Strategic Mobilization of Voters

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Abstract

Organized public demonstrations of voter support for policy issues through rallies, petitions and letter-writing campaigns are mechanisms by which interest groups sometimes seek to influence political decision-making. We develop a model of an interest group's strategic decision to publicly mobilize supportive voters that assesses the informational and voter preference conditions under which mobilization is effective, and which form of mobilization is optimal. Our model shows that voter mobilization can be influential when elected politicians are sufficiently uncertain about two dimensions of voters' preferences, the breadth of support for the issue and the saliency of the issue (depth of support). The distribution of voter preferences – defined by the numbers of policy supporters and opposers and election vote-switchers and non-switchers – determines whether low or high participation-cost forms of mobilization are optimal. The model's predictions are consistent with recent mobilization campaigns organized by a range of interest groups, such as firms (e.g. Uber, Airbnb), environmental activists (e.g. Fridays for Future), and racial justice advocates (e.g. Black Lives Matter).

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Collective voter demonstrations of public support for, or opposition to, public policy issues through rallies, protests and petitions are a staple of liberal democracies because they offer a way for citizens to directly communicate to government their preferences on specific issues and hence to potentially influence policymakers' decisions. Such public events are typically not spontaneous, however, but are organized by non-governmental organizations (NGOs), social advocacy groups, labor unions, or firms who have resources and an interest in the policy outcome. In recent years, interest groups have mobilized voters in orchestrated campaigns to pressure governments on a wide range of issues: for example, Black Lives Matter advocates have mobilized supporters through social media campaigns, marches, and campouts at city halls, demanding an end to racial discrimination and police violence. Fridays for Future, an environmental NGO started by activist Greta Thunberg, has organized student walkouts and demonstrations to persuade policymakers to act on climate policy. Firms also occassionally mobilize stakeholders when seeking support for changes in legislation or regulations that affect their business operations. For example, Uber has organized consumer petitions when entering new cities, AirBnb has sponsored accommodation host rallies, and the pharmaceutical industry has funded patient advocacy groups when new drugs are under regulatory consideration.

Surveys of government relations experts indicate that voter mobilization campaigns can be quite effective in shaping elected politicians' policy decisions, especially compared to the impact of lobbying and financial contributions to election campaigns (Lord, 2000). Anecdotal evidence finds that voter petitions and rallies have been influential in policy debates around the regulation of new technologies (Holburn and Raiha, 2017), and that NGO campaigns on social and environmental issues have had some successes (Levin, 2020; Sgueglia and Andrew, 2020). However, casual observation suggests that interest groups do not in fact always mobilize voters in order to directly influence policymakers, and that firms, one type of interest group, are generally more likely to rely on lobbying and campaign contributions as their preferred tactics. Under what conditions, then, are interest groups likely to organize voter demonstrations

of support when seeking policy change – and when are such demonstrations persuasive? Further, what explains the choice of tactic among interest groups that do mobilize their supporters? Some (e.g. Uber, #BlackLivesMatter) systematically tend to use petitions or social media hastag campaigns, which have a low voter participation-cost, but others (e.g. AirBnb, Fridays for Future) instead utilize high participation-cost public rallies and demonstrations.

In this paper, we develop a voter-participation model (Battaglini, 2017; Hill, 2022; Lohmann, 1993; 1994;) that analyzes the conditions under which an interest group such as a firm mobilizes voters and, if they do so, which method is optimal, when seeking to influence political decisions. The model includes three sets of actors: first, an elected politician who, uncertain about the extent and intensity of voter preferences for a proposed policy – and hence for her election prospects – must decide whether or not to implement the policy. The second actor is an interest group that chooses whether to mobilize voters to publicly demonstrate the level of support for the policy, which is favored by the interest group and, if so, how – either through a zero participation-cost event such as an online petition (i.e. cheap-talk) or a positive participation-cost event such as a public rally (i.e. costly signaling). Voter participation in a rally or petition provides new information to the politician about the expected election impact of implementing the policy, which affects all voters (not just the interest group's supporters, who are a subset of the voter base). Third, the model incorporates voters who individually decide whether to voluntarily participate in a mobilization event: voters may or may not support the policy proposal and more crucially they differ in the intensity of their preferences. For voters with strong preferences, the issue is sufficiently salient to affect their vote for a politician in a future election, while for other voters with moderate preferences the issue is not salient enough to be pivotal in their vote for a political candidate.

