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Research highlights

- We study the influence of decision power on distributive fairness.
- Across three experimental treatments, we vary the decision power to divide a gain from productive activity between two actors – an active and an inactive.
- Participants trade off self-interest and fairness in their allocation decisions, they take into account meritocratic considerations, and they reveal self-serving biases in their fairness judgments.
- Having full decision power enhances self-serving fairness judgments.

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Abstract

We study the influence of decision power on fairness in the division of gains from productive activity. In an experimental setting, two actors are involved in generating a gain, but only one contributes actively by completing a task. In three treatments, decision power to divide the gain is assigned to (1) the inactive, (2) both the inactive and the active, (3) the active participant. Results show that changes in decision power not only affect allocations in accordance with previous research, but that they also alter fairness perceptions. In particular, full decision power significantly enhances self-serving interpretations of fairness. We discuss implications for organizational design.

Keywords: fairness, experiments, power, self-serving bias, organizational design

JEL classification: C91, D33, D63

1. Introduction

In this paper, we investigate experimentally the influence of decision power on divisions of economic gain from productive activity and on the fairness perceptions of the involved parties.

Obviously, when various parties contribute jointly to the generation of an economic gain, the power structure which determines a division can be manifold and range from dictatorial decisions by one party, to partially participative or even fully democratic decision processes. For instance, the power structures which determine wages or executive compensation within corporations differ widely across companies, industries, and areas of jurisdiction. Germany's restrictive co-determination law provides an example of legal constraints to the allocation of decision power. Compensation committees now determine many CEO and top executives' wages. As an interesting exemplary case, the Brazilian company Semco[1] has voluntarily adopted fully democratic decision structures.

People care about fairness in the division of economic gains. Consider the contemporary debates around minimum wage regulations, limits to executive pay, general developments in wage earnings vs. shareholder profits, or, in an international context, how "Fair Trade" aims to divide profit in a way that pays higher wages to workers in third-world countries. Discussion on these matters often involves demands for distributive justice or fairness. But then, what is a fair division of economic gain? Philosophical theories of distributive justice can offer some guidance to answer this question. For instance, a strict version of an egalitarian theory would always propose an equal split of the gain, whereas a theory based on merit, desert, or proportionality (e.g., Aristotle, 1925) would suggest giving according to contributions, hence more or even the entire gain to more active participants. Nozick (1974) takes an entirely different approach when he argues for the principle of "justice in transfer", according to which, all allocations resulting from freely chosen transfers are fair. While philosophical analysis is systematic and very instructive, a closer look at the multiplicity of theories reveals that it cannot provide one definite answer for what is a fair division. As an alternative to *a priori* theoretical analysis, the question of fairness may be regarded as

[1] See the company homepage at http://semco.locaweb.com.br/en/.

an empirical one. In that case, fair is simply what (most) people intuit as fair. It is of course controversial to what extent lay intuitions can serve as the basis of moral worth (cf., Nichols, 2004). Yet, it is a widely held belief that they should be taken seriously, if only for positive analysis; and indeed lay intuitions about fair divisions have been studied across disciplines. Whereas neoclassical economic theory had traditionally focused on efficiency wages and on remuneration for risk-taking, influential experimental work on bargaining behavior (e.g., Güth et al., 1982; Forsythe et al, 1994) and the growing influence of psychological studies (most prominently Kahneman et al., 1986) have moved fairness into the center of attention in economic research. By now, it is well established in economic literature that many people accept reducing their own monetary gains for the sake of fairness considerations (see e.g., Konow, 2003). Many insights from this literature also pertain to fairness when economic gain from joint productive effort has to be divided.

In the present study, we employed an experimental setting in which a gain is generated by asymmetric effort. Two people were involved, but only one of them contributed actively by completing a non-trivial task while the other remained inactive. Under otherwise equivalent conditions, Treatment 1 assigned full decision power to the inactive party, Treatment 2 assigned symmetrically shared decision power to both the inactive and the active party, and Treatment 3 assigned full decision power to the active party. While several papers have studied divisions within particular power structures (e.g., Ruffle, 1998; Konow, 2000; Cherry et al., 2002, Oxoby and Spraggon, 2008), our study provides a direct analysis of the influence of decision power across the three treatments. Moreover, we not only observed how power affected actual divisions, but also asked participants to state fairness judgments. When fairness is seen as a criterion for organizational design, the discrepancy between actual divisions and perceived fairness under different decision structures is of interest. Based primarily on literature from economics and social psychology, we derive and test different hypotheses for allocations and fairness judgments, with a particular focus on the influence of decision power. Our results reveal that power structures have an intricate effect on distributive fairness involving allocations, fairness perceptions, and how both relate for the different parties.

