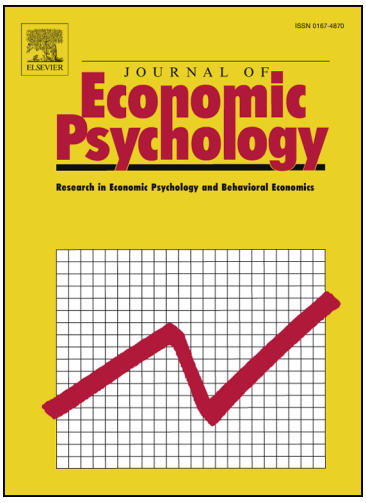

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Choosing an Electoral Rule: Values and Self-Interest in the Lab[1]

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Abstract

We study the choice of multi-person bargaining protocols in the context of politics. In politics, citizens are increasingly involved in the design of democratic rules, for instance via referendums. If they support the rule that best serves their self-interest, the outcome inevitably advantages the largest group. In this paper, we challenge this pessimistic view with an original lab experiment, in which 252 subjects participated. In the first stage, these subjects experience elections under plurality and approval voting. In the second stage, they decide which rule they want to use for extra elections. We find that egalitarian values that subjects hold outside of the lab shape their choice of electoral rule in the second stage when a rule led to a fairer distribution of payoffs compared to the other one in the first stage. The implication is that people have consistent 'value-driven preferences' for decision rules.

JEL classifications: D71, D72, C90, C91, C92

Keywords: Political economy; lab experiment; choice of decision rules; electoral rules; voting

[1] The data and replication files are available at: https://doi.org/10.7910/DVN/LKBBHG.

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Highlights:

- We organized elections under plurality and approval voting in a lab (first stage)
- We let subjects choose the electoral rule that they want for extra elections (second stage)
- Subjects who hold egalitarian values outside of the lab tend to choose the rule that leads to the most egalitarian distribution of payoffs in the first stage
- Subjects who hold inegalitarian values tend to choose the rule that concentrates payoffs around a few subjects

1. Introduction

Formal decision rules are key ingredients of bargaining protocols. The structure under which individuals make their choice and interact can affect the outcome and increase/decrease the group's welfare (Bolton and Ockenfels 2012; De Clippel et al 2014; Konow et al 2020; Maskin 1999). Economic theory has been concerned with rules design for some time already (e.g., the Nobel lecture of Hurwicz 2008), especially for two-person bargaining situations within economics environments (Chessa et al 2022; Malik et al 2021; Myerson 2008). By contrast, multi-person bargaining theory has produced comparatively less results although formal political scientists have stressed the importance of such situations early on (Baron and Ferejohn 1989; Ordeshook 2007). The many obstacles to the theory led theorists to take multi-person bargaining models to the lab (McKelvey et al 1978) using either structured or unstructured protocols (Karagözoglu 2017) as part of the general 'revolution' of behavioral economics.

In this paper, we study the choice of multi-person bargaining protocols in a political context. In politics, the core decision rules are those that organize elections, i.e., electoral rules. These rules have important consequences for society, but exhibit inextricable trade-offs, like the one between the fair representation of all major social groups in the political process via the multiplicity of parties in parliament and political accountability that single-party governments facilitate (Carey and Hix 2011; Lizzeri and Persico 2001; Persson 2002; Persson et al 2003). Choosing an electoral rule should thus depend on the societal objectives that one seeks to achieve or, in other words, on one's societal values. Meanwhile, since some electoral rules give an advantage to some competitors, it is in the self-interest of the people involved in their design to select the one that maximizes their chances of winning, and therefore to implement their

policy platform (Aldrich et al 2014; Boix 1999; Fréchette et al 2008; Trebbi et al 2008). The choice of an electoral rule is thus not trivial.

We set up a lab experiment to analyze the choice of electoral rules as a case of multi-person bargaining (number of subjects = 252). The experiment is organized in two stages: in the first, subjects practice elections under plurality and approval voting; in the second, we ask them to choose the rule that they want to use for some extra elections. Under plurality, subjects cast a single vote for a candidate and the one with most votes is elected. Under approval voting, they approve as many candidates as they want and the candidate with most approvals is elected. Approval voting was proposed by Brams and Fishburn who praised it because of its immunity from 'vote wasting' and its capacity to elect a Condorcet winner (Brams and Fishburn 1978; Laslier and Sanver 2010). It is used in internal elections by a few organizations such as the American Mathematical Association and the Economic Science Association for global leadership elections. Besides, it has been recently adopted for political elections in the cities of Saint Louis (MO) and Fargo (ND). Although it has never been used in a national political election, it has attracted the attention of many researchers because of its theoretical properties.

We selected plurality and approval voting because these two rules (1) apply to the same electoral context, i.e., the election of a single candidate, (2) are simple enough to be accurately modelled in the lab[2], and (3) lead to similar yet distinct results. Both favor the centrist candidate in theory, but not to the same degree empirically (we show evidence of this in Section 4.1.). The differences between the two are thus *tendential* rather than *deterministic*. The choice in

[2] Proportional representation is particularly hard to model in the lab because of the presence of frequent coalitions, in which the winning parties need to share power with other parties (Kamm 2017).

the second stage is therefore a choice between two electoral rules and not between two certain electoral outcomes.

There is a key experimental condition in the second stage of our design: whether subjects have information about which rule is more advantageous to them prior their choice between plurality or approval voting. In other words, we simulate a 'veil of ignorance' *à la* Harsanyi (1955) or Rawls (1971).[3] We find that regardless of the experimental condition subjects tend to make a choice consistent with the values that they hold outside the lab in the second stage in the sessions when the two rules led to different outcomes in the first stage. In those sessions, those who believe in egalitarianism in society are more likely to choose approval voting in the second stage because they learn from the first stage that it is the rule that produces the most egalitarian distribution of payoffs. By contrast, still in those sessions, those who are more inegalitarian[4] tend to choose plurality as it is the rule that concentrates the payoffs around a few subjects. In other sessions where the two rules led to similar outcomes in the first stage, there is no association between egalitarianism and the choice of electoral rule in the second stage.

