American Economic Journal: Microeconomics 2013, 5(2): 73–98
http://dx.doi.org/10.1257/mic.5.2.73

Why People Vote: Ethical Motives and Social Incentives[†]

By S. Nageeb Ali and Charles Lin*

Some individuals vote because they are motivated by a civic duty to do so, whereas others may vote because they wish to appear prosocial to others. This paper proposes a simple framework that captures these motivations, and provides results consistent with findings on turnout, e.g., that turnout is responsive to the expected closeness and importance of an election, to the observability of one's choice to vote, and to social rewards and punishments associated with voting. We study various extensions of this framework in which community monitoring plays a role, and explore the implications that voter mobilization has for electoral competition. (*JEL* D03, D72)

Understanding why people vote is fundamental to the theory and practice of democracy. Analyses rooted in rational choice face difficulty in explaining why so many people incur the cost of voting, even when it is improbable that any one of them is pivotal. An obvious shortcoming of pivotal voter models is that it restricts voter motivations to be purely instrumental in terms of affecting the electoral outcome to the exclusion of motives rooted in civic duties, ethics, the desire to have voice, social norms, and social pressures. The evidence on voter motivations and turnout calls for alternative theories of why people vote.[1] This paper offers a framework that unifies ethical motives and social incentives to vote.

Our starting point is the paradigm in which voters draw utility from fulfilling their civic duties. Influential early contributions within this paradigm (e.g., Riker and Ordeshook 1968) modeled the act of voting as having a constant consumption value for those who vote, which rationalizes voting without explaining why turnout varies across elections. Recent contributions have addressed this issue by imposing greater structure on what duty entails: in the *ethical voter* framework, some citizens are rule-utilitarian and so vote according to the rule that is optimal for their group to follow. Harsanyi (1980) initially proposed this framework in an election with common

*Ali: Department of Economics, University of California, San Diego, 9500 Gilman Drive, La Jolla, CA 92093-0508 (e-mail: snali@ucsd.edu); Lin: Department of Economics, University of California, San Diego, 9500 Gilman Drive, La Jolla, CA 92093-0508 (e-mail: chl083@ucsd.edu). We thank On Amir, Chris Chambers, Vince Crawford, Julie Cullen, Ozgur Evren, Tim Feddersen, Marjorie Flavin, Navin Kartik, David Miller, Paul Niehaus, Nicola Persico, Debraj Ray, Sebastian Saiegh, Alvaro Sandroni, Joel Sobel, Frank DiTraglia, Justin Valasek, Hal White, and two anonymous referees for their suggestions and comments. Igor Vaynman provided research assistance. Ali thanks the National Science Foundation and the UCSD Academic Senate for financial support, and thanks Microsoft Research for its hospitality and support.

[†] To comment on this article in the online discussion forum, or to view additional materials, visit the article page at http://dx.doi.org/10.1257/mic.5.2.73.

[1] See Feddersen (2004) for a survey of the theoretical literature on turnout.

interests, and Feddersen and Sandroni (2006a, b, c) generalize it to elections with competing political interests. Importantly, they show that linking civic duties to the primitives of an election can generate aggregate turnout that is responsive to voting costs, the importance of the election, and the expected closeness of the race.[2]

The ethical voter framework is useful to understand turnout, but is silent about social mechanisms and pressures that are widely believed to drive voting, and have been the focus of a growing empirical literature. For example, Gerber, Green, and Larimer (2008) find that informing voters in the 2006 Michigan Republican primary that their neighbors will be told whether they voted increases turnout among registered voters from 29.7 percent to 37.8 percent, garnering an increase greater than most campaign mobilization strategies.[3] Funk (2010) finds similar evidence in Switzerland in which optional postal voting was adopted sequentially across cantons, which reduced voting costs substantially and yet failed to significantly increase aggregate turnout and in fact decreased turnout in small communities. As discussed by her and others (Dubner and Levitt 2005; Bénabou and Tirole 2006), these findings point towards social incentives since voting by mail is less visible than doing so in person.

Social pressures and signals have been at the core of many real-world mechanisms designed to mobilize turnout. "Name-and-shame" systems in which the names of nonvoters were publicly displayed were common in the nineteenth century, remained in Italy until 1993, and continue in some form today across the world.[4] Communities and religious organizations often use campaign mobilization strategies that induce individuals to vote in groups so as to ensure visibility. All of these mechanisms suggest that the *visibility* of the act of voting is an important motivator of turnout; it is perhaps less than surprising that it would be, especially since the importance of social esteem and extrinsic incentives for "good behavior" has been established in many domains, including giving behavior, organizational economics, and political economy.[5]

Our perspective is that rather than modeling ethical and social motivations as being orthogonal, it is useful to integrate these two frameworks while maintaining simplicity and tractability. Ethical voting offers a useful and necessary anchor for social pressure. Indeed, while the importance of extrinsic motives and social pressure in turnout decisions has been discussed extensively (e.g., Knack 1992; Shachar and Nalebuff 1999; Grossman and Helpman 2002), its form has lacked an explicit description. Models with reduced-form rewards and sanctions for voting fail to capture why it is that turnout should depend on its expected closeness or its importance,

[2] Coate and Conlin (2004) develop a model based on this approach and structurally estimate Texas liquor referenda, and Banerjee et al. (unpublished) use an ethical voter framework to interpret how voters in India respond to information about political candidates. A separate literature has modeled ethical voters as being *act utilitarian* and altruistic. We discuss this in the conclusion.

[3] Gerber, Green, and Larimer (2008) focus on the Republican primary because the Democratic primary was largely uncontested.

[4] For example, in Singapore, the punishment for not voting is to be declared ineligible to vote in the future unless one pays a fine. Singapore's Elections Department makes publicly available the list of citizens who are eligible to vote, thereby allowing citizens to infer who did not vote. Voting history is public record in the United States, and in certain contexts, easily available electronically (e.g., http://www.whovoted.net); Birch (2009) discusses these institutions. We thank Justin Valasek for suggesting these examples.

[5] See Bernheim (1994); Harbaugh (1998); Benabou and Tirole (2006); Ellingsen and Johannesson (2008); Andreoni and Bernheim (2009); Ariely, Bracha, and Meier (2009); Daughety and Reinganum (2010); and DellaVigna, List, and Malmendier (unpublished).

and do not elucidate the source of social motivation. Complementing ethical voter models with social pressure shows that the ethical voting framework is useful even if all voters are not intrinsically motivated by ethics, and can speak to the role of social mechanisms and visibility in fostering turnout. Accordingly, we study a model in which some voters are *extrinsically motivated* to vote because they wish to *appear intrinsically motivated*.

Our basic setting is an election in which each of two opposing groups have a continuum of citizens, each of whom finds voting costly. Citizens in each group are either *ethical* or *pragmatic*. An ethical citizen is group-utilitarian: she follows the rule that maximizes the social welfare of her group given the behavior of others. A pragmatic citizen (henceforth pragmatist) votes only because she wishes others to think of her as being ethical. We show that a profile of action rules exists in which every citizen—ethical and pragmatic—is optimally responding to the aggregate population. We call any such profile a *political equilibrium*. In a political equilibrium, the ethical citizens in a group follow the rule that best responds to the ethical citizens in the other group and the pragmatists in each group. Analogously, a pragmatist decides whether to vote based on the gain in *social image* from voting, which is derived from the equilibrium participation rates of ethical and pragmatic citizens. Thus, ethical and pragmatic citizens are influenced by the behavior of the other in a political equilibrium. We characterize political equilibria and show that in many settings, there is a unique political equilibrium.

Our analysis of political equilibria reveals a number of interesting features of turnout. Because a pragmatist's motive for voting is to influence how others see her, she has weaker incentives to vote when there is little ex ante uncertainty about her type. Therefore, social signaling alone cannot motivate turnout. Interpreting the evidence for social incentives towards social image (as is often done) implies that citizens must consider there to be a substantial fraction of both ethical and pragmatic citizens.

Anchoring social incentives to ethical motivations permits the framework to capture the *competitive predictions* at the core of ethical voter models. Because ethical citizens vote more with increases in the importance of the election or its expected closeness, and with decreases in the voting costs, so do pragmatists, and thus, *all citizens* respond to these changes. Unlike ethical citizens, pragmatists respond directly to the visibility of their vote, and hence, are further inclined to vote when their choice is observable to neighbors, when voting is at a public polling location, or when there is information that is shared publicly about the importance of an election. Thus, the framework straightforwardly captures many of the predictions attributed to turnout.

While the participation rate of pragmatists is increasing in that of ethical citizens, ethical citizens decrease their participation rate in response to a larger turnout from pragmatists in their group. In effect, ethical citizens attempt to compensate for the lower turnout of pragmatists and so a greater turnout from pragmatists dampens their motive to vote. Thus, if the groups are asymmetric in the strength of their social incentives, ethical citizens in the group with greater social incentives will have a lower participation rate than those in the weaker group. Nevertheless, the group with stronger social incentives wins the election with greater likelihood.

The role that social incentives play in turnout may raise the concern that excessive social pressure could distort individual incentives towards *too much* voting.

This tension manifests in other settings. For example, Benabou and Tirole (2006) and Daughety and Reinganum (2010) demonstrate that too much social pressure can induce "pro-social behavior" and public good contributions that are excessively high and socially inefficient.[6] In contrast to these settings, social pressure *never* induces overvoting: if a pragmatist votes, she does so only at costs that the ethical citizen in her group would also do so. The force that countervails "overvoting" is that were it to arise, abstention would induce a more favorable equilibrium image than voting in which case no pragmatist would vote.