Our model predicts that an interest group will mobilize voters to demonstrate support for a policy when several conditions are satisfied. The politician needs to be sufficiently uncertain about the distribution of voter preferences for the policy issue, specifically about the numbers of vote-switchers and of

supporters and opposers. Uncertainty can arise for novel policy issues pertaining to new industries or businesses that disrupt existing markets, or where there is little historical precedent to evaluate the impact on certain types of voters. Greater political skepticism about voter support for the policy leads to a higher threshold for participation in an event such as a rally or petition in order to convince a politician to implement the policy. If, on the other hand, the politician is perfectly informed about voter preferences then there is no informational benefit from organized mobilization of supporters. The preference distribution of supporting voters – the number of supporters and the intensity of preferences – is also crucial in shaping the effectiveness of an organized event. A low-cost (cheap-talk) event such as a petition can be influential if there is a larger number of voters in a jurisdiction with moderate intensity preferences for the policy issue; and a high-cost (costly signaling) event such as a rally can be effective when there is a smaller set of voters with sufficiently intense preferences (meaning they will switch their vote for the politician depending on whether the politician implements the policy). If the number of supporters accounts for too small a fraction of voters then neither petitions nor rallies will be feasible, irrespective of the intensity of preferences. However, the interest group does not need a majority of voters to attend a rally in order to positively impact the politician's decision. It is possible that even if a majority of voters oppose the policy – and the politician is aware of this fact – the politician will still implement the policy since it is the intensity of voter preferences that matters to the politician. Since attending a rally is a costly exercise for voters, rally participation sends a credible signal to politicians about the number of voters who are prepared to switch votes, and a small number may be sufficient to convince the politician.

Our model makes two main contributions to political economy research on interest groups' political influence strategies. First and foremost, we provide new insights into the strategic calculus behind voter mobilization campaigns, an issue that to date has not received scholarly theoretical attention. Even though a small handful of papers examines the rationale for voter participation in public events, the existence of such events in these models is always assumed

to be exogenous. Our model endogenizes both the creation and type of public event, and delineates the key factors that influence an interest group's strategic mobilization decisions. Second, we model a novel dimension of voter preference for a specific policy – the intensity relative to other policy issues - and analyze its effect on both a politician's policy decisions as well as the voter mobilization strategies of interest groups. Heterogeneity in the intensity of voter preferences impacts the optimal type of mobilization event and demonstrates the trade-offs that politicians often face in deciding between policies that affect a minority intensely versus a majority moderately.

The remainder of the paper is organized as follows. In the next section we review political economy literature on voter participation, information aggregation, as well as strategic corporate constituency-building. In the third section we present a model of voters mobilization that includes voters, a political decision-maker, and an interest group that may organize an event. The fourth section presents the model's main results – the focal equilibrium profile of the game – as well as a description of each actor's strategic behavior. The fifth section discusses predictions arising from the model and how they inform our primary research questions. We consider extensions of the model and future research directions before concluding.

I Literature

Our model relates to several theoretical literatures. First, we build on models of how voter participation in mass public demonstration events can influence policy-makers' decisions and policy outcomes through an information aggregation mechanism. In one of the earliest papers to address this issue, Lohmann (1993) models the decision of a politician who seeks to maximize voter welfare by matching a policy choice with the state of the world, about which both the politician and voters are uncertain. The model establishes conditions under which voluntary voter participation in a public protest reveals information about the state of the world that influences the politician's decision. In a related model without a political decision-maker (Lohmann, 1994), voters

use participation in a protest event prior to a referendum as a communication device that enables them to make inferences about the state of the world. Participation can lead to better informed collective referendum choices by voters, but voters with extreme preferences can also create 'noise', depleting the informational value of mass participation. Battaglini (2017) and Banerjee and Somanathan (2001) extend this research by further characterizing the theoretical conditions under which costless protest and demonstration events act as information aggregation mechanisms, specifically the conditions around the precision of individual voter signals about the state of the world, the degree of preference conflict with the policy-maker, and the size of the population.

