Pivotal Decision Maker, Agenda Power and Collective Responsibility Attribution*

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Abstract

We explore the role that agenda power plays when the decision making context incorporates sequential voting. We extend the Bartling, Fischbacher and Schudy (2015) experiment by incorporating a proposal stage in which one of the decision makers (DMs) decides which of three possible allocations is put to the sequential vote. In this modification of Bartling, Fischbacher and Schudy (2015) we find weaker support for their contention that pivotality is the basis for responsibility attribution when individual DMs vote sequentially on an allocation to recipients. In particular, the recipients in the modified experiments punish proposing DMs disproportionately when the allocation proposed is less fair to the recipients. The agenda power heuristic, much more so than pivotality, appears to shape responsibility attribution for collective decisions. Agenda power plays an important role in responsibility attribution in contexts in which the DMs vote sequentially on an allocation to recipients.

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1 Introduction

We examine how individuals participating in group decisions are held accountable for their choices. The expectation is that when individuals make decisions in groups they can avoid, or at least partially avoid, responsibility for the outcome. Why? Experimental evidence suggests that group settings can diffuse being pivotal. Our experimental evidence suggests another feature of group decision making, agenda setting, plays an important role in responsibility attribution. We find that recipients in a collective decision making game punish, disproportionately, the decision making that proposes relatively unfair allocations that are vote on by the group.

Collective decisions are mean; or at least there is considerable evidence suggesting that this is likely the case. Group decision making such as those that characterize juries are more likely to make punitive decisions. Son, Bhandari and FeldmanHall (2019) suggest that groups amplify the value of punishment by making individuals less cautious and impulsive. Charness and Sutter (2012) describe the extent to which group decisions are more "self-interested" and "rational" which might explain the fact that they tend to be meaner. Moreover, we regularly observe cases in which group decisions are clearly unethical if not illegal.[1]

Collective decision making diffuses responsibility favoring immoral choices. The widely accepted culprit here is pivotality. Falk, Neuber and Szech (2019) argue that the diffusion of pivotality facilitates moral transgression. Their conclusions regarding the role of pivotality are based on the high levels of immoral choices they observe when there are multiple individuals making similar decisions, simultaneously, about identical potential immoral outcomes. Clearly, the treatment introduces uncertainty as to how many other decision makers opt for the immoral choice. Recent contributions to this literature suggests that pivotal decision makers in collective decision making organizations bear the brunt of the responsibility for these decisions and their consequences. In a context in which decision makers vote sequentially on two different allocations to recipients, Bartling, Fischbacher and Schudy (2015) find that pivotality strongly affects responsibility attribution for specific decision makers.

Does it matter? Yes, because we are interested in understanding how context or institutional

[1]Recent examples of organizations failing to respect ethical norms include the "clean diesel" scandal at Volkswagen, the mortgage-backed security practices that contributed to the financial melt-down of 2008, and the 2015 cases of LIBOR rigging in the U.K.

design might affect unethical decision making. Hence, building on this notion that responsibility attribution focuses on the pivotal decision maker, scholars argue that decision makers who are not pivotal – or whose pivotality is not observed – have opportunities for making unethical, unpopular, or anti-social decisions. Bénabou, Falk and Tirole (2018) argue that shared control of decision making, something we observe in most organizations, diffuses pivotality, and encourages immoral behavior. Falk and Szech (2013) claim that pivotality is one of the operant mechanisms that causes markets to erode moral decision making.[2] They argue that in multilateral markets, the pivotality of an individual trader is lower which emboldens immoral decisions. One of the important messages from this literature is that institutional design can reduce immoral or anti-social decisions by making pivotality highly transparent.

We argue that agenda setting also signals responsibility for collective decisions. Proposals in Bartling, Fischbacher and Schudy (2015) and Falk, Neuber and Szech (2019) are exogenously determined, essentially by the experimenter. But in most collective decision making contexts, the proposer is one of the collective decision makers *and* their identity is known by those attributing responsibility. This is certainly the case in most political contexts – for example, a proposed bill is typically identified with a particular legislator and political party. And in many firms and organizations where collective decision making takes place there is a procedure for proposing, and then "voting" on a proposed initiative. And even in multilateral market transactions, the identity of the actor proposing a particular transaction will be, or could, be known.

Collective decisions are often made with the participation of an explicit, or possibly implicit, but, identifiable agenda setter. And frequently this is an identifiable member of the collective decision making body; an individual that determines what choice set confronts decision makers or "voters." The interesting question from a "consequentialist" perspective is the relative "responsibility" weight individuals attribute to these two features of the decision making context: the pivotality of the individual decision maker that has been shown to affect immoral choices but also the agenda setting power of the decision maker.

We tackle the problem by observing how those affected by these decisions attribute responsibility. Their responsibility attribution provides insight into which decision makers they perceive as imposing the"consequentialist costs" (or benefits) of a collective outcome. Duch, Przepiorka and

[2] Although see Wilson (2013).

Stevenson (2015) examine responsibility attribution for collective decisions with three information treatments: there is a proposer; voting weights vary; and in some circumstances there are majority veto players. Their experimental results suggest that the voting weight heuristic is employed with limited frequency, and subjects do not seem to favor the heuristic that assigns responsibility to the DM with veto power. On balance, these two heuristics play a minor role in the attribution of individual responsibility for collective decision making. On the other hand, subjects in these experiments clearly favored agenda power and the largest vote weight as heuristics for attributing responsibility for members of a collective decision making body. Quite different responsibility attribution experiments produce this same result. Duch, Przepiorka and Stevenson (2015) present evidence in two differently designed laboratory experiments and a third on-line survey experiment demonstrate that if subjects have the opportunity to hold individual DMs responsible for a group decision, they primarily attribute responsibility to the proposer and the DM with the largest vote weight.

The Duch, Przepiorka and Stevenson (2015) result, though, is specific to a particular collective decision making mechanism – one in which there is in fact agenda power and weighted *simultaneous* voting. Bartling, Fischbacher and Schudy (2015) propose a different decision making design for testing collective responsibility attribution. In their setup voting is *sequential* and they find that in fact pivotality has a very strong affect on responsibility attribution for collective decisions. In this paper we present experimental results from a decision making context that combines the sequential voting features from Bartling, Fischbacher and Schudy (2015) and the agenda setting features from Duch, Przepiorka and Stevenson (2015).

We implement an experiment that extends Bartling, Fischbacher and Schudy (2015) by adding the agenda setting feature from Duch, Przepiorka and Stevenson (2015) and employs the direct-response method.[3] Our main results are as follows. First, recipients in our modified version of the Bartling, Fischbacher and Schudy (2015) experiments punish proposing DMs disproportionately when the allocations proposed for a vote are less fair to the recipients. Second, in more favorable allocations, recipients penalize DMs for voting and implementing unequal outcomes. Finally, pivotally does not play a significant role regardless of the fairness of the proposed allocations.

[3]Results of a second version of the experiment are reported in the Appendix. It incorporates agenda setting power but retains the strategy method employed by Bartling, Fischbacher and Schudy (2015).

The rest of our paper is organized as follows. Section 2 discusses the literature on agenda setting power and explains how this can be integrated into a sequential voting environment. Section 3 explains the experimental design and procedures. Section 4 discusses the punishment prediction by comparing the expected payoff, to DMs and recipients, under each possible allocation. Section 5 reports our main results and Section 6 concludes.

2 Agenda setting power with sequential voting

Bartling, Fischbacher and Schudy (2015) implement an experiment in which DMs vote sequentially on two different allocations of a fixed sum between DMs and recipients – one of the allocations is more favorable to the recipients. They find that pivotality strongly affects responsibility attribution for specific decision makers. This pivotality result is in stark contrast to Duch, Przepiorka and Stevenson (2015). In their experiment, DMs vote simultaneously for an allocation of a fixed sum between DMs and recipients that is proposed by one of the decision makers. Their recipients largely ignore veto power when they attribute responsibility for collective decisions but do punish the agenda setter. One explanation for the difference may be that under sequential voting the influence of the pivotal voter is significantly more obvious to the average recipient and, therefore, we might see pivotal voters attracting much of the responsibility attribution. But does this imply that agenda power in such contexts will attract little or no responsibility attribution on the part of recipients? We address this question in a modified version of the Bartling, Fischbacher and Schudy (2015) experiment.

