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The Effects of Individual Judgments about Selection Procedures: Results from a Power-to-Resist Game

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The Effects of Individual Judgments about Selection Procedures: Results from a Power-to-Resist Game

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Abstract

We use a power-to-resist game to find out the effects of individuals' judgments about a proposer's selection procedure on the willingness to offer resistance against proposed outcomes. In the experiment, one individual is selected on the grounds of a particular procedure. This individual is allowed to propose how to allocate a pie among five group members: herself and four responders. After that each responder in the group can decide whether to offer costly resistance against the proposed allocation. Resistance is modeled as a threshold public good. If resistance is successful, the proposer receives nothing. If resistance is unsuccessful, the pie is distributed according to the proposer's decision. We find that resistance increases with (a) the size of the proposal, with (b) subjectively perceived unfairness of the selection procedure of the proposer's role, and with (c) the individual procedural preferences being unsatisfied. Surprisingly, resistance is not affected by the fact whether or not the group's majority vote on the selection procedure is respected. We check for robustness of our results and find that results are stable over two countries. The presented evidence suggests that procedural effects over and above outcomes are relevant in strategic interaction.

JEL Classification: C91, D23, D63, D72, H41, O57

Keywords: selection procedure, favored process effect, fair process effect, procedural fairness, legitimacy

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1. Introduction

Most decisions in society are made by one or several individuals, while their outcomes affect many. This is true for decision-making e.g., in the organizational context or in the political sphere. Whether people voluntarily comply with those decisions or resist them may depend on many aspects: What were the alternatives? Who made the decision? According to which rules? And how was the decision-maker appointed? As most economic models (e.g. standard neoclassic or outcome-based models of social preferences) follow utilitarianism according to which every choice is judged by the consequent states of affairs, they would predict resistance to depend on resulting allocations only. However, some of the procedural aspects have been studied experimentally and have been shown to play a decisive role. For example, the alternatives not chosen may yield information about the intentions of the decision-maker, which in turn may trigger reciprocal behavior (Dufwenberg and Kirchsteiger 2004; Falk and Fischbacher 2006; Falk et al. 2008). With respect to different role allocation mechanisms, only a few approaches so far have considered potential effects. Hoffman and Spitzer (1985) and Hoffmann et al. (1994), for instance, found that responders accept more unequal offers when the role of the proposer was earned rather than randomly assigned. Whereas this so-called entitlement effect has been proved to be robust across several settings, it is an open empirical question whether responders' behavior is also affected by the perceived fairness of and satisfaction with an appointment procedure assigning the role of the proposer. We test whether people's willingness to offer costly resistance against a decision depends not only on the resulting allocation (outcome fairness/satisfaction), but also on the way the decision-maker has been selected (procedural fairness/satisfaction).

This paper reports the results of a controlled laboratory experiment on resistance against centralized decisions in small groups. Resistance is modelled as a threshold public good: individuals can voluntarily contribute to its provision by investing any share of their endowment. Resistance is successful if a sufficient amount of contributions is reached. This setting reflects the possibility of various participation degrees in the resistance movement, as observable in real-world, which may reach from no participation at all (therewith free-riding on the contributions of others), to low-level or even large-scale participation with increasing monetary costs.

The goal of this study is to identify variables that induce or mitigate resistance against others' allocation decisions. We designed a sequential game with groups of five. Before playing the game, individuals were asked to express their preference and fairness judgments concerning the procedure that allocates the role of the proposer among them. One proposer was then chosen out of the group either by the appointment procedure favored by majority or by exactly the other one. The proposer obtained the right to demand part of a pie, which is at that time equally distributed among the other group members. After having learned about the applied appointment procedure by which the proposer was chosen, they were given the power to articulate resistance to the proposer's demand. As a consequence, we observe responders' willingness to offer resistance depending on the allocation itself, individual fairness perception of the appointment procedure, and individual and group satisfaction with the procedure.

The causes of individuals' willingness to offer resistance can hardly be investigated in the field. In the field, different factors typically coincide and make it difficult to separate distributional and procedural effects. Besides, individual procedural preferences and fairness evaluations thereof are often neither observable nor can they be exogenously varied. Furthermore, to study procedural factors that drive people's decision to accept an allocation, it is highly important that the procedure does not affect subjects' expectations over the resulting outcome. We ruled out this possibility by applying the strategy method (Selten 1967): responders indicated in an incentive-compatible way which share of their endowment they want to invest in resistance contingent on any feasible allocation proposal. By systematically varying variables that may influence individual resistance, we test how distributional and procedural aspects, as well as their interaction influence resistance.

2. The Experiment

2.1 The Basic Game

The game includes one proposer and four responders. Each responder has an initial endowment of 25 chips. The proposer has an endowment of zero. Instead, she declares the share she wants to have from the responders (hence we speak of a tax), that is, the number $x \in \{0, 5, 10, 15, 20, 25\}$ she would like to receive from each responder. If her proposal is accepted, she gets $4x$, while each responder keeps $25-x$. However, each responder i can pay $y_i \in \{0, 0.5, 1, .., 24.5, 25\}$ in a responder group account. Resistance is modeled as a threshold

public good so that contributions to the group account reflect individuals' willingness to pay for resistance. Responders' decisions are simultaneous. Payments to the group account are lost. If the amount in the group account reaches the threshold *t=26*, the proposal is rejected and each responder keeps $25-y_i$.[4] In this case the proposer receives nothing. If the sum in the group account is below the threshold *t*, each responder has to pay *x* to the proposer. However, responders can only pay what is left after investing in the group account. So the proposer receives 4*x* as a maximum.

