

Experimental evidence on identity biases in voting choices

Robert Böhm* Bettina Rockenbach[†] Arne Weiss[‡]

September 19, 2013

We propose a model of identity voting: Voters derive 'identity utility' from voting for ingroup candidates, which is traded off against the utility from policy outcomes. 'Identity-biased' voters more likely vote for a policy, even against monetary incentives, if proposed by an ingroup than an outgroup member. A laboratory experiment with exogenously induced groups strongly supports our model. Voters' identity bias is moderated by their strength of group identification. This paper provides the first direct experimental evidence on identity biases in voting choices and has important implications for the explanation—and potential attenuation—of, for instance, ethnic voting.

JEL Classification: C91, D72, Z13

Keywords: Voting Behavior; Social Identity; Experiment

*RWTH Aachen University

[†]University of Cologne

[‡]University of Cologne; correspondence: Staatswissenschaftliches Seminar für Experimentelle Wirtschafts- und Verhaltensforschung, Universität zu Köln, Aachener Straße 217, D-50931 Cologne, Germany. Email: arne.weiss@uni-koeln.de

1 Introduction

”Issues are important, but they are not as important as the fact that this is an opportunity to vote for one of your own.” (Tony Sanchez, 2001, during his gubernatorial campaign in Texas)

“I mean, I say that jokingly, but it would be helpful to be Latino.” (Mitt Romney, 2012)

Ethnicity¹ is a good predictor of voting choices in many countries (Huber, 2012). Tony Sanchez and Mitt Romney seem to believe that this is more than merely correlation and, importantly, that ethnicity might trump issues. In other words, ethnic voting might have elements that are best explained by social identity theory (Tajfel and Turner, 1979) and not by theories that only consider policy outcomes. From the perspective of social identity theory, voting for a member with shared ethnicity can be seen as voting for an ingroup member of the same social group in order to express and strengthen one’s own social identity (Horowitz, 1985), which is an important part of one’s self concept, and not about –instrumentally– moving the electoral outcome towards one’s policy preferences.

We formalize this notion by proposing a simple individual-choice identity-voting model that assumes that voters derive an ‘identity utility’ from voting for ‘one of their own’, which is traded off against the utility from policy outcomes. The model predicts a testable ‘identity bias’: voters are more likely to vote for *any type of policy* if it is proposed by an ingroup member than by an outgroup member. As an example, a voter might decide *against* her monetary interests in order to vote for an ingroup member.

This identity bias is similar in structure to the ‘moral bias’ of Feddersen et al. (2009), but might have fundamentally different implications. Feddersen et al.’s (2009) ‘ethical voter theory’ predicts that voters’ choices in large electorates are biased towards ethical alternatives. If voters’ expressive utility from policies’ ethicality correlates with socially agreed upon values (as represented by social welfare functions), the resulting ‘moral bias’ will make society as a whole better off. By contrast, an identity bias, if substantial, may well have adverse effects: winning or losing in elections might become a question more of demographics and less so of performance assessments (see discussion in Chandra, 2006). Political competition might therefore become toothless as a disciplining device; instead, it may turn into a wasteful competition among political entrepreneurs with demographics on their side over the political rents that lenient voters allow. It can furthermore trigger conflict between ethnic groups as minorities do not expect to win power through elections (this is a central message of Horowitz’ (1985), the standard reference on *’Ethnic groups in conflict’*; see also Ferree and Horowitz, 2007).

For identity utility to have any explanatory power, the existence of an identity bias in voting choices must first be established empirically. There is substantial evidence across scientific disciplines that social identities play an important role in voting campaigns and

¹For a definition of ethnicity, see Fearon (2003).

that candidates' and voters' ethnicity or race may affect voting decisions (e.g., Böhm et al., 2010; Ferree, 2006; McCrary, 1990; Kinder and Sears, 1981; Mcdermott, 1998; Wolfinger, 1965). Yet, the reasons behind the relevance of ethnicity in voting choices are subject to intense debates. The previous literature has offered instrumental explanations: Ethnic voting could result from shared policy preferences; voters are also likely to strategically vote for members of their own ethnic group because of ethnically homogeneous patron-client networks (e.g., Fearon, 1999; see also discussion in Keefer, 2010). Furthermore, under uncertainty, voters might use ethnicity as a mental cue ('heuristics') to help them decide which option is likely to benefit them in the future (Ferree, 2006).² Importantly, all of these proposed explanations (and potential confounds in non-experimental studies) do not rely on the assumption of a positive identity utility.

Only few researchers have attempted to explicitly test for identity biases, which are implied by Horowitz's view on ethnic voting. Two noteworthy examples are Ferree (2006) and Dunning and Harrison (2010). Ferree (2006) finds, for South-African voters, little evidence for what she calls the 'expressive/identity voting hypothesis' but stronger evidence for 'racial heuristics'. By experimentally varying whether voters can identify co-ethnics, Dunning and Harrison (2010) can causally link shared ethnicity to higher evaluations of candidates. However, the authors conclude that this finding might not be the result of in-group preferences, but because voters find campaign promises by co-ethnics more credible. Given the methodology of this literature, there are good reasons for researchers' reluctance to conclude on identity biases in voter's decisions as they can easily become a residual post-hoc explanation to fill what cannot be explained by other factors. This danger is exacerbated with survey data: as survey responses are necessarily without economic consequences, they might be prone to reporting biases that stem from respondents' sense of self and the interaction with the interviewee (Traugott and Katosh, 1979): Voters might view ethnic voting as part of an identity-based prescription (Akerlof and Kranton, 2000) shared among members of their ethnic group; alternatively, they might be aware that ethnic voting in the form of electoral clientelism is socially undesirable.³ The context in which the survey takes place might then well decide whether the role of ethnicity is over- or under-reported. Furthermore, ethnic identity is increasingly seen as a construct (e.g., Chandra, 2006) that is at least partly chosen by individuals themselves; this creates an obvious simultaneity problem for identifying causal effects.

In this paper, we therefore take a step back and ask whether exogenously induced shared identity leads to an identity bias in voting choices. We present a laboratory experiment, in which the potentially confounding factors put forth in the literature can be controlled for, in particular strategic incentives to vote one's identity and identity-biased beliefs. Despite the potential contribution of such an experimental test of identity biases, there has been, to our knowledge, no direct test yet.

In this paper, we make two main contributions to the literature: After introducing a simple voting model based on the assumption that voters care for whom they vote for

²If unfounded, this would indicate a 'perceptual bias' through identity-biased beliefs, but not necessarily a direct utility from voting one's identity.

³For a related argument and a definition of electoral clientelism see Wantchekon (2003), who finds clientelistic messages to pay off for candidates in a field experiment in Benin.

in section 2, we propose a new experimental paradigm that allows for a direct test of the model’s predictions in section 3. By measuring group identification, we can, as a related contribution, test for the possible influence of the strength of identification on identity biases. We link this paper to the related literature in section 4. Our results, reported in section 5, lend clear support for the model’s assumption of a positive identity utility. Moreover, identity biases in voters’ choices are moderated by the strength of group identification and are thus not displayed by voters with weak group identification. As identity biases may have negative consequences for policy choices, discussed in the concluding section 6, our results connect well with claims that abating ethnic identification may improve the performance of ethnically diverse democratic systems (Collier, 2010). They also relate to recent evidence on the relevance of social identity in economic decision making (Chen and Li, 2009) and to theories of ‘expressive’ voting (e.g., Riker and Ordeshook, 1968; Schuessler, 2000; Feddersen and Sandroni, 2006).