In the remainder of the paper, section 2 derives hypotheses from previous findings on fairness in the division of gains from productive activity. Section 3 describes in detail our experimental design. Section 4 presents the results from the three experimental treatments and tests the hypotheses. Section 5 discusses the results and suggests some implications for organizational design. Section 6 concludes.

2. Fairness in the division of economic gain: Literature and hypotheses

In this section, we review relevant existing literature from economics and psychology and derive hypotheses for allocations and fairness judgments in our experiments.

Most empirical work on fairness in economics relies on data from controlled and simplified laboratory environments (Camerer, 2003). For example, in the standard dictator game, many dictators share money with an anonymous counterpart (e.g., Hoffman et al., 1994). Allocations typically lie between the equal split and no sharing, indicating that people trade off self-interest and fairness considerations (Konow, 2000). For our experiment, this tendency leads to the prediction that allocations in Treatments 1 and 3 will lie between the fully self-interested outcome and the allocation that is considered fair (Hypothesis 1 – for formalization see section 3). In addition, more decision power should on average lead to higher gains (Hypothesis 1').

There are many different criteria for what can be considered fair. In interview studies, Alves and Rossi (1978) identify considerations of need and merit as main determinants of fair earnings. Hoffman and Spitzer (1985) summarize their results stating that for allocation decisions people usually apply considerations of merit or entitlement, and that they use egalitarian norms when there is "no obvious morally relevant distinction" between the parties. The latter may be the case in standard dictator games, where the equal split is typically assumed to be the fair division. In contrast, dictators in Ruffle (1998) share more when recipients spent effort in generating the gain, whereas there is almost no sharing in Cherry et al. (2002) where dictators themselves earned the gain by completing a real-effort task. Oxoby and Spraggon (2008) replicate these two findings within one study. The importance of merit for fairness is also emphasized by Konow (2000), who suggests a model in which people maximize their utility by trading off their personal gains and costly deviations from what they judge as the fair division. Cappelen et al. (2007) use a similar parametric utility model to

investigate the determinants of merit in more detail. They show that people differ in the extent to which they combine a deliberate effort choice and an exogenously given rate of return (e.g., due to talent) for deciding what is a fair division of gain from joint production. In our experiment, only one participant in a pair provided active work effort to generate the gain. We expect that participants judge it fair that active contributors receive more of the gain (Hypothesis 2). In addition, inactive participants should share more in Treatment 1 than active participants in Treatment 3, and allocations in Treatment 2 should be biased in favor of the actives (Hypothesis 2').

Both the multiplicity of theoretical fairness ideals and the heterogeneity in lay intuitions frequently reveal "moral ambiguity" when economic gain has to be divided. For such situations, it has been shown that people have a tendency to rely on the fairness criteria which favor what is in their own interest (c.f., Babcock and Loewenstein, 1997). For instance, Messick and Sentis (1979) find a "self-serving bias" in survey statements about hypothetical labor scenarios. In their study, people who were said to have worked more on a joint task generally believed that they should earn more, while those who were said to have worked less stated frequently that both parties should be paid equally. Self-serving biases are often explained with cognitive dissonance theory (Festinger, 1957). According to this theory, the conflicting desires of gaining more money in the experiment and obtaining a fair division cause cognitive dissonance, which participants can unconsciously reduce by interpreting fairness in a way that is more in line with their monetary self-interest. We expect that such a role-dependent bias in fairness judgments between inactive and active participants should also be observed in all three treatments of this experiment (Hypothesis 3).

Some experimental findings point towards an acceptance of entitlements beyond meritocracy (Hoffmann and Spitzer, 1985, Bolle and Vogel, 2005). In the present case, the authority given through the assignment of decision power could be expected to generate a sense of entitlement and hence shift fairness judgments towards higher fair gains for increasing power (Hypothesis 4). Note that this order across the three treatments should hold for fairness judgments from both active and inactive participants. Such a finding would also be in line with a "just world effect" (Lerner and Miller, 1978) according to which, "individuals have a need to believe that they live in a world where people generally get what they deserve"(p. 1030). In the present case, this means that

the powerful deserve their position and the mere fact that they were given the power entitles them to a larger fair share.

3. Experimental design

Upon entering the laboratory, participants were informed that they would be paid €2 as a show-up fee, and as pairs, they would be involved in the generation of an experimental gain of €16. The roles of the individuals in the pair were referred to as A1 and A2, which for exposition we label as "Inactive" and "Active", respectively. Actives would have to work on a tedious real-effort task which consisted of counting letters in different parts of a text. Inactives would have nothing special to do, but could relax, read (we provided newspapers), do homework, etc. The €16 would be generated only by successful task completion within 20 minutes. Of the €16, both Active and Inactive would receive the same fixed amount of €3 as a minimum compensation, but the excess gain of €10 would have to be divided between the two actors. Participants were told who decided on how to divide the excess gain. The assignment of decision power varied across treatments:

Treatment 1 - "Inactives decide" how to divide the €10.