Bartling, Fischbacher and Schudy (2015) essentially adopt the same collective dictator game set-up employed by Duch, Przepiorka and Stevenson (2015) with the major difference that Bartling, Fischbacher and Schudy (2015) employed sequential voting. They assigned each DM with an equal voting weight which is in contrast to the weighted voting in Duch, Przepiorka and Stevenson (2015). And Bartling, Fischbacher and Schudy (2015) did not assign DMs with proposal power. In order to assess the role of agenda power in a context with sequential (non-weighted) voting we add a proposal stage to the Bartling, Fischbacher and Schudy (2015) set-up such that a particular DM is designated proposer and makes a decision as to which of two, out three allocations, is put to a vote.

Our goal is to identify the heuristics that individuals employ for holding individual decision makers accountable for a collective decision. Individuals observe collective decisions. It could be the budget size and allocations of a multi-party governing coalition (Bawn and Rosenbluth, 2006; Persson and Tabellini, 2006), the majority vote of the members of the Bank of England Monetary Policy Committee (Riboni and Ruge-Murcia, 2010), or the market clearing price for goods traded in a particular multilateral trading context (Falk, Neuber and Szech, 2019). Individuals acquire information about these decisions, and how they were arrived at, which determines responsibility attribution, generally, and, more specifically, responsibility attribution for the individual decision makers.

At the most general level, individuals learn about the overall generosity of the collective decision. One of our conjectures is simply that unkind outcomes will generate more punishment by recipients. Outcome-based models of social preferences predict that individuals dislike unequal outcomes. In our experiments we exploit the finding that DMs often keep a larger share for themselves and, given the opportunity, recipients punish DMs for their inequitable allocation (Guth, Schmittberger and Schwarze, 1982; Fehr and Gachter, 2000; Fehr and Fischbacher, 2004; Henrich et al., 2006; Dawes et al., 2007). Our expectations regarding the overall punishment of these collective decisions are informed by a well-developed theoretical literature on other-regarding preferences (Bolton and Ockenfels, 2000; Falk, Fehr and Fischbacher, 2006; Fehr and Schmidt, 1999, 2006). Formal models of other-regarding preferences typically imply that an unequal distribution of monetary payoffs causes disutility in inequity-averse individuals and predict that individuals will punish in response to the perceived inequity. Moreover, the results of Duch, Przepiorka and Stevenson (2015); and Bartling, Fischbacher and Schudy (2015) clearly confirm this is the case in collective Dictator Games.

C_1: Overall unkind collective outcomes are punished by recipients.

Individuals also learn about how the individual preferences of decision makers get aggregated into a collective decision. Bartling, Fischbacher and Schudy (2015) propose a representation of collective decision making in which those affected by these collective decisions observe sequential voting and the vote of each of the decision makers. And they are informed that decisions are taken by majority vote. As the authors point out, we are now in a world where intention-based models of social preferences predict the responses of those affected by these collective decisions. These models suggest that individuals are willing to incur costs in order to punish unkind actions irrespective of outcome (Dufwenberg and Kirchsteiger, 2004; Rabin, 1993). Rather than simply judging the unkindness of an action, individuals compare the unkindness of the chosen action with alternative, counterfactual, actions that could have been taken. In the Bartling, Fischbacher and Schudy (2015) game, punishment is avoided when decision makers vote for a kind outcome or if the vote is already decided by other voters. Punishment for unkind intention only occurs in the Bartling, Fischbacher and Schudy (2015) set-up if there is an unkind outcome.

An additional feature of collective decisions is an agenda setter – someone determines the choices that are put to a vote. And recipients learn, or make inferences, about the agenda setting decision of a proposer. Our conjecture is that typically the choice set on which DMs are deciding, or "voting", enters into the responsibility attribution calculus. The choice set faced by DMs represents one of a number of alternatives that could have been proposed. In many cases this counterfactual can be observed by recipients because they are informed about the process by which proposals get put to a vote or are the basis for DM decisions. Recipients have a good idea of the alternatives that could have been "voted" on by the DMs. The Duch, Przepiorka and Stevenson (2015) experimental set-up incorporates this information into the responsibility attribution calculus by drawing attention to the role of the agenda setter in determining the allocations that are put to a DM vote.

In a world of intention-based social preferences, recipients will compare agendas proposed to those that could have been put on the table for a vote. Our expectation then is that responsibility attribution will differ in experimental contexts in which DMs have no proposal power, and hence subjects have no information about counterfactual proposals, from experiments in which DMs have proposal power and subjects are informed of proposals that could be more or less generous. When subjects are informed about counterfactual proposals, we conjecture that subjects will consider both the fairness of the proposals under consideration *and* the generosity of the outcome actually selected.

As was the case in both Duch, Przepiorka and Stevenson (2015) and Bartling, Fischbacher and Schudy (2015) we measure responsibility attribution with punishments points accorded DMs by recipients in a modified Collective Dictator Game (decisions are made by a group rather than an individual (Engel, 2010)). The features of our game are designed to ensure that recipients punish with considerable frequency, i.e., make lots of responsibility attribution decisions. In order to minimize confounding strategic calculations on the part of subjects, the game mimics in every way possible a one-shot interaction. For example, our design eliminates any reputational incentives that recipients might exploit in order to discipline DMs. We also implement relatively cheap punishment for recipients on the grounds that this would maximize the expenditure of punishment points. Finally, we structured the payoffs to encourage DM allocations that would maximize punishment and thus responsibility attributions by recipients.

Our primary conjecture is that, when collective decisions are unfair to recipients, proposal power is the primary responsibility attribution heuristics that recipients employ for punishing individual decision makers.

C_2: Proposal Power is a strong and dominant responsibility attribution heuristic.

We evaluate these two conjectures with lab experiments that build on Bartling, Fischbacher and Schudy (2015); adding an agenda setting stage to the design. We report the results of an extended multi-round version of the original design. Results for a version employing the original strategy method are reported in the Appendix.

3 Experimental Design

Our version of the sequential voting game has three allocations that can be voted on: As was the case in the Bartling, Fischbacher and Schudy (2015) experiment, there is an unequal allocation (9,9,9,1,1,1) that gives 9 points to the A recipients and 1 point to the B recipients; and an equal allocation (5,5,5,5,5,5) that gives 5 points to both A and B recipients. A third allocation is added (7,7,7,3,3,3) in which the A members each receive 7 points and each B recipient receives 3 points. The three A subjects are asked to propose two allocations from these three that will be voted on. One of the three A subjects is randomly chosen to be the proposer and the two allocations she proposed are decided by the majority, sequential, votes of the A subjects. Hence, the A subjects vote on one of three possible allocation pairs:

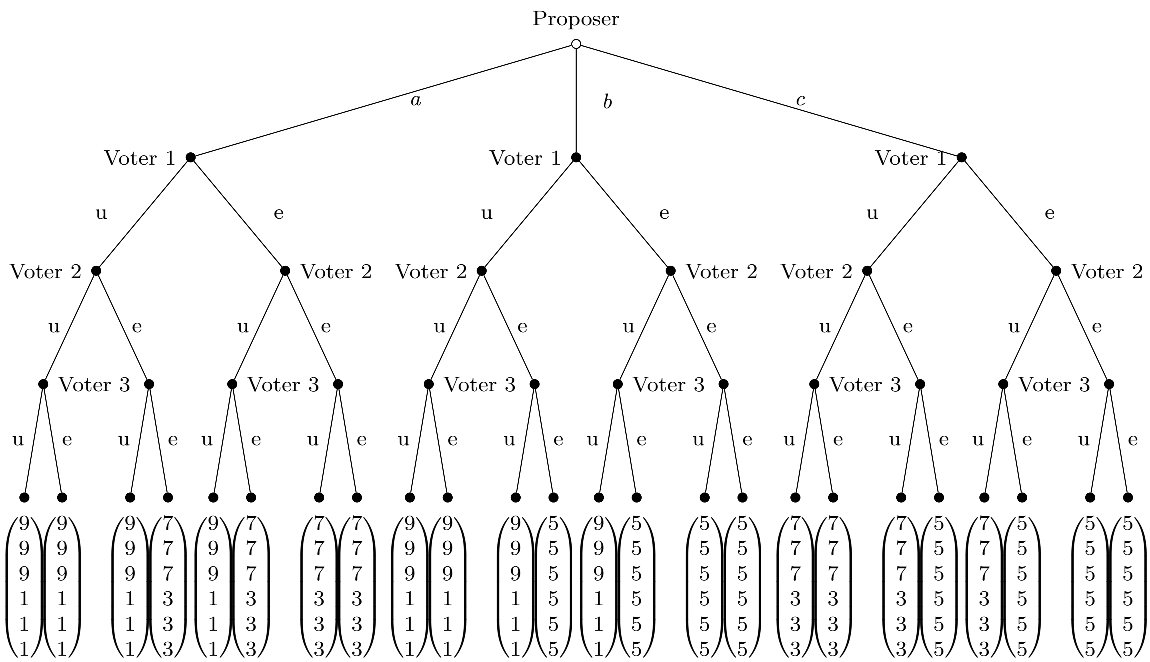
$$a = [(9,1), (7,3)]$$

$$b = [(9,1), (5,5)]$$

$$c = [(7,3), (5,5)]$$

All subjects are informed of the proposer's identity, the three possible proposal, and of the proposal that was selected to be put to a vote. In addition, for any given proposal, all subjects are informed about the identity and the vote of each voter and the sequence in which they vote. Figure 1 illustrates the decision tree for the sequential voting in any possible allocation, a, b and c. The three receivers observe the voting outcome and have the option to punish individual voters by deducting points. Punishing is costly for receivers. One of the receivers is randomly selected and their punishment implemented.

Figure 1: Sequential Voting with Proposer



In the first round of the experiment, subjects are randomly split into groups of six, and given a role of A voter or B recipient. The groups and roles are reshuffled every three-rounds. One of the three A subjects is randomly chosen to be the proposer who is asked to propose among three different paired allocations, *a*, *b* or *c*. The allocation she proposed is put to a vote and decided by the majority votes of the A subjects. All subjects are informed of the proposer's identity and the proposal that was selected to be put to a vote. Sequential voting then proceeds as in Bartling, Fischbacher and Schudy (2015). The voting records are the common knowledge for both A and B subjects. The A voters can refer to the votes of other As who move earlier, and B subjects observe how decision making proceeds. B subjects observe the proposal, the vote decision of each A subject, and the allocation outcome. B subjects then assign deduction points to A voters. After all the B subjects have made decisions, one of the B subjects is randomly chosen and their deduction point decisions are applied to the DMs. This process is repeated for thirty rounds. Figure 1 indicates the sequence of voting by A1, A2 and A3 that takes place once one of the three proposals is put forward.

3.1 General Procedures

The experimental protocol is as follows.

1. In the first round, subjects are randomly split into groups of six, and given a role of A voter or B recipient. The groups and roles are reshuffled every three-rounds.

2. There are three allocations that can be voted on: the unequal allocation (9,9,9,1,1,1), equal allocation (5,5,5,5,5,5), and in-between allocation (7,7,7,3,3,3). One of the three A subjects is randomly chosen to be the proposer who is asked to propose the two allocations from these three. The two allocations she proposed are put to a vote and decided by the majority votes of the A subjects. All subjects are informed of the proposer's identity and the proposal that was selected to be put to a vote.

3. Sequential voting then proceeds as in Bartling, Fischbacher and Schudy (2015): each of the A voters decide on either the equal (e) or unequal (u) allocation from the ones previously proposed. The voting records are the common knowledge for both A and B subjects. The

A voters can refer to the votes of other As who move earlier, and B subjects observe how decision making proceeds.

4. B subjects observe the proposal, the vote decision of each A subject, and the allocation outcome. B subjects then assign deduction points to A voters. After all the B subjects have made decisions, one of the B subjects is randomly chosen and their deduction point decisions are applied to the DMs.

5. This process is repeated for thirty rounds.

We ran four sessions of this experiment in October and November 2014 at the Nuffield Centre for Experimental Social Sciences with a total of sixty subjects. As a result, we have 2.700 observations of punishment decisions across the three potential allocations pairs, a, b and c.

4 Proposals, Votes and Punishment

Our claims regarding proposal power presume that recipients are informed about the choice set of proposals that an agenda setter could put forward. Recipients understand that agenda setters choose from amongst this "set" of possible proposals that DMs then vote on. We make this choice set very explicit in our experimental design. As Figure 1 illustrates, subjects' payoffs are conditional on which of three proposals are put to a vote. In our version of the sequential voting game, one of the three A subjects is randomly selected as proposer. She chooses one of three allocations pairs,a, b or c which is then put to a vote. In each case, the DMs, or A subjects, vote for an allocation that is relatively unequal (u) or equal (e) for the receivers, i.e., the B subjects.

The subjects' expected payoffs associated with a particular voting agenda are determined by the branch of the Figure 1 decision tree in which they find themselves; this of course is determined by the agenda setter choice. At this node of the decision tree the subjects know the pair of allocations that will be put to a vote and we can characterize the receivers' and DMs' expected payoffs. We can then compare receiver and DM utility for the two different agendas (say for a versus b). This results in a ranking of expected payoffs. Our conjecture is that agenda setting punishment by receivers will be correlated with this ranking of expected payoffs – the highest preferred agenda should result in the lowest agenda setter punishment.

In the subsequent nodes of Figure 1 recipients will observe DM sequential voting on the selected agenda. At this point three factors plausibly shape the punishment, or responsibility attribution, behavior of recipients. Bad outcomes will generate higher punishment for all DMs – as pointed out earlier, this is pretty well a universal result in games of this sort with second-party punishment (Bartling, Fischbacher and Schudy, 2015; Duch, Przepiorka and Stevenson, 2015). Of particular interest is how recipients calibrate their punishment of individual DMs once they observe them voting, sequentially, for one of the two allocations. We entertain two possible responsibility attribution heuristics. The Bartling, Fischbacher and Schudy (2015) results suggest recipients punish disproportionately the pivotal DM who voted for the least generous allocation to the recipients. Alternatively, recipients may simply punish any voter who voted for the allocation least generous to the recipients.

Receiver Expected Payoff If the probabilities of choosing equal (e) or unequal (u) allocations, within a, b and c are exogenous we can conjecture that the expected payoff for a Receiver (R) under each allocation is given by:

$$E_a(R) = p + 3(1 - p) = 3 - 2p$$

$$E_b(R) = q + 5(1 - q) = 5 - 4q$$

$$E_c(R) = 3z + 5(1 - z) = 5 - 2z$$

where p, q and z are the probabilities of choosing the unequal allocation in a, b and c respectively. Now, the expected payoff of choosing c, instead of a is given by:

$$E_{ca}(R) = E_c(R) - E_a(R) = 2(p - z) + 2$$

As is clear for any possible value of p and z, the c allocation is better or equal than allocation a, $E_{ca}(R) \geq 0$.

Result 1: For Receiver (R) the c allocation dominates allocation a.