2 The model

The aim of this formal exercise is to provide a simple model that allows for a direct test of the assumption of an identity utility in voting choices by means of a laboratory study. We therefore model votes as independent individual choices rather than as strategic decisions. In our model, the society is split into two social groups $g \in \{1, 2\}$, each consisting of 1 candidate and 2 voters. Voters decide between 2 policies each proposed by one candidate, who will implement the policy if elected. Formally, a voter i from group g makes a pair-wise decision between alternatives Q_g and R_{-g} , where Q_g is the policy (in this case Q) proposed by the candidate from the voter’s ingroup (g) and R_{-g} is the policy (in this case R) proposed by the candidate from the voter’s outgroup ($-g$). Q and R may or may not differ. When taking their voting decisions, voters have separable preferences over policies and over candidates. Policies may be about any issues a voter cares about. In our later experiment, policies will differ over how a fixed sum of money is divided between the members of the society. Such a constant-sum game can be thought of as an abstraction of many real-world political decisions. The domain of policies can, however, be purely ideological as well. Furthermore, the utility voters derive from voting for policies is equally general and may include both instrumental as well as expressive components. For instance, voters may care for how money is divided but may derive an additional utility if they vote for what they consider the ‘ethical’ policy (as in Feddersen et al., 2009). To keep things simple, voters are assumed to be risk neutral such that the expected utility for voter i_g of voting for policy Q , proposed by candidate $C_k \in \{g, -g\}$, can be expressed as

$$u_{i_g}(Q, C_k) = v_{i_g}(Q, \gamma_{i_g}) + w_{i_g}(C_k, \gamma_{i_g}, \beta_{i_g}) \quad (1)$$

where v is the policy utility, w the utility of voting for a candidate, γ_{i_g} the expected pivot probability of voter i_g , i.e. the probability with which voter i_g expects his choice to be decisive, and β_{i_g} the strength of voter i_g ’s identification with her group. The subscripts indicate that preferences as well as parameters are allowed to differ between

individuals and we will not (need to) make any assumption on the distribution of these. We do assume, however, that voters' preferences with respect to voting for policies and candidates are complete and transitive. The core assumption of our model is

$$w_{i_g}(C_g, \gamma_{i_g}, \beta_{i_g}) - w_{i_g}(C_{-g}, \gamma_{i_g}, \beta_{i_g}) = d_{i_g}(\gamma_{i_g}, \beta_{i_g}) \geq 0 \quad (2)$$

In other words: *ceteris paribus*, all voters are assumed to weakly prefer voting for the ingroup candidate to voting for the outgroup candidate. This difference in utility, the *identity utility* denoted by the function d , may have different sources: It may stem from a purely expressive preference by enhancing the voter's sense of (social) self. Voting one's identity in this case is a signal to oneself or to others to which group one belongs. A second possible source are identity-based prescriptions that demand voting for an ingroup member. In Akerlof and Kranton (2000) (as well as subsequent models), such prescriptions become behaviorally relevant by invoking a disutility (through an unpleasant feeling of discomfort) for non-compliance. In this case, d would be positive because $w(C_{-g}) < 0$ (disutility from non-compliance with identity-prescription) and $w(C_g) = 0$ (no disutility). If d comes from either of these two sources, it is likely to be insensitive to the pivot probability. If this is the case, identity utility would, as other expressive components in voting decisions, provide one solution to the well-known 'paradox of voting' as it can rationalize voter participation in large elections.⁴ However, voters may actually care for who gets elected, possibly because electoral victory enhances a group's status: Social psychological research on inter-group relations proposes that individuals' social identity increases in the case of a favorable comparison between ingroup and outgroup on a valuable dimension (here: electoral victory or being in power) through creating a positive distinctiveness (Tajfel and Turner, 1979). In this case, d has an instrumental component, albeit unrelated to policy-outcomes. In our model, we abstract from the nature of d by analyzing situations with constant pivot probability. Holding pivot probability constant allows us to simplify expression (1) to

$$u_{i_g}(Q, C_k) = v_{i_g}(Q) + w_{i_g}(C_k, \beta_{i_g}) \quad (3)$$

Just as policy preferences, the size of d is likely to be individual-specific. Part of this heterogeneity is captured through the parameter β , the strength of a voter's identification with her group with $d'(\beta) > 0$ for all voters. The voter maximizes utility by voting for the alternative that yields the highest utility.

⁴Any purely instrumental utility from voting quickly approaches zero when the size of the electorate increases as the probability that a single vote is pivotal is negligible in a large election; it will therefore become smaller than even minimal cost of voting (such as the opportunity cost of the time spent going to the polls). By contrast, an expressive utility can rationalize voter participation even in large elections if it is insensitive to voters' pivot probability. An expressive utility may stem from a sense of 'civic duty' or a desire to signal (to oneself or others) one's ethical behavior or, as just discussed, one's social identity; for related literature see the discussions in Feddersen et al. (2009), Bassi et al. (2011) and Shayo and Harel (2012).

2.1 Testing for the existence of identity utility in voting choices

As a straightforward prediction of our model, all voters will weakly prefer voting for the ingroup candidate when both candidates propose the same policy. Observing voters consistently making such choices would be first evidence in support of the assumption that $d > 0$. More interestingly, however, our model also implies that a voter might vote for an alternative that is inferior in its policy dimension, but superior in its identity dimension. For instance, a voter i_g who prefers R over Q ($v_{i_g}(R) > v_{i_g}(Q)$) will nevertheless vote for Q_g rather than R_{-g} if the identity utility is as high as to over-compensate the loss in policy utility ($w(C_g, \beta_{i_g}) - w(C_{-g}, \beta_{i_g}) > v_{i_g}(R) - v_{i_g}(Q)$).

While such identity voting can be directly identified in the model, it cannot be easily tested for empirically as it relies on knowing voters' policy preferences.

Specifying policy preferences is inherently difficult as there is likely considerable heterogeneity not only in the size but even the sign of the utility difference between two policies. The literature on distributional preferences suggests that the policy utility function v can differ substantially between individuals even if policies are restricted, as in our case, two divisions of a fixed amount of money between individuals. Behavioral principles include difference aversion, charity and envy (Charness and Rabin, 2002) and with respect to inter- and intra-group divisions maximizing the average payoffs of ingroup members Brewer and Silver (2000), maximizing inter-group differences Tajfel and Turner (1979, 1986) and maximizing inter-group differences while at the same time minimizing intra-group differences Turner et al. (1987).⁵ Furthermore, voters may have expressive preferences over policies (e.g., Tyran, 2004; Feddersen et al., 2009).

