also supported for the pooled data set.

subjective fairness values, that they apply these values to the situation at hand, and that they experience disutility when deviating from this personal fairness judgment in their final decision. Since material self-interest is absent, impartial decision makers should choose the allocation that equals their personal fairness judgment.

According to this line of reasoning, it is not clear why we should observe deviations from initial fairness judgments towards final decisions in *communication* treatments. If impartial decision makers are sufficiently confident about the application of their fairness values to the situation, they should consider stakeholders' statements irrelevant. Yet, in our experiment, decision makers react to the statements of stakeholders. Accordingly, we infer that impartial decision makers have some degree of uncertainty about the fit of their own fairness values to the particular situation. Such uncertainty about the "right" allocation decision leaves room for stakeholders' statements to influence decisions.

Surprisingly, this influence does not, on average, lead to results that favor communicating stakeholders over those stakeholders in the same role in the *baseline*. Although impartial decision makers seem to react to the statements of stakeholders, they do not generally align their allocation decision with the communicated suggestions. Decision patterns show that impartial decision makers do not follow claims for allocations that exceed their initial fairness judgment. However, they are willing to follow claims that are lower than their initial fairness judgment. This indicates that impartial decision makers are aware of a potential self-interest bias in messages when stakeholders ask for higher shares. It is reasonable to assume that these statements have been expected by impartial decision makers and hence convey no new information. At the same time, lower requests may have been perceived as non-biased and therefore as new relevant information about a fair allocation. Therefore, impartial decision makers update their fairness judgment according to low statements, but not to high statements.

To sum up, we are able to reconcile our findings with the idea of decision makers who act based on their own fairness judgment. Yet, our results imply two qualifications. First, impartial decision makers have some degree of uncertainty in their initial judgment. Second, impartial decision makers consider the potential self-interest bias in the stakeholders' statements when updating their fairness judgment.

Our data do not allow us to distinguish between different underlying sources of motivation that lead to a fairness judgment. Hence, we leave open whether the subjective fairness values of impartial decision makers are based only on intrinsic fairness principles, such as equality or equity, or whether these values also include the desire to consider the well-being of both stakeholders. However, it is appealing to assume that impartial decision makers are motivated by the attempt to maximize the joint utility of both stakeholders, players X and Y. If this is the dominating understanding of fairness, the initial fairness judgments are the result of such maximizations. Beliefs about communicating stakeholders' utility could be subject to an update, particularly if decision makers receive moderate statements. In these cases, decision makers would be able to infer that reducing the allocation to that stakeholder, player X, and thereby increasing the allocation to the other stakeholder, player Y, would not hurt player X as much as it would help player Y. Decision patterns in this experiment are in line with such a utilitarian rationale.

Punishment of overly demanding claims may additionally have contributed to the significantly lower transfers towards communicating stakeholders in the *communication* treatments. Yet, we observe only little punishment in our setting. The reason why these reactions occur less often than in the standard dictator game (see, e.g., Rankin 2006) may be explained by two factors: First, the potential fairness rule of output equity allows for very high allocations to stakeholders with the role of player X. Therefore, even high claims might still appear reasonable. Second, impartial decision makers' outcomes are not affected by the requests, which might cause less negative emotional reactions to high claims.

V. Concluding Discussion

In this paper, we study whether and under which circumstances stakeholders persuade impartial decision makers of their fairness opinions. By comparing two *communication treatments* with a *baseline*, we find that impartial decision makers are indeed influenced by statements of stakeholders. Surprisingly, stakeholders who state their opinion are allocated significantly less money than their counterparts in the *baseline*. Our analysis within both *communication treatments* shows that this effect can be attributed to the decision makers' willingness to follow stakeholders' moderate requests and largely to ignore high monetary claims.