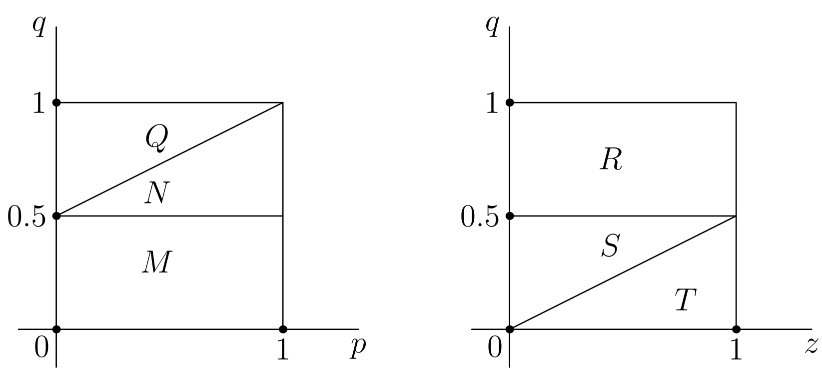
Now, the expected payoff of choosing c, instead of b, is given by:

$$E_{cb}(DM) = E_c(DM) - E_b(DM) = 4q - 2z$$

If $E_{cb}(R) > 0$, it will always be better to chose c instead of b. This is the case if $q > \frac{z}{2}$. In this case, the area under which c dominates b is $R + S$ in the right panel in Figure 2.

Result 2: If any probability combination (q, z) is equally likely (for instance if the joint distribution is uniform), then for a Receiver allocation c stochastically dominates allocation b. In particular, the area $R + S$ in the right panel in Figure 2 is three times larger than the area T, implying that in a stochastic environment c is preferred to b for a Receiver.

Figure 2: Probability of (p, q) and (z, q)



Finally, the expected payoff for a Receiver of choosing b, instead of a, is given by:

$$E_{ba}(R) = E_b(R) - E_a(R) = 2(p - 2q) + 2$$

Hence, it will always be better to chose b instead of a if $2(p - 2q) + 2 > 0$. This will always be the case if $(p - 2q) > -1$. In this case, the area in the space (q, p) for which $(p - 2q) > -1$ is given by the area $M + N$. This area is three times larger than the area Q where $(p - 2q) < -1$.

Result 3: If any probability combination (q, p) is equally likely (for instance if the joint distribution is uniform), then for Receivers allocation b stochastically dominates allocation a. In particular, the area $M + N$ in the left panel in Figure 2 is three times larger than the area Q, implying that in an stochastic environment b is preferred to a for a Receiver.

Decision Makers Expected Payoff For DM it is possible to derive similar expected payoffs. As shown in Appendix A, for DM we have three additional results:

Result 4: For DM the a allocation dominates allocation c.

Result 5: For a DM, allocation a stochastically dominates allocation b.

Result 6: For a DM allocation b stochastically dominates allocation c.

4.1 Summary, implications and predictions

The simple decision theoretic reasoning generates a set of preferred allocations for both Receivers and DMs. Table 1 summarizes the preference orderings. First, independently of the distribution of probabilities within each allocation, a, b and c, there is a clear tension between allocation a and c for Receivers and DMs. In particular, allocation a dominates allocation c for the DMs, whereas the opposite is true for Receivers.

Table 1: Preferred Allocations in a Stochastic Enviroment

Decision Maker	Receiver
Allocation a dominates c	Allocation c dominates a
Allocation a stochastically dominates b	Allocation b stochastically dominates a
Allocation b stochastically dominates c	Allocation c stochastically dominates b

Now, if we assume each probability pair is equally likely we can derive two additional results. [4] The first one is that allocation a stochastically dominates allocation b in the case of DM, whereas

[4] Of course, in our experiment probabilities are endogenous: they will depend on the behavior of DMs and Receivers. On one hand, DMs maximize expected income subject to penalization by Receiver. In short, p, q and z are endogenously determined.

the opposite is true for Receiver. The second one is that allocation b stochastically dominates allocation c in the case of DM. Again, the opposite is true for Receiver.

Implications. In this decision making scenario, the actors have preferences over which pairs of allocations should be put to a vote.

1. From the above analysis, it is clear DMs would choose allocation a to be put to a vote instead of c. If Receivers decide the allocation to be voted on, they will chose allocation c. This is independent of probabilities p and z.

2. It follows that if Receivers can *only* penalize DM, in a given amount, for whether they vote e or u and NOT for choosing a given allocation, then DM will prefer a over c.

3. Allocation c can give potentially the *same* expected income for Receivers as b subject to the choices of DM within c and b. Depending on the probabilities q and z within allocations b and c Receivers can be indifferent between these allocations.

4. The range of probabilities that makes the Receiver indifferent between b and c should satisfy $q = \frac{z}{2}$. Hence, the Receiver should penalize Unfair allocations more heavily if in b than in c.

Predictions. The voting agenda matters and those affected by these voting outcomes should attribute responsibility to the agenda setter:

1. From Results 1 and 2 it follows that Receivers should most heavily punish the decision to put allocation a to a vote. Hence, a proposer should be punished for choosing a independently of the subsequent voting strategy.

2. From Results 1, 2 and 3 it follows that NO punishment should be given to the DM that proposes b or c. Receivers should punish DMs who vote for u in either case (b or c). The punishment will be conditional on whether allocation b or c is put to vote.

3. From Result 4, it follows that more points should be deducted from a DM that votes u under b than for a DM who votes u under a c allocation.

5 Results

Punishment Heuristics Table 2 presents the average punishment. From this we can conjecture that pivotality punishment, defined as in Bartling, Fischbacher and Schudy (2015), seems not to be salient. [5] Out of twelve occasions where a DM is pivotal to the unequal allocations (bold numbers in the table), the pivotal DM is assigned the higher average punishment on only three occasions. In five of the cases, the DM who first voted for the unfair allocation receives the most punishment. Second, when the proposal consists of the two most unfair allocations, the DMs are punished even when all of them voted for the less unfair option (i.e. (7,7,7,3,3,3)).

Table 2: Average Punishments

			Average Punishment		
Allocation	Voting sequence	N	Voter 1	Voter 2	Voter 3
((9,1),(7,3))	u-u-u	5	0.87	**1.20**	0.73
	u-u-e	15	1.69	**1.78**	0.36
	u-e-u	15	1.51	0.22	**1.31**
	e-u-u	16	0.29	1.73	**1.54**
	u-e-e	10	1.97	0.07	0.10
	e-u-e	11	0.52	2.76	0.27
	e-e-u	2	0.33	0.33	0.50
	e-e-e	30	0.89	0.80	0.66
((9,1),(5,5))	u-u-u	1	0.00	**0.00**	0.00
	u-u-e	11	1.76	**1.15**	0.58
	u-e-u	9	1.30	0.07	**0.81**
	e-u-u	7	0.19	2.24	**1.48**
	u-e-e	6	1.11	0.00	0.00
	e-u-e	10	0.00	0.37	0.00
	e-e-u	0			
	e-e-e	47	0.04	0.04	0.13
((7,3),(5,5))	u-u-u	6	0.78	**0.44**	0.28
	u-u-e	13	1.28	**1.08**	0.23
	u-e-u	9	0.59	0.37	**0.93**
	e-u-u	7	0.00	1.38	**0.95**
	u-e-e	15	0.38	0.00	0.00
	e-u-e	11	0.18	0.36	0.03
	e-e-u	1	0.00	0.00	0.00
	e-e-e	43	0.04	0.02	0.04

Notes: "u": a vote for the unequal allocation, "e": a vote for the equal allocation. The boldface indicates the pivotal voter for unequal outcomes

[5] Receivers can observe the voting sequence and can identify whether any given decision maker is pivotal or not. As a result, pivotality is fully observed and can eventually be punished.

Table 3 shows the punishment for the proposer and non-proposer. The DM who has proposed the most unfair allocation (a), is punished more severely than the non-proposer DMs. This is true independently of the proposer's subsequent vote. In particular, a proposer DM who chooses a and votes for the equal allocation receives a deduction of 1.29 points, which is 1 point above the penalization than a non-proposer, who votes for an equal allocation, receives in this case. Hence, even if the proposer chooses a fair allocation, within a, she will be penalized for choosing a. In the case of allocations b and c, which are potentially fairer to the receiver, being proposer does not change the penalization DMs get. In particular, for both b and c, the penalization associated to the unequal and equal votes is similar for proposer and non-proposers.