Our contribution is threefold. First, we contribute to the political science's literature on the choice of electoral rules. A few empirical studies suggest that both politicians and citizens have preferences for electoral rules that are at least partly motivated by values (Blais et al 2015; Bol 2016; Bowler et al 2006; Riambau et al 2020), but they are all observational. They evaluate whether politicians' or citizens' support for different rules correlates with their values, and whether this correlation holds in a regression after controlling for the personal payoffs they can

[3] Our design is not a replica of Rawls' version of a veil of ignorance, in which subjects do not know anything about their identity or position in society. In our experiment, the veil means that subjects are uncertain about their position on the political spectrum, and how many points they can expect to get out of the electoral rules.
[4] By 'inegalitarian', we mean the opposite of 'egalitarian' that is someone who prefers when wealth is concentrated around a few people and not equally distributed.

expect out of the rules. Our lab experiment allows us to disentangle self-interest and values. Although we measure values using survey questions, we randomly manipulate how much personal payoffs they can expect out of each rule, thus making the two variables orthogonal by design.

Second, we contribute to the (normative) literature in experimental economics about the choice of multi-person bargaining protocols and procedural fairness. In the domain, what applies to large groups such as societies or countries may also apply to groups of smaller size. Even for a small group of individuals who know each other, there can be a trade-off between the rule that is collectively good and the one that is selfishly good for a given individual in a certain circumstance. This literature for example finds that when subjects can democratically choose upon a decision rule for the group, they are more likely to show pro-social behaviors than when they are assigned to it (Dal Bó et al 2010; Sausgruber et al 2021; Sutter et al 2010).

Closer to us, a few recent studies investigate what shapes subjects' preference for decision rules (Hoffman and Renes 2021; Engelman et al 2020; Weber 2020). Like us, they ask subjects to choose a multi-person bargaining protocol behind a veil of ignorance. Whereas Hoffman and Renes (2021) find that people are not more likely to choose the fairest rule, Engelman et al (2020) and Weber (2020) conclude that they are, in the sense that many choose a rule knowing that it will not maximize their own payoff. The authors then propose the conjecture according to which some subjects favor the rule that appears fairer, either intrinsically fairer because of the way it works or indirectly fairer because it leads to a fairer outcome (see Anand 2001; Esaiasson et al 2019; Frey et al 2004 on the difference between 'procedural fairness' and

'outcome-based fairness').[5] Yet these are conjectures, and we are to our knowledge the first to provide an empirical test of the reasons why people do not choose protocols in a selfish manner. We do so by looking at the consistency between subjects' choices and the values that they hold outside the lab. We find strong evidence for such consistency, both when subjects are behind the veil of ignorance and when they are not. Subjects are more likely to choose the rule that leads to an outcome that fits their societal values. We conclude that values indeed matter for the choice of decision rules.

Third, assuming lab experimental findings can be generalized to the field (see Section 5 for a discussion of this), we believe our study has real-world implications. Citizens are increasingly involved in the choice of democratic rules, either indirectly because elites take public opinion into account when they decide, or directly via referendums and citizen assemblies (Renwick 2010). In the last 10 years, there have been dozens of referendums on democratic reforms in Canada, Italy, Ireland, New Zealand, Slovenia, and the United Kingdom. Recent examples include the state of Maine where, in 2016, citizens voted 'yes' to replace the plurality rule by instant runoff, and the city of Fargo (ND) and Saint Louis (MO) where people opted for approval voting respectively in 2018 and 2021. Our conclusions are optimistic in this domain: citizens being increasingly involved in the choice of democratic rules, we are likely to witness the emergence of rules that reflect the societal values of the population.

2. Experimental design

[5] In our paper, we show that it is 'outcome-based fairness' affects the choice of decision rules. We make the argument that subjects who hold egalitarian values outside of the lab are more likely to choose approval voting over plurality because approval voting tends to lead to a more egalitarian distribution of payoffs. Indeed, we show in Section 3.2 that in the sessions in which the two rules lead to the same payoff distribution, egalitarian subjects are *not* more likely to choose approval voting over plurality, which rules out the possibility that this effect is due to procedural fairness.

Between May and June 2018, we organized 12 experimental sessions, 6 in Great Britain and 6 in France[6], with 21 experimental subjects each, which means that we have a total number of 252 subjects.[7] The experiment was in two stage and lasted about one hour. In the first stage, we assigned each subject to an ideal point on a scale going from 0 to 20 (one subject per position, uniformly distributed). There were five candidates (A, B, C, D, and E) that each had an ideal point on this scale. Table 1 offers a visualization. Although this was never mentioned to avoid ideological bias in behavior, we can see the 0-20 scale as the spatial left-right space.[8]

Table 1. Payoff structure

Subjects	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Payoff if A	9	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0
Payoff if B	4	5	6	7	8	9	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0
Payoff if C	0	0	1	2	3	4	5	6	7	8	9	8	7	6	5	4	3	2	1	0	0
Payoff if D	0	0	0	0	0	0	0	1	2	3	4	5	6	7	8	9	8	7	6	5	4
Payoff if E	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3	4	5	6	7	8	9

Note: Each column represents one subject. Each of these subjects have a position in the 0-20 scale. The rows below indicate how many points each subject receives in case each candidate wins (candidate A, candidate B…).