While these models focus on the informational role that participation in protest events plays in the strategic behavior of voters and policy-makers, the events themselves are assumed to exist exogenously. By contrast, in our model, we explicitly incorporate a strategic interest group that decides whether to organize an event and to mobilize voters in an attempt to sway a policy-maker. Another distinct feature of our approach compared to this prior research is that we model voters as having two-dimensional rather than single-dimensional preferences over policy (Hill, 2022). We introduce an intensity (or saliency) preference attribute in the model, which is central to generating a rich set of predictions about how the distribution of voter preferences affects the incentives for an interest group to organize an event, and whether it is costly or costless.

A second stream of research in political economy directly examines firm mobilization of voters as a political influence tactic, though these models tend to be reduced form and deterministic (Baron, 1999, 2001, 2018; De Borger and Glazer, 2015). In Baron's models, voter mobilization is a costly action for the firm – like lobbying or campaign contributions – that lowers the cost of obtaining legislator votes on legislation affecting the firm. De Borger and Glazer (2015) adopt a similar premise in their model of worker employment, compensation and political mobilization, proposing that by recruiting more workers and offering above-market wages, firms can induce workers to voluntarily mobilize, which in turn reduces the risk of unfavorable regulation being

implemented. In all of these models, the primary decision of the firm is to optimize over the amount of voter mobilization, which is assumed to deterministically translate into political support. Voters are also assumed to act non-strategically, simply responding to the firm's mobilization incentives. Our model incorporates strategic behavior of both voters and the politician under conditions of uncertainty about the distribution of voter preferences.

Third, at a more general level, our model contributes to political economy models of interest group influence on policy-makers in contexts where interest groups cannot directly and credibly transmit private information about optimal policy due to incentive alignment and cheap-talk concerns (Austen-Smith and Wright, 1992; Potters and van Winden, 1992). Even though an interest group may have superior information about the state of the world, the interest group's preference around policy outcomes – which is known – would make a policy-maker skeptical of the interest group's lobbying reports. One set of models in the literature examines how costly actions enable interest groups to send credible signals to policy-makers or voters. For instance, campaign contributions and advertisements can be used to signal to voters whether a political candidate is high quality, under the assumption that the interest group benefits more from supporting a higher quality politician (Potters, Sloof, and van Winden, 1997; Prat, 2002a; Prat, 2002b). Similarly, Raiha (2018) considers how firms can influence voters' election decisions by making costly capital investments: by boosting economic conditions in a jurisdiction, firms can distort voters' inferences about the quality of an incumbent politician, allowing the firm to gain political support for its preferred policy. Another set of political economy models explores how interest groups use strategic intermediaries or channels to credibly convey information to decision-makers. Firms may covertly subsidize other groups to 'astroturf' lobby on their behalf (Lyon and Maxwell, 2004) or they may lobby allied legislators who in turn lobby other members of a legislature to develop a majority coalition (Hall and Deardorff, 2006; Schnakenberg, 2017). In this paper, we introduce voter events as a distinct type of information transmission mechanism that interest groups use to achieve influence on policy outcomes: by recruiting allied voters to partici-

pate in organized events, interest groups can indirectly transmit information to policy-makers about the policy preference profile of the broader electorate.