Table 3: Average total deduction points for proposers

	Proposers vote		No proposers vote		
Chosen proposal	Unequal (n)	Equal (n)	Unequal(n)	Equal (n)	N
a=[(9,1),(7,3)]	1.93 (192)	1.29 (120)	1.33 (198)	0.31 (426)	936
b=[(9,1),(5,5)]	1.25 (81)	0.07 (192)	1.17 (138)	0.10 (408)	819
c=[(7,3),(5,5)]	0.97 (66)	0.08 (249)	0.72 (243)	0.04 (387)	945
N	339	561	579	1221	2700

Multivariate Model To determine how DM are penalized, and the relative importance of pivotality and agenda setting, we estimate a series of logistic regression models, in which the outcome variable is whether deduction points are allocated by a recipient to a particular DM. The first independent variable is *Proposer* dummy that assumes a value of 1 for DMs who are proposers. We split the data into three subsets based on the proposal chosen by the proposer and then estimated separate models for each proposal set because the choice sets are different across proposals. Since the data are split into three according to proposal sets, the proposer dummy variable indicates whether the DM is responsible for proposing the particular proposal set. A positive coefficient on the *Proposer* dummy variable indicates that the probability of DM punishment is higher if the DM proposed the proposal that is set for a vote.

A second independent *Choice Unequal* dummy variable assumes a value of 1 for those DMs who voted for the less equitable allocation and a value of zero for those DMs who voted for the more equitable allocation. A positive coefficient on this *Choice Unequal* dummy variable indicates that the probability of a DM receiving punishment increases when they vote for the less equitable allocation.

A third independent variable is the *Pivot to Unequal* dummy variable. If the DM vote is pivotal for an unequal allocation then the *Pivot to Unequal* dummy takes a value of 1 when the outcome is less fair than the other alternative in the DM's choice set *and* the DM is pivotal in the outcome. This variable is interacted, in some specifications, with the *Proposer* variable.

Finally, as in Bartling, Fischbacher and Schudy (2015), we incorporate the *Unequal Outcome* variable. This variable takes the value of 1 if the unequal allocation is the one implemented: i.e. if the unequal votes are two or more. We estimate the logistic model for each of the three possible allocations, a, b, and c. In each case, we have nearly the same number of observations across allocations: 900 data points in each case.

In Table 4 we report the results of estimating the logistic model in the case in which the a allocation is chosen and put to a vote. Model 1 assesses the impact of being proposer. In this case, being the proposer DM has an impact, which is statistically significant, of 0.75 on the probability of being punished. Of course, when this variable is the only one considered it may also capture additional motives that trigger a punishment. To assess the marginal impact of the voting behavior, in Model 2, we incorporate also the *Choice Unequal* dummy. This variable has a positive impact on DMs penalization, 0.98, which is independent of whether the DM is proposer or not and it is statistically significant. In this case, the proposer variable also has a positive impact on the probability of punishing the DM: 0.49.

Table 4: Logistic Regression Models of DM Punishment proposal a: ((9,1),(7,3))

	Model 1	Model 2	Model 3	Model 4
Proposer	0.75^{***}	0.49^{***}	0.49^{***}	0.53^{***}
	(0.15)	(0.15)	(0.15)	(0.16)
Choice Unequal		0.98^{***}	0.95^{***}	0.85^{***}
		(0.15)	(0.17)	(0.19)
Pivotal to Unequal			0.07	0.01
			(0.21)	(0.22)
Unequal Outcome				0.21
				(0.19)
Constant	-1.05^{***}	-1.41^{***}	-1.41^{***}	-1.47^{***}
	(0.09)	(0.11)	(0.11)	(0.13)
AIC	1144.39	1103.55	1105.43	1106.20
BIC	1154.07	1118.07	1124.80	1130.40
Log Likelihood	-570.19	-548.77	-548.72	-548.10
Deviance	1140.39	1097.55	1097.43	1096.20
Num. obs.	936	936	936	936

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

Model 3 in Table 4 introduces the *Pivot to Unequal* dummy variable. This variable has an impact which is not different from zero, leaving the impact of *Proposer* and *Choice Unequal* virtually unchanged. Model 4 introduces the *Unequal Outcome* variable. The *Unequal Outcome* variable has no significant impact on DM punishment. What is clear from the results in Table 4 is that voters penalize the DM who propose this allocation. The probability of penalization to this DM, implicit in the 0.53 coefficient in Model 4 in Table 4, is 28%.[6] In terms of points, the DM who is the proposer of this allocation loses 0.86 points (see Table 7 in OLS estimation in Appendix B). In this case, receivers also penalize DM who vote for the unequal allocation within a. More specifically

[6]We convert the logit regression coefficients to probabiities according to the standard formula ued in this case: $p_a = \frac{1}{exp-(constant+a_{coefficient})}$, where $a_{coefficient}$ is the regression coefficient associated to each variable.

the probability of penalization to this DM, implicit in the 0.85 coefficient in Model 4 of 4, is 35%. In terms of points, the DM who chooses the unequal allocation loses 1.06 points (see Table 8 in OLS estimation in Appendix B). Overall, we can conclude that the DM who chooses proposal a and votes for the unequal allocation within this proposal can lose two points. In this event, her expected payoff is reduced from 9 points to 7. Hence, penalizing the DM is a strategy that imposes costs for DMs who choose the most adverse proposal for receivers and who vote for the unequal allocation within this proposal.

Overall, from Table 4 we conclude that when allocation a is put to a vote, DMs are penalized for choosing this allocation (in the case of the proposer DM) and for voting for the unequal allocation within a. Receivers punish DMs for choosing this allocation because for them a is always worst than allocation c.

We perform a similar set of logistic regressions, in the case in which the allocation b proposed options are put to a vote. The results are presented in Table 5. In sharp contrast with the previous results, being proposer does not generate any punishment, whereas voting for the unequal allocation within b generates a larger punishment than in the case in which allocation a is the chosen proposal. In this case pivotality is never relevant. If the unequal outcome within b is implemented, all DMs are penalized. This last result is also found in Bartling, Fischbacher and Schudy (2015).

Table 5: Logistic Regression Models of DM Punishment proposal b: ((9,1),(5,5))

	Model 1	Model 2	Model 3	Model 4
Proposer	0.13	-0.02	-0.05	0.05
	(0.23)	(0.26)	(0.26)	(0.27)
Choice Unequal		2.97^{***}	2.87^{***}	2.10^{***}
		(0.29)	(0.31)	(0.35)
Pivotal to Unequal			0.25	-0.24
			(0.29)	(0.31)
Unequal Outcome				1.69^{***}
				(0.36)
Constant	-2.11^{***}	-3.59^{***}	-3.58^{***}	-4.06^{***}
	(0.14)	(0.27)	(0.27)	(0.31)
AIC	579.24	436.31	437.60	415.48
BIC	588.65	450.44	456.43	439.02
Log Likelihood	-287.62	-215.16	-214.80	-202.74
Deviance	575.24	430.31	429.60	405.48
Num. obs.	819	819	819	819

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

When proposal b is chosen the penalization behaviour is very different from the one that emerges in the case of proposal a. First, the proposer is not penalized for chosing b. As shown in Model 4 in Table 5, the penalization is, in this case, not statistically different from zero. In this particular case, DM are penalized for voting for the unequal allocation within b, with probablity 15% (given the coefficient 2.1 in the logist regression in Table 5). In terms of points, this implies a deduction of almost a point. DM are also penalized, with probablity 10%, if the unequal allocation within b is the one choosen. In this case, 0.5 point are deducted to all DMs (see Table 8 in OLS estimation in Appendix B).