For the theoretical analysis, we consider only sub-game perfect equilibria in pure strategies assuming that players maximize their payoffs. Under this assumption, three conditions hold. First, no responder invests more in resistance than the tax proposal *x* because *x* is the return of successful resistance. Second, $y_i(x) = 0$ for $x < 6.5$ because then the maximum collective investments are $4x < 26$, that is, resistance cannot be successful. Third, whenever *x* is high enough for successful resistance, responders either coordinate on non-resistance or on exactly the right amount of resistance because otherwise at least one responder could benefit by reducing her investment unilaterally. Taken together, for tax proposals $x \in \{0, 5\}$, rational payoff-maximizing responders would not offer any resistance ($y(0) = y(5) = 0$). For proposals $x > 5$, the game becomes a coordination game: many sub-game perfect equilibria in pure strategies exist and only some of them are symmetric in responder strategies. Symmetric equilibria require all four responders to choose the same function $y(x) \in \{0, 6.5\}$. In consequence two types of equilibria compete against each other: the free-rider equilibrium with a zero contribution of all responders no matter how high the tax is, and the threshold equilibria, i.e. responders successfully coordinate on resistance for at least one tax proposal. Given the responder strategies, the best response of the proposer is to select the highest value of *x* for which there is no resistance. Since $x \in \{0, 5, 10, 15, 20, 25\}$, it follows that $x^* \geq 5$.[5]

2.2 Experimental Procedures

Table 0 shows that each session consists of a pre-experimental questionnaire inquiring about basic demographic information and the average time spent in voluntary work (see appendix for experimental instructions). Three decision stages follow. A post-experimental questionnaire concludes the experiment. After answering the pre-experimental questionnaire,

[4] Note that no single responder can achieve rejection.

[5] Note that $x = 5$ is the equal division proposal: 100 chips are equally divided among the five group members.

participants are randomly divided into groups of five. However, nobody receives information about the composition of one's own group or the other groups. In decision stage one, participants are already accustomed to the structure of the experiment and they are asked to choose between two appointment procedures (AP) for the group's proposer. The choice is between AP1 "The experimenter appoints a proposer" and AP2 "Group members appoint a proposer by majority vote". AP1 can be understood as 'experimenter despotism', and AP2 as a 'majority vote'.

Table 0: Sequence of Events

Stage no.	Task
0	All: pre-experimental questionnaire
1	All: preference elicitation, treatment variation, and role allocation
2	Proposer: decision on *x* (payoff-relevant) Responder: decision on *x* (hypothetical)
3	Proposer: decision on (hypothetical) Responder: decision on (payoff-relevant)
4	All: post-experimental questionnaire

We implement appointment procedure 1 by a random mechanism, i.e. we cast lots to determine the proposer of a group. Appointment procedure 2 is more difficult to implement since we respect anonymity. Therefore we ask participants to vote for a criterion to determine the proposer. They have the choice between age (*the oldest group member*) and high engagement in student and voluntary activities (*the one who spends most time per week on such activities*).[6]

In order to receive information on subjectively perceived unfairness, participants rank both APs on a 7-point Likert scale (1=*completely unfair*, and 7=*very fair*). To assess participants' procedural preference satisfaction, they had to indicate their preferred procedure, AP1 or AP 2. As each group consists of five members, voting yields a majority. Moreover, independently of their own preferences with respect to the AP, participants vote for one criterion, seniority or high engagement, so that, in the case of AP 2, a proposer can be chosen.

[6] The relevant information is available from the pre-experimental questionnaire. *Student and voluntary activities* include, for instance, voluntary activities and (paid and non-paid) internships and jobs at private or state organizations. In the Bulgarian cultural context we use this criterion to distinguish between participants as *active* or *passive*. People who are active have a higher social esteem (cf. Tilkidjiev 2002).

After stage one is completed, we count the votes and appoint one group member to be the proposer. Instructions for decision stage two contain information about the results from stage one: We inform participants about the preferences of their group, that is, the AP preferred by the majority and the size of the majority. We then inform them whether the preference of the majority is respected (treatment 'majority') or not (treatment 'minority'), and which AP, 1 or 2, has been used to appoint the proposer. Half of the groups are randomly assigned to treatment 'majority', the other half to treatment 'minority'. We apply a between-subject design where participants are not aware of the different treatments. Participants are also informed whether they are a proposer or a responder.

In decision stage two, responders are asked which tax *x* they would claim in case they were appointed as proposers (hypothetical decision). In stage three, responders have to choose their contribution *y* to the responders' group account for each feasible tax the proposer might have chosen (strategy method). The instructions emphasize that these contingent contribution choices are binding and that one choice will be carried out depending on the actually proposed tax.