II Model

The model involves three sets of players: an interest group (which we label as a firm), an incumbent politician, and a discrete set V of $N \in \mathbb{N}$ voters.[1]

There is a policy issue that needs to be determined by the politician, who chooses between two discrete alternatives, $d \in \{0, 1\}$, where $d = 1$ indicates the outcome that is preferred by the firm. The politician does not know (ex ante) the preferences of voters on the policy issue, and thus is uncertain about how the decision will affect her subsequent electoral prospects. However, the politician can potentially make inferences about voter preferences by observing the mobilization actions of the firm and voters, both of whom possess more information about preferences than the politician.

The firm has an opportunity to mobilize its supporting voters (such as its employees or customers), in an effort to convince the politician that she should implement the firm's preferred policy. The firm can organize a single voter event that its supporters may voluntarily participate in – $e \in \{0, 1\}$ where $e = 1$ denotes that an event is organized – such as a public rally or an online petition, by which voters publicly express support for the firm's policy position. An event is characterized by the cost of voter participation, $c \in \mathbb{R}_+$. For instance, it is more costly for a voter to attend a public rally than to sign an online petition. Voter participation in an event can convey information to the politician about the direction of voters' preferences on the issue as well as the intensity of preferences, as indicated by the cost of voter participation in the event. For simplicity, we assume there are two possible event types the firm can organize: an event that is costless for voters to participate in, $c = 0$ (e.g. online petition), or an event that has a positive voter-participation cost, $c = \eta > 0$ (e.g. rally).[2] The costless event is effectively a form a cheap-talk on

[1] As we elaborate in the Appendix, we assume N is sufficiently but not arbitrarily large.

[2] We use the term *petition* to refer to a costless-participation event and the term *rally* to

the part of participants, while the costly event is a form of costly signalling. In each case, the cost to the firm of organizing an event, irrespective of its type, is $k > 0$.[3] The event and the politician's policy decision both occur prior to an election, at which point voters choose whether or not to re-elect the incumbent.

Payoffs

Before discussing the precise sequence of moves and players' information sets we first describe the players' payoffs. The firm benefits if the politician implements its preferred policy (i.e. $d = 1$) and it also pays a cost k if it organizes a voter event, so its payoff is simply $d - ek$. We assume the politician is intrinsically policy neutral but aims to maximize the number of votes she receives in the election.

Voter payoffs are more complex. Let $i \in V$ denote a generic voter who has two dimensions of preference: (i) policy issue preference ($\psi_i \in \mathbb{R}$), and (ii) valence/other issue preference ($\theta_i \in \mathbb{R}$). The voters' payoff is determined jointly by the policy choice of the politician as well as by his/her event participation decision – which we denote by $\rho_i \in \{0, 1\}$, where $\rho_i = 1$ denotes that the voter participates in the event and $\rho_i = 0$ denotes that the voter does not participate in the event – and election vote choice ($v_i \in \{0, 1\}$), where $v_i = 1$ denotes a vote for the incumbent and $v_i = 0$ is a vote for the challenger. To ensure temporal consistency between the politician's policy decision and voters' subsequent election decisions, we assume that each voter's payoff depends, in part, on their election choice.

If the voter has valence preference $\theta_i > 0$ we assume that the voter prefers to re-elect the incumbent politician rather than to elect the challenger in the absence of the policy issue, which is introduced by the incumbent (but is not adopted by a challenger). We normalize the voter's payoff under a challenger at zero.[4] If the voter has a policy preference $\psi_i > 0$ then the voter prefers that

refer to a costly-participation event throughout the paper.

[3] Although we assume the cost of organizing an event is the same for both event types, the results are unchanged if the cost varies by event, as long as the costs satisfy the subsequent conditions described below.