We perform a set of estimations for c allocation. This dominates allocation a (strictly) and allocation b (stochastically) in the case of receivers. Table 6 presents the results for the logistic estimations. In this case, proposers are not punished; nor are pivotal. DMs are punished for voting for the unequal allocation within c and also if the unequal allocation is implemented. More specifically, if DMs vote for the unequal allocation, with probablity 7.1% they are penalized (given the 1.73 coefficient in Model 4 in Table 6). This represents a deduction of 0.5 points (see Table 9 of the OLS estimation in Appendix B). In addition, if the unequal allocation withih c is chosen, DM are penilized with probability 7.0% (given the 1.71 coefficient in Model 4 in Table 6). This represents a deduction of 0.3 points (see Table 9 in OLS estimation in Appendix B).

Table 6: Logistic Regression Models of DM Punishment proposal c: ((7,3),(5,5))

	Model 1	Model 2	Model 3	Model 4
Proposer	−0.15	0.39	0.37	0.24
	(0.24)	(0.27)	(0.27)	(0.27)
Choice Unequal		2.65***	2.52***	1.73***
		(0.30)	(0.32)	(0.36)
Pivotal to Unequal			0.35	−0.12
			(0.28)	(0.29)
Unequal Outcome				1.71***
				(0.35)
Constant	−2.21***	−3.89***	−3.88***	−4.30***
	(0.13)	(0.29)	(0.29)	(0.33)
AIC	593.47	486.14	486.54	462.01
BIC	603.18	500.69	505.95	486.27
Log Likelihood	-294.74	-240.07	-239.27	-226.01
Deviance	589.47	480.14	478.54	452.01
Num. obs.	945	945	945	945

***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

Overall, from the results in Tables 4, 5 and 6 we can conclude that proposers are penalized only if the most unequal agenda, proposal a, is chosen. In this case, DMs are also penilized for voting for the unequal allocation. In contrast, DMs are not penilized for chosing proposals b or c, which have a higher unconditional expected value for receivers. In the case of proposals b and c, DMs are also penilized for voting for the unequal allocation. In addition, they are penilized if the unequal allocation, within each proposal, is choosen.

The highest combined penalization is for DMs who chose proposal a and who vote for the unequal allocation within this proposal. In this case, the combined penalization can reach up to 2.5 points[7], which is above the combined penalization under proposals b and c.

An important results from the previous exercises is that pivotal DMs are not penalized. In our modified experiment, DMs are penalized for choosing the most unfair proposal (for receivers) and, independently of the proposal for voting for the unequal allocation within proposal and, in the case of porposal b and c, if the unequal allocation is implemented.

The original Bartling, Fischbacher and Schudy (2015) experiment was conducted employing the strategy method. As a robustness exercise we also implemented our extended version of Bartling, Fischbacher and Schudy (2015) using the strategy method. This generates fewer observations than in the case of the direct response method: a total of 720 DM punishments. The results are reported in Appendix B and are consistent with those reported here for the direct response method.

6 Conclusion

There is a notion of shared, and possibly shirking of, responsibility when groups of individuals make a collective decision. Bénabou, Falk and Tirole (2018) suggest that when individuals are not pivotal to these collective decisions, "exculpatory narratives can allow individuals to maintain a positive image when in fact acting in a morally questionable way."

The recognition that pivotality – or its absence – allows individuals to excuse morally questionable behavior is founded on persuasive experimental evidence. Falk, Neuber and Szech (2019) demonstrate that immoral, incentivized, choices are significantly higher in randomly assigned collective decision-making contexts that diffuse the subject's pivotality. And others have observed similar immoral or unethical decisions taken by individuals in group settings where pivotality is

[7]This number is coherent with the point estimates in the OLS regression in Table 7 in Appendix B once the standard errors are considered.

less obvious such as in the classic case of the “by-stander” effect (Darley and Latane, 1968).

An important assumption here is that the pivotal decision maker, associated with a collective decision, bears disproportionate responsibility for the outcome. A rich theoretical literature indicates that voting weights and pivotality determine the influence of individuals in a voting system – committee systems in particular (Shapley and Shubik, 1954). An interesting empirical puzzle is whether this “pivotality” reasoning is widely shared in the population? Bartling, Fischbacher and Schudy (2015) demonstrate that being pivotal matters for the assignment of blame in their collective decision making experiments even when controlling for other punishment motives.

We contend that agenda setting power in collective decision making also affects responsibility attribution. Duch, Przepiorka and Stevenson (2015) establish that recipients punish unfair allocations and mainly target the decision maker who have proposal power and have the largest weighted vote. But they find weak evidence that decision makers with veto power are targeted or that recipients punish proportional to vote share.

The experimental results reported here are an effort to better understand this responsibility attribution tension between proposal power and pivotality. In the Bartling, Fischbacher and Schudy (2015) experiment there is a much more significant priming for pivotal power while it is more subtler in the original Duch, Przepiorka and Stevenson (2015) experiment. Accordingly, we designed an experiment that helps identify the relative importance of pivotality when recipients face a richer information environment — one in which they are informed about agenda setting power as was the case in Duch, Przepiorka and Stevenson (2015) but also observe sequential voting on a proposal as was the case in Bartling, Fischbacher and Schudy (2015).

Our results suggest that at least in some contexts, proposal power can trump pivotality as an heuristics for holding individual decision makers accountable for collective decisions. We arrive at this conclusion based on an extension of the Bartling, Fischbacher and Schudy (2015) experimental design. A richer information context in which recipients are informed about the agenda setting decisions of a proposer suggests that proposal power is an important heuristics for determining how individuals attribute responsibility to individual decision makers who contribute to collective decisions

Recipients in these experiments recognize that DM choices have consequences for their earnings. Moreover, in this particular design, recipients recognize that the consequences are conditional. They give every indication of trying to identify the DM actions that have consequences for their earnings. We find that recipients punish proposing DMs disproportionately when the allocations proposed for a vote are less fair to the recipients. Second, in more favorable allocations, recipients penalize DMs for voting and implementing unequal outcomes. And pivotality plays a much less significant role regardless of the fairness of the proposed allocations.

What does this say about markets and immoral choices? So we concur with the "replacement logic" proposed by Sobel (2010) – there are decision making contexts in which agents can mutually excuse their immoral behavior on the grounds of individual powerlessness in the face of others' immoral behavior. An important contributing factor here is pivotality. To the extent that an individual is unlikely to be – or perceived to be – pivotal to a collective decision we can expect unfair or immoral choices. Agents in this case can excuse their unfair or immoral behavior. But there are other features of the decision making context that facilitate these "mutual excuses." We demonstrate that the power to set the agenda – or maybe more accurately one's powerlessness over controlling the agenda – provides another "excuse" for immoral or unfair behavior. In some sense the moral "counterfactual" or excuse here is a proposed agenda that would have facilitated more moral behavior on the part of decision makers.

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Appendices

A DMs Expected Payoff.

If probabilities of choosing e or u allocations, within a, c and c, are exogenous we can conjecture that the expected payoff for DM under each allocation is given by:

$$E_a(DM) = 9p + 7(1-p) = 2p + 7$$
$$E_b(DM) = 9q + 5(1-q) = 4q + 5$$
$$E_c(DM) = 7z + 5(1-z) = 2z + 5$$

where p, q and z are the probabilities of choosing the unequal allocation in a, b and c respectively. Now, the expected payoff of choosing a, instead of c is given by:

$$E_{ac}(DM) = E_a(DM) - E_c(DM) = 2(p-z) + 2$$

As is clear for any possible value of p and z, the a allocation is always better or equal than c, $E_{ac}(DM) \geq 0$.

Result 4: For a DM the a allocation dominates allocation c.

Now, the expected payoff of choosing a, instead of b, is given by:

$$E_{ab}(DM) = E_a(DM) - E_b(DM) = 2(p-2q) + 2$$

It will always be better to chose a instead of b if $2(p-2q)+2 \geq 0$. This will always be the case if $(p-2q) \geq -1$. As the left panel in Figure 2 indicates, the area in the space (q,p) for which $(p-2q) \geq -1$ is given by the area $M+N$. This area is three times larger than the area Q where $(p-2q) < -1$ (in which b would be preferred to a).