In the first stage, the subjects experience two electoral rules (order is randomize from session to sessions).[9] There is a series of four elections under plurality, and another one of four elections under approval voting (the order randomly varies from session to session). Under plurality, the subjects have one vote, and the candidate with most votes wins. Under approval

[6] In Great Britain, we conducted the sessions in Wivenhoe (EssexLab). In France, we conducted the sessions in Paris (LEEP). We follow the ethical requirements of both labs that include a clause of no deception. We received an IRB approval from the ethical committee of King's College London prior the experiment.

[7] A description of the two samples can be found in A1. Like in most lab experiments, the samples over-represent university students (young and overly female).

[8] We chose the positions 0, 5, 10, 15, and 20 for the candidates because we anticipated that payoffs would be easier to calculate for subjects with round numbers.

[9] After reading the instructions to subjects, we asked them a few quiz questions (non-incentivized) to make sure that they understood the rules. We do not exploit the answers to these questions in the analysis because they served as training purpose. Subjects who responded incorrectly were notified of their error on the screen with an explanation of why this was in fact incorrect. A1 includes the instructions, the quiz questions (with proportion of correct answers), and copies of decision screens.

voting, they approve or not each of the candidates, and the candidate with most approvals wins. In both, subjects have perfect information about the structure of payoffs, and cannot abstain. They vote simultaneously, so that they do not know how others vote when they make their decision. We randomly reshuffle the positions of subjects on the 0-20 scale at the beginning of each series[10], but the positions of candidates remain constant.

After each election, there is a single winning candidate, which determines the payoff of subjects. The intuition is that, just like in real-life elections, the closer one is from this candidate on the scale, the greater the payoff. The formula is the following:

Payoff = 9 – (Distance between subject and winning candidate on the 0-20 scale)

The payoff cannot be negative. In other words, for subjects with an extreme position, it does not matter whether it is the centrist candidate or one on the other side that wins, their payoff is 0 (see Table 1). We introduce this specificity for realistic concerns: voters whose preference does not resonate with any candidate because they are too far away from them ideologically speaking are indifferent to the candidate ultimately elected (Bol and Ivandic 2022). After each election, subjects see on their screen how many votes (approvals) each candidate received, which candidate won, and how many points they received based on this result.

In the second stage, we organize two extra elections after randomly reshuffling the positions of the subjects on the 0-20 scale. The elections are the same as in the first stage, except that,

[10] The subjects keep the same position for four elections under each electoral rule in the first stage of the experiment to avoid confusion. Note however that this choice has no consequence over the main analysis of the paper that is based on the second stage of the experiment. In the second stage, the subjects change position before each election.

before voting, subjects must choose whether they want to use plurality or approval voting (they cannot abstain from choosing). Importantly, they see on the decision screen a summary of the results of the first stage before making their choice: how many times each candidate won under each rule. Then, we randomly pick one subject, and organize the election with their favorite rule. The advantages of this 'random dictator' procedure are twofold: (1) there cannot be any tactical voting in the choice of rule, and (2) each individual choice has the possibility of being pivotal, which ensures that the decision is meaningful.

The experimental condition is whether subjects are behind the veil when they choose the electoral rule in the second stage. In the first conditions, subjects are informed about their position on the 0-20 scale *before* they make their choice. Hence, they can determine which rule will maximize their expected personal payoff in the second stage given the result of the first stage. By contrast, in the second condition, we assign them a position *after* they make their choice. They are thus behind a veil of ignorance. Subjects can still compute their personal payoffs in expectation, but we design the experiment such that these expected payoffs behind the veil of are identical under both rules. In both instances, the average gain is around 15 and the minimal gain is 0 (there is always a subject who got no point after four elections, see Section 4.1). The order of the two conditions of the second stage varies from session to session, so that half of the subjects start choosing behind the veil and then choose while knowing their position on the 0-20 scale, and vice versa for the other half.

Given the focus of the paper on the choice of an electoral rule, the main part of the analysis revolves around the second stage of the experiment. The dependent variable is the choice of electoral rule in the second stage. We then have 2 countries x 6 sessions x 21 subjects x 2 choices = 504 observations (252 observations per experimental condition). In the results

section (see Section 4.1), we also analyze what subjects learn from the first stage of the experiment. For this analysis, we consider that each session is a separate unit. In other words, we aggregate all elections organized in the first stage and consider that this aggregation is the bit of information that the subjects acquire at this stage. We thus have 12 observations (2 countries x 6 sessions). In Table 3, we analyze the vote decisions that subjects make in the first stage. Hence, we use subject-candidate dyads as unit, which means that we have 2 countries x 6 sessions x 21 subjects x 8 elections x 5 candidates = 10,080 observations (5,040 per electoral rule).

At the end of the experiment, we ask subjects to answer a short survey containing questions about their socio-demographic profile (age, gender) and their personal views about society and redistribution. In particular, we ask a classic battery of questions eliciting their degree of egalitarianism.[11] We also select randomly three elections (two in the first and one in the second stage). The number of points obtained by each subject at these three elections are averaged, and monetary gains are then calculated such as 1 point = 1 euro (France) or 3 pounds (Great Britain).

3. Expectations and hypotheses

3. 1. First stage

[11] Note that we decided against using a dictator game to measure egalitarian attitudes. Although such behavioral procedure would have minimized the risk of misreporting, we opted for a self-reported attitudinal one because we aim at studying how the values that subjects hold *outside* the lab on their decision *inside* the lab. Besides, we believe that misreporting is unlikely in this context given that (1) egalitarianism is not a particularly sensitive issue for which answers are likely to be affected by social desirability bias, and (2) previous studies demonstrate the validity of these survey items by showing their empirical association with actual egalitarian behavior (Evans and Neundorf 2020).