Treatment 2 - "Both decide" and have to agree how to divide the €10.

Treatment 3 - "Actives decide" how to divide the €10.

Participants were then randomly assigned their role. Knowing his or her personal role and the exact procedure, each participant marked on a sheet of paper whether he or she agreed to stay in the experiment or preferred to leave with the show-up fee. Participants who preferred to leave were substituted. We opted for the combination of fixed minimum compensation of €3 plus deliberate acceptance of the conditions in order to make the situation more representative of natural (non-forced) labor relations. The computer randomly matched pairs of Active-Inactive. Participants never found out who was their counterpart, but could see that in the room there was a group of Actives who were busy counting and a group of Inactives who were typically reading the newspaper.

Also, Inactives were shown the text with the counting exercise so that they could infer the difficulty of the task.

In Treatment 2 – "Both decide", Active and Inactive determined the allocations jointly in a repeated simultaneous-offers bargaining procedure. If they agreed (i.e., their proposals coincided), then the division was implemented. If they disagreed, they were informed of the proposal of the other party and were asked to make a new proposal. This procedure was repeated until they reached an agreement. We chose this bargaining procedure because it was easy to understand and gave participants equal decision power (e.g., no first-mover advantage, no informational asymmetry, etc.). Those pairs of participants who agreed quickly left the experiment earlier, but we varied the duration of the post-questionnaire to assure that they could not infer who had been their counterpart.

Experimental measures. In all three treatments we observed the divisions of the €10 excess gain. In what follows, results will be reported in terms of the **payments** that were given to the Active. After the actual division was made, we asked participants the following question: "What do you think would be the fair division?" These **fairness judgments** will be reported in terms of "fair payment to the Active".[2] In a subsequent questionnaire, participants were asked to state **arguments** for giving money to the Active and for giving money to the Inactive. Arguments should give an insight into the reasoning behind allocation decisions and fairness judgments. Previous experimental work in economics usually infers fairness from behavior, while psychological studies tend to rely on questionnaires. In the present study we combine both methods. This method also allows identifying discrepancies between an individual's fairness perception and his or her actual behavior.

Experimental frame. Treatment 1 – "Inactives decide" and Treatment 3 – "Actives decide" are variants of the Dictator Game. The Dictator Game is widely recognized as an "interesting vehicle for studying the meaning and interpretation of

[2] The question was phrased "Independently [of your decision how much to give / of what you think you will receive/ of the final division], what would be the fair division?" In Treatments 1 and 3 the party with absolute decision power answered the question after having made the decision, while the other party was asked before receiving information about the actual payment.

fairness" (Hoffman et al., 1996). It has been criticized, however, for not representing a genuine social situation; in particular that money comes as "manna from heaven" (e.g., Bardsley, 2005). Here, the game was embedded into an experimental frame in which economic gain was generated by productive activity. Productive activity in economic experiments has been operationalized differently. For instance, participants in Konow (2000) prepare letters for mailing, Capellen et al. (2007) mimic production by a monetary investment decision, and Oxoby and Spraggon (2008) determine earnings based on the number of correct answers to exam questions. In the present study, Actives had 20 minutes to correctly count the frequencies of the letter M in different parts of a text. Note again that the focus of our design is on active vs. inactive involvement of participants. Of course, other considerations such as risk or efficiency play important roles in the division of gains from production in natural environments. The purpose of the present design was to provide a simplified experimental benchmark of a genuine labor context.

Recruiting and computerization. The experiment was computerized with z-tree software (Fischbacher, 2007) and conducted in the experimental laboratory of Pompeu Fabra University in Barcelona (Spain). The participants were 168 students of both genders and from various fields of study[3], who were recruited using the ORSEE online recruitment system (Greiner, 2004). They participated in nine sessions (16 to 20 participants per session) between October 2006 and May 2007.

Hypotheses. By introducing some simple notation, we formalize the hypotheses from section 2. We abbreviate the three treatments as T1 ("Inactives decide"), T2 ("both decide"), and T3 ("Actives decide"). We denote as X the average actual gain that the Active received from the €10. We denote as F the average judgments referring to Actives' "fair gain". Subscripts of F indicate whether fairness judgments were given by Actives (F_{act}) or Inactives (F_{inact}).

[3] In all three experimental treatments, approximately half of the subjects were business or economics majors, the other half were majoring in other studies, including law, political sciences, biology, and engineering.

Hypothesis 1: Allocations in Treatments 1 and 3 lie between the fully self-interested outcome and the allocation that the party with decision power considers fair.