We believe that integrating conceptions of social duties and pressures helps illustrate the role that communities play in turnout.[7] A number of studies highlight how differences in community participation rates correlate with other characteristics of the community, and the literature points to the importance of frequent interactions and *social connectedness* as discussed in Grossman and Helpman (2002, 85–86):

> *"All of these observations point to "social connectedness" as an important predictor of voter turnout. Individuals who are part of groups that meet frequently and interact intensively should be more likely to vote than those who are socially isolated or who belong to loosely linked groups.…"*

Towards understanding the role of social connectedness, we discuss two extensions in which we enrich the informational setting. First, we investigate behavior when pragmatists may lie about whether they have voted, but such lies may be detected by others in the community. Second, we study turnout when individuals may possess some information about the voting costs of others. In both of these settings, we find that richer information induces greater aggregate turnout and offers a starting point to understand why tightly-knit groups in which individuals meet frequently have greater turnout than others.

We also study the implications that electoral competition has for turnout and platform selection. In practice, candidates select platforms to influence not only *how* people vote, but also *who* votes; this has been widely recognized in academic and media analyses, and is an issue that looms large in political rhetoric.[8] Yet, in most models of electoral competition, voting is costless thereby obscuring this motive that candidates may have to pander to groups that are able to effectively mobilize turnout.[9] In a stylized setting, we show that candidates motivated purely by office converge to a common platform ensuring no turnout, while policy-motivated candidates diverge ensuring some turnout. In both cases, asymmetries across the two groups

[6] Similar issues arise when agents have extrinsic motives or career concerns and are privately informed about the right action to take as highlighted by Levy (2007), Prat (2005), and Visser and Swank (2007).

[7] Putnam (2000) argues that the decline in political participation in the United States has followed a decline in social ties. Similarly, Alesina and Ferrara (2000) finds that inequalities in communities reduce voter participation.

[8] A salient illustration of this effect is the extent to which candidates pander on issues of Social Security and the cost of prescription drugs in their platforms to the greater turnout of the elderly, as noted by Campbell (2003). Similarly, in both developed and developing countries, the importance of lower-class mobilization for political redistribution is widely noted and studied (e.g., Hill, Leighley, and Hinton-Andersson 1995; Varshney 2007).

[9] A few models have studied the interaction of turnout and electoral competition—Glaeser, Ponzetto, and Shapiro (2005) and Virág (2008), study political extremism when platforms are not publicly observed, and Valasek (forthcoming) studies the interplay of electoral competition and voting costs in an ethical voter framework—but none to our knowledge have focused on this motive to pander towards the social incentives of particular groups.

creates a motive to pander towards those who are more responsive to policy or have stronger social incentives.

The proofs for the basic framework described in Section I are in the Appendix, but those for all other sections are in the online Appendix.

I. The Basic Model

A. Environment

We build on the ethical voter framework of Feddersen and Sandroni (2006a, c); each citizen of a continuum decides whether to vote for alternative 1, alternative 2, or abstain, and the winner of the election is determined by majority rule. Citizens belong to one of two groups, 1 and 2, and those who belong to group 1 prefer that alternative 1 wins, and others prefer that alternative 2 wins. Voting by citizen i for alternative i is denoted by $a_i = 1$ and abstention is denoted by $a_i = 0$. The cost of voting for citizens is distributed according to cdf F whose pdf, f, is continuous and strictly positive on $[0, \infty)$.[10]

Citizens are uncertain about the relative size of each group. The fraction of citizens in group 1, denoted by k, is a random variable with support $[0, 1]$ and governed by a symmetric beta distribution with parameter α. The beta distribution encompasses both the uniform distribution $(\alpha = 1)$ and those that are single-peaked around $\frac{1}{2}(\alpha > 1)$. Instead of using the expression for the density of k in our analysis,[11] it is simpler to formulate probabilities in terms of $x = \frac{k}{1-k}$, whose density denoted by h is

$$h(x, \alpha) = \frac{x^{\alpha-1}}{(1+x)^{2\alpha} B(\alpha, \alpha)},$$

in which $B(\alpha, \alpha)$ is the beta function. For expositional convenience, we suppress the dependence of h on α and use $H(x)$ to denote its cdf.

Citizens are either ethical $(t_i = E)$ or pragmatic $(t_i = P)$. The fraction of ethical citizens in each group is q in $(0, 1)$. We describe voter motivations in greater detail below.

B. Voter Motivations

An ethical citizen votes according to the rule that maximizes his perception of social welfare, even though he recognizes that his own vote is not pivotal in this large election. Each citizen believes that the collective gain is w when her preferred candidate wins, which denotes the *importance of the election*, and prefers for aggregate voting costs to be minimized. Assuming that every citizen is ethical, and holding fixed the behavior of pragmatists and the other group, the ethical rule specifies the utilitarian optimal decision rule, which necessarily takes the form of a threshold rule: an ethical citizen i in group G votes if and only if $c_i \leq c_G^*$ for some cost c_G^*.

[10] Introducing an upper bound on voting costs does not affect the analysis but requires more notation.

[11] The density of k being a symmetric beta distributed random variable is $\frac{k^{\alpha-1}(1-k)^{\alpha-1}}{\int_0^1 \tilde{k}^{\alpha-1}(1-\tilde{k})^{\alpha-1}\, d\tilde{k}}$.

A pragmatist, in contrast to the ethical citizen, recognizes that her vote is not pivotal in the electoral outcome, but that it is pivotal in how she is perceived by others (insofar as ethical individuals are esteemed). Her payoff from taking action a_i is

$$-c_i a_i + \lambda \Pr(t_i = E | a_i).$$

The second term represents her social esteem, in which the coefficient $\lambda > 0$ represents the marginal payoff from social image. Naturally, this coefficient reflects both her image-payoffs and the probability with which her act of voting is observed by others in her group.[12]

Image is attributed to citizens' actions via Bayes' rule. The payoff induces a threshold $\hat{c}_G$ such that a pragmatist citizen i in group G votes if and only if $c_i \leq \hat{c}_G$. Suppose that the expected cutoff for ethical citizens in group G is c_G^*.[13] The perception of a citizen's moral type denoted by $\zeta(a, \hat{c}_G, c_G^*)$ is

$$(1) \qquad \zeta(a, \hat{c}_G, c_G^*) = \begin{cases} \dfrac{qF(c_G^*)}{qF(c_G^*) + (1-q)F(\hat{c}_G)} & \text{if } a = 1, \\ \dfrac{q(1 - F(c_G^*))}{q(1 - F(c_G^*)) + (1-q)(1 - F(\hat{c}_G))} & \text{if } a = 0. \end{cases}$$

Implicit in the above equation is that a citizen's type is assessed according to the relative participation rates of ethical citizens and pragmatists in her group alone. Our assumption that a citizen's affiliation is known is motivated by homophily (McPherson, Smith-Lovin, and Cook 2001; Currarini, Jackson, and Pin 2009): peers from whom one wishes to gain approval are likely to belong to the same group, and hence, judge one's actions based on behavior within that group. Political polarization reinforces these incentives: pragmatists may be valued on the basis of showing loyalty to their particular group rather than to the entire electorate.[14]

A pragmatist with the threshold cost is necessarily indifferent between voting and abstaining, and so this cost offsets the pragmatist's gain in social esteem from voting:

$$(2) \qquad \lambda(\zeta(1, \hat{c}_G, c_G^*) - \zeta(0, \hat{c}_G, c_G^*)) = \hat{c}_G.$$

For each value of c_G^*, we let $P(c_G^*)$ denote a solution (if any exists) to the above equation.

[12] Voting may be directly observed when communities coordinate on voting or registering together, as they often do. In other contexts, it may be spread by word-of-mouth communication through the social network in the community.

[13] We establish below that, as in the prior literature, the ethical rule takes the form of a threshold strategy.

[14] In the symmetric setting, results are necessarily identical if we assumed alternatively that a citizen's political affiliation is unknown, and hence, her image is determined using the fraction of ethicals in both groups. However, if groups are asymmetric, slightly different results follow when citizens' affiliations are unknown.

DEFINITION 1: *For an ethical cutoff, c_G^*, a cutoff for pragmatists $\hat{c}_G$ is a Pragmatic Best Response if $\hat{c}_G = P(c_G^*)$.*

Before turning attention to ethical citizens, we highlight useful properties of P.

LEMMA 1: *The Pragmatic Best Response exists, is unique, and is strictly increasing in c_G^*.*

The argument for uniqueness is straightforward. The marginal gain in social image from voting for a pragmatist in group G is strictly decreasing in $\hat{c}_G$, because when pragmatists vote in greater number, they sully the image of voting and improve that of abstaining. In contrast, more voting by ethical citizens strengthens the signaling incentives of pragmatists and hence increases the Pragmatic Best Response.