Shall we conclude that communication opportunities are hurtful to stakeholders? We clearly object to such a conclusion. The focus of our paper is on the influence of stakeholders on impartial decision makers' choices and hence on consequences for distributions. Yet, when talking about stakeholders' utility, we deem that the sole focus on the monetary consequences of statements would be inadequate, as other (potentially positive) aspects are not captured by this monetary dimension. E.g., a stakeholder might appreciate if her fairness opinion is implemented by the impartial decision maker – this is indeed on average more often the case in the *communication* treatments than in the *baseline*.[10] Moreover, we refer to our companion paper (Kleine et al. 2013), in which we show that, despite the negative monetary consequences, stakeholders who have an opportunity to express themselves in the *communication* treatments are more generous in subsequent interaction with the impartial decision makers than their counterparts in the *baseline*. These aspects can clearly be considered as positive effects of giving stakeholders the opportunity to state their opinion.

Our laboratory experiment shows causal effects of impartial decision making under stakeholders' influence when it comes to fairness decisions, and it contributes to understanding the potential underlying processes. Both could hardly be achieved in the field, e.g., by studying judges' decisions. The laboratory approach requires a high degree of abstraction and a design that deliberately neglects certain aspects of "real-world" interactions with impartial decision makers for the sake of identifying causal effects. Future research could relax some of these constraints and thus explore the robustness of our findings.

[10] On average, 16.9% of all allocations in the *baseline* treatment are equal to the initial fairness judgment stated in private by the respective stakeholders, compared to 27.6% in the *narrow communication* treatment and 26,6% in the *broad communication* treatment (Pearson Chi^2 *narrow* vs. *baseline*: $\text{chi}^2(1) = 1.9147$, p=0.166, *broad* vs. *baseline*: $\text{chi}^2(1) = 1.1640$, p=0.281).

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VII. Appendix: Instructions

The instructions for the *baseline* and the *communication* treatments only differ in one regard. The *baseline* consists only of Steps 1 and 2. In the *communication* treatments, an additional intermediate step between these two steps is introduced. Therefore, we report first the full instructions of the *baseline* and afterwards only the new step 2 of the *communication* treatments. Here, we only present the instructions for the part of the experiment that is of interest for this paper. We refer to Kleine et al. 2013 for the complete instructions of the experiment.

a) Baseline

General Instructions for Participants

Please begin by reading these instructions carefully. **Communication during the experiments is prohibited.** If you have any questions, please raise your hand. We will then come to you. **Disobeying this rule will lead to exclusion from the experiment and all payments.**

The experiments are conducted anonymously, i.e., nobody is told with which other participant he or she has interacted. The analysis of the experiment results will also be conducted anonymously.

You will take part in several experiments today. You can earn money during the experiments, depending on the decisions you and the other participants make. In the first experiment, we speak not of €, but of Taler. Your income from this experiment is therefore initially calculated in Taler. At the end of the experiment, the Taler earned are **converted into Euro at a rate of 2 Taler = 1 Cent and paid out to you**. In addition, each participant receives a lump sum payment of 4 Euro for showing up today.

The instructions for the individual experiments will be handed out to you just before each respective experiment. On the following pages, we will first describe the exact procedure of the first experiment. Then, there will be more experiments. It will be **impossible** for you to lose your earnings from one of the experiments in a later experiment.

After the final experiment, you will be given a questionnaire. Once you have filled in this questionnaire, the total sum you have earned will be paid to you in cash.