H1: $0 < X\,(T1) < F_{inact}\,(T1)$ and $F_{act}(T3) < X(T3) < 10$

Hypothesis 1': More decision power leads to higher gains.

H1': $X\,(T1) < X\,(T2) < X\,(T3)$

Hypothesis 2: Participants judge it fair that Actives receive more of the gain.

H2: $F_{act} > 5$ and $F_{inact} > 5$ *in T1, T2, T3*

Hypothesis 2': Inactives share more in Treatment 1 than Actives in Treatment 3, and in Treatment 2 the Active receives more than half of the €10.

H2': $X\,(T1) > 10 - X\,(T3)$ and $X\,(T2) > 5$

Hypothesis 3: In all three treatments, fairness judgments reveal a role-dependent "self-serving bias".

H3: $F_{inact} < F_{act}$ *in T1, T2, T3*

Hypothesis 4: For Inactives and for Actives, judgments of fair gains are monotonically increasing with decision power.

H4: $F_{inact}\,(T1) < F_{inact}\,(T2) < F_{inact}\,(T3)$ and $F_{act}\,(T1) < F_{act}\,(T2) < F_{act}\,(T3)$

4. Results

Two of the 168 participants decided to leave the experiment after learning the rules and their personal role; one Inactive in Treatment 2 and one Inactive in Treatment 3. They were substituted. Three of the 83 Actives did not manage to complete the task within 20 minutes. These three pairs were neither asked for an allocation decision nor for a fairness judgment, but they had to wait until the end of the experiment to receive the €2 show-up fee. The data rely on the remaining 160 participants, of which 25 pairs of Inactives and Actives were in Treatment 1, 27 pairs in Treatment 2, and 28 pairs in Treatment 3.

Figure 1 compares the cumulative distribution functions of payments to the Active and of fairness judgments by Actives and Inactives. Table 1 summarizes mean payments and mean judgments across treatments.

----- Figure 1 about here ----

Treatment 1 – "Inactives decide". The average gain for the Active *X (T1)* was 2.6. The majority of Inactives (17 of 25) stated that the equal split is fair; their average judgment F_{inact} *(T1)* was 5.3. Actives' average judgment F_{act} *(T1)* was 7.2.

Treatment 2 – "Both decide". The average gain for the Active *X (T2)* was 5.7. Average judgment for Inactives F_{inact} *(T2)* was 6.3 and for Actives F_{act} *(T2)* it was 7.5.[4]

Treatment 3 – "Actives decide". The average gain for the Active *X (T3)* was 9.1. Inactives' average judgment F_{inact} *(T3)* was 6.7, Actives' average judgment F_{act} *(T2)* was 8.5.[5]

----- Table 1 about here -----

Arguments to justify allocations

In the questionnaire following the allocation decision we asked participants to "please give [up to three] arguments in favor of allocating money to A1" (the Inactive) and to "please give [up to three] arguments in favor of allocating money to A2" (the Active).

We compared arguments and classified them into categories. Table 2 reports the frequencies with which participants wrote down arguments from a particular category. For example, the two far left columns show the arguments which were given for allocating money to Actives in Treatment 1; the far left column presents the number of times that Actives gave the arguments, the second left column presents the number of times that Inactives did so. We are cautious not to overstate these verbal results and our categorization. We believe, however, that these auxiliary data provide interesting indications of the motivations and thinking underlying participants' fairness judgments.

[4] The number of bargaining periods until an agreement was reached ranged from 2 periods (lasting approximately 1 minute) to 66 (approximately 20 minutes) with a median of 5 (approximately three minutes).

[5] We lost fairness judgments from three participants in one session of Treatment 3 due to a computer problem.

The most frequent arguments based on "amount of work / effort / time spent" reflect considerations of merit. The majority of participants stated the amount of work or effort as a reason for giving money to Actives. In addition, this argument was used to justify allocating money to Inactives. In these cases, participants usually stated that "A1 had to spend time in the experiment". In all three treatments, Inactives and Actives recognized merit almost equally often as justification for giving to Actives (24 vs. 24; 27 vs. 27; 22 vs. 18), while it was used more often by Inactives as a justification for giving to Inactives (4 vs. 2; 13 vs. 9; 11 vs. 6).

"Egoism / maximization of personal gain", and "using power / decision rights", are reasons to explain allocating money to those with decision power. Powerful Inactives in Treatment 1 stated "Egoism and maximization of personal gain" twice as often as a reason for keeping money for themselves than powerful Actives in Treatment 3 (12 and 10 vs. 5 and 6). "The other already gains €3" was provided as an additional reason by powerful Actives for keeping money for themselves.

The arguments that "roles were determined by chance" and that "both players are needed and are part of the team" were typically given to justify the allocation of money to Inactives, in particular when Inactives had no, or only partial power. These two arguments may also be interpreted as supportive of an egalitarian division. "Solidarity or altruism" was stated almost exclusively by Inactives in Treatment 3 as a reason to give money to them.