As the pragmatists respond to their expectations of how ethical citizens behave, ethical citizens respond to their expectations of pragmatists' participation. For pairs of cutoffs for ethical citizens, (c_1, c_2), and pragmatists, $(\hat{c}_1, \hat{c}_2)$, the expected social cost of voting is

$$\phi(c_1, c_2, \hat{c}_1, \hat{c}_2) = E[k]\Big(q \int_0^{c_1} cdF + (1-q)\int_0^{\hat{c}_1} cdF\Big) + (1 - E[k])\Big(q\int_0^{c_2} cdF + (1-q)\int_0^{\hat{c}_2} cdF\Big).$$

Accordingly, the aggregate welfare as perceived by ethical citizens in each group is

$$V_1(c_1, c_2, \hat{c}_1, \hat{c}_2) = w\left(1 - H\left(\frac{qF(c_2) + (1-q)F(\hat{c}_2)}{qF(c_1) + (1-q)F(\hat{c}_1)}\right)\right) - \phi(c_1, c_2, \hat{c}_1, \hat{c}_2), \tag{3}$$

$$V_2(c_1, c_2, \hat{c}_1, \hat{c}_2) = wH\left(\frac{qF(c_2) + (1-q)F(\hat{c}_2)}{qF(c_1) + (1-q)F(\hat{c}_1)}\right) - \phi(c_1, c_2, \hat{c}_1, \hat{c}_2).$$

The optimal ethical rule for each group is the cutoff c_G^* which, holding all else fixed, maximizes V_G.[15] This notion of *consistency*, offered by Coate and Conlin (2004) and Feddersen and Sandroni (2006a, b, c), is adapted to our setting in which non-ethical citizens vote:

DEFINITION 2: *A profile (c_1^*, c_2^*) is a Consistent Ethical Response to $(\hat{c}_1, \hat{c}_2)$ if for every group G,*

$$V_G(c_G^*, c_{-G}^*, \hat{c}_1, \hat{c}_2) \geq V_G(c, c_{-G}^*, \hat{c}_1, \hat{c}_2) \qquad \text{for all} \qquad c > 0.$$

[15] Throughout our analysis, we assume that ethical citizens do not account for the welfare of pragmatists in signaling their type.

Before proceeding to our equilibrium concept, we pause to remark on our modeling choices.

REMARK 1 (How Pragmatists Vote): Our setting assumes that each individual votes for her group's preferred alternative. While this would appear uncontroversial for ethical citizens, this assumption for pragmatists requires explanation. We see two complementary justifications for this approach. First, we think of our analysis of a continuum of voters as the limit of a large but finite population. In elections with large finite populations, a pragmatist may consider the probability with which she is pivotal to be sufficiently small that she would not vote in the absence of social incentives but once she has incurred the cost of voting, she would find it strictly optimal to vote for her favored alternative. Second, a pragmatist may share the same beliefs as ethical citizens within her group about social welfare but lack an instrumental reason to vote; yet, she may incur a psychological cost to vote for the inferior alternative.[16]

REMARK 2 (Symmetry): Our baseline framework incorporates a number of symmetry assumptions that simplify analysis. In particular, it assumes that cost distributions, the importance of the election, the fraction of ethical types, and social incentives are symmetric across groups. The online Appendix shows that if k is uniformly distributed on [0, 1], these symmetry assumptions can be dispensed with, and a unique political equilibrium continues to exist. We use this setting to discuss comparative statics of political equilibrium with asymmetric groups in Properties 5 and 6, as well as to study how office-motivated and policy-motivated candidates respond to asymmetric social incentives in our application to electoral competition.

C. *Political Equilibrium*

Based on the voter motivations described in the prior section, we describe the appropriate solution-concept: pragmatists in each group hold correct beliefs about the behavior of ethical citizens and best-respond based on their signaling motives, and given the beliefs (and behavior) of pragmatists, ethical citizens in each group do not prefer to deviate to an alternative ethical rule.

DEFINITION 3: *A Political Equilibrium* $\{(c_1^*, c_2^*), (\hat{c}_1, \hat{c}_2)\}$ *is a profile of thresholds such that:*

(i) (c_1^*, c_2^*) *is a Consistent Ethical Response to* $(\hat{c}_1, \hat{c}_2)$.

(ii) $(\hat{c}_1, \hat{c}_2)$ *are Pragmatic Best Responses to* (c_1^*, c_2^*).

We first show that a political equilibrium exists and is unique. Based on the pragmatists' cutoffs, $(\hat{c}_1, \hat{c}_2)$, one can derive the Consistent Ethical Response by examining

[16] We thank a referee for raising this concern and suggesting the second justification.

the two first-order conditions from equation (3) with respect to c_1 and c_2. Comparing the two reveals that at the optimum

$$c_1^*(qF(c_1^*) + (1-q)F(\hat{c}_1)) = c_2^*(qF(c_2^*) + (1-q)F(\hat{c}_2)). \tag{4}$$

Since in equilibrium, $\hat{c}_G = P(c_G^*)$ and P is strictly increasing, it follows that $c_1^* = c_2^*$. Substituting this symmetry into the FOC and verifying that the SOC is satisfied demonstrates existence and uniqueness.

THEOREM 1: *There is a unique political equilibrium: for every group G, c_G^* solves*

$$c_G^*(qF(c_G^*) + (1-q)F(P(c_G^*))) = \frac{2^{1-2\alpha}w}{B(\alpha,\alpha)}. \tag{5}$$

Using this expression, we describe various properties of the unique political equilibrium. Since the LHS is increasing in c_G^*, changes in parameters that monotonically change the value on the RHS must have the same effect on the political equilibrium. The term w captures the importance of the election. Similarly, α offers one metric for the competitiveness of the election by capturing the beliefs that citizens have that the groups shall ex post be similarly sized: increasing α shifts mass of the symmetric beta distribution from the tails (where the election is lopsided) to the neighborhood of its peak of $\frac{1}{2}$.[17] Finally, voting cost distributions can be ranked by first-order stochastic dominance. We say that voting costs decrease if the resulting distribution is dominated by the initial distribution.

PROPERTY 1 (Competitive Effects): *The participation rate of all citizens is increasing in the importance and competitiveness of the election, and as voting costs decrease.*

This property highlights how political equilibrium captures competitive aspects of an election without predicating behavior on an individual's pivot considerations. Our solution-concept inherits this property directly from its ethical voter foundations, and analogous results without social signaling are derived by Feddersen and Sandroni (2006a). The intuition is straightforward: as the election becomes more important or competitive, ethical types in each group consider it more important to vote, and this spurs the pragmatists to also vote in greater numbers. When costs decrease, the marginal cost of increasing turnout from the standpoint of the consistent rule decreases, and so the participation rate of ethical citizens rises. Holding the pragmatists' participation rate fixed, the greater participation of ethical citizens increases the gap in social image between voters and abstainers. Therefore, in a political equilibrium, the participation rate of pragmatists necessarily increases.

Our next set of properties describe the signaling incentives in the framework. The term λ includes a number of concerns relevant for pragmatists, including the

[17] A shortcoming of our approach is that since group sizes are ex ante identical, this metric for the competitiveness of an election does not capture the political competition between ex ante majority and minority groups.

observability of voting, the impact of social image, the social rewards attached with being perceived as ethical or loyal, and the sanctions of being perceived as nonethical. Its changes can therefore be attributed to variations in the observability of voting (Gerber, Green, and Larimer 2008; Funk 2010), or the role of group leaders in generating social pressure (Shachar and Nalebuff 1999).

PROPERTY 2: *An increase in social incentives decreases the participation rate of ethical citizens but increases the participation rate of pragmatists and the average participation rate.*

That the participation of pragmatists increases with social incentives is intuitive but the more subtle effect is that of social incentives on ethical citizens. With stronger social incentives, ethical citizens are less motivated to compensate for pragmatists and therefore decrease their participation. This is one form in which extrinsic motivation *crowds out* intrinsic motivation: stronger social incentives skews the composition of voters towards those who are more extrinsically motivated and abstainers towards those who are more intrinsically motivated. Overall voter participation nevertheless increases with social incentives.

That turnout is increasing in extrinsic motivation invites a concern: perhaps social pressure could induce more turnout than that which would be ethical. Such inefficiencies emerge generally in other settings (as described in the introduction), but are precluded in our framework.

PROPERTY 3 (No Overvoting): *For all values of* λ, *pragmatists in group G vote only at costs that an ethical voter also does, so* $\hat{c}_G < c_G^*$.

The mechanism for Property 3 is simple: as $\hat{c}_G \to c_G^*$, the gain in social image from voting is vanishing. Indeed, if pragmatists voted more than ethical citizens, abstention rather than voting would be a better signal that one is ethical, in which case pragmatists should not be voting at all (since they are effectively taking a costly action that only tarnishes their image). Accordingly, as $\lambda \to \infty$, the pragmatists' cutoff approaches from below that of ethical citizens thereby dissolving the gap in image between voters and abstainers.

We now demonstrate that having a non-trivial fraction of ethical citizens is indispensable for this analysis. For signaling incentives to motivate voting, citizens must expect that they can influence their image through voting and if the prior probability of being an ethical citizen is sufficiently small, pragmatists have weak incentives to vote.

PROPERTY 4: *As* $q \to 0$, *the participation rate among ethical citizens converges to full participation* $(F(c_G^*) \to 1)$, *but overall turnout is nevertheless vanishing.*

That signaling incentives are weak when there is little ex ante uncertainty is analogous to our understanding of reputation in other contexts. Reputation effects are dramatic when a long-run player considers the undiscounted sum (Kreps and Wilson 1982) or approaches perfect patience (Fudenberg and Levine 1992), but for a fixed discount factor, reputation effects disappear as the prior belief on types

converges to probability 1 on the rational type. Similar to the no discounting limit, if λ is arbitrarily large, even a small probability of ethical citizens suffices to induce substantial turnout, but if λ is bounded, then reputational incentives require a non-trivial fraction of ethical citizens. We view this property as important to our understanding of the complementarity of ethical and social motives to vote.