However, we can go around having to make assumptions on policy preferences if we analyse a pair of choices between Q_g and R_{-g} on the one hand and Q_{-g} and R_g on the other hand. The voter might then choose Q_g over R_{-g} and R_g over Q_{-g} . In other words: She might decide inconsistently with respect to policies in order to vote for her ingroup candidate. Within the model, such a pair of choices can only be explained by $d > 0$, and this is true irrespective of which policy the voter actually prefers. It only matters whether the absolute difference in policy utility is smaller than the identity utility: $|v_{i_g}(Q) - v_{i_g}(R)| < d(\beta_{i_g})$. This allows for a meaningful test of identity utility in voting choices: If there is a sufficiently large identity utility, we should observe some voters to vote for Q_g over R_{-g} and for R_g over Q_{-g} . More formally, this can be stated as

Proposition 1: Let voter i_g decide between two policies Q and R .

Then $P(Q_g \succ_{i_g} R_{-g}) \geq P(Q_{-g} \succ_{i_g} R_g)$.

The probability that a voter with unknown policy preferences and unknown strength of identification will vote for Q_g over R_{-g} is greater or equal to the probability that the voter will choose Q_{-g} over R_g . The proof is provided in Appendix A.

The generality of this proposition allows for a simple and direct existence-proof of a positive identity utility, without having to estimate voters' policy preferences, by empirically observing that the frequency of $Q_g \succ R_{-g}$ is higher than the frequency of

⁵See also discussion in Chen and Li (2009).

$Q_{-g} \succ R_g$. Our model only assumes completeness and transitivity in preferences and, consequently, also allows for expressive components in voting choices over policies. The likely inter-personal heterogeneity in policy preferences is even an advantage for our purposes: As we will explain in more detail in the next section, there has to be a significant number of voters for whom the absolute difference in policy utility must be less than the identity utility from ingroup voting in order to conclude, with conventional standards of confidence, that $P(Q_g \succ_{i_g} R_{-g}) > P(Q_{-g} \succ_{i_g} R_g)$.

Based on the assumption that d is increasing in β , we can further note:

Proposition 2: Let i_g and j_g be two voters of group g with $\beta_{i_g} > \beta_{j_g}$, then $P(Q_g \succ_{i_g} R_{-g}) \geq P(Q_g \succ_{j_g} R_{-g})$.

For any two policies, a voter with a higher group-identification is more likely to vote for the policy proposed by the ingroup candidate than a voter with lower group-identification. The proof is provided in Appendix A.

3 Experimental test

Experimental evidence for an identity utility $d > 0$ can be established if we find that the estimated probability (based on observed frequencies) of a voter choosing Q_g over R_{-g} is significantly higher than the estimated probability of choosing Q_{-g} over R_g . The experimental design therefore implements such alternatives over a range of policy-comparisons: voters make, in a within-subject design, pairwise decisions between the same policies but proposed once by an ingroup candidate and once by an outgroup candidate. Furthermore, as the weakest test of the assumption that voters care about the candidates' identity, voters also make one decision when both candidates propose the same policy.

Policies are varied over different possible distributional motives when social identity is salient. Because each policy combination is presented twice with varying proposers for each policy, we are able to provide an exploration for the existence of identity utility in voting choices independently of voters' underlying distributional preferences.

In order to exclude confounding explanations, in particular that voters expect ingroup biases from candidates, the latter have no say over the implemented distribution. The design keeps pivot probability constant across voters' choices. This is achieved through the following design elements: Voters decide by strategy method (Selten, 1967) over all possible pairwise comparisons and only one voting decision is randomly selected; to ensure equal selection probability, candidates cannot decide themselves which policy to propose. The following paragraphs introduce the design in more detail.

3.1 Group induction

The experiment starts with a minimal-group task in order to create a strong sense of group identity despite an assignment to artificial social categories (adapted from Böhm et al., 2013; see also Tajfel et al., 1971). First, subjects are put into groups of six,

the so-called 'societies'. Second, all subjects perform an estimation task. This task consists of five rounds of estimating the number of "X"s (X-signs) shown on screen. In each society, a median split on the aggregated number of estimated "X"s then separates the three 'high-estimators' and the three 'low-estimators'.⁶ It is then announced to the three 'high-estimators' ('low-estimators') that they are assigned to the yellow (blue) group. Afterwards, each group performs a tedious real-effort competition against the other group in their society. The task is to search for letters in a text consisting of Latin words (Lorem ipsum filler text) for a period of four minutes (adapted from Azar, 2009). The higher-performing group would win a prize of 120 points. The winner of this competition is not announced until after the main experiment in order to avoid income effects or group-biased beliefs on other participants. The purpose of this real-effort task is to put the group members in a 'common fate' mode, with a positive interdependence between ingroup members and a negative interdependence between outgroup members, which should further increase group identity (e.g., Tajfel et al., 1979, 1986). The group induction part ends by measuring group identification with four standard questionnaire-items by Doosje et al. (1995), e.g., "I feel attached to the other high-estimators/low-estimators." Participants answered on 7-point scales from 1 = *strongly disagree* to 7 = *strongly agree*. This is our estimate of the parameter β .

3.2 Voting stage

Subjects interact within their society, consisting of three yellow and three blue group members. Both groups have two 'citizens' and one 'candidate'. Roles are allocated randomly. One of the citizens is the 'voter', who decides which of the candidates will become the 'president' of the society.

We will first present the voting stage from the perspective of the voter and later describe how a citizen becomes the voter. From the perspective of the voter, one candidate is an ingroup member and one candidate is an outgroup member. Each of the two candidates proposes a policy that will be implemented if the candidate gets elected. A policy is a distribution of a fixed sum of money between the four citizens. Proposals are equal regarding efficiency from the society's perspective since the overall sum of money is held constant (400 points, equivalent to 32 Euro); however, they differ regarding the distribution of money between citizens. There are four different policies (see Table 1) that may be proposed by the candidates.

Policy P1 provides every citizen with the same income. Policy P2 gives the voter and her ingroup member a higher income at the expense of the citizens from the voter's outgroup. Policy P3 benefits the voter herself at the expense of her ingroup-member so that the total income of the voter's group is held constant. Policy P4 benefits the voter's

⁶In the minimal-group paradigm as used in social psychology, subjects are typically deceived by assigning them, contrary to the experimental instructions, randomly to groups. To avoid deception, we assigned subjects to groups according to the test results. However, the only five trials and the low sensitivity of the estimation task render the test unreliable but still face valid, such that personality differences between subjects from different groups can be excluded as a confound (see Böhm et al., 2013).

Policy	Payoff in points			
	Ingroup (2 citizens)		Outgroup (2 citizens)	
	Voter (1)	Ingroup member (2)	Outgroup member (1)	Outgroup member (2)
P1	100	100	100	100
P2	110	110	90	90
P3	110	90	100	100
P4	100	110	95	95

Table 1: Policies.

ingroup-member at the expense of the two citizens from the other group.

In each decision the voter decides between policy P1 and another policy (see Appendix B). Each policy is once proposed by the voter’s ingroup candidate (Q_g) and once proposed by the voter’s outgroup candidate (Q_{-g}) and the alternative policy is once proposed by the outgroup candidate (R_{-g}) and once by the ingroup candidate (R_g), respectively. Hence, with respect to policies, the voter decides on each of the following pairwise comparisons: policy P1 vs. policy P2, policy P1 vs. policy P3, and policy P1 vs. policy P4. Alternating which policy is proposed by which candidate yields six alternatives that each consist of one of the four policies and one of the two candidates. This method exempts us from having to estimate voters’ policy preferences, $v(Q) - v(R)$, but still allows us to test for a positive identity utility over a range of policy comparisons. Moreover, one additional decision is added, where both alternatives consist of policy P1 but different candidates. The choice of voters between candidates when both propose P1 is the minimal test for concluding that $d > 0$. A voter therefore takes a total number of seven decisions, which are presented in a random order and have the same probability of being decisive.