----- Table 2 about here -----

Hypothesis testing

We test the hypotheses that were derived in section 2 and presented more formally in section 3. In general, the robust rank order test is used to test for significant differences in the distributions of two independent samples, the Wilcoxon signed rank test for dependent samples.[6] We report one-tailed p-values for all directional hypotheses. We indicate separately whenever additional tests are used.

[6] For all Wilcoxon tests, ties in the ranks were accounted for by using average ranks.

Based on findings that people trade off monetary self-interest and fairness considerations, Hypothesis 1 predicts that $0 < X\ (T1) < F_{inact}\ (T1)$ and that $F_{act}(T3) < X(T3) < 10$. This is supported by the data. The 2.6 average gains for the Active in Treatment 1, X(T1), are significantly different from zero ($p < .01$), but lower than Inactives' fairness judgments $F_{inact}\ (T1)$ of 5.3 ($p < .01$). Average gains X (T3) of 9.1 are significantly different from 10 ($p < .01$), and significantly higher than Actives' fairness judgments $F_{act}\ (T3)$ of 8.5 ($p < .01$). Not directly motivated by any hypothesis, we test for correlations between individual fairness judgments and actual decisions. For Inactives in Treatment 1, there was no significant correlation between their fairness judgments and payments to the Actives (Spearman rank-order correlation coefficient $\rho = .15$, n.s.). In contrast, Actives' payments to Inactives in Treatment 3 were significantly correlated with their fairness judgments (Spearman rank-order correlation coefficient $\rho = .44$, $p = .03$).

Hypothesis 1' predicts that more power should lead to higher gains. $X\ (T1) < X\ (T2) < X\ (T3)$ is supported by the data. The Jonckheere test for ordered alternatives reveals that the average gains to the Active (see Table 1) follow the expected order ($p < .01$). Pairwise comparisons of the distributions support that the strict inequalities hold.

Hypothesis 2 predicts that due to considerations of meritocratic entitlement $F_{act} > 5$ and $F_{inact} > 5$ hold in all three treatments. Tests on the sample distributions of fairness judgments in the three treatments equally support that judgments are above equal split ($p < .01$), with the exception of the judgments of Inactives in Treatment 1 ($p = .36$).

Hypothesis 2' predicts that meritocratic considerations are also reflected in allocations, so that $X\ (T1) > 10 - X\ (T3)$ and $X\ (T2) > 5$. This is supported by observed allocations: $X\ (T1)$ with mean 2.6 is significantly higher than $10 - X\ (T3)$ with mean 0.9 ($p < .01$). Also, $X\ (T2)$ with mean 5.7 is significantly above the equal split ($p < .01$).

Hypothesis 3 predicts a role-dependent self-serving bias in T1, T2, and T3, i.e., $F_{inact} < F_{act}$. Indeed, the difference in the distributions of fairness judgments between Inactives and Actives is statistically significant in all three treatments ($p < .01$).

Hypothesis 4 expects that for both Inactives' and Actives', fairness judgments attribute higher fair gains when a party has more decision power, i.e., that $F_{inact}\ (T1) < F_{inact}\ (T2) < F_{inact}\ (T3)$ and $F_{act}\ (T1) < F_{act}\ (T2) < F_{act}\ (T3)$. The Jonckheere test for

ordered alternatives supports this hypothesis for both roles ($p < .01$). Pairwise comparison shows, however, that for Inactives, the differences between the distributions are statistically significant only between T1 and T2 ($p < .01$), but not between T2 and T3 ($p = .27$). For Actives, pairwise comparison reveals that the differences are statistically significant between T2 and T3, ($p = .02$), but not between T1 and T2 ($p = .24$). The difference in effect size is further illustrated by two separate ordinary least squares regression analyses with Inactives' and Actives' fairness judgments as dependent variables and judgments from T2 as baseline (see Table 3). Coefficients for the dummy variables "no power" and "full power" have the expected signs in both cases and coefficients for "no power" are smaller in size than those for "full power" (.33 vs. -1.01 for Inactives, -.28 vs. .94 for Actives). Coefficients for "no power" are not significant ($p = .26$ for Inactives, $p = .28$ for Actives), whereas those for "full power" are significant on the 5-percent level ($p = .03$, $p = .03$).

----- Table 3 about here -----

5. Discussion

The results of our experiments confirm several predictions that were derived from findings in previous research. In particular, the data show that people trade off self-interest and fairness considerations, that meritocratic considerations influence distributive fairness, and that people tend to interpret fairness according to their self-interest.