In decision stage two, proposers are asked to allocate the group pie of 100 chips, with the monetary value of 1 chip being 0.40 Euro in Germany (and 0.25 Lev in Bulgaria). Initially, each responder has 25 chips, whereas the proposer has nothing. The proposer has to propose a tax *x* to be paid to her by each responder. In decision stage three, proposers are asked how they would behave in case they were responders (hypothetical decision).

Apart from the fact that we make clear that hypothetical decisions (stage two decisions of responders and stage three decisions of proposers) are not payoff relevant, instructions for proposers and responders are the same.[7] To minimize experimenter effects, the same experimental design and procedures are used in Germany and Bulgaria. We apply the translation-back-translation–method for the written instructions and one of us is present in all sessions and conducts the same training of local experimenters. In order to exclude sample-specific differences and to maximize comparability across subject pools, we use participants who are similar in age, educational, and socio-economic background. Participants are sixty-

[7] All participants are confronted with equal decision tasks independently of their role since we want participants to put themselves in the role of the other player in order to understand the other players' task and the game as a whole.

four students (average age= 22.37 years (SD 2.17), relative share of males = 42.2 %) from Saarland University, Faculty of Economics and eighty undergraduate students (average age= 20.09 years (SD 1.50), relative share of males = 38.8 %) from Sofia University, Faculty of Economics and Business Administration. No subject has previous experience in economic experiments. The non-computerized experiments take about 45 minutes and participants in Germany earn 6.81 Euro on average (that is, 9.12 Euro per hour). Participants in Bulgaria earn 5.9 Leva on average, including 1 Lev show-up fee (that is, 7.85 Leva or 4 euros per hour).[8]

2.3 Behavioral Predictions

With regard to distributional preferences, we expect a positive correlation between tax proposals and resistance levels. As discussed before, the standard homo economicus model does not predict that responders will choose an increasing resistance pattern with increasing tax proposals. Experimental evidence, however, suggests that people are not purely selfish, but some are also endowed with social preferences. A positive correlation is predicted by both outcome-based models of social preferences assuming that agents are inequity-averse (e.g. the guilt-envy theory by Fehr and Schmidt 1999, or the theory of equity, reciprocity and competition by Bolton and Ockenfels 2000), and by intention-based models of reciprocity (e.g. Rabin 1993; Dufwenberg and Kirchsteiger 2004; Falk and Fischbacher 2006). Consider a tax proposal of $x = 5$, which leads to an equal distribution among all group members. In this case, inequity-averse responders are expected to offer zero resistance. If the proposal increases and consequently yields to an increasing inequality towards responders we expect increasing resistance. Similar predictions are derived when responders are assumed to care for intentions: higher tax proposals are associated with worse intentions, thus resulting in a negative reciprocal behavior. Taken together, we expect that the higher the tax proposal is [for any tax proposal ≥ 5], the higher the responders' resistance is.[9]

The outcome-based nature of those approaches ignores the fundamental role of procedures. We suggest the *consideration of procedural aspects in addition to outcome fairness*: people not only care about outcomes themselves, but also about the way outcomes are achieved. Indeed, procedures have been shown to matter in a broad range of areas and settings (for an

[8] Note that we adjust the earnings in order to pay the relative opportunity costs.

[9] We exclude a tax proposal of zero from the hypothesis as different theories suggest different predictions. Models of reciprocity, for example, would predict zero resistance in case of $x=0$, whereas inequity aversion suggests positive resistance.

overview, see Frey and Stutzer 2001, Frey et al. 2004). There is an ongoing debate on procedural effects in social psychology (e.g. Greenberg 1990; Leventhal 1980; Lind and Tyler 1988) and economics (Aldashev et al. 2009; Anand 2001; Benz and Stutzer 2003; Dur and Roelfsema 2010). The observation that people are more likely to accept decisions when they feel they are made via fair procedures is the *fair process effect* (Folger 1987). It is said that this effect is extremely robust (Folger 1987). However, studies on decision-making situations in which different strategies imply different monetary consequences are still rare. We therefore aim at exploring possible procedural effects. If we hypothesize that people are endowed with procedural preferences, then the individual procedural fairness perception may play a role. The fair process effect suggests that resistance is higher if the selection procedure is perceived as unfair by a responder.

The two-way interaction between procedural fairness and outcome fairness was originally shown by Folger and his colleagues and reviewed extensively by Brockner and Wiesenfeld (1996). It showed that the fair process effect (people's tendencies to react more positively when procedural fairness is relatively high) is stronger when outcomes are more unfair. Originally demonstrated by Folger and his colleagues (e.g. Folger et al. 1983), and shown many time since (Brockner and Wiesenfeld 1996), the interactive relationship between procedural fairness and outcome fairness may be described as follows: the fair process effect is more pronounced when people have received outcomes that are more unfair/unfavorable.