3.3 Payoffs

One of the voter’s decisions is randomly selected. The alternative chosen by the voter simultaneously determines which candidate becomes the ‘president’ and which policy will be implemented. Payoffs are determined by the policy that is part of the chosen alternative; the citizens consequently receive the points in the respective column: the voter herself receives the points in the first column, the ingroup member receives the points in the second column and both members of the voter’s outgroup receive the same points, displayed in the third and fourth column (see Table 1).

It is randomly determined which citizen becomes the voter. Before this random draw takes place, all citizens take their decisions for the case that they will become the voter.

Both candidates earn 150 points regardless of whether they have been elected or not. Nevertheless, the election result is not meaningless: the president has to select the recipient of a real-life donation worth 100 points. She can select among five well-respected organizations (Greenpeace, The Red Cross, Doctors without Borders, Misereor, Bread for the World).

3.4 Procedure

The experimental sessions were run in January 2012 at the Experimental Economics Laboratory at the University of Erfurt (elab). The experiment was programmed in ztree (Fischbacher, 2007). 72 subjects, split over three sessions with 24 subjects each, participated in the experiment and were recruited with the online recruitment system ORSEE (Greiner, 2004). In total, we therefore have 336 voting decisions nested within 48 independent voters. Voting decisions had real monetary consequences; the exchange rate was 1 point = 0.08 Euros (about 0.1 USD). On average, subjects earned 10.90 Euros for participation in the experiment, which lasted for about 75 minutes. Written instructions (see Appendix C) were distributed in three steps, first for the group induction procedure, second for the real-effort competition, and finally for the voting stage. On-screen test-questions, which all subjects had to answer correctly in order for the experiment to proceed, ensured common knowledge of all relevant procedural details.

4 Related Literature

The closest paper on testing for identity utility is Bassi et al. (2011), who also suggest that voters receive an additional utility from voting their identity. They test this by studying whether voters vote their identity if they have contrary strategic incentives. They only find weak support for such identity effects. In particular, when strategic incentives are actually payoff-relevant (and not hypothetical), identity voting vanishes.⁷ While their results are consistent with the assumption of a positive identity utility, it does not show up in an economically relevant way.⁸ As the authors conclude themselves (p. 561), their design is biased against finding identity effects. For one, voters do not actually decide on candidates, but on color-coded alternatives that correspond to the assigned identities. Furthermore, these identities are based on mere categorization and also change from one experimental round to the next so that voters' identification with their color is likely to be weak.

Landa and Duell (2013) provide an indirect test of identity utility by studying the interaction between electoral accountability (through retaining or firing incumbent representatives) and social identity. Their findings are mixed: On the one hand, they find voters to be more lenient towards incumbent representative's effort choices in their retention decision; on the other hand, there are a significant number of voters who retain outgroup representatives at higher rates than ingroup representatives. They suggest that these voters' decisions may be explained by their history of interaction with their representatives; in addition, about half of these voters had negative experiences with their

⁷In their design, minority voters have a strategic incentive to vote against their assigned identity if they expect majority voters to vote sincerely (in terms of economic incentives and assigned identity). They do find about half of the minority voters to still vote their identity if financial incentives are hypothetical (subjects are instructed to behave as if there were real). If financial incentives are real, less than 5% of minority voters vote against their identity.

⁸Furthermore, the game being played has multiple equilibria that become even more numerous when common knowledge of rationality is lacking so that identity utility is not the only candidate to explain the choices against hypothetical strategic incentives.

group in a group task. Therefore, the level of group identification across voters might not have been sufficiently strong.

The closest model to ours is the aforementioned Feddersen et al. (2009). In their model, voters enjoy a fixed, expressive benefit from voting for an 'ethical' alternative. 'Ethical voting' is therefore predicted to increase with the size of the electorate as the pivot probability declines. They test this prediction by systematically varying pivot probabilities and find empirical support. While their paper provides the first conclusive experimental evidence for an expressive utility in voting choices, we cannot infer whether this also holds for ethnic voting based on social identity. Compared to them, our set-up, in which voters decide over alternatives that consist of policies and of candidates, allows for a novel way to test for, generally speaking, non-economic components in voters' utility function.

5 Results

The validity of the model's experimental test rests on the assumption that voters identify themselves as members of the group they were assigned to. We therefore compute the mean score of the four items assessing group identification, which exhibit satisfying internal consistency (Cronbach's $\alpha = .75$). On average, voters indeed report a high level of group identification ($M = 4.81$), which is significantly above the midpoint of the scale ($t(47) = 4.52$, $p < 0.001$). There is, however, also a substantial variation in voters' level of identification ($SD = 1.24$).⁹

Given the successful group induction with a high level of group identification on average, do subjects display identity-biased voting choices? Figure 1 depicts the share of votes each policy received when pitted against the equal distribution policy P1, separately for each proposing candidate. As a first test for the existence of an identity utility, we focus on the choice between candidates in the case of two equal policies (policy P1), proposed by both the ingroup and the outgroup candidate. The data provide first support for the model: the ingroup candidate receives significantly more votes (85.4%) than the outgroup candidate ($p < 0.001$, binomial test).

Stronger evidence for the existence of an identity utility can be derived if the number of votes for any policy P2, P3 or P4 (vs. policy P1) is significantly larger when proposed by the ingroup than the outgroup candidate. As it turns out, this is indeed the case for all three policies (see Figure 1: the dotted white ingroup-proposer bars on the left-hand side are always higher than the plain white outgroup-proposer bars on the right-hand side).

The null-hypothesis that the proposing candidate does not matter in voters' decisions is rejected at $p = 0.004$ (P_2), $p = 0.083$ (P_3), $p = 0.046$ (P_4), and $p < 0.001$ (combining the decisions over policies P2, P3 and P4, see column 'Total of P2, P3 and P4' in Figure

⁹Using the same group assignment procedure without a subsequent group competition task, Böhm et al., 2013 found a qualitatively lesser group identification ($M = 3.62$, $SD = 1.34$). Hence, the combination of a minimal group task and an inter-group competition task appears to be a highly effective group induction procedure.