During the elections of the first stage, subjects can naively vote for (or approve) the candidate the closest to them on the 0-20 scale if they do not want to try to anticipate what other subjects will do. Yet, subjects should in fact strategically vote (or approve) the centrist candidate C to make sure that a candidate from the other side of the 0-20 scale does not win and thus maximizes their payoff. This strategy is the classic rational prediction of Hoteling-Downs models under plurality and approval voting (Downs 1967; Cox 1985). The exception is subjects located at the extremes (0, 1, and 19, 20) whose payoff associated to candidate C is null. These subjects are indifferent to candidate C and the candidates from the other side of the 0-20 scale. They can thus vote (or approve) candidates B or D depending on which side of the spectrum they are located. Since there are only four of these subjects, candidate C should nevertheless win under both electoral rules.

The key defining element of approval voting compared to plurality is that subjects can choose more than one candidate. Hence, on top of approving candidate C, subjects who are closer to candidate B than to candidate C (i.e., those between 0-7) can also approve candidate B (and those closer to candidate D, i.e., those between 13-20, can also approve candidate D). This second approval is indeed costless, and subjects can think that in the event when others make some random mistakes, candidates B or D can in fact win. Consequently, the elections are likely to be tighter under approval voting than plurality. Although candidate C should in theory still win according to the Hoteling-Downs model, there is greater chance that candidates B or D win at least some of the time because of random mistakes. This is actually a common finding in experimental studies organizing election under approval voting with similar setup (e.g., Baujard et al 2014). Note finally that the extremist candidates A and E should in theory never win.

3. 2. Second stage

We have expectations and hypotheses about the effect of self-interest and values on the choice of electoral rule. The assumption is that subjects do not know have any priors about the electoral rules and the outcomes that they produce in this laboratory setting. They learn that from the first stage, and they then make their decision in the second stage based on this bit of information. First, we expect that when subjects know their position on the 0-20 scale, they self-interestedly select the electoral rule that gave the largest payoff to this position during the first stage. For example, if a subject's position in the second stage is 10, they will favor the rule that gave the most points to position 10 during the elections of the first stage. Note that the positions of candidates are perfectly symmetric. Hence, subjects should understand that a rule that favors a certain candidate also favors the symmetrical candidate. For example, if candidate B (position 5) wins often under a certain rule, the symmetric candidate D (position 15) is as likely to win under this rule. We thus calculate a variable that we call 'Rational Benefit':

Rational Benefit = $((P_i^A - P_i^{Pl}) + (P_j^A - P_j^{Pl}))/2$

Where P_i^A is the number of points obtained by the subject placed at position i in the four elections of the first stage under approval voting, P_i^{Pl} by the subject placed at position i in the four elections of the first stage under approval voting, and j is the symmetric position in the 0-20 scale (e.g., the 17 is the symmetric position of 3). We expect this variable to be positively associated to choosing approval voting over plurality. The first hypothesis is the following:

H1 (self-interest). When subjects know their position on the 0-20 scale, the larger the payoff an electoral rule gives to this position (and its symmetric position) compared to the other rule in the first stage, the more likely they choose this rule.

Second, we expect that when subjects are behind the veil, they choose an electoral rule for other reasons than maximizing their payoff. They indeed have the same expected payoff under plurality and approval voting. On average, both rules give an equal number of points to subjects, and there is in each a possibility to receive zero point (hence, no 'maximin strategy', see evidence of this in Section 4.1). In that context, we expect subjects to make their decision based on other-regarding preferences and choose an electoral rule that is consistent with the values that they hold outside of the lab.

Here as well, we assume that they learn the consequences of the two rules during the first stage and that they use this information to make their decision in the second one. However, since they do not know their position on the 0-20 scale, they need to consider the consequences for the entire group. In a controlled setting like ours, the main consequence of the rules concerns the distribution of payoffs. Depending on which candidate wins, and how many times, the distribution can be more or less egalitarian. As shown in Section 4.1., approval voting produces a more egalitarian distribution of payoffs. We then hypothesize that subjects who hold egalitarian values are more likely to choose approval voting. To measure egalitarianism, we ask standard survey questions aimed at measure egalitarian values at the end of the experiment (same as in Feldman 1988):

"To what extent do you agree with the following statements (strongly agree/agree/neither agree, nor disagree/disagree/strongly disagree):

(1) If people were treated more equally in this country, we would have many fewer problems

(2) We should give up on the goal of equality, since people are so different to begin with"[12]

After reversing the answers to the second question, we sum them up to construct a continuous index that goes from 0 to 8, and that we call 'Egalitarianism'. In our sample of experimental subjects, the average interim covariance of the Cronbach Alpha for this index is 0.50 and its scale reliability is 0.61.[13]

H2 (values). When subjects are behind the veil, the more egalitarian they are the more likely they choose approval voting over plurality because it is the rule that leads to the most egalitarian distribution of payoffs.

Note that, in our experiment, egalitarianism is not randomly assigned. We rely on the values that subjects hold outside of the lab. Yet, by design, egalitarianism is independent from self-interest, because their self-interest is a function of the position on their 0-20 scale, which is randomly assigned at each series of elections. In our data, there is indeed no correlation between the variable Egalitarianism and Rational Benefit (correlation=-0.005, p=0.91). Furthermore, there is no correlation between Egalitarianism and how many point subjects have at the end of the experiment (correlation=-0.002, p=0.97).

Note also that one can fear that responses to these survey questions might be influenced by what happened during the experiment, which would cast doubt on our result. However, we

[12] In French, the wording is: "*Si les gens étaient traités de manière plus égale dans ce pays, nous aurions beaucoup moins de problèmes*" and "*Nous devrions abandonner l'objectif d'atteindre l'égalité puisque de toute façon les gens sont au départ très différents les uns des autres.*"

[13] Note that this Cronbach below standard. This means that the measurement of the egalitarian values hold by subjects outside the lab is noisy, which can affect the results of the study.

believe this is unlikely for two reasons. First, in the literature, egalitarianism is described as a 'core value', that is remarkedly stable even over a lifetime (Sears and Funk 1999). This suggests that it hardly affected by any political events. It thus seems unlikely that it can be affected by a lab experiment that lasts one hour. Second, the survey questions are about egalitarian attitudes in a societal context (e.g., "If people were treated more equally in this country, we would have many fewer problems"). We believe that it is unlikely that subjects make the connection between these questions and the choices made during the experiment.