A topic that has received less attention in the literature is the *satisfaction of procedural preferences*. A notable exception is Dal Bo et al. (2010) who show in a laboratory experiment that the effect of a policy to foster cooperation is greater if it was chosen democratically by the subjects than when it was exogenously given. Our experimental setting permits to test this relation. In our experimental setting, the proposer is chosen out of the group either by the appointment procedure favored by majority or by exactly the other one. We test whether people offer less resistance towards responder's decisions if the responder is appointed by the procedures favored by *a group's majority*. If we would observe a treatment effect, we call this the *legitimacy effect.* Furthermore, we use the term *favoured process effect* to describe the possibility that people offer less resistance in case their *individual* procedural preferences are satisfied. Indeed, as long as procedures matter only to the extent to which they promote favorable outcomes (instrumental or consequentialist reasoning) we should not observe any difference. If, however, procedures are valued in their own right (non-instrumental or

proceduralist reasoning), then individuals, whose procedural preferences are satisfied (on an *individual* or *group level*) would gain utility from the mere fact of deciding under the preferred procedure.

As a result of the above discussed literature we derive three hypotheses with respect to different possible effects on decisions. They are the legitimacy effect, the favored process effect, and the fair process effect. The hypotheses that we test in our experiment are the following:

- *Legitimacy effect*: Ceteris paribus, responders contribute more to resistance if their group preferences regarding the appointment procedure are not satisfied than if they are satisfied. Moreover, the effect becomes stronger when outcomes are more unfair.
- *Favored process effect*: Ceteris paribus, responders contribute more to resistance if their individual preferences regarding the appointment procedure are not satisfied than if they are satisfied.
- *Fair process effect*: Ceteris paribus, responders contribute more to resistance if they perceive the fairness of the appointment procedure is relatively low. Moreover, the effect becomes stronger when outcomes are more unfair.

3. Results

3.1 Overview

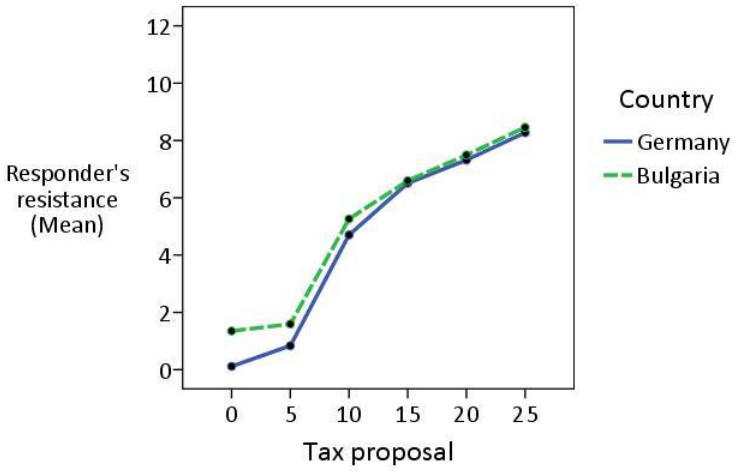
Prior to hypotheses testing, we provide a cross-cultural sample check. General and meaningful findings would call for replication in different countries. This is particularly true as we use a new experimental design to measure resistance. Therefore, we conduct the same experiment with comparable subject pools in two countries, Germany and Bulgaria. We expect that in spite of possible cultural particularities, we will find similar patterns of resistance. Participants in both countries have grown-up in democratic environments with market structures (cf. Ivanova-Stenzel 2001 for experimental results for both countries) and were all students with comparable socio-demographic backgrounds. Indeed, we find the correlation between tax proposal and resistance cross-culturally in Germany and Bulgaria. A MANOVA with the factors tax proposal (0, 5, 10, 15, 20 or 25) and country (Germany or Bulgaria) does not show that there is a significant main effect of the factor country or a meaningful interaction with tax proposal [both $p > .16$]. The main effect of tax proposal is

highly significant [$F(5,138) = 78.16$, $p < .001$, $\eta^2 = .74$], indicating that, as expected, resistance increases as outcome favorability decreases. Table 1 includes the descriptive statistics and Figure 1 shows the slope of resistance for both countries. In conclusion, responders' resistance behavior depends only on the tax proposal and does not vary between different subject pools. Based on this, the data from the two countries are pooled.

Table 1: Resistance in Cross-Country Comparison

Tax proposal	**Resistance M [SD]**	
	Germany (N=64)	**Bulgaria (N=80)**
0	0.12 [0.71]	1.35 [4.12]
5	0.84 [1.98]	1.59 [2.98]
10	4.70 [2.97]	5.26 [3.47]
15	6.51 [2.66]	6.59 [3.05]
20	7.32 [2.86]	7.49 [3.74]
25	8.27 [3.79]	8.46 [4.43]