[4] This normalization is made primarily for mathematical simplification, but it could also

the incumbent politician select the policy alternative $d = 1$, which increases the voter's payoff by ψ_i. If the incumbent does not select this policy (i.e. $d = 0$), we assume the voter's payoff decreases by ψ_i. Hence, if the voter cares more about the policy issue than the valence (i.e. $|\psi_i| > |\theta_i|$), then the voter's election vote for the incumbent or challenger will switch depending on the incumbent politician's policy decision, d: for a voter who is strongly in favor of the policy issue, the payoff is greater from voting for the incumbent than from voting for the challenger ($\theta_i + \psi_i > 0$). For a voter who is strongly opposed to the policy issue, the payoff from voting for the challenger is greater than from voting for the incumbent ($0 > \theta_i - \psi_i$). Alternatively, if the voter cares more about the valence than the policy issue (i.e. $|\theta_i| > |\psi_i|$), then the voter bases his or her election decision solely upon θ_i.[5]

Table 1 summarizes the voter's payoff structure in four scenarios, according to which policy is selected ($d = 0$ or 1) and whether the voter elected the incumbent or challenger ($v_i \in \{0, 1\}$). The upper table (A) shows the payoffs if the voter does not participate in a stakeholder event organized by the firm. The lower table (B) shows the payoffs in each scenario if the voter does participate in an event, which reduces scenario payoffs by the voter participation cost c.

For simplicity, we assume hereafter that all voters share the same valence preference – i.e. $\theta_i = \theta$ for all $i \in V$ – and furthermore that $\theta > 0$.[6] We denote the profile of voters' issue preferences as $\psi = (\psi_1, \psi_2, \ldots, \psi_N)$. Without loss of generality, we order voters in increasing magnitude of their realized issue preference, ψ_i – that is, $i < j \Rightarrow \psi_i \leq \psi_j$ for any $i, j \in V$. Figure 1 shows an illustrative voter issue preference profile.[7]

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reflect voter uncertainty about a potential challenger's ideological position on the issue.

[5]This formulation of payoffs is akin to existing literature that models retrospective or expressive voting. Models commonly include voters who exogenously vote retrospectively or expressively (e.g. Austen-Smith and Banks, 1989; Glazer, 1992) or who rationally choose to vote retrospectively (e.g. Alesina et al., 1993; Lohmann, 1998). One can interpret retrospective voting in our model as the optimal voter strategy in circumstances where voters learn about the preferences of politicians and choose not to vote for politicians who have revealed that they do not share the same policy preference as the voter on an issue.

[6]Later it is straight forward to see that the results are generalizable and robust to many different specifications of θ_i.

[7]For visual ease, we depict the voters' preference profile as a continuous curve rather than a discrete set of points.

Table 1: Voter Payoffs

(A) When voter does not participate in stakeholder event ($\rho_i = 0$)

Politician's Policy Choice	Voter's Election Decision: $v_i = 1$	$v_i = 0$
$d = 1$	$\theta_i + \psi_i$	0
$d = 0$	$\theta_i - \psi_i$	0

(B) When voter participates in stakeholder event ($\rho_i = 1$)

Politician's Policy Choice	Voter's Election Decision: $v_i = 1$	$v_i = 0$
$d = 1$	$\theta_i + \psi_i - c$	$-c$
$d = 0$	$\theta_i - \psi_i - c$	$-c$

The points on the curve above the x-axis show the voters who support a policy decision $d = 1$ (i.e. voters for whom $\psi_i > 0$), while the points on the curve below the x-axis show the voters who oppose it (i.e. voters for whom $\psi_i < 0$). In the example drawn in Figure 1, slightly more than half of voters oppose $d = 1$ and prefer the politician to choose $d = 0$. However, when deciding whether to vote for the incumbent politician in the election, voters consider both dimensions of their preferences, which influences which decision is electorally advantageous for the politician.