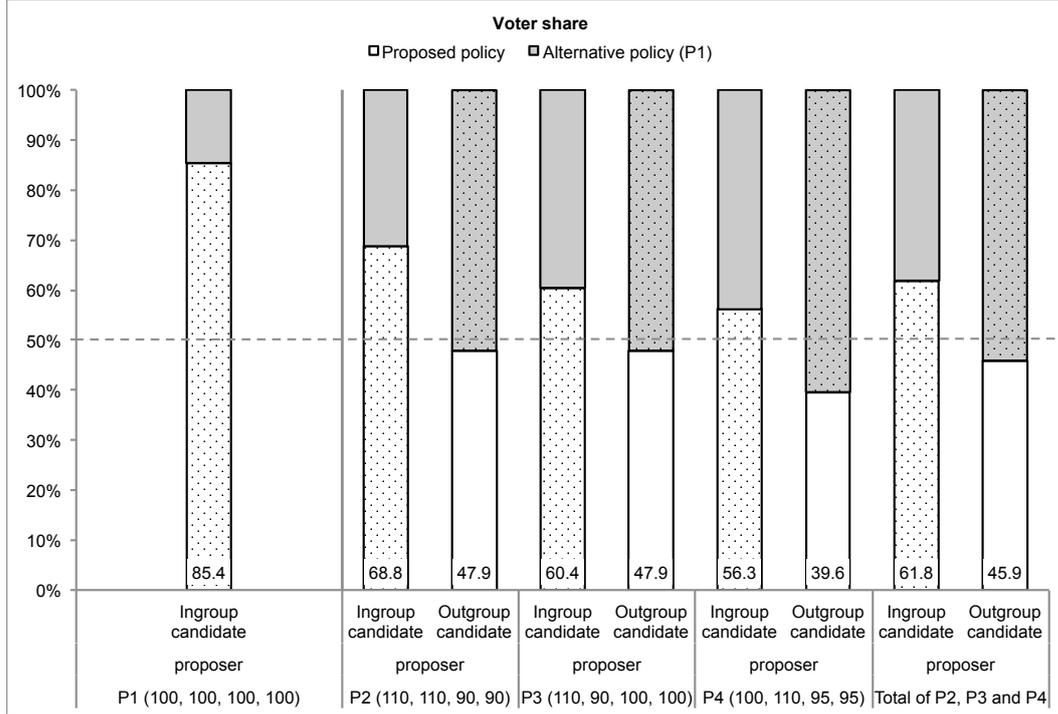


Figure 1: Votes by policy and proposing candidate. Dotted bar areas indicate the share received by the ingroup candidate.

1).¹⁰ Voters' choices therefore lend strong support for the model's assumption of a positive identity utility ($d > 0$). This is also reflected in the overall share of ingroup votes (pooled over all proposals with/without the equal policies comparison: 62.2%/58.3%), which significantly exceeds the share of outgroup votes ($p < 0.001$ in both cases).¹¹ Note that the share of ingroup votes is highest when both candidates propose the same policy. This can be explained by the presence of heterogeneity in policy preferences among voters and adds empirical evidence to the necessity to control for these when testing for identity utility.

The nested individual-level voting choices also allow testing the assumption of a positive identity utility separately for each voter. As it turns out, 75.0% behave consistently with the model's assumption of $d > 0$ by showing at least a weak preference for the ingroup candidate. 33.3% show even a strong preference for the ingroup candidate, i.e., they vote at least once for an unequal policy (P2, P3 or P4) only if it is proposed by the ingroup candidate but not if it is proposed by the outgroup candidate.¹² There are a

¹⁰Wilcoxon signed-rank tests based on the null-hypothesis that each voter's vote for a given policy is independent of the proposing candidate.

¹¹Wilcoxon signed-rank tests based on the null-hypothesis that the number of ingroup votes is equal to the number of outgroup votes.

¹²Among those voters with a strong preference for the ingroup candidate, 31.3% show ingroup-biased voting behavior only if this choice does not sacrifice the individual payoff, 6.2% do so if it does not

further 14.6% of voters who behave inconsistently and 10.4% of voters who make choices consistent with $d < 0$, though only 1 of these voters (2.1%) displays an outgroup-bias such that she chooses a policy only if it is proposed by the outgroup candidate. The choices of these 25.0% of voters are inconsistent with the proposed model. Errors are certainly a likely candidate for most of these choices.¹³

Our model has clear assumptions how to explain this heterogeneity in ingroup-voting decisions: Proposition 2 predicts that the likelihood to choose a policy proposed by an ingroup candidate is increasing in the strength of a voter’s group identification. In other words, the likelihood to vote for a policy that is proposed by an ingroup candidate should be moderated by the voter’s individual group identification. To test this assumption, we perform generalized linear mixed-effect model analyses (with a logit link). The voting decision for policies P2, P3 and P4 is regressed on the proposing candidate’s group membership and the voter’s group identification. Subjects are modeled as a random factor in order to control for their interdependent error terms (random intercept model, see Pinheiro and Bates, 2009) and thus, to account for the nested data structure. Table 2 displays the predictor coefficients including the corresponding standard errors, for two model specifications. Model 1 includes only the main effects of candidates’ group mem-

Predictor	Model 1		Model 2	
	<i>B</i> (<i>SE</i>)	<i>p</i>	<i>B</i> (<i>SE</i>)	<i>p</i>
(Intercept)	-0.886 (0.710)	0.212	0.532 (0.904)	0.586
Ingroup candidate proposer (A)	0.650 (0.248)	0.009	-2.062 (1.047)	0.049
Group identification (B)	0.067 (0.137)	0.624	-0.226 (0.181)	0.213
Interaction term (A*B)	—	—	0.556 (0.209)	0.008
Observations [subjects]	288 [48]		288 [48]	
AIC / BIC	390 / 405		385 / 404	

AIC = Akaike information criterion. BIC = Bayesian information criterion.

Table 2: Mixed-effects models predicting votes for an unequal policy (P2, P3 or P4).

bership (ingroup or outgroup from a voter’s perspective) and voters’ group identification. Consistent with the non-parametric test statistic reported above, the likelihood to vote for an unequal policy increases significantly if it is proposed by an ingroup candidate ($p = 0.009$). As expected, group identification alone has no effect ($p = 0.624$). In model

sacrifice the joint payoff of the own group, whereas the vast majority of these voters (62.5%) prefer the ingroup candidate’s over the outgroup candidate’s proposal even if this would lead to payoff losses for themselves or their group.

¹³Note that for all but 3 voters (6.3%), the inconsistency with the model is due to one (out of seven) decisions.

2, we additionally use the interaction term of candidates' group membership and voters' group identification as a predictor variable. First of all, model 2 is superior compared to model 1 regarding both the AIC and BIC criterion. More importantly, the data indeed support our theoretical model's prediction that the probability to choose policy P2, P3 and P4 over policy P1 if it is proposed by the ingroup candidate is increasing with the level of a voter's group identification ($p = 0.008$).¹⁴ Furthermore, by going into the tail-ends of the identification distribution, considerable differences emerge: The identity bias displayed in Figure 1 is not present for voters whose identification is at least 1 standard deviation below the mean, whereas there is a large effect for voters whose identification is at least 1 standard deviation above the mean (see Figure 2 for the total share of votes for policies P2, P3 and P4). In other words, strongly identified voters display a stronger identity-bias than weakly identified voters. Hence, the data supports the model's assumption that identity utility is increasing with the voters' level of group identification: $d'(\beta) > 0$.