The final set of properties that we discuss depart from symmetry in the manner discussed in Remark 2. A challenge in studying asymmetric groups is that a political equilibrium may no longer exist or be unique when it does. We show in the online Appendix that if k is uniformly distributed on $[0, 1]$, a unique political equilibrium exists.[18] With this restriction, we describe how asymmetries between the ethical citizens in the two groups affect the unique political equilibrium.

PROPERTY 5: *When the election is more important to group* 2 *than it is to group* 1 ($w_2 > w_1$), *or group* 2 *has a lower distribution of voting costs* (F_1 *first-order stochastically dominates* F_2), *then the participation rates of both ethical citizens and pragmatists are higher in group* 2 *than in group* 1. *Therefore*, *group* 2 *has a higher probability of winning the election.*

The above property is intuitive, but also highlights the political gain from subsidizing turnout as well as introducing ballot propositions that one group may consider more important than the other.

With asymmetric social incentives—suppose $\lambda_1 < \lambda_2$—the Pragmatic Best Response for group 2 (denoted by P_2) exceeds that for group 1 (denoted by P_1) for every ethical cutoff, c^*. An analogue of equation (4) holds whose implication is

PROPERTY 6: *When group* 2 *has stronger social incentives than group* 1, *ethical citizens in group* 2 *participate less than ethical citizens in group* 1. *Nevertheless*, *the average participation rate in group* 2 *is higher*, *and therefore*, *group* 2 *has a higher probability of winning the election.*

The above result is analogous to the *underdog effect*: when group 1 has weaker social incentives, its ethical citizens participate more to compensate for the rest of their group, although it is not sufficient to overcome group 2's aggregate turnout. Because ethical citizens in group 1 participate more than those in group 2 and pragmatists in group 1 participate less than those in group 2, the image gap between voters and abstainers is higher in group 1. Thus, those who participate in group 2 are more likely to be motivated by social rewards than voters in group 1.

II. Extensions

This section explores several extensions to our framework. We study the role of community monitoring in fostering turnout. Section IIA allows for the possibility for individuals to lie about voting, and examines how turnout varies with the

[18] Feddersen and Sandroni (2006c) offer conditions for existence and uniqueness of consistent rule profiles in the setting without social incentives.

probability with which communities foster hard information about voting decisions. Section IIB studies a different setting in which communities vary in the extent to which their members know the voting costs of other members. Section IIC discusses other extensions in which ethical behavior may be less sophisticated about each group's distribution of ethics, and individuals may vary as to how ethical they are along a continuum.

A. *Votes and Lies*

The social incentive to vote comes from persuading others that one is ethical, which invites an important question: Why do pragmatists vote at all when they can lie about voting? That reported turnout (to pollsters) exceeds actual turnout suggests that voting is socially rewarded. Yet, a pragmatist may find it more difficult to lie about voting to others in one's community, especially if voting and registration in that community are organized in groups. Information diffuses quickly in tightly-knit communities and so in concocting a voting experience, an abstainer may reveal that he has not voted and in lying, revealed his type. In contrast, when voting, a citizen may be seen by others (or choose to vote when others are doing so) in which case the hard evidence speaks in favor of his type. We investigate the interplay of lying and signaling incentives in turnout.[19]

Suppose that after a citizen chooses to vote or abstain, a perfectly informative signal of her action is revealed to others with probability s and with complementary probability, no external signal is generated. Prior to this signal being generated, a citizen can communicate to others about her choice but this message need not be truthful. We assume that ethical citizens follow the ethical rule, and reveal their decisions truthfully. Others assess a citizen's type by the message that she sends and hard information about her action if any such information is revealed.

Towards finding the Pragmatic Best Response in this setting, let c_G^* and $\tilde{c}_G$ denote the threshold cost cutoffs used by ethical citizens and pragmatists respectively. For a pragmatist that abstains, the payoff from lying is invariant to her voting cost; μ_G denotes the fraction of pragmatists that falsely claim to vote.[20] A voter thus expects a social image of

(Voter's Image)

$$s\frac{qF(c_G^*)}{qF(c_G^*)+(1-q)F(\tilde{c}_G)}+(1-s)\frac{qF(c_G^*)}{qF(c_G^*)+(1-q)(F(\tilde{c}_G)+\mu_G)},$$

[19] Harbaugh (1996) studies these issues in a setting in which individuals vote because they enjoy receiving praise and dislike lying whereas some others prefer to lie, and a third category of people admit that they did not vote. Our model derives the value of praise or sanctions endogenously in equilibrium. DellaVigna et al. (unpublished) find evidence through a novel field experiment design that individuals who abstain are averse to discussing their political participation. This evidence indicates that individuals are motivated to vote so as to avoid having to tell others that they abstained or lie about it.

[20] While in principle, a pragmatist could vote and lie that she abstained, she has no reason to do so in equilibrium, and so we ignore this case.

in which the first term is the social image when hard information is revealed proving that the voter voted, and the second term is the image relying on cheap talk alone. A citizen who abstains and admits this to others has a social image of

$$\text{(Truthful Abstainer's Image)} \quad \frac{q(1-F(c_G^*))}{q(1-F(c_G^*))+(1-q)(1-F(\tilde{c}_G)-\mu_G)}.$$

Finally, a citizen who abstains but claims to vote expects an image of

$$\text{(Lying Abstainer's Image)} \quad s(0)+(1-s)\frac{qF(c_G^*)}{qF(c_G^*)+(1-q)(F(\tilde{c}_G)+\mu_G)}.$$

In understanding behavior, it is helpful to begin with the case without hard information ($s=0$): no pragmatist ever votes but a positive fraction claims to vote. Yet, a positive fraction must also confess to abstention for otherwise this message would be sent by only ethical citizens and then command the greatest social esteem. In equilibrium, the fraction of pragmatists that claims to vote equates the fraction of ethical citizens that votes so that a citizen's social image is invariant to what she tells others.

Greater monitoring induces more voting and truth-telling from pragmatists. In equilibrium, a pragmatist who abstains is truthful with positive probability for the reason described above,[21] and so must randomize between lying and telling the truth if she lies at all. We define the Pragmatic Best Response in this setting as follows

DEFINITION 4: *For an ethical cutoff, c_G^*, the Pragmatic Best Response is a vector $(\tilde{c}_G, \mu_G)$ such that:*

(i) *A pragmatist citizen with cost below $\tilde{c}_G$ votes and reveals this truthfully to others.*

(ii) *Pragmatists with costs above $\tilde{c}_G$ abstain; the fraction of these that claims to vote is μ_G.*

(iii) *For every G, $\tilde{c}_G = \lambda(\textit{Voter's Image} - \textit{Truthful Abstainer's Image})$.*

(iv) *If $\mu_G > 0$, then Truthful Abstainer's Image = Lying Abstainer's Image.*

[21] The underlying principle is akin to that which drive experts in Dziuda (2011) to reveal unfavorable information: if an "honest" type sometimes takes this action, a strategic type who wishes to appear honest has a strong signaling motive to imitate.

We show in the online Appendix that for every c_G^*, the Pragmatic Best Response exists and is unique.[22] Since pragmatists' behavior varies with s, so does the Consistent Ethical Response.

THEOREM 2: *There is a unique political equilibrium in which for every group G*,

$$c_G^*(qF(c_G^*) + (1 - q)\,F(\tilde{c}_G)) = \frac{2^{1-2\alpha}w}{B(\alpha,\alpha)}.$$

The participation rate of all citizens and pragmatists in each group is increasing in s while that of ethical citizens is decreasing in s. The fraction of pragmatists that falsely claim to vote in each group, μ_G, *is decreasing in s and there exists* $\tilde{s} < 1$ *such that* $\mu_G = 0$ *for every* $s > \tilde{s}$.

This result illustrates how aspects of our basic model extend to accommodate lying: when citizens are concerned that lies may be detected by others, some of them vote for the sake of social image. With improvements in monitoring, pragmatists have a stronger incentive to vote and thus, ethical citizens (as in Property 2) have less of an incentive to vote; on net, average turnout increases. Because the social image of an abstainer is always strictly positive, community monitoring need not be perfect to discourage lying altogether as identified by $\tilde{s} < 1$. It is straightforward to show that analogous to Property 6, if monitoring is permitted to be asymmetric across groups, *ceteris paribus*, the group with better monitoring has a higher probability of winning the election.

B. *Observable Voting Costs*

A different channel by which differences across communities may manifest in turnout is that in those with frequent interaction, more may be known about each individual's voting cost. Instead of being able to abstain on the grounds of a high cost of voting, a pragmatist may feel compelled to vote because others know her voting cost to be low.