Figure 2 illustrates the four different types of voter. Voters in region A strongly oppose a policy of $d = 1$ (i.e. $\psi_i < -\theta$). Since the intensity of their policy preference is sufficiently negative, these voters will vote for the incumbent politician if and only if she chooses $d = 0$. By contrast voters in region D strongly support the policy $d = 1$ (i.e. $\psi_i > \theta$) and will vote for the incumbent if and only if she chooses $d = 1$. We refer to voters in regions A and D as *switchers* (either supportive or opposing) since they switch their vote depending on the politician's decision d. We denote the number of supportive switchers by N^s and the number of opposing switchers by N^o. In between

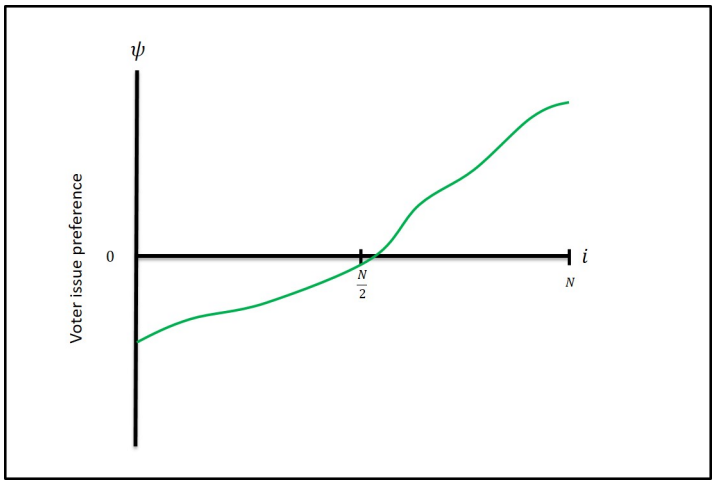

Figure 1: Voter Issue Preference Profile

these two categories are B and C type voters, for whom $|\psi_i| < \theta$. B and C voters do not have a sufficiently strong preference on the policy issue for it to affect their voting decision. As such, we refer to these voters as supportive or opposing *non-switchers*. Since the incumbent politician wishes to maximize the number of votes she receives she would optimally select $d = 1$ given the profile depicted in Figure 2, even though a majority of voters prefer $d = 0$, because the number of supportive switchers is greater than the number of opposing switchers (i.e. $N^s > N^o$).

Information

If the politician knew precisely the scale and intensity of voter preferences, and hence N^s and N^o, her policy decision would be straightforward, and voter events would not convey new information. However, we assume instead that the politician does not know voters' issue preferences but has prior beliefs. We assume that the voters' preference profile $\psi = (\psi_1, \psi_2, \ldots, \psi_N)$ is stochastic, where each ψ_i is i.i.d according to the density function F. The value of each ψ_i is known only to voter i, while the politician holds prior beliefs in accordance with the distribution F. We assume F is non-degenerate and also that $P(\psi_i > \theta) < P(\psi_i \leq -\theta)$, which implies that in the absence of new information the

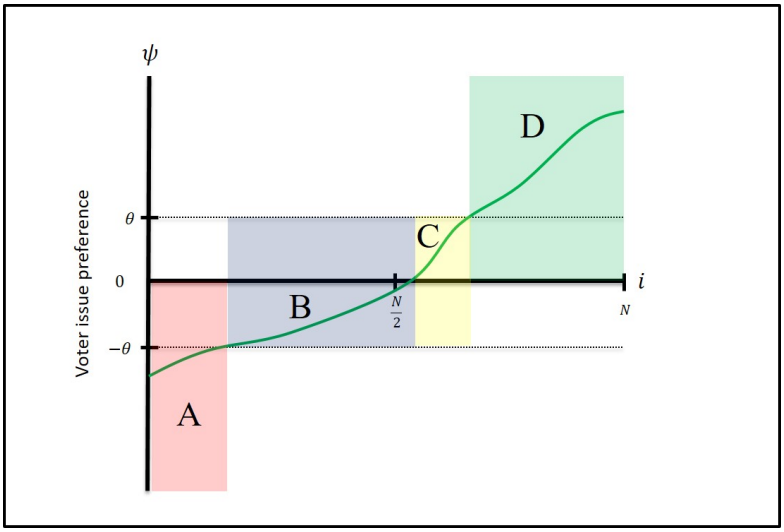

Figure 2: Categories of voters

politician would optimally choose $d = 0$ (i.e. $E(N^s) < E(N^o)$).