It is worth pointing out that of all six distributions of fairness judgments, only those of Inactives with full decision power in Treatment 1 are not significantly above the equal split. This is in line with the findings by Messik and Sentis (1979) on self-serving biases in labor settings and implies a limitation to the extent to which merit is a generally excepted fairness criterion. People with decision power who do not contribute actively to the generation of a gain judge merit as less important for distributive fairness.

An additional finding in our data is that for both Inactives and Actives, the distributions of fairness judgments differed more between full power and shared power,

than between shared power and no power. In other words, for both roles there was an asymmetric shift towards more self-serving judgments under full power. Note that this goes beyond the original motivation for Hypothesis 4 of entitlement through authority, which should have resulted in symmetric shifts for both roles. One possible explanation is that those participants with full decision power gave more importance to entitlement due to authority. We cannot rule out, however, that they also judged other self-serving criteria as more important (e.g., egalitarian reasoning of Inactives in Treatment 1, meritocratic reasoning of Actives in Treatment 3). One may argue that, in accordance with dissonance theory (Festinger, 1957), people with decision power should have a stronger need to reduce dissonance, since it is in their responsibility to actually take the decision between acting in their own interest and in accordance to fairness considerations. In face of that trade-off, they face a stronger temptation to apply a self-serving interpretation of fairness.

It seems interesting that actual decisions and fairness judgments were significantly correlated for Actives, but not so for Inactives. Why would Actives be more likely to align decisions and judgments? A possible answer is that for Actives it is easier to achieve an alignment between fair and self-interested decisions. Note that even their fully self-interested decision, i.e., keeping € 10, may be considered as fair by emphasizing meritocratic entitlement. In the terms of dissonance theory, Actives can reduce dissonance completely by applying a self-serving view. [7] For Inactives, on the other hand, it seems difficult to find arguments for aligning self-interest and fairness. The equal split seems rationalizable as fair by egalitarian arguments, but hardly any division below that. Hence, Inactives face a stronger dilemma than Actives. The fact that no significant correlation can be found may mean that they individually deal with the dissonance in different ways. We believe that the psychology behind discrepancies between actions and (fairness) judgment is worth investigating in further research, and experimental methods combining both types of data may prove useful to do so.

[7] Note that we cannot discriminate whether the process of biased rationalization occurred at the time of the decision or ex post when fairness judgments were elicited. Psychologists generally agree that biased rationalization processes are largely unconscious.

Implications for organizational design. As noted at the outset, fairness in the division of economic gain can be seen as a desirable criterion for institutions with productive activity, e.g. business organizations. Decision power, on the other hand, is a design variable for organizational arrangements. For institutions which aspire to fairness in division of economic gain, our results suggest that the division of decision power between the different parties which are involved in the creation of economic gain has a double effect on distributive fairness. First, since people are tempted not to be fully fair but to act in their monetary self-interest, more decision power leads on average to higher gains for the one who decides. Moreover, our results suggest that when one party has the full power to decide, then this party's perception is significantly more biased towards its self-interest, so that the discrepancy between the judgments of different parties is larger. Since self-serving biases are often regarded as a conflict-enhancing psychological phenomenon, it is useful to take into account this additional influence of decision power.

For instance, consider again the case of executive compensation. Executives are active contributors compared to shareholders. Our results suggest that when executives have a lot of decision power in organizations, they are likely to take a large share of the economic gain for themselves at the cost of shareholders. Moreover, executives will provide arguments to judge it fair to do so. We would imagine that this happened during the 2008 banking crisis, when many bank managers continued to reap large bonus payments while shareholders were suffering losses. Alternatively, when owners of a company are inactive but have decision power over the division of the economic gain, it can be expected that many pay less than a fair wage to the active contributors, namely the workers. Again, this will include a biased perception of fairness.

From a philosophical perspective, our findings relate to Rawls' (1985) discourse on "justice as fairness". Rawls recognizes that full consensus on metaphysical conceptions of justice is unlikely in a free society. Instead, he emphasizes the need to establish appropriate conditions which "situate free and equal persons fairly and must not allow some persons greater bargaining advantages than others (p.235)".[8] Whereas Rawls focuses primarily on the political realm, his analysis is initially meant to apply very

[8] The well-known "veil of ignorance" is a hypothetical ideal representation of such conditions.

generally to "a society's main political, social, and economic institutions (p.225)". Our experimental results suggest a conclusion very similar to his for the division of gain within economic institutions: When general consensus on the question of distributive justice is unlikely, the appropriate conditions - here of shared decision power - may be the key to outcomes that are generally perceived as more fair and are hence regarded as more acceptable.

It is noteworthy that our results do not include considerations of "procedural fairness". There is empirical evidence that people have a preference for fair procedures in addition to their preferences over allocations (see e.g., Anand, 2001, Bolton et al., 2005).