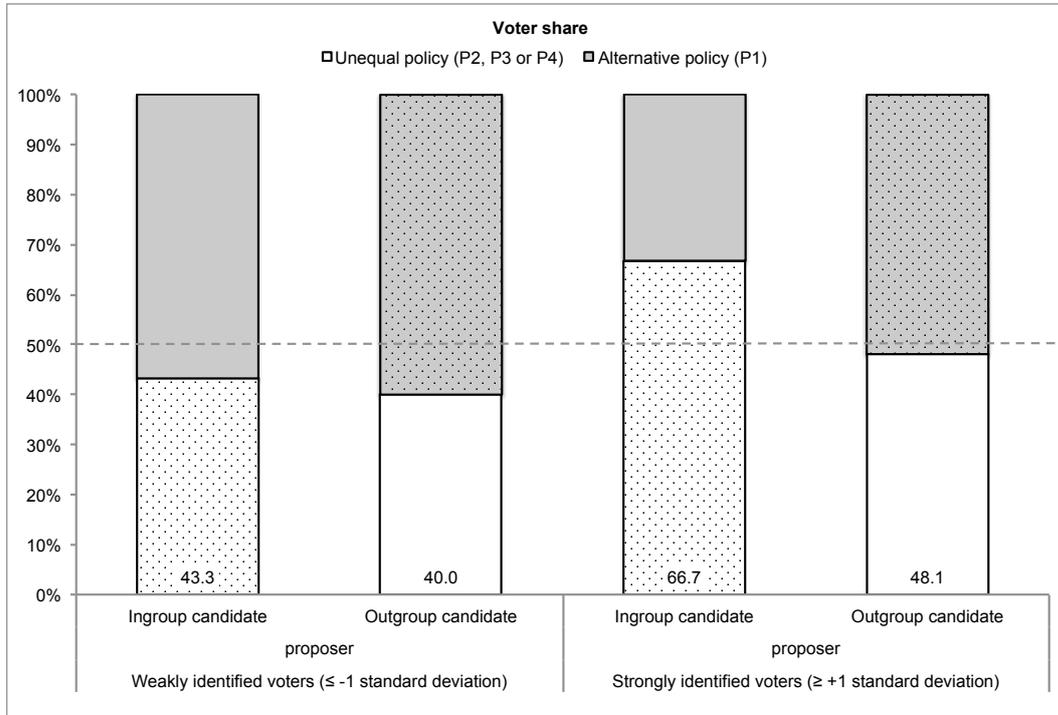


Figure 2: Votes by policies, proposing candidate and voters' group identification. The share of votes for the unequal policies displays the mean of the policies P2, P3 and P4. Dotted bar areas indicate the share of the ingroup candidate.

¹⁴The interaction effect remains a significant predictor ($B = 0.670$, $SE = 0.232$, $p = 0.004$) even if we control for voters' monetary self-interest and her ingroup member's interest. In this case, also voters' self-interest significantly predicts voting choices ($B = 2.007$, $SE = 0.360$, $p < 0.001$), whereas the ingroup member's interest does not ($B = 0.220$, $SE = 0.321$, $p = 0.494$).

6 Conclusion and Discussion

Despite a substantial amount of evidence that voting behavior is correlated with salient categories of social identity, most importantly ethnicity, this paper provides the first direct experimental evidence on identity biases in voting choices. In our individual-choice voting model, voters trade off policy utility against identity utility from voting for one of their own. We consequently predict an identity bias: Voters will more often vote for a policy if it is proposed by an ingroup candidate than by an outgroup candidate irrespective of policy preferences. Employing a novel experimental paradigm with exogenously induced group memberships, we indeed find support for this prediction in all comparisons of policies.

The model not only explains the aggregate data well, but also individual data across choices: 75.0% of voters behave according to the model's assumption of a positive identity utility, and the choices of 33.3% of voters imply a substantial identity utility in that they at least once change their choice among policies in order to vote for an ingroup candidate. The share of ingroup votes is highest when the ingroup and the outgroup candidate propose the same policy, which is to be expected when voters have heterogeneous policy preferences. It therefore corroborates this paper's novel approach to test for identity biases without having to estimate policy preferences. We furthermore find that identity biases increase with the voters' strength of identification with their social group.

Going beyond the predictions tested in this paper, the support for the assumption of a positive identity utility has several noteworthy implications: Identity utility can explain that politicians enjoy 'slack' in the policy dimension among voters who identify with the candidate. Therefore, a large identity-based support can explain policies that are suboptimal even from the perspective of the winning group. Indeed, the lack of credible commitment to furthering group interests is a major criticism against explaining ethnic voting (solely) with strategic incentives (Keefer, 2010). Voting choices against individual or group interests may also be expected within organizations, such as when deciding between a female and a male board member or chief executive. Since the overall efficiency of the proposed policies was held constant in the present study, future research has to show whether this also holds when ingroup-biased voting leads to sacrificing social welfare (which might indeed be the case according to research in other domains, Blackwell and McKee, 2003). Furthermore, if group boundaries are fixed, identity biases can pre-determine electoral outcomes, possibly creating permanent winners and losers. While the results do not mirror an electoral census, the considerable amount of ingroup-biased voting in our study can determine electoral outcomes, particularly if differences in policy utilities between alternative platforms are sufficiently small.

Our results show that the size of the identity bias depends on voters' strength of identification. In the field, the strength of identification might respond to the salience of ethnicity, which may be highly context-dependent. For instance, Eifert et al. (2010) find ethnic salience to vary over the electoral cycle. This may be exploited by politicians playing the ethnic card during electoral campaigns (Dickson and Scheve, 2006), which may further increase identity biases.

Going one step further in taking the constructivist nature of ethnicity¹⁵ serious opens room for potentially welfare-enhancing policy interventions that strengthen (or even create) a national identity. As Collier (2010) argues, these efforts should precede democratization as a prerequisite for a functioning democracy. This is consistent with research in social psychology, showing that focussing on collective (e.g., of the organization or the country) rather than group-based goals makes persons' common identity salient, which in turn reduces ingroup-biased behavior (Gaertner et al., 1993). There is some micro-level evidence on the potential benefits of such efforts in the political domain: In a quasi-experimental investigation, Miguel (2004) compares communities on either side of the exogenously drawn Tanzania-Kenya border, which, according to Miguel, are very similar except for the divergence in national policies: after independence, Tanzania made significantly more effort to create a national identity¹⁶ than Kenya. Consequently, ethnically heterogeneous communities in Tanzania achieve a significantly higher level of local public good provision than comparable communities on the Kenyan side. On all these fronts, further research seems equally promising and important.

The relative size of identity utility to policy utility in real-world elections is an open question. On the one hand, our experimental results may be an underestimation of identity biases for two reasons: First, if identity utility is largely expressive and policy utility mainly instrumental, even an identity utility of a miniscule size will quickly become larger than any difference in policy utility in large electorates (see analysis by Feddersen et al. (2009) with respect to 'moral biases' in large electorates). Second, identification with social groups (such as with one's ethnicity) is certainly stronger in the field than during a short, anonymous experimental setting. On the other hand, social identity is never as clearly separated as in a laboratory setting. Cross-cutting identities can weaken the influence of one dimension, e.g., of ethnicity Böhm et al. (2010); Dunning and Harrison (2010). Further research may therefore explore the strength of identity utility and which dimension of identity becomes salient when different dimensions are cross-cutting (for instance ethnicity and gender).

Going beyond identity biases in voting choices, this paper connects well with recent experiments in political sciences and economics which show that non-standard (e.g. expressive) components in voting choices have to be taken seriously and can be tested for (Feddersen et al., 2009), that ingroup biases have real economic consequences (Chen and Li, 2009), and that experiments can be a useful tool in order to identify the underlying mechanisms for the influence of differences in ethnicity on behavior (Habyarimana et al., 2007).