The firm possesses superior but imperfect knowledge of the voters' policy preference profile ψ. After nature determines ψ, the firm receives a signal $\hat{\psi} = (\hat{\psi_1}, \hat{\psi_2}, \ldots, \hat{\psi_N})$, which with probability π is equal to the realized preference profile $\psi = (\psi_1, \psi_2, \ldots, \psi_N)$, and with probability $1 - \pi$ is equal to a profile $\psi^0 = (\psi_1^0, \psi_2^0, \ldots, \psi_N^0)$ which is stochastic and also distributed according to F. In this way, with probability π the firm correctly observes the preference profile of the electorate, and with probability $1 - \pi$ the firm observes an erroneous preference profile. We assume that $\pi > 1 - \pi$; that is, the firm's information is more likely to be correct than incorrect. Furthermore we assume that the cost to the firm of organizing an event k, satisfies $\pi > k > 1 - \pi$. As we will see, this condition simply ensures that the firm will only organize an event if it expects to succeed in persuading the politician.[8] Each voter naturally knows his/her own policy preference ψ_i, but does not know other voters' preferences. The common valence preference θ is known to all players.

[8]Since the payoffs to the firm from the policy being approved or not are normalized to one and zero, respectively, the assumed bounds on k are simplified. If the payoff to the firm from the policy being approved were instead B then we would assume that $B\pi > k > B(1 - \pi)$.

Voter Participation and Coordination

Voters voluntarily decide whether to participate in a firm-organized voter event, which can convey information about voter preferences that persuades the politician to choose the policy $d = 1$. For an event that is costless to participate in (i.e. $c = 0$), it is easy for voters who support the issue to indicate their support for the policy through participation. But if an event is costly to participate in (i.e. $c > 0$) then even a supporter of the issue would not want to bear the individual cost of participating without a sufficiently high likelihood of being pivotal to the politician's decision. Otherwise, the temptation to free-ride on other voters' participation would inhibit costly participation.

For notational convenience we let $N_p(c)$ denote both the number and set of voters who would be willing to participate in an event of cost c if they knew they were pivotal. For a costless event, it is easy to see that $N_p(0) = \{i \in V : \psi_i > 0\}$: any supporter of the issue would be willing to participate in a costless demonstration of support. By contrast, $N_p(\eta)$ depends on how costly it is for the voter to participate. Since the firm observes $\hat{\psi}$, which is not necessarily the actual preference profile ψ, we also analogously define $\hat{N}_p(c)$ as the set of (perceived) willing participants according to the firm's observation $\hat{\psi}$. Q denotes the actual number of observed participants – that is, $Q = \sum_{i \in V} \rho_i$.

If the firm organizes a costly event, its supporters would not participate unless they reasonably expected to be pivotal in the politician's decision – otherwise they would likely free-ride (Olsen, 1965; Palfrey and Rosenthal, 1983). For modeling parsimony, we assume the firm overcomes the free-riding problem by utilizing a coordinator – a dummy actor who knows voter preferences and who can send signals indicating whether their participation is likely to be pivotal when an event is costly. When the firm organizes an event with a positive cost of participation $c = \eta > 0$, the coordinator mobilizes supporters by sending to each voter a participation signal $\alpha_i \in \{0, 1\}$, which is observed only by the voter who receives it. The coordinator sends the signal $\alpha_i = 1$ only to Q^c of willing participant voters, if such a set exists. If there does not exist Q^c willing participants (because there are too few voters in $N_p(\eta)$) then the coordinator simply sends the participation signal $\alpha_i = 1$ to all willing

participants.[9]

Sequence

The sequence of the game is as follows:

1. Nature selects the profiles ψ and ψ^0 according to the distribution F, and sends a signal $\hat{\psi}$ to the firm, for which $\pi = P(\hat{\psi} = \psi)$ and $1-\pi = P(\hat{\psi} = \psi^0)$.