4. Results

4. 1. First stage

In line with our expectations, the two rules have strong centripetal effects. In the 96 elections organized in the first stage (12 sessions x 4 elections x 2 electoral rules), the centrist candidate (C) is the one that wins the most (64% of the time) and the extreme candidates (A and E) never win (0%). We see some difference between the two rules regarding the candidates B and D: they win slightly more often under approval voting (38% compared to 35% under plurality) to the detriment of candidate C. The two electoral rules thus lead to outcomes that are only tangentially different[14], but the aggregate proportion of victories is not the best indicator of how the electoral rule affects the outcome of the election.

[14] Some might argue that the similarity in outcomes could lead subjects to rely on other motivations than payoff maximization to make their choice in the second stage. However, we find that the effect of values in the choice of an electoral rule is in fact larger in sessions in which the two rules produced two substantially different outcomes (see Section 4.2). This suggests that the effect of values is *not* inflated by the similitude of outcomes under the two electoral rules. A2 contains the results of the elections of the first stage.

Several factors affect the payoff distributions in our experimental setting. The first one is the identity of the candidate who wins. A centrist candidate leads to a more egalitarian distribution of payoffs than an extreme candidate. However, given that extreme candidates never win in our data, this factor is not consequential. Another more important factor is how many different candidates wins over the series of elections. In sessions where a single candidate wins all four elections, the aggregate distribution of payoffs is not particularly egalitarian. Given that the subjects keep the same position over the four elections, all points go to the same subjects, and other subjects receive no point. By contrast, when there is more than one candidate winning over a series, a larger of subjects receive at least some points which makes the payoff distribution more egalitarian. Given that candidates B and D tend to win more under approval voting than plurality, we expect the distribution of payoffs to be more egalitarian under approval voting. To formally test this intuition, we use two indicators: the mean standard deviation of the distribution of payoffs among all 21 subjects over the four elections of the first stage, and the mean number of subjects that receive at least one point over the four elections during this stage. Both are indicators of payoffs equality, but the latter is a cruder measure, easier to compute for subjects.

Table 2. Average results of first stage (over four elections per session)

Variables	Approval	Plurality	Difference
Mean Standard Deviation of Payoffs Distribution (min: 7.18, max: 12.87)	9.82	11.25	-1.44**
Mean Number of Subjects With At Least 1 Point (min: 14, max: 21)	19.00	17.58	1.42**
Average Gain (min: 14.29, max:15.43)	15.00	15.02	-0.02
Minimal Gain (min: 0, max: 4)	0.33	0.00	0.33

Note: N=12 sessions. P-values in the last column are derived from t-tests of the difference between the mean over the four elections under approval voting and the mean over the four elections under plurality, assuming equal variance (two tailed). *p<0.05, **p<0.01.

From Table 2, we observe that on average, the standard deviation of payoffs is smaller under approval voting (9.82, compared to 11.25 under plurality, t(11)=-4.38, p<0.01), and the number of subjects with at least one point larger (19, compared to 17.58 under plurality, t(11)=3.26, p<0.01). Importantly, there is no experimental session in which plurality produces a more egalitarian distribution of payoffs over the four elections of the first stage. In the most extreme case, both rules are equally egalitarian (which happened in two out of 12 sessions if we consider differences in standard deviation). Some subjects thus experience a more egalitarian distribution of payoffs under approval voting than under plurality and some do not. Importantly, Table 2 also shows that the average and minimal gain obtained by subjects over the four elections of the first stage is the same under both electoral rules (respectively, t(11)=-0.25, p=0.81 and t(11)=1.00, p=0.34). This finding is important as it means that behind the veil of ignorance, subjects' expected payoff is the same regardless of the rule that they choose.

Why do we observe this difference of results between approval voting and plurality? In Table 3, we report the results of conditional logit regressions predicting the subject's vote for (or approval of) a given candidate by her distance to this candidate, and candidate dummy variables. We observe that in both instances, the distance is an important predictor (the further away subjects are from candidate, the less likely they are to vote for it), and that subjects are more likely to support C than any other candidate. The main difference is that, as expected, the probability to vote for (or approve) B and D is substantially larger under approval voting than under plurality. Consequently, the number of votes separating the top two candidates is smaller under approval voting than under plurality (1.44, compared to 2.35 under approval voting), which means that the elections are tighter. Hence, a single vote is more likely to change the electoral result, typically in favor of candidate B and D. For this reason, we observe more variations in the number of different winning candidates under approval voting than under

plurality. This confirms our expectation regarding the results of the first stage of the experiment.[15]

Table 3. Conditional logit regressions of voting behavior

	Plurality	Approval Voting
Distance to Candidate	-0.003**	-0.005**
	(0.001)	(0.001)
Candidate Dummies	(C as Reference)	(C as Reference)
Candidate A	-0.027**	-0.004*
	(0.004)	(0.002)
Candidate B	-0.019**	-0.002
	(0.002)	(0.001)
Candidate D	-0.013**	-0.001
	(0.002)	(0.002)
Candidate E	-0.027**	-0.005**
	(0.004)	(0.001)
N	5,040	4,920

Note: Entries are marginal effects estimated from conditional logit regressions predicting the probability to vote for/approve a candidate. Standard errors clustered by subjects are in parentheses. *p<0.05, **p<0.01 (two-tailed). The N is the number of decisions made by subjects. The N is smaller under approval voting because observations for which a subject approves all five candidates cannot be included (no variation in the dependent variable). This happened in 2% of the observations.