Figure 1: Resistance in Cross-Country Comparison



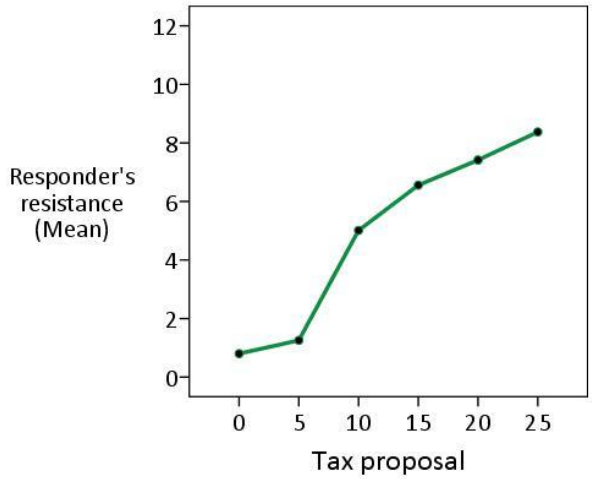
By using the pooled data for Germany and Bulgaria (N = 144), we confirm that responders' resistance levels increase with the size of proposers' tax proposal. The descriptive statistics in Table 2 show this positive correlation. T-tests for dependent samples with a *Bonferroni-Holm*-correction reveal that each step of tax proposal increase leads to increased resistance [all $p < .05$]. This trend is overall tested by a main effect of tax proposal in a MANOVA, which is highly significant [$F(5,139) = 77.74$, $p < .001$, $\eta^2 = .74$]. Figure 2 points out the main effect and reveals an important cut between a tax proposal of 5 and 10: the mean resistance is almost

quadruplicated between these claims. This finding speaks in favor of inequity aversion. Whereas a proposer's claim of 5 leads to an equal distribution within the group, a claim of 10 would cause an unequal distribution in favor of the proposer.

Table 2: Resistance and Size of Tax Proposal

Tax proposal	Resistance M [SD]
0	0.80 [3.16]
5	1.26 [2.60]
10	5.01 [3.26]
15	6.56 [2.87]
20	7.42 [3.37]
25	8.38 [4.14]

Figure 2: Resistance and Size of Tax Proposal



3.2 Hypotheses Testing

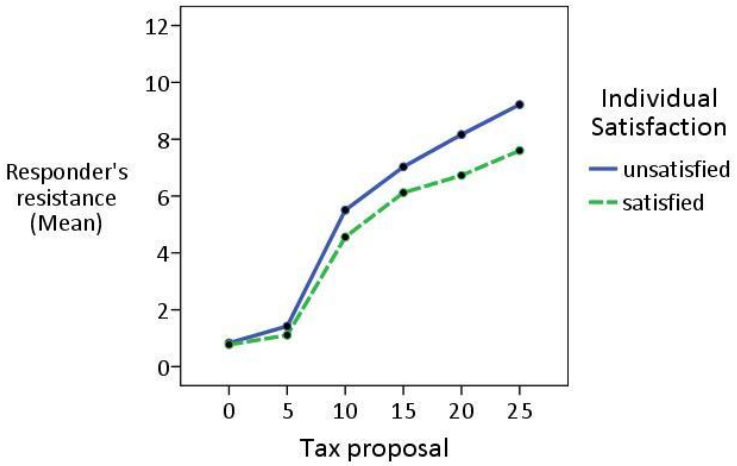
First, we examine *Hypothesis 1 (legitimacy effect),* therewith tackling the question of 'satisfied group preferences'. Remember that the selection rule has endogenously been allocated by asking any group member which rule should be applied and then randomly allocating either the preferred rule (by majority vote) or the opposite one. We find that procedural satisfaction of the group majority has no influence on resistance. In a MANOVA with the factors tax proposal (0, 5, 10, 15, 20 or 25) and group satisfaction (satisfied vs. unsatisfied) the main factor for the group is not significant [p = .39], exactly as the interaction of both factors [all p = .97]. Only the main factor tax proposal – again – is significant [$F(5,138) = 77.31$, $p < .001$, $\eta^2 = .73$].

Second, *Hypothesis 2 (favored process effect)* states that individual procedural preferences, being satisfied or not, may have an effect on resistance. As shown in Table 3, responders offer for any tax proposal more resistance if being unsatisfied with the applied procedure. In a MANOVA with the factors tax proposal (0, 5, 10, 15, 20 or 25) and individual satisfaction (satisfied vs. unsatisfied) the main factors tax proposal [$F(5,138) = 79.02$, $p < .001$, $\eta^2 = .74$] and individual satisfaction [$F(1,142) = 6.37$, $p = .01$, $\eta^2 = .04$] are significant, with the last finding confirming hypothesis 2. Figure 3 emphasizes that the influence of satisfaction becomes more important with increasing tax proposals, but this is only a descriptive trend whereas the interaction between tax proposal and individual satisfaction is not significant [$p = .52$].