Information on the First Experiment: Part 1

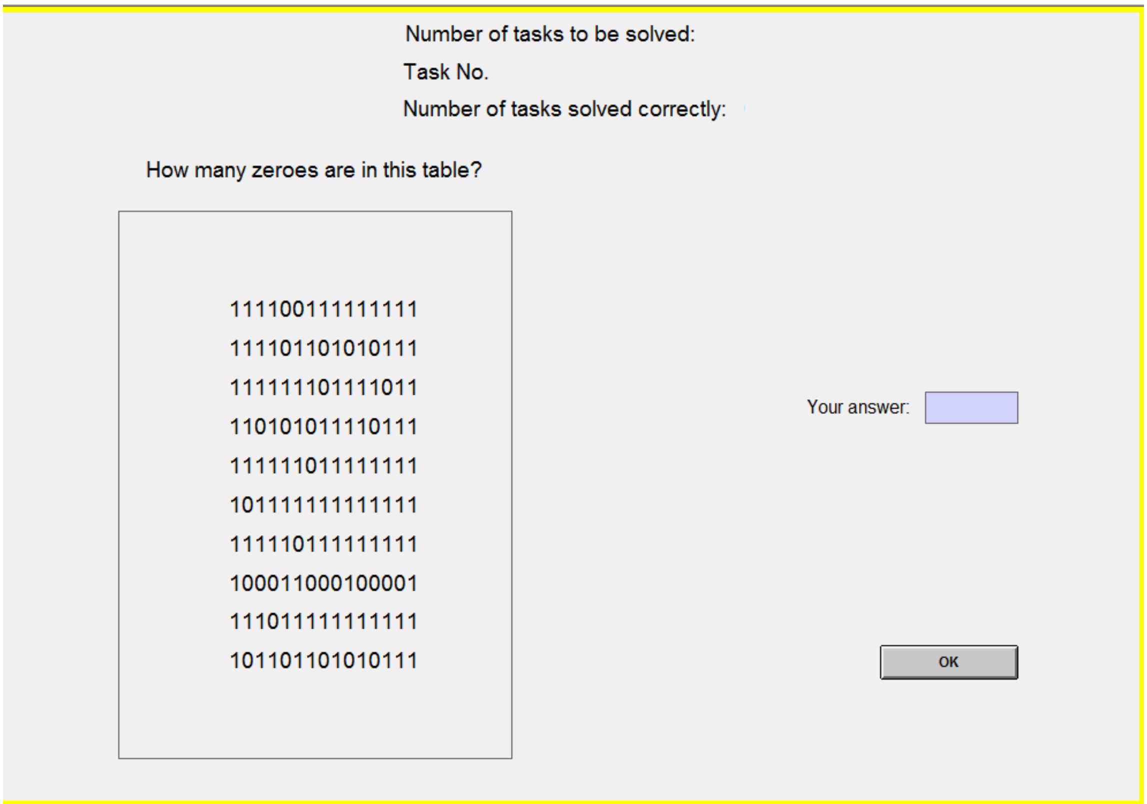
In this experiment, there are three roles: **A**, **X**, and **Y**. At the beginning of the experiment, you are assigned a role **at random**. One participant A, one participant X, and one participant Y form a **group** in this experiment. In this part of the experiment, participant **A** receives a **fixed lump sum of 5 Euro**, which remains unaltered regardless of the decisions taken by A or the other participants. The earnings of participants **X and Y are determined** by the **decisions** made in the course of the experiment. We shall now explain how exactly this works.

This experiment consists of **several parts**. First, we explain and conduct the **first part of the experiment**. You will receive further information separately for the other parts. **Here it is also impossible for you to lose what you have earned in a previous part of the experiment**.

The first part of the experiment consists of **two** steps.

Step 1:

Participants **X** and **Y each solve** a predetermined number of **tasks**. Each task consists of determining the correct amount of zeroes in a table consisting of the numbers 0 and 1. If an incorrect number is given, the participant has up to two more attempts to find the correct number. If the number given is still incorrect after three attempts, the task is considered not completed, and the participant is given a new task. The format of the table (i.e., the number of lines and columns) is the same for all tasks and participants. The tasks are presented to participants X and Y on the screens, as in the following example:



The respective participant is shown new tasks until the predetermined number of tasks that are to be solved has been reached. The number of tasks to be solved and the Taler earned per task correctly solved **are different** for participant **X** and participant **Y**, as the following table shows:

	Number of tasks to be solved correctly	Taler earned per task correctly solved
Participant **X**	**12**	**150**
Participant **Y**	**4**	**50**

In total, thus, participants X and Y together accumulate 2000 Taler in this step. The Taler earned are added up.

In the second step, participant **A** will determine the **definitive distribution** of the 2000 Taler amongst the participants X and Y. Participant A does not solve any tasks.