We also emphasize that while fairness may be desirable for many reasons, it is only one among many criteria for the design of corporate structures. Efficiency considerations, for example, have been excluded in this study by construction of the experimental design, using a fixed gain for task completion. In addition, our experiment does not deal with the question of how risk associated with different inputs is fairly compensated. It may be fruitful to adapt our experimental benchmark setting for addressing such issues in further research.

6. Conclusions

We used an experimental laboratory setting to study in a controlled manner the influence of decision power on allocations of economic gain from production, and on the fairness judgments of involved parties. The experiment provided a simplified labor context in which only one of two participants worked actively on a task to generate the gain. Decision power was assigned differently across three experimental treatments: Full power to Inactives, shared power between Inactives and Actives, and full power to Actives. The data confirmed several findings of previous experimental research, namely that people trade off self-interest and fairness considerations, that meritocratic considerations are influential for distributive fairness, and that people tend to interpret fairness in a self-serving manner depending on their role in a social setting. Moreover, the results revealed that full decision power has the effect of enhancing self-serving fairness judgments. This finding is an additional piece of information for understanding peoples' fairness perceptions. Moreover, our study illustrates the intricate influence of

decision power on distributive fairness, consisting of a combined influence on fairness perceptions and on the extent to which fairness considerations counter-act monetary self-interest in actual allocation decisions. Last, we discuss practical implication of the findings for the division of decision power, e.g. within organizations.

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Appendix - Experimental instructions

(Differences between Treatments 1, 2 and 3 are indicated in italics.)

Instructions

Thank you for participating in this experiment which is part of a research project. You will have to make decisions. The money you can gain depends on your decisions and on the decisions of the other participants. From now on please do not talk until the end of the experiments. Thank you very much! You have already gained € 2 for coming to the experiment. Now we tell you how the experiment works and how you can gain more money.

The experiment

Actors

The experiment consists of an interaction between **two actors: A1 and A2**. Each of you will be randomly assigned a role (A1 or A2). You will be matched randomly to build pairs "A1 – A2". You know that you will be assigned a counterpart to the other role, but you will never know who he/she is.

Payments

A2 has to do an exercise. If he/she completes the exercise successfully, a **total gain of € 16** is generated. From these € 16 both are paid € 3 for sure. *The rest will be paid provisionally to A1. / A1 and A2 have to agree how to divide the rest (€ 10) between them./ The rest will be paid provisionally to A2.*

Actions

A2 has a maximum of 20 minutes to complete the exercise in order to generate the € 16. If A2 does not complete the exercise within 20 minutes, the gain of € 16 will not be generated.

The exercise consists of several parts of a text. The entire exercise takes between 10 and 15 minutes if A2 works calmly but with full concentration. As stated, A2 has a maximum of 20 minutes.
While A2 is working A1 has nothing special to do, but waits until A2 has finished. He/she can read (we have today's newspaper), relax, etc.
When A2 has finished the exercise, ***A1 decides how to divide the € 10*** *between him/herself and A2. / ...,* ***both decide on the division of the € 10*** *by making proposals simultaneously until they agree./ ...,* ***A2 decides how to divide the € 10*** *between him/herself and A1.*

Important: Participation by all actors is voluntary!

When you know your role and the rules, you can decide whether you want to continue with the experiment (that you accept your role and the rules) or you can leave (with the € 2).

We repeat the process of the experiment

1) Distribution of the roles and decision whether to participate or not

It will be randomly decided how is A1 and A2 The distribution of the roles will be sequential so that it can take a few minutes until you have your role. When you are given your role, you have to decide if you want to continue with the experiment or leave. The distribution is finished when everyone has a role.
Remember that you have gained € 2 for coming to the experiment. If you continue with the experiment and if A2 completes the exercise correctly then you receive at least € 3 more.

2) Exercise

A2 counts letters of a text. The information about which letter to count will appear on the computer screen. The exercise will take approximately 15 minutes. All A2 has to do is complete the task before the experiment proceeds.
A1 can relax, read, etc.
If A2 completes the exercise in 20 minutes then a total gain of € 16 is generated.

3) Division

A1 divides the additional gain of € 10 between him/herself and A2. / A1 and A2 divide the additional gain of € 10 between themselves. / A2 divides the additional gain of € 10 between him/herself and A1. This means *he/she / they* can decide between 11 different divisions:

1)	€ 10 for A1		€ 0 for A2
2)	€ 9 for A1		€ 1 for A2
	...	...	...
10)	€ 1 for A1		€ 9 for A2
11)	€ 0 for A1		€ 10 for A2

[Treatment 3:] If the proposals from A1 and A2 coincide, then the division is implemented. If the proposals do not coincide, A1 and A2 will have to make new proposals. That process is repeated until the proposals coincide. You will see the proposals of the otherperson on the screen.