Table 3: Resistance and Individual Procedural Satisfaction

Tax proposal	Resistance M [SD]	
	Satisfied (N=75)	Unsatisfied (N=69)
0	0.77 [3.28]	0.83 [3.05]
5	1.11 [2.59]	1.42 [2.63]
10	4.56 [2.97]	5.51 [3.50]
15	6.12 [2.36]	7.03 [3.30]
20	6.73 [2.54]	8.16 [3.96]
25	7.60 [3.20]	9.22 [4.85]

Figure 3: Resistance and Individual Procedural Satisfaction



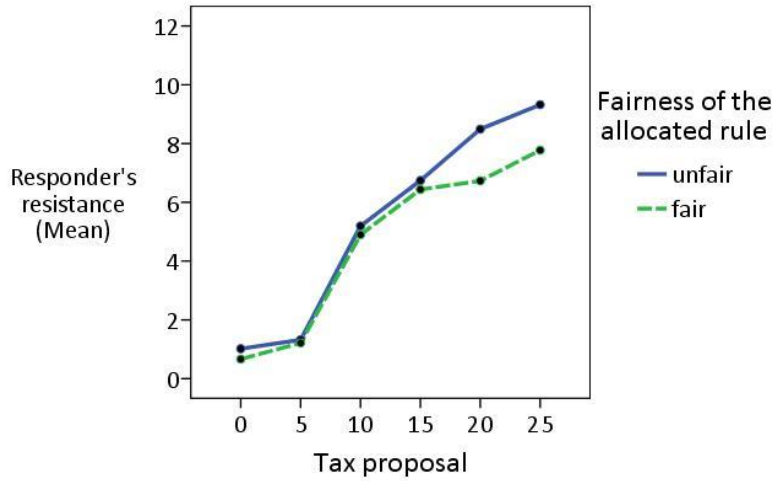
Third, *Hypothesis 3 (fair process effect)* claims that resistance depends on the perceived fairness of the way the proposer has been chosen. Indeed, we find that resistance depends on

the responder's perception of the fairness of the procedure. A MANOVA with the factors tax proposal (0, 5, 10, 15, 20 or 25) and allocation rule fairness (fair or unfair) shows a significant main effect for allocation rule fairness [$F(1,142) = 4.08$, $p = .05$, $\eta^2 = .03$]. If the allocation rule is considered to be unfair, the responders offer more resistance against the tax proposal. The mean values of resistance are listed in Table 4. In addition, the MANOVA contains the already discussed main effect of the tax proposal [$F(5,138) = 78.53$, $p < .001$, $\eta^2 = .74$] and an interaction effect of allocation rule fairness and tax proposal [$F(5,138) = 2.51$, $p = .03$, $\eta^2 = .08$]. Figure 4 shows this interaction: the higher the proposer's claim, the more important the way she is chosen. When proposers claim large shares (tax proposal 20 or 25) and were chosen in a way perceived as unfair, this might create the impression among responders that the proposer has no right to ask for so much and might encourage resistance.

Table 4: Resistance and Procedural Fairness

	Resistance M [SD]	
Tax proposal	**Fair allocation rule (N=88)**	**Unfair allocation rule (N=56)**
0	0.67 [3.00]	1.02 [3.41]
5	1.22 [2.66]	1.32 [2.54]
10	4.90 [3.39]	5.20 [3.07]
15	6.44 [2.72]	6.74 [3.12]
20	6.73 [2.97]	8.49 [3.69]
25	7.77 [3.73]	9.32 [4.60]

Figure 4: Resistance and Procedural Fairness



This result is confirmed in a linear regression analysis with resistance as a criterion and a measure for perceived fairness of the allocated rule, in relation to the other possible rule, as a predictor. The measure is the differential between the score of the allocated rule on a Likert scale (1-7) and the score of the second rule on a similar Likert scale (1-7), therefore the measure varies between -6 and 6. While the regression is not significant for all tax proposal between 0 and 15 [any $p > .48$], it is significant for tax proposal 20 [$ß = -.19$, $F(1,142) = 5.3$, $p = .02$, $R^2 = .04$] and tax proposal 25 [$ß = -.16$, $F(1,142) = 3.84$, $p = .05$, $R^2 = .03$]. So, for high tax proposals, the resistance decreases, the fairer the allocation rule is from responder's point of view (in contrast to the second rule).

4. Conclusions

By analyzing decision-making within a newly designed power-to resist game, we have shown that individuals are willing to adopt resistance against the proposal of the allocation of money, even when resistance is costly. Furthermore, subordinates are rather willing to accept harmful allocation decisions if the decision-maker has been appointed by a procedure they individually consider as "fair" or "right to use". Whereas those two aspects clearly increase responders' willingness to accept a decision, the satisfaction of the group's procedural preference has no effect. Thus, group voting seems not to be able to enhance the legitimacy of proposers and their decisions. Instead, individual procedural preferences and judgments are behaviorally relevant. Furthermore, results are stable with respect to two different subject pools from different countries. The findings contradict traditional economic theory, but support the relevance of procedural fairness and procedural satisfaction, a topic that recently received attention.

Taken together, our findings may be important for all hierarchical structured social entities. The decisive point is that if responders articulate resistance, the resources available for a group at large are reduced. Thus we can conclude that for any process in which (a) a leader has the right to allocate resources and (b) subordinates can offer resistance towards this allocation, it becomes essential that the society's procedural preferences are considered when a leader is elected. This may be of relevance for decisions in teamwork production, for organizations like firms, or in political voting behavior.