The bottom line is that approval voting leads to slightly more egalitarian distributions of payoffs because candidates B and D wins slightly more often compared to plurality. Importantly, we have evidence that subjects perceive the difference in fairness between electoral rules. At the end of the experiment, we ask them to evaluate the fairness of the two rules, from 0 'not fair at all' to 4 'very fair'. On average, we find that 46% think that approval voting is fairer than plurality, whereas 25% think the opposite (29% think they are equally fair). These proportions vary depending on the electoral results of the first stage. In Session 6 (where approval voting leads to more egalitarian distribution of payoffs than plurality), 48% think

[15] Note that there is no evidence of coordination among voters, as the average margin of victory is almost the same in the first and last election of the first stage: from 1.33 to 2.00 under approval voting, and from 2.00 to 2.50 under plurality.

approval voting is fairer, compared to 33% in Session 10 (where approval voting and plurality lead to equally egalitarian distributions of payoffs).

4. 2. Second stage

In the second stage, subjects choose approval voting 61% of the time. There is little difference across experimental conditions (60% when they know their position, 62% behind the veil), countries (62% in France, 60% in Great Britain), or order (62% when they start with plurality in the first stage, 60% when they start with approval voting).

To test our hypotheses, we run logistic regressions predicting the probability of choosing approval voting over plurality.[16] We first split the sample in two: the choices made when subjects know their position on the 0-10 scale, and those made behind the veil. The independent variables are: 'Rational Benefit' and 'Egalitarianism', as defined above. In order to compare the coefficients of the independent variables across experimental conditions, we then pool all observations and add an interaction between the main independent variables and the experimental condition. Note that the descriptive statistics of the independent and dependent variables, as well as control variables that we use in a robustness test, can be found in A2. Histograms of the independent variables can be also found in Figure 1.

[16] Note that subjects, and not experimental groups, constitute the unit of analysis because we measure the variables of interest at this level. First, the experiment is designed so that the choice of electoral rule (i.e., the dependent variable) is made by each subject independently from the rest of the group thanks to the system of random dictator. Second, the independent variable Egalitarianism is measured at the end of the experiment in a questionnaire to which each subject responded privately. Third, although the independent Rational Benefit is partially based on the results of the first stage of the experiment and is thus not totally independent from the group, it still varies at the subject level in the sense that the value depends on the position of each subject on the 0-20 scale that we assign randomly. That said, we account for this partial grouping in clustering our standard errors at the group level.

Table 4. Main regressions for the second stage

	(No Veil)	(Veil)	(Pooled)
Rational Benefit (Approval – Plurality)	0.020	0.007	0.020
	(0.011)	(0.009)	(0.011)
Egalitarianism	0.022	0.043*	0.021
	(0.012)	(0.021)	(0.011)
Rational Benefit (Approval – Plurality) x Veil			-0.012
			(0.011)
Egalitarianism x Veil			0.022
			(0.014)
Veil			-0.103
			(0.068)
N	252	252	504
Pearson χ^2	114.51	112.76	227.26
Pearson χ^2 p-value	0.096	0.091	0.033

Note: Entries are marginal effects from logit regression predicting the probability of choosing approval over plurality. Standard errors clustered by sessions are in parentheses. *p<0.05, ** p<0.01 (two-tailed).

From Table 4, we first observe that in our sample Rational Benefit increases the probability of subjects choosing the electoral rule that is most favorable to their position when they know their position. However, this result is not statistically significant (p=0.08). Behind the veil, Rational Benefit has an even smaller effect, which is normal given that subjects do not know their position (we can see this as a placebo test, p=0.42).

Second, we find that Egalitarianism affects the probability of choosing approval voting over plurality, but only when subjects are behind the veil (p=0.04). The coefficient is twice smaller and not statistically significant when they know their position on the 0-20 scale (p=0.06). The statistical significance of these effects is of course affected by the relatively low number of observations. We did not perform any power analysis prior the experiment since there was no benchmark on which to base our estimates. An *ex-post* power analysis based on results of Table 4 reveals that, at a power level of 0.80, a sample size of 340 (veil) and 374 (no veil) would have led to an effect of Egalitarianism (from the mean to +1 standard deviation above the mean) statistically significant at a level of p<0.01.

From the last column, we observe that the interaction term between Egalitarianism and the experimental condition is not statistically significant (p=0.12). This suggests that values matter as much for the choice of an electoral rule regardless the experimental condition. Note that in this regression as well, a simulation shows that effect of 'Egalitarianism' behind the veil of ignorance is 0.043 (p=0.04).

Similarly, a bivariate analysis reveals that the mean value of Egalitarianism is higher by 0.44 among subjects who choose approval voting compared to those who choose plurality (t(502)=2.70, p<0.01, N=504). This difference is the larger behind the veil (+0.62, t(250)=2.67, p<0.01, N=252) than when subjects know their position on the 0-20 scale (+0.27, t(250)=1.16, p=0.25 N=252).