Result 5: If probabilities are distributed such that any probability combination (q,p) is equally likely (for instance if the joint distribution is uniform), then for a DM, allocation a stochastically dominates allocation b. In particular, the area $M+N$ in Figure 1 is three times larger than the area Q, implying that in an stochastic environment a is preferred to b.

Finally, the expected payoff of choosing b, instead of c is given by:

$$E_{bc}(DM) = E_b(DM) - E_c(DM) = 4\left(q - \frac{z}{2}\right)$$

in this case $E_{bc}(DM) \geq 0$ if $q \geq \frac{z}{2}$. The right graph in Figure 2 indicates the areas of the probability space (q,z).

Result 6: If probabilities are distributed such that any probability combination (q,z) is equally likely (for instance if the joint distribution is uniform), then for a DM allocation b stochastically dominates allocation c. In particular, the area $R+S$ in the right panel in Figure 2 is three times larger than the area T, implying that in an stochastic environment b is preferred to c.

B OLS Regressions: Direct Method

In the following regressions, the dependent variable is penalization points to DMs

Table 7: OLS Models of DM Punishment proposal A: ((9,1),(7,3))

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Proposer	1.05^{***}	0.79^{***}	0.79^{***}	0.91^{***}	0.74^{***}	0.86^{***}
	(0.12)	(0.12)	(0.12)	(0.13)	(0.12)	(0.14)
Choice Unequal		0.89^{***}	0.97^{***}	0.93^{***}	1.10^{***}	1.06^{***}
		(0.11)	(0.13)	(0.13)	(0.15)	(0.15)
Pivotal to Unequal			-0.19	0.12	-0.11	0.16
			(0.17)	(0.22)	(0.17)	(0.22)
Unequal Outcome					-0.27^{**}	-0.25^{*}
					(0.14)	(0.14)
Proposer * Pivotal to Unequal				-0.63^{**}		-0.58^{*}
				(0.30)		(0.30)
Constant	0.63^{***}	0.35^{***}	0.35^{***}	0.32^{***}	0.43^{***}	0.40^{***}
	(0.07)	(0.07)	(0.07)	(0.08)	(0.08)	(0.09)
R^2	0.08	0.14	0.14	0.14	0.14	0.14
Adj. R^2	0.08	0.13	0.13	0.14	0.14	0.14
Num. obs.	936	936	936	936	936	936

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table 8: OLS Models of DM Punishment proposal B: ((9,1),(5,5))

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Proposer	0.05	0.00	0.01	-0.04	0.03	-0.02
	(0.09)	(0.08)	(0.08)	(0.09)	(0.08)	(0.09)
Choice Unequal		1.11^{***}	1.18^{***}	1.18^{***}	0.94^{***}	0.94^{***}
		(0.09)	(0.10)	(0.10)	(0.12)	(0.12)
Pivotal to Unequal			-0.19	-0.39^{**}	-0.36^{**}	-0.55^{***}
			(0.15)	(0.19)	(0.15)	(0.19)
Unequal Outcome					0.47^{***}	0.47^{***}
					(0.11)	(0.11)
Proposer * Pivotal to Unequal				0.46^{*}		0.44^{*}
				(0.25)		(0.25)
Constant	0.37^{***}	0.09^{*}	0.09^{*}	0.10^{**}	0.02	0.03
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
R^2	0.00	0.17	0.17	0.17	0.19	0.19
Adj. R^2	-0.00	0.17	0.17	0.17	0.19	0.19
Num. obs.	819	819	819	819	819	819

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table 9: OLS Models of DM Punishment proposal C: ((7,3),(5,5))

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Proposer	-0.03	0.09	0.09	0.09	0.06	0.06
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Choice Unequal		0.73^{***}	0.66^{***}	0.66^{***}	0.50^{***}	0.50^{***}
		(0.07)	(0.08)	(0.08)	(0.09)	(0.09)
Pivotal to Unequal			0.20^{*}	0.20	0.07	0.06
			(0.11)	(0.13)	(0.12)	(0.13)
Unequal Outcome					0.33^{***}	0.33^{***}
					(0.08)	(0.08)
Proposer * Pivotal to Unequal				-0.01		0.02
				(0.22)		(0.22)
Constant	0.30^{***}	0.02	0.02	0.02	-0.01	-0.01
	(0.04)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
R^2	0.00	0.11	0.12	0.12	0.13	0.13
Adj. R^2	-0.00	0.11	0.11	0.11	0.13	0.13
Num. obs.	945	945	945	945	945	945

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

C Robustness: the Strategy Method

Punishment Heuristics Table 10 presents the average points deducted from each of the DMs for the votes. We see some support for the Bartling, Fischbacher and Schudy (2015) proposition that pivotal DMs get disproportionately punished when they supported the unfair allocations and the unfair outcome receives majority support (the first four rows in each section of Table 10). This is particularly evident for the session in which the proposers put (9,9,9,1,1,1) and (5,5,5,5,5,5) to a vote. Note that frequently the average deduction points rise for the DM that is pivotal in the sequential voting.

Table 10: Average punishments in modified Bartling, Fischbacher and Schudy (2015)

		Average Punishment		
Allocation	Voting sequence	Voter 1	Voter 2	Voter 3
((9,1),(7,3))	u-u-u	0.52	**0.67**	1.14
	u-u-e	1.10	**1.00**	0.57
	u-e-u	0.67	0.19	**1.48**
	e-u-u	0.14	0.76	**1.38**
	u-e-e	1.90	0.19	0.43
	e-u-e	0.10	1.29	0.62
	e-e-u	0.10	0.19	1.71
	e-e-e	0.33	0.52	0.95
((9,1),(5,5))	u-u-u	1.67	**2.17**	0.83
	u-u-e	1.50	**2.67**	0.50
	u-e-u	1.00	0.00	**3.67**
	e-u-u	0.00	1.17	**3.50**
	u-e-e	0.83	0.00	0.33
	e-u-e	0.00	1.67	0.33
	e-e-u	0.00	0.00	0.83
	e-e-e	0.00	0.00	0.00
((7,3),(5,5))	u-u-u	1.33	**1.33**	1.33
	u-u-e	2.00	**1.67**	0.67
	u-e-u	2.00	1.00	**1.67**
	e-u-u	0.67	2.00	**2.00**
	u-e-e	0.00	0.00	0.00
	e-u-e	0.00	0.00	0.00
	e-e-u	0.00	0.00	0.00
	e-e-e	0.00	0.00	0.00

Notes: "u": a vote for the unequal allocation, "e": a vote for the equal allocation. The boldface indicates the pivotal voter for unequal outcomes

Table 11 shows the punishment for the proposer and non-proposer. Here we see support for the Duch, Przepiorka and Stevenson (2015) claim that agenda power plays an important role in responsibility attribution for collective decisions. This effect is in fact very dramatic in the case when the proposer choses the paired allocations that are least favorable to the B recipients:

(9,9,9,1,1,1) and (7,7,7,3,3,3). Note that the proposer is punished in all circumstances irrespective of vote decision when the proposer chooses the least equitable options. Of particular interest to the agenda power argument is the fact that it is most evident when the proposer chooses the polarized proposal, (9,9,9,1,1,1) and (5,5,5,5,5,5), where the outcome can be the most unfair or fair. In this case, the proposer is harshly punished if she actually votes for the unfair allocation. The agenda power is most evidently punished when the proposer has put to a vote the pair of allocations least favorable to the recipients. And recipients expend disproportionate deduction points in the case when the proposer chooses the polarized proposal and also express support for the unfair allocations.

Table 11: Average total deduction points for proposers

	Proposers vote		No proposers vote		
Chosen proposal	Unequal (n)	Equal (n)	Unequal(n)	Equal (n)	N
((9,1),(7,3))	1.64 (84)	0.77 (84)	0.88 (168)	0.15 (168)	504
((9,1),(5,5))	2.25 (24)	0.29 (24)	1.56 (48)	0.00 (48)	144
((7,3),(5,5))	1.33 (12)	0.17 (12)	1.25 (24)	0.21 (24)	72
N	120	120	240	240	720

C.1 Multivariate Results: Strategy Method

To determine how DMs are punished, and the relative importance of pivotally and agenda setting, we estimate a series of logistic regression models, in which the outcome variable is whether deduction points are allocated by a recipient to a particular DM. As before, we have four independent dummy variables: *Proposer*, *Choice Unequal*, *Pivot to Unequal* , *Unequal Outcome*. We estimate the logistic model for each of the three possible allocations, a, b, and c. We have a total of 720 punishment decisions that are unevenly distributed across the three possible proposals.