The investigation of the causes of individual resistance against decisions of other individuals addresses fundamental problems of societies. Since resistance of some individuals may influence the well-being of many, it is worth investigating the reasons *why* individuals are willing to display resistance. We center the problem on the following point: if individuals are prepared to destroy some of their own resources in order to express resistance, then the amount of overall available resources diminishes for a society. As a consequence, a society has fewer resources if resistance is present as compared to a situation without resistance. In an extreme case, such as a revolution which is supported by part of the population against a non-benevolent dictator, some individuals may risk their wealth or lives in order to articulate resistance against the dictator and his/her decisions. If we assume a less extreme case, i.e. a benevolent dictator who collects tax in order to provide public goods for the society, the society may end up without or less public goods if some individuals are willing to destroy part of their resources. Since resistance against the decision of a proposer—being a dictator or not—always reduces resources available, a society (including the proposer) should have an inbuilt interest in such cases not occurring.

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Appendix

A) Sign-up sheet

The original sign-up sheets were in German or Bulgarian. Each participant filled in this sheet before the experiment was conducted.

1. Participation ID:
2. Gender: □ male □ female
3. Age: _____
4. Field of study:_____
5. Approximately how many hours per week are you engaged in volunteer activities?
   - □ less than 1 hour/week
   - □ about 1 hour/week
   - □ about 2 hours/week
   - □ about 3 hours/week
   - □ about 4 hours/week
   - □ about 5 hours/week
   - □ about 6 hours/week
   - □ about 7 hours/week
   - □ about 8 hours/week
   - □ more than 8 hours/week

B) Written instruction

The original instructions were in German and Bulgarian. This appendix reprints a translation of majority treatment instructions for proposers. The original instructions in the Bulgarian or German language will be sent on request.

Instructions

Welcome to our experiment! This experiment lasts about 45 minutes. **Please do not communicate with the other participants from now on.** If you have any questions, please raise your hand. We will answer them. You can pose questions throughout the experiment. Please do not ask questions in public. Ask only the experimenter, do not ask other participants. Thank you!

The experiment has four stages. You can earn money depending on your decisions and on the decisions of the other members in your group. In stage four, we will ask you to fill in a short questionnaire. You have been randomly assigned to a group of 5 people (you and four other participants). Throughout the experiment however, nobody will be informed about who is teamed with whom or who earns how much. We will keep this information in confidence.

In our experiment, you can earn **chips.** At the end of the experiment your earnings in chips will be converted in Leva at the rate of 4 chips = 1 Lev, i.e. each earned chip equals 0.25 Lev.

Please read all sheets carefully. Then make your decisions and fill in the sheets accordingly. A stage is completed if all decisions are filled in. Please do not scroll back.

Decision sheet (stage 1)

There are 4 *chip owners* in your group and 100 chips in total. Each chip owner gets 25 chips. The fifth member of your group has 0 chips at the beginning. This group member without chips is called *participant X*.

During the experiment participant X proposes how many chips each chip owner is supposed to yield to him. Thereafter, chip owners have to decide whether or not to offer resistance against the proposal of participant X. The attempt to offer resistance costs chips. If no resistance is offered or resistance is unsuccessful, participant X obtains the number of chips claimed (as long as they have not been spent on resistance). If resistance is successful, participant X receives nothing.

However, only one group member is actually participant X. One of the following two rules determines who participant X will be.
Rule 1: The experimenter chooses someone to be participant X.
Rule 2: The group is asked to vote for one of two options choosing someone to be participant X: either the oldest group member or the one who spends most time in student and volunteer activities. If more than one group member has to be considered (for instance, two persons are of the same age) participant X will be chosen by lot.

A) Please indicate your opinion about both rules.

1. How do you rate the importance of the rule for choosing participant X on a scale from very important to completely unimportant?
   very important □ □ □ □ □ □ □ completely unimportant

2. How do you rate rule 1 (the experimenter decides) on a scale from completely unfair to vary fair?
   completely unfair □ □ □ □ □ □ □ very fair

3. How do you rate rule 2 (group voting) on a scale from totally unfair to extremely fair?
   completely unfair □ □ □ □ □ □ □ very fair

B) Please vote now: If you do not tick any box, your vote counts for the first one.

1. In your opinion, which rule should be used: rule 1 (the experimenter decides) or rule 2 (vote of the group)?
   □ rule 1 □ rule 2

2. If rule 2 is applied, who should be participant X?
   □ the oldest participant
   □ the participant who spends most time on student and volunteer activities

Stage 1 is completed when you answer all questions.

Decision sheet (stage 2)

In stage 1, each group member has voted for a rule to be applied for choosing participant X. The voting result is as follows:
_____ votes for rule 1.
_____ votes for rule 2.

Thus, the majority voted for rule _____.

The majority decides which rule will be used.
Thus: Rule _____ applies.

Based on this rule you have been assigned the role of participant X.

No participant of the experiment will ever know that you are participant X. As participant X, you have 0 chips, while each chip owner has 25 chips. It is now up to you to propose how many chips each chip owner is supposed to yield to you: 0 chips, 5 chips, 10 chips, 15 chips, 20 chips or 25 chips.

In stage 3 of the experiment, chip owners can decide whether to offer resistance against your proposal or not. The attempt to offer resistance costs chips. If no resistance is offered or resistance is unsuccessful, you as participant X receive the number of chips you had proposed (as long as the chips have not been spent on resistance). If resistance is successful, you receive nothing.