Suppose that each individual believes that with probability $p \in [0, 1]$, others in her community know her cost realization, and with complementary probability, no one else knows the realization. She is thus unsure of the social image attached to her choosing to vote or abstain, and this uncertainty affects her decision to vote. For pragmatist i whose voting cost is $c_i < c^*$, the cutoff for ethical citizens in her group, she reveals that she is a pragmatist if she chooses to abstain and her voting cost is known by others. If she votes, and it is expected that a pragmatist with that cost would vote with probability 1, then her social image corresponds to the prior belief about her type. Thus, voting is not socially rewarded but a failure to do so is penalized. On the other hand, if it is expected that a pragmatist would not vote

[22] Because ethical citizens communicate truthfully, the language is exogenously fixed and not subject to issues of babbling or inversion of messages. The Pragmatic Best Response does not uniquely define the behavior of every pragmatist type with cost above $\tilde{c}_G$ but specifies the fraction that falsely claims to vote and the complementary fraction that truthfully admits to abstention. The multiple strategies that correspond to a Pragmatic Best Response are necessarily payoff-equivalent.

with that cost, but an ethical would, then her social image corresponds to that of an ethical citizen.

This race between actions and social expectations precludes the existence of a simple threshold equilibrium in which pragmatists vote at all costs below some $\hat{c} < c^*$ because the expected social image from voting would be discontinuous around $\hat{c}$. Therefore, equilibrium behavior involves pragmatists mixing between voting and abstention: suppose that a pragmatist with cost c is expected to vote with probability μ^c, and let $\hat{\mu} = \int_0^\infty \mu^c dF$ denote the participation rate from all pragmatists in this group. Let $\mu^* = F(c^*)$ denote the participation of all ethical citizens in the group. Her expected social image if she votes is

$$\zeta(1, c, \mu^c, \mu, \mu^*) = \begin{cases} p\,\dfrac{q}{q+(1-q)\,\mu^c} + (1-p)\,\dfrac{q\mu^*}{q\mu^*+(1-q)\,\hat{\mu}} & \text{if} \quad a = 1, c \le c^*, \\ (1-p)\,\dfrac{q\mu^*}{q\mu^*+(1-q)\,\hat{\mu}} & \text{if} \quad a = 1, c > c^*. \end{cases}$$

When the cost is known by others, then a citizen's image is assessed relative to the fraction of ethical citizens and pragmatists who vote at that cost in her group. When the cost remains hidden, then it is relative to the participation rate of all ethical and pragmatic citizens in her group. By reasoning similar to Property 3, there exists no equilibrium in which pragmatists vote at costs higher than that of the ethical cutoff, and so the second entry concerns an off-path event. Using this property, if a citizen abstains, her expected social image is

$$\zeta(0, c, \mu, \mu^*) = \begin{cases} (1-p)\,\dfrac{q(1-\mu^*)}{q(1-\mu^*)+(1-q)(1-\hat{\mu})} & a = 0, c \le c^*, \\ pq + (1-p)\,\dfrac{q(1-\mu^*)}{q(1-\mu^*)+(1-q)(1-\hat{\mu})} & \text{if } a = 0, c > c^*. \end{cases}$$

If a citizen abstains at costs below the ethical cutoff, the only hope for preserving some reputation is if one's voting costs weren't observed by others. In contrast, if a citizen abstains at costs above the ethical cutoff, then her behavior doesn't distinguish her from an ethical citizen conditional on the cost being observed.

If the attribution of image to actions follows that from above, then for every cost such that $\mu^c \in (0, 1)$, it follows that

$$\lambda(\zeta(1, c, \mu^c, \mu, \mu^*) - \zeta(0, c, \mu, \mu^*)) = c, \tag{6}$$

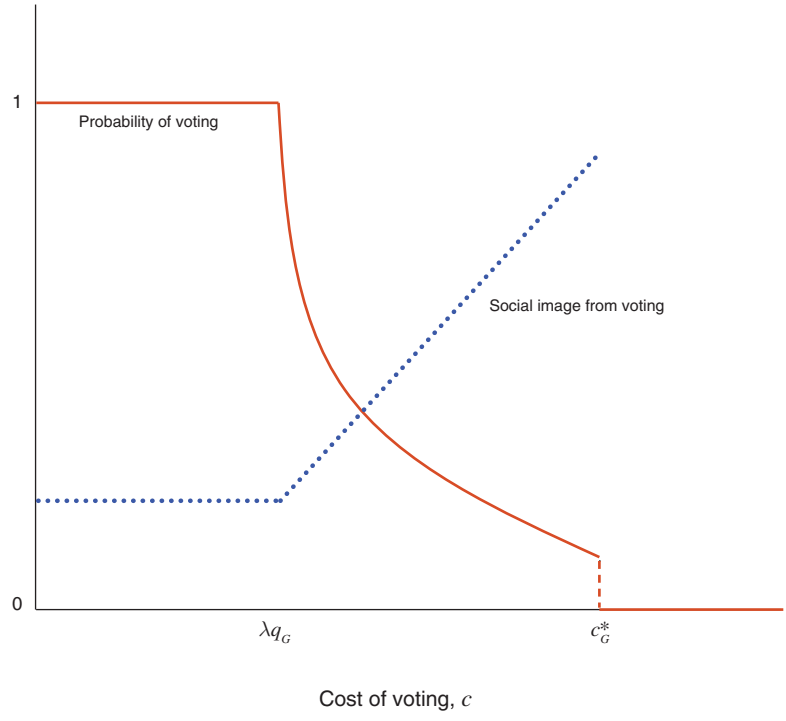

FIGURE 1. VOTING BEHAVIOR WITH OBSERVABLE COSTS

which uniquely defines μ^c in terms of $\hat{\mu}$. Notice that because the gap in image, $\zeta(1,c) - \zeta(0,c)$, is decreasing in $\hat{\mu}$, it follows that equation (6) holds if and only if μ^c is decreasing in $\hat{\mu}$. This property guarantees uniqueness of the pragmatists' best response.

THEOREM 3: *There exists a unique political equilibrium for every p in* $[0,1]$ *in which for every group G*,

$$c_G^*(q\mu_G^* + (1-q)\hat{\mu}) = \frac{2^{1-2\alpha}w}{B(\alpha,\alpha)}.$$

Turnout behavior is depicted in Figure 1 for the case in which $p = 1$, and $\lambda q < c^* < \lambda$. The solid curve in red depicts the probability with which a pragmatist at a given cost votes and the dashed curve in blue denotes the social image associated with someone voting at that cost. As noted earlier, pragmatists with low voting costs always vote generating a social image that corresponds to the prior q. At voting costs greater than λq, such a social image is not enough to convince a pragmatist to vote, but it is also not an equilibrium to abstain with probability 1. Pragmatists thus randomize so that the social reward matches their private cost. However, no pragmatist votes at costs that exceed the ethical cutoff, c^*.

The combination of observable voting costs and social incentives can induce all pragmatists to participate exactly as much as ethical citizens (in contrast to the

baseline model of Section I). Consider the ethical cutoff that would be selected in a political equilibrium if all pragmatists voted just like ethical citizens: this cutoff, denoted by $c^{\dagger}$ uniquely solves $cF(c) = \frac{2^{1-2\alpha_W}}{B(\alpha,\alpha)}$. Suppose that $p > 0$ and λ is sufficiently high that λpq is greater than $c^{\dagger}$. Then it trivially follows that the unique political equilibrium prescribes that all pragmatists vote in the same way as ethical citizens. Interestingly, pragmatists earn no social rewards from voting—their social image corresponds exactly to the prior q when they vote—but they are nevertheless punished by having no social esteem if they abstain at costs less than c^{*} and their voting cost is known by others. In communities in which others have good information about other's voting costs, extrinsic incentives have a powerful effect on turnout.

C. *Other Extensions*

We describe two other extensions whose formal details, for the sake of brevity, are relegated to the online Appendix.

Naïve Ethics.—Ethical decisionmaking in our model embeds a sophisticated understanding of the heterogeneity of motives of citizens across and within groups. Although it resonates with equilibrium analysis, this form of consistency may be more sophisticated than ethical heuristics used in practice. We propose a tractable variant of naïve ethics in which each ethical citizen believes that every citizen is ethical. We show that a naïve analogue to political equilibrium exists and is unique. In comparison to our benchmark setting, the naïve political equilibrium features lower turnout but has similar comparative statics.

Continuum of Types.—A simplification of our basic framework is its bifurcation of the population into ethical citizens and pragmatists. We describe an extension in which individuals value following an ethical rule to different degrees, as captured by an *ethical coefficient*. Generalizing the binary setting reveals a subtle aspect of the definition of ethical rules: there must be some group of "pure ethical citizens" whose behavior, holding fixed the behavior of all others, follows the ethical rule. Otherwise, a Consistent Ethical Response fails to exist. Accordingly, we define pure ethical citizens to be those who have a strict incentive to follow the ethical rule, and other citizens care about the extent to which they are seen to be a pure ethical. A unique political equilibrium continues to exist in this setting.

III. An Application to Electoral Competition

This section discusses the implications that our framework for turnout has on how political candidates choose platforms in a competitive election. We show that office-motivated candidates converge to a single platform so that there is no turnout in equilibrium whereas policy-motivated candidates diverge generating a non-trivial turnout in equilibrium. In both cases, candidates pander towards the group that is more mobilized to vote, i.e., the one that is most responsive to policy, or has stronger social incentives.