Table 12 presents the logistic regression results for allocation a. DMs are punished for proposing a. Furthermore, independently of whether the DM is proposer or not, they are punished for voting for the unequal allocation within a. These results are not only qualitatively similar to the findings under the direct response method, the magnitude of the punishment coefficient is roughly the same in the case of *Choice Unequal* and slightly larger for the *Proposer* variable. As before, pivotality is not significant in this a model.

Table 12: Logistic Regression Models of DM Punishment proposal a: ((9,1),(7,3))

	Model 1	Model 2	Model 3	Model 4
Proposer	0.60^{***}	0.62^{***}	0.62^{***}	0.62^{***}
	(0.22)	(0.22)	(0.22)	(0.22)
Choice unequal		0.90^{***}	0.86^{***}	0.79^{***}
		(0.23)	(0.25)	(0.27)
Pivotal to unequal			0.09	0.02
			(0.29)	(0.31)
Unequal Outcome				0.21
				(0.27)
Constant	-1.49^{***}	-2.00^{***}	-2.00^{***}	-2.05^{***}
	(0.14)	(0.20)	(0.20)	(0.22)
AIC	528.16	513.85	515.75	517.17
BIC	536.61	526.52	532.64	538.28
Log Likelihood	-262.08	-253.93	-253.88	-253.58
Deviance	524.16	507.85	507.75	507.17
Num. obs.	504	504	504	504

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

Table 13 presents logistic estimates for the b allocation model. As in the case of the direct method, DMs are not punished for choosing this allocation. The main features that determine punishment are, as before, a vote for the unequal option and the unequal outcome. In these cases the estimated coefficients are similar to those in the direct method. Pivotality on its own does not have any significant impact on punishment decisions.

Table 13: Logistic Regression Models of DM Punishment proposal b: ((9,1),(5,5))

	Model 1	Model 2	Model 3	Model 4
Proposer	0.31	0.43	0.24	0.35
	(0.39)	(0.46)	(0.49)	(0.50)
Choice unequal		3.16^{***}	2.82^{***}	2.50^{***}
		(0.64)	(0.66)	(0.68)
Pivotal to unequal			0.97^{*}	0.53
			(0.53)	(0.57)
Unequal Outcome				1.21^{**}
				(0.58)
Constant	-1.10^{***}	-3.30^{***}	-3.22^{***}	-3.71^{***}
	(0.24)	(0.62)	(0.62)	(0.70)
AIC	171.59	129.90	128.46	125.89
BIC	177.53	138.80	140.34	140.74
Log Likelihood	-83.80	-61.95	-60.23	-57.95
Deviance	167.59	123.90	120.46	115.89
Num. obs.	144	144	144	144

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

Table 14 presents the logistic regression results for the c allocation. Again, DMs are not penalized for proposing this allocation. The principal driver for punishment is whether DMs voted for the unequal choice. In the experiment there are no DMs punished for choosing the equal allocation – as a result, the *Unequal Outcome* variable is collinear with the constant. Hence we are only able to estimate Models 1 through 3 in this case.

Table 14: Logistic Regression Models of DM Punishment proposal c: ((7,3),(5,5))

	Model 1	Model 2	Model 3
Proposer	-0.00	-0.00	0.38
	(0.53)	(0.57)	(0.62)
Choice unequal		1.61^{***}	1.22^{**}
		(0.56)	(0.62)
Pivotal to unequal			1.22
			(0.81)
Unequal Outcome			
Constant	-0.69^{**}	-1.61^{***}	-1.75^{***}
	(0.31)	(0.49)	(0.51)
AIC	95.66	88.35	87.93
BIC	100.21	95.18	97.04
Log Likelihood	-45.83	-41.17	-39.97
Deviance	91.66	82.35	79.93
Num. obs.	72	72	72

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

The main result for the strategy method are summarized in Table 15. It contains the specifications under each allocation as well as the effect of each variable when all allocations are considered at the same time. Pivotality is never relevant and there is an important difference between strategies under a versus the b and c allocations. DMs who propose a are punished; this is not the case for b and c. In these latter two allocations receivers try to avoid the unequal allocation within b and c, but do not punish the proposer.

Table 15: Logistic Regression Models of DM Punishment proposal a, b and c

	Model 4 a	Model 4 b	Model 3 c
Proposer	0.62^{***}	0.35	0.38
	(0.22)	(0.50)	(0.62)
Choice Unequal	0.79^{***}	2.50^{***}	1.22^{**}
	(0.27)	(0.68)	(0.62)
Pivotal to Unequal	0.02	0.53	1.22
	(0.31)	(0.57)	(0.81)
Unequal Outcome	0.21	1.21^{**}	
	(0.27)	(0.58)	
Constant	-2.05^{***}	-3.71^{***}	-1.75^{***}
	(0.22)	(0.70)	(0.51)
AIC	517.17	125.89	87.93
BIC	538.28	140.74	97.04
Log Likelihood	-253.58	-57.95	-39.97
Deviance	507.17	115.89	79.93
Num. obs.	504	144	72

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

C.2 OLS - Apendix

Table 16: OLS Models of DM Punishment proposal A: ((9,1),(7,3))

	Model 1	Model 2	Model 3	Model 4
Proposer	0.69^{***}	0.69^{***}	0.69^{***}	0.69^{***}
	(0.16)	(0.15)	(0.15)	(0.15)
Choice unequal		0.77^{***}	0.78^{***}	0.93^{***}
		(0.14)	(0.16)	(0.17)
Pivotal to unequal			-0.03	0.12
			(0.21)	(0.22)
Unequal Outcome				-0.40^{**}
				(0.17)
Constant	0.52^{***}	0.13	0.13	0.23^{*}
	(0.09)	(0.11)	(0.11)	(0.12)
R^2	0.04	0.09	0.09	0.10
Adj. R^2	0.04	0.09	0.09	0.09
Num. obs.	504	504	504	504

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table 17: OLS Models of DM Punishment proposal B: ((9,1),(5,5))

	Model 1	Model 2	Model 3	Model 4
Proposer	0.49	0.49^{*}	0.27	0.28
	(0.31)	(0.27)	(0.26)	(0.26)
Choice unequal		1.69^{***}	1.11^{***}	1.07^{***}
		(0.26)	(0.27)	(0.29)
Pivotal to unequal			1.74^{***}	1.70^{***}
			(0.36)	(0.38)
Unequal Outcome				0.12
				(0.29)
Constant	0.78^{***}	-0.07	0.01	-0.03
	(0.18)	(0.20)	(0.19)	(0.20)
R^2	0.02	0.25	0.36	0.36
Adj. R^2	0.01	0.24	0.34	0.34
Num. obs.	144	144	144	144

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table 18: OLS Models of DM Punishment proposal C: ((7,3),(5,5))

	Model 1	Model 2	Model 3	Model 4
Proposer	0.02	0.02	0.19	0.06
	(0.29)	(0.25)	(0.27)	(0.23)
Choice unequal		1.08^{***}	0.86^{***}	0.43^{*}
		(0.24)	(0.27)	(0.25)
Pivotal to unequal			0.68^{*}	0.16
			(0.38)	(0.34)
Unequal Outcome				1.20^{***}
				(0.25)
Constant	0.73^{***}	0.19	0.13	-0.13
	(0.17)	(0.19)	(0.19)	(0.17)
R^2	0.00	0.23	0.26	0.46
Adj. R^2	-0.01	0.21	0.23	0.43
Num. obs.	72	72	72	72

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$