Example: You propose a transfer of 10 chips. If your proposal is implemented, you will get 10 chips from each chip owner that is, 40 chips in sum. As each chip owner has 25 chips at the beginning and is then asked to yield 10 chips to you, 15 chips are left for the chip owner. The result would be: 40 chips for you as participant X and 15 chips for each chip owner.

Please decide now. Tick the chosen transfer in the last column! Tick only one transfer. In case you tick more than one or none transfer, the lowest transfer is counted. If you want to cancel an entry, cross it out clearly and tick another entry.

Transfer:	Each chip owner keeps:	You will get:	Your proposal:
0 chips	25 chips	0 chips	
5 chips	20 chips	20 chips	
10 chips	15 chips	40 chips	
15 chips	10 chips	60 chips	
20 chips	5 chips	80 chips	
25 chips	0 chips	100 chips	

Stage 2 is completed when you have chosen a transfer.

Comments on stage 3

You as participant X have decided in stage 2 how many chips you claim from each participant. Now the four other participants make their decisions. However, we would like to ask you to imagine that you are in the situation of a chip owner. Now we would like to ask you how you would decide in such a situation. Your decision now has no consequences on your payoff.

The chip owners have to decide either to pay the chips which you have demanded as player X or to show resistance. Since the chip owners do not know how much you have demanded they have to decide for each possible claim.

Please imagine now that you are in the role of a chip owner. As a chip owner, you are endowed with 25 chips. Participant X asks for a transfer from you and from the other chip owners: either 0, 5, 10, 15, 20, or 25 chips. If you do not want to pay the transfer, you may pay any number of chips out of your 25 chips into the common account. All chip owners are asked to do the same. In case the chip owners pay at least 26 chips in sum into the common account, the transfer to participant X does not need to be paid.

Thus there are two alternatives:

1. **There are 26 chips or more in sum paid into the common account:** Then no one has to transfer anything to participant X. Thus participant X receives 0 chips. The chip owners can keep all chips, which they have not paid into the common account. The chips paid into the common account are lost.
2. **There are less than 26 chips paid in sum into the common account:** The chips paid into the common account are lost. All chip owners have to pay the transfer; if they have not enough chips left, they will pay as much as they can. Participant X receives the transfer she or he has asked for or less, if a chip owner does not have enough chips left to pay the whole transfer.

Three examples:

1. Participant X asks each chip owner for a transfer of 10 chips. You do not want to pay the transfer. You pay 5.5 chips into the common account. The other three chip owners pay 22.5 chips in sum. Thus, there are 28 chips in the common account. Therefore, the transfer need not be paid. You will receive 19.5 chips: 25 chips minus 5.5 chips (your transfer into the common account) equals 19.5 chips. Participant X receives 0 chips.
2. Participant X asks each chip owner for a transfer of 10 chips. You do not want to pay the transfer. You pay 6 chips into the common account. The other three chip owners pay 13.5 chips in sum. Thus, there are 19.5 chips in the common account. Therefore, the transfer must be paid. You will receive 9 chips: 25 chips minus 6 chips (your transfer into the common account) minus 10 chips (transfer to participant X) equals 9 chips. Participant X receives 40 chips in sum: 10 from each chip owner.
3. Participant X asks each chip owner for a transfer of 10 chips. You do not want to pay the transfer. You pay 20 chips into the common account. The other three chip owners pay 3.5 chips in sum. Thus, there are 23.5 chips in the common account. Therefore, the transfer must be paid. You will receive 0 chips: 25 chips minus 20 Chips (your transfer into the common account) equals 5 chips; you have to transfer these 5 chips to participant X. Participant X receives 35 chips in sum: only 5 chips from you, because you cannot pay more, and 10 from each of the other owners.

Decision sheet (stage 3)

As a reminder: In stage 1 each group members decided for a rule in order to determine participant X. **The rule which received the majority of votes was applied to select participant X. Please** indicate how many chips you would like to transfer to the common account. You can pay any sum between 0 and 25 chips and you can also pay half chips. You are asked to make a decision for each possible transfer proposal of participant X.

1. Assume that participant X asks for a transfer of 25 chips. In this case, how many chips of your endowment of 25 chips do you want to pay into the common account?
   I would like to pay _____chips.

2. Assume that participant X asks for a transfer of 20 chips. In this case, how many chips of your endowment of 25 chips do you want to pay into the common account?
   I would like to pay _____chips.

3. Assume that participant X asks for a transfer of 15 chips. In this case, how many chips of your endowment of 25 chips do you want to pay into the common account?
   I would like to pay _____chips.

4. Assume that participant X asks for a transfer of 10 chips. In this case, how many chips of your endowment of 25 chips do you want to pay into the common account?
   I would like to pay _____chips.

5. Assume that participant X asks for a transfer of 5 chips. In this case, how many chips of your endowment of 25 chips do you want to pay into the common account?
   I would like to pay _____chips.

6. Assume that participant X asks for a transfer of 0 chips. In this case, how many chips of your endowment of 25 chips do you want to pay into the common account?
   I would like to pay _____chips.

Stage 3 is completed when you have filled in all six gaps.

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