¹⁵One prominent example is the Hutu-Tutsi divide in Burundi, which may have been accentuated or even created by the Belgium colonizers (Alesina et al., 2003, p. 156/157).

¹⁶for instance, by enforcing a national language and the creation of national symbols.

References

- Akerlof, G. A. and Kranton, R. E. (2000). Economics and Identity. *Quarterly Journal of Economics*, 115(3):715–753.
- Alesina, A., Devleeschauwer, A., Easterly, W., Kurlat, S., and Wacziarg, R. (2003). Fractionalization. *Journal of Economic Growth*, 8(2):155–194.
- Azar, O. H. (2009). Does Relative Thinking Exist in Mixed Compensation Schemes? *Ben-Gurion University of Negev Working Paper*.
- Bassi, A., Morton, R. B., and Williams, K. C. (2011). The Effects of Identities, Incentives, and Information on Voting. *The Journal of Politics*, 73(2):558–571.
- Blackwell, C. and McKee, M. (2003). Only for my own neighborhood? Preferences and voluntary provision of local and global public goods. *Journal of Economic Behavior & Organization*, 52(1):115–131.
- Böhm, R., Funke, F., and Harth, N. S. (2010). Same-Race and Same-Gender Voting Preferences and the Role of Perceived Realistic Threat in the Democratic Primaries and Caucuses 2008. *Analyses of Social Issues and Public Policy*, 10(1):248–261.
- Böhm, R., Rothermund, K., and Kirchkamp, O. (2013). Social categorization and group-motivated interindividual-intergroup discontinuity. *European Journal of Social Psychology*, 43(1):40–49.
- Brewer, M. B. and Silver, M. D. (2000). Group Distinctiveness, Social Identification, and Collective Mobilization. In Stryker, S., Owens, T. J., and White, R. W., editors, *Self, identity, and social movements*, pages 153–171. University of Minnesota Press, Minneapolis.
- Chandra, K. (2006). What Is Ethnic Identity and Does It Matter? *Annual Review of Political Science*, 9(1):397–424.
- Charness, G. and Rabin, M. (2002). Understanding social preferences with simple tests. *The Quarterly Journal of Economics*, 117(3):817–869.
- Chen, Y. and Li, S. X. (2009). Group Identity and Social Preferences. *American Economic Review*, 99(1):431–457.
- Collier, P. (2010). *Wars, Guns, and Votes: Democracy in Dangerous Places*. Harper Perennial, New York.
- Dickson, E. S. and Scheve, K. (2006). Social Identity, Political Speech, and Electoral Competition. *Journal of Theoretical Politics*, 18(1):5–39.
- Doosje, B., Ellemers, N., and Spears, R. (1995). Perceived Intragroup Variability as a Function of Group Status and Identification. *Journal of Experimental Social Psychology*, 31(5):410–436.

- Dunning, T. and Harrison, L. (2010). Cross-cutting Cleavages and Ethnic Voting: An Experimental Study of Cousinage in Mali. *American Political Science Review*, 104(1):21–39.
- Eifert, B., Miguel, E., and Posner, D. N. (2010). Political Competition and Ethnic Identification in Africa. *American Journal of Political Science*, 54(2):494–510.
- Fearon, J. D. (1999). Why Ethnic Politics and Pork Tend to Go Together. *Stanford University Working Paper*.
- Fearon, J. D. (2003). Ethnic and Cultural Diversity by Country. *Journal of Economic Growth*, 8(2):195–222.
- Feddersen, T., Gailmard, S., and Sandroni, A. (2009). Moral Bias in Large Elections: Theory and Experimental Evidence. *American Political Science Review*, 103(2):175–192.
- Feddersen, T. and Sandroni, A. (2006). A Theory of Participation in Elections. *American Economic Review*, 96(4):1271–1282.
- Ferree, K. E. (2006). Explaining South Africa’s Racial Census. *The Journal of Politics*, 68(4):803–815.
- Ferree, K. E. and Horowitz, J. (2007). Identity Voting and the Regional Census in Malawi. *University of California Working Paper*.
- Fischbacher, U. (2007). z-Tree: Zurich toolbox for ready-made economic experiments. *Experimental Economics*, 10(2):171–178.
- Gaertner, S. L., Dovidio, J. F., Anastasio, P. A., Bachman, B. A., and Rust, M. C. (1993). The Common Ingroup Identity Model: Recategorization and the Reduction of Intergroup Bias. *European Review of Social Psychology*, 4(1):1–26.
- Greiner, B. (2004). An Online Recruitment System for Economic Experiments. *Forschung und wissenschaftliches Rechnen 2003. GWDG Bericht*, 63:79–93.
- Habyarimana, J., Humphreys, M., Posner, D. N., and Weinstein, J. M. (2007). Why Does Ethnic Diversity Undermine Public Goods Provision? *American Political Science Review*, 101(4):709–725.
- Horowitz, D. L. (1985). *Ethnic groups in conflict*. University of California Press, Berkeley, Los Angeles, London.
- Huber, J. D. (2012). Measuring Ethnic Voting: Do Proportional Electoral Laws Politicize Ethnicity? *American Journal of Political Science*, 56(4):986–1001.
- Keefer, P. (2010). The ethnicity distraction? Political credibility and partisan preferences in Africa. *Policy Research Working Paper No. 5236*.

- Kinder, D. R. and Sears, D. O. (1981). Prejudice and Politics: Symbolic Racism Versus Racial Threats to the Good Life. *Journal of Personality and Social Psychology*, 40(3):414–431.
- Landa, D. and Duell, D. (2013). Social Identification and Electoral Representation. *New York University Working Paper*.
- McCrary, P. (1990). Racially Polarized Voting in the South: Quantitative Evidence from the Courtroom. *Social Science History*, 14(4):507–531.
- Mcdermott, M. L. (1998). Race and Gender Cues in Low-Information Elections. *Political Research Quarterly*, 51(4):895–918.
- Miguel, E. (2004). Tribe or Nation? Nation Building and Public Goods in Kenya versus Tanzania. *World Politics*, 56(3):328–362.
- Pinheiro, J. C. and Bates, D. M. (2009). *Mixed effects models in S and S-PLUS*. Springer Verlag, New York, 2nd edition.
- Riker, W. H. and Ordeshook, P. C. (1968). A Theory of the Calculus of Voting. *American Political Science Review*, 62(01):25–42.
- Schuessler, A. A. (2000). Expressive Voting. *Rationality and Society*, 12(1):87–119.
- Selten, R. (1967). Die Strategiemethode zur Erforschung des eingeschränkt rationalen Verhaltens im Rahmen eines Oligopolexperimentes. *Beiträge zur Experimentellen Wirtschaftsforschung*, pages 136–168.
- Shayo, M. and Harel, A. (2012). Non-consequentialist voting. *Journal of Economic Behavior & Organization*, 81(1):299–313.
- Tajfel, H., Billig, M. G., Bundy, R. P., and Flament, C. (1971). Social categorization and intergroup behaviour. *European Journal of Social Psychology*, 1(2):149–178.
- Tajfel, H. and Turner, J. C. (1979). An integrative theory of intergroup conflict. In Austin, W. G. and Worchel, S., editors, *Psychology of Intergroup Relations*, pages 33–47. Brooks/Cole Publishers, Monterey, CA.
- Tajfel, H. and Turner, J. C. (1986). The social identity theory of intergroup behavior. In Worchel, S. and Austin, W., editors, *Psychology of intergroup relations*, pages 7–24. Nelson-Hall Publishers, Chicago.
- Traugott, M. W. and Katosh, J. P. (1979). Response Validity in Surveys of Voting Behavior. *Public Opinion*, 43(3):359–377.
- Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S. D., and Wetherell, M. S. (1987). *Rediscovering the social group: A self-categorization theory*. Blackwell, Cambridge.
- Tyran, J.-R. (2004). Voting when money and morals conflict: an experimental test of expressive voting. *Journal of Public Economics*, 88(7-8):1645–1664.