We illustrate these issues using the simplest possible example. Each of the two candidates commit to a platform p from a policy space, P_x, with three possible locations, $\left\{\frac{3}{2}-x, \frac{3}{2}, \frac{3}{2}+x\right\}$, in which $x \in \left(0, \frac{1}{2}\right)$. The payoff of group G from the selected policy being p is $\kappa_G u(|p-G|)$ in which $\kappa_G > 0$ is the responsiveness of group G to policy, and the function u is smooth, strictly decreasing, and strictly concave. When candidates 1 and 2 choose platforms p_1 and p_2 respectively, the difference between the two endogenizes the importance of the election:

$$w_G(p_1, p_2) = \kappa_G |u(|p_1 - G|) - u(|p_2 - G|)|.$$

When the two candidates choose the same platform, then no citizen votes ensuring that each candidate wins with equal probability. To guarantee existence and uniqueness of a Consistent Ethical Response, we assume that the fraction of citizens in group 1 is uniformly distributed on $[0, 1]$. The groups are entirely symmetric except that group 2 may be more responsive to policy ($\kappa_2 > \kappa_1$) or have stronger social incentives ($\lambda_2 > \lambda_1$). For expositional clarity, we separate the two forms of asymmetries. As a normalization, we set $\kappa_1 = 1$ and write κ for κ_2.

We begin by studying candidates who are motivated purely by office. In any equilibrium, each candidate must have an equal probability of winning since otherwise, a candidate can deviate to the other's position to ensure no turnout and split the election. Accordingly, candidate incentives are assessed by examining when a platform in P_x defeats another platform with probability greater than $\frac{1}{2}$. When one candidate chooses platform $\frac{3}{2}$ and the other selects $\frac{3}{2}+x$, the ratio of the importance of the election to groups 1 and 2 is

$$\frac{w_1(p_1, p_2)}{w_2(p_1, p_2)} = \left(\frac{1}{\kappa}\right)\left(\frac{u\left(\frac{1}{2}\right) - u\left(\frac{1}{2}+x\right)}{u\left(\frac{1}{2}-x\right) - u\left(\frac{1}{2}\right)}\right).$$

Because u is strictly concave, the second term on the RHS (henceforth denoted by κ_x) exceeds 1: distinct platforms biased towards group 2's preferred policy would induce greater turnout from members of group 1 if the groups are equally responsive. Accordingly, a sufficiently large gap in responsiveness or social incentives is needed for platforms to pander to group 2.

THEOREM 4: *In the unique equilibrium, office-motivated candidates select the same platform, which is either* $\frac{3}{2}$ *or* $\frac{3}{2}+x$.

(i) Asymmetric Responsiveness: *The equilibrium platforms satisfy*

$$p_1 = p_2 = \begin{cases} \frac{3}{2} & \text{if} \quad \kappa < \kappa_x, \\ \frac{3}{2}+x & \text{if} \quad \kappa > \kappa_x. \end{cases}$$

(ii) Asymmetric Social Incentives: *There exists* $\overline{\kappa} > 1$ *and* $\underline{\lambda}$ *such that if* $\kappa_x < \overline{\kappa}$ *and* $\lambda_2 > \underline{\lambda}$, *then the unique platform is* $\frac{3}{2}+x$.

All citizens abstain on the equilibrium path and each candidate wins with equal probability.

When citizens balance the costs of voting with its benefit, electoral platforms are affected by the intensity of citizens' preferences—as captured by responsiveness—and not simply their orderings. Even though no citizen turns out in equilibrium, platforms pander towards groups that have a greater incentive to vote for otherwise one candidate could do better by unilaterally pandering. The extent to which candidates pander is balanced by κ_x. Yet, if the policy space were continuous, our results indicate that any asymmetry in responsiveness or social incentives will induce at least some pandering (since $\kappa_x \to 1$ as $x \to 0$). Finally, since each candidate's probability of victory is $\frac{1}{2}$, office-motivated candidates have no incentive to devote resources to social incentives.

In contrast, policy-motivated candidates choose divergent platforms sacrificing winning probability for a more preferable policy should they win.[23] Suppose that candidate G has a preferred policy of G and her payoff from policy p being implemented is $v(|p - G|)$, where v is smooth, strictly decreasing, and strictly concave. Since the candidates do not choose the same platform in equilibrium, their divergent profiles induce turnout in equilibrium. The asymmetries between the groups shapes electoral competition, and therefore influence whether equilibrium platforms are $\left(\frac{3}{2} - x, \frac{3}{2} + x\right)$ or $\left(\frac{3}{2}, \frac{3}{2} + x\right)$. Also playing a critical role is the extent to which candidate 1 is willing to select the centrist position. Let

$$v_x = \frac{v\left(\frac{1}{2} - x\right) - v\left(\frac{1}{2} + x\right)}{v\left(\frac{1}{2}\right) - v\left(\frac{1}{2} + x\right)} > 1.$$

THEOREM 5: *Policy-motivated candidates select different platforms in the unique equilibrium. The equilibrium platforms are either* $\left(\frac{3}{2} - x, \frac{3}{2} + x\right)$ *or* $\left(\frac{3}{2}, \frac{3}{2} + x\right)$. *The latter is the unique equilibrium if responsiveness or social incentives are sufficiently asymmetric as described below:*

(i) *Asymmetric Responsiveness*: *There exists* $\overline{v} > 1$ *and* $\overline{\kappa}$ *such that if* $\kappa > \overline{\kappa}$ and $v_x < \overline{v}$.

(ii) *Asymmetric Social Incentives*: *There exists* $\overline{v} > 1$, $\overline{\kappa} > 1$, *and* $\underline{\lambda}$ *such that if* $v_x < \overline{v}$, $\kappa_x < \overline{\kappa}$, *and* $\lambda_2 > \underline{\lambda}$.

Citizens vote on the equilibrium path, and the probability with which candidate 2 *wins is increasing in the relative responsiveness* (κ) *or social incentives* (λ_2) *in group* 2.

The only incentive for a policy-motivated candidate 1 to pander to group 2 is that it increases his probability of victory at the expense of the policy should he win. By

[23] This divergence echoes results from Wittman (1983) and Calvert (1985), who show that policy-motivated candidates diverge when voting is costless and candidates are uncertain about the distribution of voter preferences.

biasing platforms towards group 2, the election becomes relatively less important to group 2 than to members of group 1, and so candidate 1 can improve his winning odds by pandering towards group 2 despite knowing that no citizen in that group votes for him. Moreover, unlike an office-motivated candidate, a policy-motivated candidate has an incentive to augment the social incentives in the group that favors him, since this improves the probability with which a policy closer to his ideal point is selected.

The above results illustrate in this stylized setting as to how candidates have an incentive to pander towards groups that are more mobilized to vote. This pandering motive highlights why political elites wish to expend effort towards social incentives, as studied in group mobilization models (e.g., Uhlaner 1989; Morton 1991; and Shachar and Nalebuff 1999): mobilization efforts influence not only the probability with which one's favored candidate wins, but also the platforms of each candidate.

IV. Conclusion

This paper offers a simple model for turnout that integrates ethical and signaling motives, generates predictions for turnout that are consistent with existing evidence, and may be useful to understand the links between voter mobilization and community monitoring as well as electoral competition. We conclude by briefly noting two important directions in which the current work may be extended.

We anchor social incentives and esteem to the rule-utilitarian notion of duty and ethics formulated by Coate and Conlin (2004) and Feddersen and Sandroni (2006a, c). Apart from its intrinsic appeal, the ethical voter framework has proven useful in a number of contexts and thus presents a natural starting point for our analysis. Alternative notions of ethics may involve the ethical type experiencing a constant warm glow from voting or being a strategic agent with altruistic preferences. The weakness of the first approach is that by divorcing the content of duty from the fundamentals of the election, it fails to capture the competitive nature of turnout, and the resulting impact that this has on electoral competition. The latter vein, as studied by Edlin, Gelman, and Kaplan (2007) and Evren (forthcoming), behaves similarly to the ethical voter framework but with an attractive feature of relying on standard equilibrium concepts. It would be interesting to understand the extent to which insights similar to those here may be derived in that setting.

Our work is clearly influenced by the insightful and rich literature on how social signaling and the desire for esteem induce pro-social and generous behavior (see footnote 5). Prior work, for example Bénabou and Tirole (2006), has shed light on this force across a range of environments. Our contribution relative to this literature is to offer an analysis tailored towards elections in which the social incentives can vary with the expected closeness of an election, its importance, or the platforms of political candidates.[24] We see endogenizing the strength of social incentives to be an important direction for future work. As Grossman and Helpman (2002) and Shachar

[24] Indeed, the main contrast with a direct voting application of Bénabou and Tirole (2006) is that they model an individual being intrinsically motivated by the act of voting—receiving a warm-glow from it—rather than by the outcome of the election, and so as with Riker and Ordeshook (1968), they would not predict that turnout would respond to an election's competitiveness, importance, or the closeness of political candidates' platforms.

and Nalebuff (1999) suggest, the social incentives to vote may be shaped by political elites and leaders who exert costly effort to monitor and motivate their group.

Appendix

PROOF OF LEMMA 1: *Consider a generic group G, and let* $S(c, c^*)$ *denote the marginal gain in image when pragmatist voters use cutoff* c *and the ethical voter has cutoff* c^*. *Thus*,

$$S(c, c^*) = \lambda(\zeta(1, c, c^*) - \zeta(0, c, c^*)).$$

Observe that the first term above is strictly decreasing in c and the second term is strictly increasing in c, and so $S(c, c^*)$ is strictly decreasing in c. Moreover,

$$S(0, c^*) = \lambda\left(1 - \frac{q(1 - F(c^*))}{1 - qF(c^*)}\right) > 0,$$

and $S(c^*, c^*) = 0$. Since S_G is continuous in c, it follows that there exists a unique $\hat{c}_G$ that satisfies equation (2). Applying the Implicit Function Theorem to equation (2) yields that

$$\frac{dP(c^*)}{dc^*} = -\frac{\frac{dS(c, c^*)}{dc^*}}{\frac{dS(c, c^*)}{dc} - 1},$$

which is positive because numerator is strictly positive and the denominator is strictly negative.