At the end of this step, all participants state which Taler distribution amongst participants X and Y they would consider fair.

100-Taler increments are possible here. Each participant hence indicates one of the following distributions:

- X receives 2.000 Taler, Y receives 0 Taler
- X receives 1.900 Taler, Y receives 100 Taler
- X receives 1.800 Taler, Y receives 200 Taler
- X receives 1.700 Taler, Y receives 300 Taler
- X receives 1.600 Taler, Y receives 400 Taler
- X receives 1.500 Taler, Y receives 500 Taler
- X receives 1.400 Taler, Y receives 600 Taler
- X receives 1.300 Taler, Y receives 700 Taler
- X receives 1.200 Taler, Y receives 800 Taler
- X receives 1.100 Taler, Y receives 900 Taler
- X receives 1.000 Taler, Y receives 1.000 Taler
- X receives 900 Taler, Y receives 1.100 Taler
- X receives 800 Taler, Y receives 1.200 Taler
- X receives 700 Taler, Y receives 1.300 Taler
- X receives 600 Taler, Y receives 1.400 Taler
- X receives 500 Taler, Y receives 1.500 Taler
- X receives 400 Taler, Y receives 1.600 Taler
- X receives 300 Taler, Y receives 1.700 Taler
- X receives 200 Taler, Y receives 1.800 Taler
- X receives 100 Taler, Y receives 1.900 Taler
- X receives 0 Taler, Y receives 2.000 Taler

Please note: **This information is not shown to any other participant and has no consequences on the payoffs** – neither on the own payoffs nor on those of the other participants.

Step 2:

Participant **A now decides how to distribute fairly** among participants X and Y the Taler earned by these two participants.

100-Taler increments are possible here. Participant **A** hence opts for one of the following distributions:

- ○ X receives 2.000 Taler, Y receives 0 Taler
- ○ X receives 1.900 Taler, Y receives 100 Taler
- ○ X receives 1.800 Taler, Y receives 200 Taler
- ○ X receives 1.700 Taler, Y receives 300 Taler
- ○ X receives 1.600 Taler, Y receives 400 Taler
- ○ X receives 1.500 Taler, Y receives 500 Taler
- ○ X receives 1.400 Taler, Y receives 600 Taler
- ○ X receives 1.300 Taler, Y receives 700 Taler
- ○ X receives 1.200 Taler, Y receives 800 Taler
- ○ X receives 1.100 Taler, Y receives 900 Taler
- ○ X receives 1.000 Taler, Y receives 1.000 Taler
- ○ X receives 900 Taler, Y receives 1.100 Taler
- ○ X receives 800 Taler, Y receives 1.200 Taler
- ○ X receives 700 Taler, Y receives 1.300 Taler
- ○ X receives 600 Taler, Y receives 1.400 Taler
- ○ X receives 500 Taler, Y receives 1.500 Taler
- ○ X receives 400 Taler, Y receives 1.600 Taler
- ○ X receives 300 Taler, Y receives 1.700 Taler
- ○ X receives 200 Taler, Y receives 1.800 Taler
- ○ X receives 100 Taler, Y receives 1.900 Taler
- ○ X receives 0 Taler, Y receives 2.000 Taler

This distribution by participant **A** determines the earnings of participants **X** and **Y** in this part of the experiment.

The first part of this experiment ends with participant A making the decision described above.

Participants **X** and **Y** are told about the distribution decided upon by participant **A** and about their earnings from the first part of the experiment **after the end of this experiment**.

It is impossible for you to lose, in a later part of the experiment, the earnings you have accumulated in the first part of the experiment.

You will now be shown some control questions on your screen. After you have answered these questions correctly, the first experiment will begin.

b) Treatment manipulation in the *communication* treatments – additional step:[11]

In Step 2, participant **X** has the chance to send participant **A** a **message**. If you are a participant **X**, please follow the instructions about this on your screen. The participants **Y** and **A** have no possibility to send a message.

[11] "Step 2" in the baseline is accordingly called "step 3" in the *communication* treatments.