Wantchekon, L. (2003). Clientelism and Voting Behavior: Evidence from a Field Experiment in Benin. *World Politics*, 55(3):399–422.

Wolfinger, R. E. (1965). The Development and Persistence of Ethnic Voting. *The American Political S*, 59(4):896–908.

Appendix

A. Proofs of the model's propositions

Proof of proposition 1

The utility of voting for Q_g (policy Q proposed by candidate g) is $u_{i_g}(Q_g, \beta_{i_g}) = v_{i_g}(Q) + w_{i_g}(C_g, \beta_{i_g})$ and the utility of voting for R_{-g} is $u_{i_g}(R_{-g}, \beta_{i_g}) = v_{i_g}(R) + w_{i_g}(C_{-g}, \beta_{i_g})$. Hence, in the choice between Q_g and R_{-g} the preference of voter i_g depends on whether $v_{i_g}(Q) - v_{i_g}(R) + (w_{i_g}(C_g, \beta_{i_g}) - w_{i_g}(C_{-g}, \beta_{i_g})) = v_{i_g}(Q) - v_{i_g}(R) + d_{i_g}(\beta_{i_g})$ is positive (then Q_g is preferred) or negative (then R_{-g} is preferred). Similarly, when deciding between Q_{-g} and R_g , the preference of voter i_g depends on whether $v_{i_g}(Q) - v_{i_g}(R) + (w_{i_g}(C_{-g}, \beta_{i_g}) - w_{i_g}(C_g, \beta_{i_g})) = v_{i_g}(Q) - v_{i_g}(R) - d_{i_g}(\beta_{i_g})$ is positive (Q_{-g} is preferred) or negative (R_g is preferred). Under the assumption that $d \geq 0$ for all voters, it follows that $u_{i_g}(Q_g, \beta_{i_g}) - u_{i_g}(R_{-g}, \beta_{i_g}) \geq u_{i_g}(Q_{-g}, \beta_{i_g}) - u_{i_g}(R_g, \beta_{i_g})$.

Hence, if $u_{i_g}(Q_{-g}, \beta_{i_g}) > u_{i_g}(R_g, \beta_{i_g})$ (this is the case if $d_{i_g}(\beta_{i_g}) < v_{i_g}(Q) - v_{i_g}(R)$), it follows that $u_{i_g}(Q_g, \beta_{i_g}) > u_{i_g}(R_{-g}, \beta_{i_g})$. In this case $P(Q_g \succ_{i_g} R_{-g}) = P(Q_{-g} \succ_{i_g} R_g) = 1$. Similarly, if $u_{i_g}(Q_g, \beta_{i_g}) < u_{i_g}(R_{-g}, \beta_{i_g})$ (this is the case if $d_{i_g}(\beta_{i_g}) < v_{i_g}(R) - v_{i_g}(Q)$), it follows that $u_{i_g}(Q_{-g}) < u_{i_g}(R_g)$. In this case, $P(Q_g \succ_{i_g} R_{-g}) = P(Q_{-g} \succ_{i_g} R_g) = 0$. In both cases, the identity utility $d_{i_g}(\beta_{i_g})$ is smaller than the absolute difference in policy utility ($|v_{i_g}(Q) - v_{i_g}(R)|$) such that the voter i_g will make choices consistent with his policy preferences and will not display any identity bias: $P(Q_g \succ_{i_g} R_{-g}) = P(Q_{-g} \succ_{i_g} R_g)$.

The interesting case is when $d_{i_g}(\beta_{i_g}) > |v_{i_g}(Q) - v_{i_g}(R)|$ as it follows that $u_{i_g}(Q_g, \beta_{i_g}) - u_{i_g}(R_{-g}, \beta_{i_g}) = v_{i_g}(Q) - v_{i_g}(R) + d_{i_g}(\beta_{i_g}) > 0$ and that $u_{i_g}(Q_{-g}, \beta_{i_g}) - u_{i_g}(R_g, \beta_{i_g}) = v_{i_g}(Q) - v_{i_g}(R) - d_{i_g}(\beta_{i_g}) < 0$. Therefore, if the identity utility over-compensates for any difference in policy utility, it follows that $P(Q_g \succ_{i_g} R_{-g}) = 1 > P(Q_{-g} \succ_{i_g} R_g) = 0$.

Proposition 1 sums up possible cases: $P(Q_g \succ_{i_g} R_{-g}) \geq P(Q_{-g} \succ_{i_g} R_g)$.

Note that we assume for simplicity that voters do make decision errors so that all voters decide with probability 1 for their preferred alternatives. As voters are also assumed to have heterogeneous, unknown preferences, voters' choices nevertheless become a random variable in our decision model (more on this in the proof of proposition 2).

Proof of proposition 2

In order to prove proposition 2, think of voters' preferences with respect to Q_g and R_{-g} as being drawn from two distributions, one for the difference in policy utility ($v(Q) - v(R)$) and one for the identity utility (d). The only thing we know about the two voters (based on the proposition's assumption) is that voter i_g will receive a higher level of group-identification β than voter j_g . As preferences over policies and candidates are assumed to be separable, it follows that $E(v_{i_g}(Q) - v_{i_g}(R)) = E(v_{j_g}(Q) - v_{j_g}(R))$. Furthermore, for a given value of β , the expected identity utility is equal ($E(d_{i_g}(\beta_{i_g})) = E(d_{j_g}(\beta_{j_g}))$) so that $E(d_{i_g}(\beta_{i_g})) > E(d_{j_g}(\beta_{j_g}))$ based on the assumption that $\beta_{i_g} > \beta_{j_g}$ and that $d'(\beta) > 0$ for all voters.

Hence, the expected net utility of voter i_g of voting for Q_g rather than R_{-g} is higher than the corresponding expected net utility that voter j_g receives: $E(v_{i_g}(Q) - v_{i_g}(R) + d(\beta_{i_g})) - E(v_{j_g}(Q) - v_{j_g}(R) + d(\beta_{j_g})) = E(d_{i_g}(\beta_{i_g}) - d_{j_g}(\beta_{j_g})) > 0$.

This makes it more likely that only voter i_g will prefer Q_g rather than R_{-g} , which is the case if $v_{i_g}(Q) - v_{i_g}(R) + d_{i_g}(\beta_{i_g}) > 0$, but $v_{j_g}(Q) - v_{j_g}(R) + d_{j_g}(\beta_{j_g}) < 0$.

This is expressed in proposition 2: Let i_g and j_g be two voters of group g with $\beta_{i_g} > \beta_{j_g}$, then $P(Q_g \succ_{i_g} R_{-g}) \geq P(Q_g \succ_{j_g} R_{-g})$.