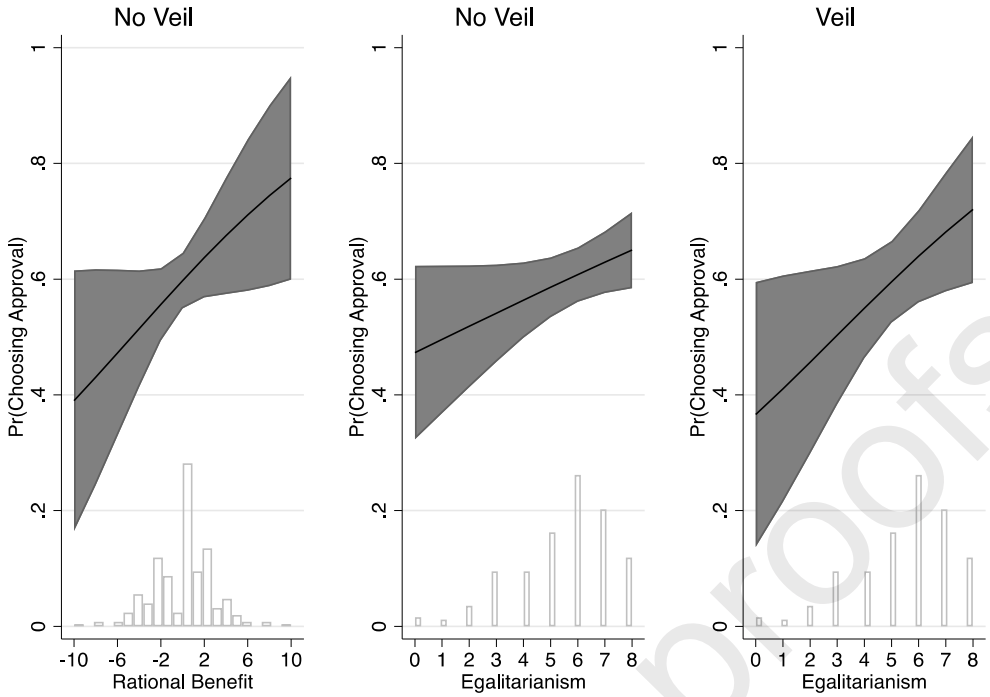
Another way of showing this finding is to look at the level of Egalitarianisms across different groups of subjects and compare those who choose a different electoral rule when they are behind the veil (30% of subjects) to those who stick to the same rule. First, we look at subjects who pick approval voting when they know their position on the 0-20 scale (N=150). Among them, those who stick to this rule when they are behind the veil are more egalitarian than those who switch to plurality by 0.91 (t(148)=2.68, p<0.01, N=150). Second, we look at the opposite image: subjects who choose plurality when they know their position on the 0-20 (N=102). Among them, those who stick to this rule behind the veil of ignorance are less egalitarian than those who switch to approval voting by -0.26 (t(100)=-0.69, p=0.49, N=102), although this difference is not statistically significant.

A2 contains a series of robustness tests. First, we reproduce the regressions of Table 4 with an OLS estimation. Second, we reproduce these regressions in adding some control variables: age,

gender, interest in politics (on a scale from 0 'not interested at all' to 10 'very interested'), and country where the experiment took place (United Kingdom or France, to control for differences in payment rates and for potential status quo bias). In addition, we add a variable called 'Myopic Benefit', which is simply the difference between the number of points obtained by the subject under approval voting and plurality in the first stage. This is different from 'Rational Benefit', as it does not consider the position of the subject that is randomly allocated prior the second stage. We also add a variable capturing the difference between the average gain of all 21 subjects in the first stage under approval voting and plurality, which corresponds to the expected payoff of subjects behind the veil since they do not know their position. In all instances, the effect sizes remain very similar although some of the results loose statistical significance.

To assess the magnitude of these effects, we plot the predicted probabilities of the dependent variable using the estimates of the regressions of Table 4. Each time, we show the variation between the empirical minimum and maximum of the independent variable. Figure 1 shows that the effect of Rational Benefits when subjects are not behind the veil is similar in magnitude to the effect of Egalitarianism when subjects are behind the veil of ignorance: +30% points in the predicted probability of choosing approval voting. Although smaller, the effect of Egalitarianism in the absence of veil is still substantial: +15% points. This means that Egalitarianism is almost as good a predictor of the choice of electoral rules than Rational Benefits.

Figure 1. Magnitude of the effect of Rational Benefit and Egalitarianism



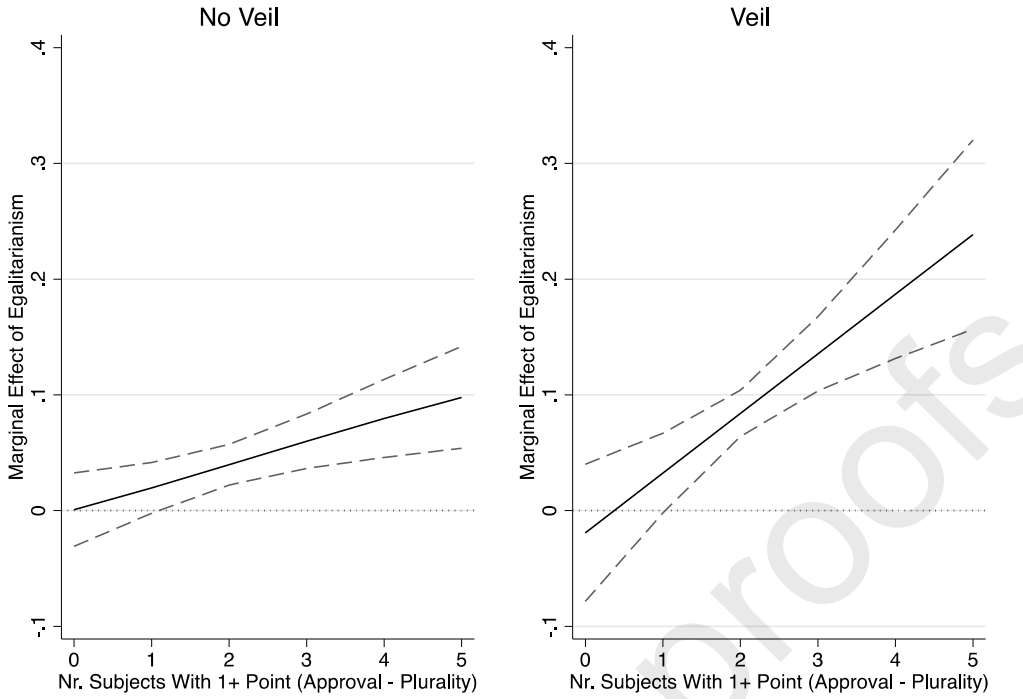
Note: Entries are predicted probabilities based on regressions of Table 4. Shaded areas are 95%-confidence intervals. White histograms show the distribution of the independent variables (Rational Benefit and Egalitarianism).