PROOF OF THEOREM 1: *Consider the first-order conditions with respect to* c_1 *and* c_2 *respectively:*

$$\frac{qF(c_2) + (1 - q)F(\hat{c}_2)}{(qF(c_1) + (1 - q)F(\hat{c}_1))^2} wh\left(\frac{qF(c_2) + (1 - q)F(\hat{c}_2)}{qF(c_1) + (1 - q)F(\hat{c}_1)}\right) qf(c_1)$$
$$- \left(\frac{1}{2}\right) c_1 qf(c_1) = 0,$$
$$\frac{1}{qF(c_1) + (1 - q)F(\hat{c}_1)} wh\left(\frac{qF(c_2) + (1 - q)F(\hat{c}_2)}{qF(c_1) + (1 - q)F(\hat{c}_1)}\right) qf(c_2)$$
$$- \left(\frac{1}{2}\right) c_2 qf(c_2) = 0.$$

Comparing the two first-order conditions yields that at an interior solution,

$$\frac{c_1}{c_2} = \frac{qF(c_2) + (1 - q)F(\hat{c}_2)}{qF(c_1) + (1 - q)F(\hat{c}_1)},$$

which translates into equation (4), from which equation (5) follows. We now verify the second order condition for a maximum. Without loss of generality, we analyze the second-derivative of V_2 at the symmetric solution which is

$$\frac{w}{qF(c_1^*)+(1-q)F(\hat{c}_1)}\ q\left[h(1)f'(c_2^*)+f(c_2^*)h'(1)\frac{qf(c_2^*)}{qF(c_1^*)+(1-q)F(\hat{c}_1)}\right]$$

$$-\ \frac{1}{2}q\left[f(c_2^*)+c_2^*f(c_2^*)\right]$$

$$=f'(c_2^*)\left[\frac{w}{qF(c_1^*)+(1-q)F(\hat{c}_1)}\right]qh(1)\ -\ \frac{1}{2}qc_2^*$$

$$+f(c_2^*)q\left[\frac{wf(c_2^*)}{(qF(c_1^*)+1-qF(\hat{c}_1))^2}\right]h'(1)\ -\ \frac{1}{2}.$$

At an interior optimum, the term in the first set of square brackets is equal to $\frac{dV_2}{dc_2}$ and so is 0 at the solution to the FOC. It therefore suffices to establish that $h'(1)<0$, as shown below:

$$h'(1)=\left(-(2\alpha)\left(\frac{1}{x+1}\right)^{2\alpha+1}\frac{x^{\alpha-1}}{B(\alpha,\alpha)}+(\alpha-1)\left(\frac{1}{x}+1\right)^{2\alpha}\frac{x^{\alpha-2}}{B(\alpha,\alpha)}\right)\Bigg|_{x=1}$$

$$=-2\alpha\left(\frac{1}{2}\right)^{2\alpha+1}\frac{1}{B(\alpha,\alpha)}+(\alpha-1)\left(\frac{1}{2}\right)^{2\alpha}\frac{1}{B(\alpha,\alpha)}$$

$$=-\frac{1}{2^{2\alpha}B(\alpha,\alpha)}<0.$$

PROOF OF PROPERTY 1: *Since the RHS is increasing in w, it follows that c_G^* is increasing in w for an interior solution. Demonstrating that the RHS is increasing in α is more involved: it suffices to show that $2^{1-2\alpha}/B(\alpha,\alpha)$ is increasing in α. Let Γ be the gamma function: since $B(\alpha,\alpha)=\frac{(\Gamma(\alpha))^2}{\Gamma(2\alpha)}$, we have*

$$\frac{2^{1-2\alpha}}{B(\alpha,\alpha)}\ =\frac{2^{1-2\alpha}\Gamma(2\alpha)}{(\Gamma(\alpha))^2}$$

$$=\frac{1}{\sqrt{\pi}}\frac{\Gamma\left(\alpha+\frac{1}{2}\right)}{\Gamma(\alpha)},$$

in which the last equality uses the duplication formula for the gamma function, $\Gamma(z)\,\Gamma\big(z+\frac{1}{2}\big)=2^{1-2z}\sqrt{\pi}\,\Gamma(2z)$. Therefore

$$\begin{aligned}&\frac{d}{d\alpha}\left(\frac{1}{\sqrt{\pi}}\,\frac{\Gamma\big(\alpha+\frac{1}{2}\big)}{\Gamma(\alpha)}\right)\\&\quad=\frac{\Gamma(\alpha)\,\Gamma\big(\alpha+\frac{1}{2}\big)\big(\psi\big(\alpha+\frac{1}{2}\big)-\psi(\alpha)\big)}{(\Gamma(\alpha))^2\sqrt{\pi}}\\&\quad=\frac{2^{1-2\alpha}}{B(\alpha,\alpha)}\left(\psi\Big(\alpha+\frac{1}{2}\Big)-\psi(\alpha)\right),\end{aligned}$$

where the first equality follows from the quotient rule, and $\frac{d}{d\alpha}\Gamma(\alpha)=\Gamma(\alpha)\,\psi(\alpha)$, where $\psi(\alpha)=-\gamma+\int_0^1\frac{1-x^{\alpha-1}}{1-x}\,dx$ is the digamma function, and γ is the Euler-Mascheroni constant. The second equality follows from above. Since the term outside brackets is strictly positive, it suffices to show that $\psi\big(\alpha+\frac{1}{2}\big)-\psi(\alpha)\geq 0$:

$$\begin{aligned}&\psi\Big(\alpha+\frac{1}{2}\Big)-\psi(\alpha)\\&\quad=\int_0^1\frac{x^{\alpha-1}-x^{\alpha-1/2}}{1-x}\,dx\\&\quad=\int_0^1\frac{x^{\alpha-1}}{1-x}\,(1-x^{1/2})\,dx\\&\quad>0.\end{aligned}$$

Finally, we show that participation increases as the voting costs decrease. Suppose that costs are initially distributed according to cdf F and decrease to cdf $\tilde{F}$. Let c^* and $\tilde{c}$ be the solution to equation (5) with cdf F and $\tilde{F}$ respectively, and let $\hat{c}$ and $\bar{c}$ be the respective cutoff for pragmatists. It follows that

$$c^*(qF(c^*)+(1-q)\,F(\hat{c}))=\tilde{c}\big(q\tilde{F}(\tilde{c})+(1-q)\,\tilde{F}(\bar{c})\big).$$

Given the above equation, it suffices to establish that $c^*\geq\tilde{c}$; suppose otherwise towards a contradiction. Because F strictly first-order stochastically dominates $\tilde{F}$, it follows that $\tilde{F}(\tilde{c})>F(\tilde{c})>F(c^*)$. From the signaling incentives, it follows that $\tilde{F}(\bar{c})>F(\hat{c})$: otherwise, $\bar{c}<\hat{c}$, and so a pragmatist at cost $\hat{c}$ is not willing to vote when costs are distributed according to $\tilde{F}$ despite the stronger social incentive to vote. The equation above however is false if $\tilde{F}(\tilde{c})>F(c^*)$ and $\tilde{F}(\bar{c})>F(\hat{c})$ leading to a contradiction.

PROOF OF PROPERTY 2: *Applying the Implicit Function Theorem to equation* (2) *yields that*

$$\frac{dP}{d\lambda}=-\frac{\zeta(1,P(c^*),c^*)-\zeta(0,P(c^*),c^*)+\frac{dS(P(c^*),c^*)}{dc^*}\,\frac{dc^*}{d\lambda}}{\frac{dS(c,c^*)}{dc}-1}.$$

From the above expression, it follows that $dc^*/d\lambda > 0$ implies $d\hat{c}_G/d\lambda > 0$. Yet, if c^* increases with λ, then the entire term on the LHS of equation (5) increases, resulting in a contradiction. Therefore, c^*_G must decrease with λ, and to satisfy equation (5), it follows that $qF(c^*_G) + (1 - q)F(P(c^*_G))$ is increasing in λ. Therefore, both the overall participation rate and that of pragmatists increase with λ.

PROOF OF PROPERTY 3: *By equation* (2), $\hat{c}_G > 0$ *if and only if* $S(\hat{c}_G, c^*_G) > 0$, *which is true if and only if* $F_G(\hat{c}_G) < F_G(c^*_G)$.

PROOF OF PROPERTY 4: *Consider a sequence* $\{q_n\}_{n=1}^{\infty}$ *such that* $q_n \to 0$, *and the corresponding cutoffs for ethical and pragmatic citizens* $\{c^*_{G,n}, \hat{c}_{G,n}\}_{n=1}^{\infty}$; *for each n, these cutoffs must satisfy equation* (5). *Observe that*

$$q_n F(c^*_{G,n}) + (1 - q_n)F(\hat{c}_{G,n}) \to (1 - q_n)F(\hat{c}_{G,n}),$$

and so to prove that aggregate turnout is vanishing, it suffices to establish that $\hat{c}_{G,n} \to 0$. From equation (2), it follows that

$$\hat{c}_{G,n} F(\hat{c}_{G,n}) < \frac{\lambda q_n}{1 - q_n},$$

and therefore, $\lim_{q_n \to 0} \hat{c}_{G,n} = 0$.