4) Questionnaire

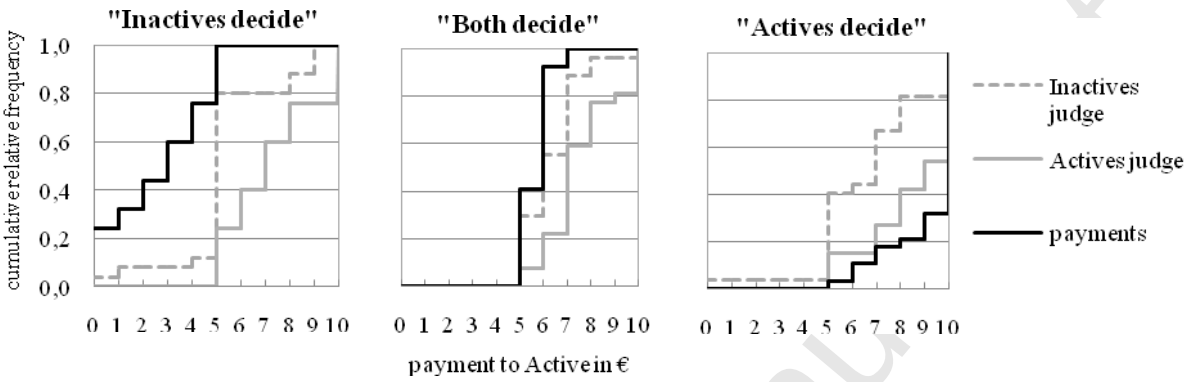
5) Payments

Remember that the payments involve real money for the participants.
No one will know your results or your decisions in the experiment.
If you have a question please ask the experimenter at any time.

Thank you very much for your participation!

Figures

Figure 1 – Comparison of cumulative relative frequencies between payments to the Active and fairness judgments in the three treatments



Tables

Table 1 -- Mean payments to the Active (row 1) and mean judgments (rows 2 and 3) in all treatments

	Treatment 1 – "Inactives decide" (25 pairs)		Treatment 2 – "Both decide" (28 pairs)		Treatment 3 - "Actives decide" (27 pairs)
Actual payments to the Active (X)	**2.6**	(p<.01)	**5.7**	(p<.01)	**9.1**
Inactives judge as fair payments (F_{inact})	**5.3**	(p<.01)	**6.3**	(p=.27)	**6.7**
	(p<.01)		(p<.01)		(p < .01)
Actives judge as fair payments (F_{act})	**7.2**	(p=.24)	**7.5**	(p=.02)	**8.5**

P-values in parentheses indicate differences in distributions of payments or of fairness judgments according to the robust rank order test.

Table 3 -- OLS regression of fairness judgments across treatments

Dependent variable: fairness judgments (i.e., the fair share to the Active)

	Inactives	Actives
"no power" (=1)	**.33**	**-.28**
	(.52)	*(.48)*
"full power" (=1)	**-1.01****	**.94****
	(.53)	*(.48)*
constant	6.33***	7.52***
	(.37)	*(.34)*
Observations	79	78
R^2	0,08	0,09

Standard errors in parentheses
*- p <0.10, **- p < 0.05, ***- p < 0.01, one-tailed
Judgments of T2 ("shared power") are used as baseline.

Table 2 -- Frequencies with which participants stated types of arguments

	Treatment 1 – "Inactive divides"				**Treatment 2 – "Both divide"**				**Treatment 3 – "Active divides"**				
Allocating money to (...)	Actives		Inactives		Actives		Inactives		Actives		Inactives		
was justified by (…) with an argument based on…	Actives	Inactives	Actives	Inactives	Actives	Inactives	Actives	Inactives	Actives	Inactives	Actives	Inactives	**Sum**
amount of work / effort / time spent	24	24	2	4	27	27	9	13	22	18	6	11	**187**
egoism / maximization of gains	x	x	12	10	0	0	0	1	5	6	x	x	**34**
using power / decision rights	x	x	0	3	0	1	6	4	0	0	x	x	**14**
the other already gains € 3	x	x	0	0	2	1	0	0	4	0	x	x	**7**
roles were determined by chance	0	0	3	5	0	0	7	11	1	1	12	5	**45**
both are needed / team of two	0	0	0	1	1	1	4	6	0	0	4	2	**19**
solidarity / altruism	1	0	x	x	0	0	0	0	x	x	1	7	**9**
other	0	0	3	3	0	1	0	1	0	1	0	0	**9**
Sum of all arguments	**25**	**24**	**20**	**26**	**30**	**31**	**26**	**36**	**32**	**26**	**23**	**25**	**324**

- Numbers are absolute frequencies
- x means "not applicable"