As a final step of the analysis, we probe the mechanism behind H2. This analysis is important to discard the possibility that egalitarian subjects prefer approval voting for other reasons than the tendency of the rule to create payoff that are more egalitarian than plurality, like for instance the simple possibility that it gives them to approve more than one candidate. In the elections of the first stage, there is some variation in how much more egalitarian the payoffs are under approval voting compared to plurality: in some sessions, the difference between the two is small, in others it is larger. We thus replicate the regressions of Table 4 by adding a measure of difference in payoffs equality ('the number of subjects with at least one point in the four elections of the first stage under approval voting – the number of subjects with at least one point in the four elections of the first under plurality') and an interaction between this variable and Egalitarianism. In A2, we show the full regression results as well as the results using

another measure of difference in payoffs equality (i.e., the difference in the standard deviation of the distribution of payoffs between approval voting and plurality).

In Figure 2, we show the marginal effect of Egalitarianism as the difference in payoffs equality changes from its empirical minimum to its empirical maximum. We observe that Egalitarianism has a strong effect when approval voting produces a much more egalitarian outcome than plurality during the first stage. From a difference of +3 in the difference between subjects having a least one point between approval voting and plurality, the effect becomes statistically significant ($p<0.01$) across experimental conditions. When the difference is maximal, it goes up to +0.10 ($p<0.01$) when subjects know their position on the 0-20 scale behind the veil of ignorance and when the subjects know their position on the 0-20 scale. The effect goes up to +0.10% points of chances of choosing approval voting ($p<0.01$) when they know their position on the 0-20 scale, and +0.24 ($p<0.01$) when they are behind the veil. By contrast, the effect is null when the two rules lead to similarly egalitarian payoffs.

Figure 2. Effect of Egalitarianism as payoffs becomes more egalitarian



Note: Entries are marginal effects of Egalitarianism as difference in payoff equality (approval voting compared to plurality) varies. Dotted lines are 95%-confidence intervals.

5. Conclusion

According to conventional wisdom and the scientific literature, people self-interestedly choose the decision rule that maximizes their payoffs. In the context of politics, this means that citizens and politicians choose the electoral rule that maximizes their chances of winning. In an original lab experiment, we make 252 subjects experience two rules and their consequences in a series of elections, before asking them to choose the one that they want to use for extra elections. We show that the values that subjects hold outside of the lab matter for their choice of electoral rule in sessions in which the two rules led to different outcomes. In those sessions, subjects who hold egalitarian values *outside* the lab support electoral rules that lead to a more egalitarian distribution of payoffs *in* the lab, and those who hold inegalitarian values choose the one that concentrates payoffs around a few subjects. Although it is a relatively well-known finding in the experimental literature that subjects do not always choose the decision rule that maximizes

their payoff (Engelman et al 2020; Weber 2020), we are to our knowledge the first to give an empirically-informed explanation of this puzzle. We confirm the conjecture suggested by this literature that other-regarding considerations matter for the choice of decision rules.

Can these findings inform real-life instances of democratic reform? There has been much discussion in experimental economics about whether lab experimental findings can be generalized to the field (e.g., Levitt and List 2007). Lab settings that resemble real-life situations tend to produce results that are replicable in more natural contexts (Camerer 2011), at least 'qualitatively' speaking since the effect sizes do not always correspond to those in reality (Kessler and Vesterlund 2015). With our design, we tried to be as close as possible to the real world. First, we rely in our analysis on genuine societal values that subjects hold outside of the lab. Second, just like in real life, we did not assume that subjects know how electoral rules work and what outcome they produce. We let them experience these in the first stage of the experiment. Furthermore, in most instances of democratic reform, it is not clear which party will benefit from the proposed electoral rule, especially in the long run (Pilet and Bol 2011; Shvetsova 2003). Hence, the experimental condition of the veil is more than a thought experiment simulating the ethical posture that Harsanyi (1955) defines as "when [the individual] forces a special, impartial, and impersonal attitudes upon himself" (p.315). We are thus confident that our results can inform real situations of democratic reform, although one could always wonder whether results would have been different if there was more at stake than some (relatively) small payoffs. However, an important limit to our study is that, although it relies on individual differences in values between subjects, it uses a convenient and relatively small sample of experimental subjects. It would be interesting for further research on the topic to use larger and more representative samples.

From a real-world perspective, our study shows that the choice of democratic rules needs not to be dominated by self-interest. Obviously, one shall not be naïve: citizens favor the rule that benefits their preferred party. Yet, there are settings in which parties are less present, and citizens more distant from partisan considerations. For example, assemblies of ordinary citizens have been organized over the last 15 years in Canada, Iceland, Ireland and the Netherlands, to discuss the necessity and desirability of electoral and institutional reforms. These assemblies are promising avenues to overcome the problem of entrenched interests in institutional design, as people have the time to think about the consequences of these institutions for society. A comprehensive analysis of such assemblies shows that their choices are "indeed anchored by general values" (Fournier et al 2011, p. 92), and, most importantly, "assembly members appear to [be] completely unmoved by their personal partisan inclinations" (ibid, p. 85).[17] While there is no doubt that partisan preferences can shape people's views about electoral rules, broad values also strongly drive their preferences.

[17] For a counter finding on this topic, see Pilet et al 2022.

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