Equation (5) is satisfied only if $c^*_{G,n} \to \infty$ which implies that $F(c^*_{G,n}) \to 1$.

PROOF OF PROPERTY 5: *Suppose that* $w_2 > w_1$; *equation* (*B2*) *fails if* $c^*_2 \leq c^*_1$ *because* $T_1 = T_2$ *and is increasing in its argument. Therefore* $c^*_2 > c^*_1$ *and* $\hat{c}_2 = P(c^*_2) > P(c^*_1) = \hat{c}_1$. *The argument for when costs are asymmetric and* F_1 *strictly first order stochastically dominates* F_2 *is identical to that in Property 1 substituting* F_1 *for* F *and* F_2 *for* $\tilde{F}$.

PROOF OF PROPERTY 6: *It follows from Property 2 that* $P_2(c) > P_1(c)$ *for every* c. *Equation* (*B2*) *in the online Appendix holds if and only if* $c^*_1 > c^*_2$, *which implies that* $T_1(c^*_1) < T_2(c^*_2)$.

REFERENCES

Alesina, Alberto, and Eliana La Ferrara. 2000. "Participation in Heterogeneous Communities." *Quarterly Journal of Economics* 115 (3): 847–904.

Andreoni, James, and B. Douglas Bernheim. 2009. "Social Image and the 50–50 Norm: A Theoretical and Experimental Analysis of Audience Effects." *Econometrica* 77 (5): 1607–36.

Ariely, Dan, Anat Bracha, and Stephan Meier. 2009. "Doing Good or Doing Well? Image Motivation and Monetary Incentives in Behaving Prosocially." *American Economic Review* 99 (1): 544–55.

Banerjee, Abhijit V., Selvan Kumar, Rohini Pande, and Felix Su. 2011. "Do Informed Voters Make Better Choices? Experimental Evidence from Urban India." http://www.hks.harvard.edu/fs/rpande/papers/DoInformedVoters_Nov11.pdf.

Benabou, Roland, and Jean Tirole. 2006. "Incentives and Prosocial Behavior." *American Economic Review* 96 (5): 1652–78.

Bernheim, B. Douglas. 1994. "A Theory of Conformity." *Journal of Political Economy* 102 (5): 841–77.

Birch, Sarah. 2009. *Full Participation: A Comparative Study of Compulsory Voting*. Tokyo: United Nations University Press.

Calvert, Randall L. 1985. "Robustness of the Multidimensional Voting Model: Candidate Motivations, Uncertainty, and Convergence." *American Journal of Political Science* 29 (1): 69–95.

Campbell, Andrea Louise. 2003. *How Policies Make Citizens: Senior Political Activism and the American Welfare State*. Princeton: Princeton University Press.

Coate, Stephen, and Michael Conlin. 2004. "A Group Rule-Utilitarian Approach to Voter Turnout: Theory and Evidence." *American Economic Review* 94 (5): 1476–1504.

Currarini, Sergio, Matthew O. Jackson, and Paolo Pin. 2009. "An Economic Model of Friendship: Homophily, Minorities, and Segregation." *Econometrica* 77 (4): 1003–45.

Daughety, Andrew F., and Jennifer F. Reinganum. 2010. "Public Goods, Social Pressure, and the Choice between Privacy and Publicity." *American Economic Journal: Microeconomics* 2 (2): 191–221.

DellaVigna, Stefano, John A. List, and Ulrike Malmendier. 2012. "Testing for Altruism and Social Pressure in Charitable Giving." *Quarterly Journal of Economics* 127 (1): 1–56.

DellaVigna, Stefano, John List, Ulrike Malmendier, and Gautum Rao. "Voting to Tell Others." 2013. Unpublished.

Dubner, Stephen J., and Steven D. Levitt. 2005. "Why Vote?" *New York Times Magazine*, November 6. http://www.nytimes.com/2005/11/06/magazine/06freak.html?pagewanted=print.

Dziuda, Wioletta. 2011. "Strategic argumentation." *Journal of Economic Theory* 146 (4): 1362–97.

Edlin, Aaron, Andrew Gelman, and Noah Kaplan. 2007. "Voting as a Rational Choice: Why and How People Vote to Improve the Well-Being of Others." *Rationality and Society* 19 (3): 293–314.

Ellingsen, Tore, and Magnus Johannesson. 2008. "Pride and Prejudice: The Human Side of Incentive Theory." *American Economic Review* 98 (3): 990–1008.

Evren, Özgür. Forthcoming. "Altruism and Voting: A Large-Turnout Result That Does not Rely on Civic Duty or Cooperative Behavior." *Journal of Economic Theory*.

Feddersen, Timothy J. 2004. "Rational Choice Theory and the Paradox of Not Voting." *Journal of Economic Perspectives* 18 (1): 99–112.

Feddersen, Timothy, and Alvaro Sandroni. 2006a. "A Theory of Participation in Elections." *American Economic Review* 96 (4): 1271–82.

Feddersen, Timothy, and Alvaro Sandroni. 2006b. "Ethical Voters and Costly Information Acquisition." *Quarterly Journal of Political Science* 1 (3): 287–311.

Feddersen, Timothy, and Alvaro Sandroni. 2006c. "The Calculus of Ethical Voting." *International Journal of Game Theory* 35 (1): 1–25.

Fudenberg, Drew, and David K. Levine. 1992. "Maintaining a Reputation When Strategies Are Imperfectly Observed." *Review of Economic Studies* 59 (3): 561–79.

Funk, Patricia. 2010. "Social Incentives and Voter Turnout: Evidence from the Swiss Mail Ballot System." *Journal of the European Economic Association* 8 (5): 1077–1103.

Gerber, Alan S., Donald P. Green, and Christopher W. Larimer. 2008. "Social Pressure and Voter Turnout: Evidence from a Large-Scale Field Experiment." *American Political Science Review* 102 (1): 33–48.

Glaeser, Edward L., Giacomo A. M. Ponzetto, and Jesse M. Shapiro. 2005. "Strategic Extremism: Why Republicans and Democrats Divide on Religious Values." *Quarterly Journal of Economics* 120 (4): 1283–1330.

Grossman, Gene M., and Elhanan Helpman. 2002. *Special Interest Politics*. Cambridge, MA: MIT Press.

Harbaugh, William T. 1996. "If People Vote Because They Like to, Then Why Do So Many of Them Lie?" *Public Choice* 89 (1–2): 63–76.

Harbaugh, William T. 1998. "What Do Donations Buy? A Model of Philanthropy Based on Prestige and Warm Glow." *Journal of Public Economics* 67 (2): 269–84.

Harsanyi, John C. 1980. "Rule Utilitarianism, Rights, Obligations and the Theory of Rational Behavior." *Theory and Decision* 12 (2): 115–33.

Hill, Kim Quaile, Jan E. Leighley, and Angela Hinton-Andersson. 1995. "Lower-Class Mobilization and Policy Linkage in the U.S. States." *American Journal of Political Science* 39 (1): 75–86.

Knack, Stephen. 1992. "Civic Norms, Social Sanctions, and Voter Turnout." *Rationality and Society* 4 (2): 133–56.

Kreps, David M., and Robert Wilson. 1982. "Reputation and Imperfect Information." *Journal of Economic Theory* 27 (2): 253–79.

Levy, Gilat. 2007. "Decision Making in Committees: Transparency, Reputation, and Voting Rules." *American Economic Review* 97 (1): 150–68.

McPherson, Miller, Lynn Smith-Lovin, and James M. Cook. 2001. "Birds of a Feather: Homophily in Social Networks." *Annual Review of Sociology* 27: 415–44.

Morton, Rebecca B. 1991. "Groups in Rational Turnout Models." *American Journal of Political Science* 35 (3): 758–76.

Prat, Andrea. 2005. "The Wrong Kind of Transparency." *American Economic Review* 95 (3): 862–77.

Putnam, Robert D. 2000. *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon and Schuster.

Riker, William H., and Peter C. Ordeshook. 1968. "A Theory of the Calculus of Voting." *American Political Science Review* 62 (1): 25–42.

Shachar, Ron, and Barry Nalebuff. 1999. "Follow the Leader: Theory and Evidence on Political Participation." *American Economic Review* 89 (3): 525–47.

Uhlaner, Carole J. 1989. "Rational Turnout: The Neglected Role of Groups." *American Journal of Political Science* 33 (2): 390–422.

Valasek, Justin. Forthcoming. "Get Out the Vote: How Encouraging Voting Changes Political Outcomes." *Economics & Politics*.

Varshney, Ashutosh. 2007. "India's Democratic Challenge." *Foreign Affairs* 86 (2): 93–106.

Virág, Gábor. 2008. "Playing for Your Own Audience: Extremism in Two-Party Elections." *Journal of Public Economic Theory* 10 (5): 891–922.

Visser, Bauke, and Otto H. Swank. 2007. "On Committees of Experts." *Quarterly Journal of Economics* 122 (1): 337–72.

Wittman, Donald. 1983. "Candidate Motivation: A Synthesis of Alternative Theories." *American Political Science Review* 77 (1): 142–57.