2. The firm decides whether to organize an event for voters to participate in, $e \in \{0, 1\}$, where $e = 1$ indicates an event is organized, while $e = 0$ indicates no event occurs. The cost to the firm of organizing an event is $k > 0$. If $e = 1$, then the firm selects a cost of participation $c \in \{0, \eta\}$.

3. If the firm organizes an event with positive voter participation cost (i.e. $e = 1$ and $c = \eta$), the coordinator sends a private signal to voters, $\alpha = (\alpha_1, \ldots, \alpha_N)$, where $\alpha_i \in \{0, 1\}$. If $Q^c \leq N_p(c)$, then the coordinator sends signal $\alpha_i = 1$ to Q^c voters from $N_p(c)$, and otherwise sends the signal $\alpha_i = 1$ to all voters in $N_p(c)$.

4. If an event is organized, each voter decides whether to participate $\rho_i \in \{0, 1\}$ (where $\rho_i = 1$ indicates that voter i participates).

5. After observing voter event participation and the participation cost, the politician decides which policy alternative to implement, $d \in \{0, 1\}$.

6. Voters decide whether to re-elect the incumbent politician or to elect the challenger; each voter i chooses $v_i \in \{0, 1\}$ where $v_i = 1$ indicates a vote for the incumbent and $v_i = 0$ indicates a vote for the challenger.

7. Payoffs are realized.

Equilibrium

The solution concept we use is perfect Bayesian Nash equilibrium (PBNE), which specifies the following:

[9] As will be seen below, the specific value for Q^c will be determined in equilibrium, and will be the pivotal cutoff expected by the firm.

- For the firm, a decision on whether to organize an event and, if so, the cost of participation c for each signal $\hat{\psi}$.
- For each voter i, a participation decision ρ_i for each cost of event participation c.
- For the politician, an issue decision d for each number of participants $Q(c)$ attending an event with participation cost c.
- For each voter i, an election voting decision v_i for each policy decision d.

III Results

Signaling and cheap-talk models often yield multiple equilibria, requiring evaluation of which ones are most plausible. In our model, there are equilibria where no stakeholder events occur or the politician does not implement the firm's preferred policy, as well as equilibria where stakeholder events occur only some of the time when they would be beneficial for the politician. We focus our attention on the PBNE where mobilization occurs whenever it is likely to benefit the firm and its supporters since alternative equilibria rely on unrealistic off-equilibrium path beliefs.[10] We now describe the focal equilibrium of the game and examine the conditions under which the firm mobilizes voters in order to influence the politician's policy decision. The formal description of the equilibrium profile is as follows:

Proposition 1. *There exists a* $(e^*, c^*) : \mathbb{R}^N \to \{0,1\} \times \{0,\eta\}$ *and* $Q^* : \{0,\eta\} \to \mathbb{N}$ *such that the following strategy profile is a PBNE of the game:*

[10]For example, if the politician were to always attribute event participation as being done by opposing switchers, this could support an equilibrium wherein mobilization does not occur even though it would benefit the voters, firm, and politician. In the Appendix we describe and discuss in more detail the other equilibria of the game. Conventional equilibrium refinements such as the intuitive criterion or divinity are not readily applied in our model since meaningful deviations (i.e. deviations where the firm organizes an event and voters participate) would require the involvement of multiple players rather than a single player. Due to the continuum of voter issue preferences and the multiplicity of event types, there is no general rule for when voters of different types would benefit from being recognized by the politician as deviating.

Firm: *(i) If* $\hat{N}_p(0) \geq Q^*(0)$*, then select* $e^* = 1$ *and* $c^* = 0$*.*

(ii) If $\hat{N}_p(\eta) \geq Q^*(\eta)$ *and* $\hat{N}_p(0) < Q^*(0)$*, then* $e^* = 1$*,* $c^* = \eta$*, and* $Q^c = Q^*(\eta)$*.*

(iii) Otherwise select $e^* = 0$*.*

Voter Participation: *Choose* $\rho_i = 1$ *if either (i) or (ii) below hold. Otherwise choose* $\rho_i = 0$*.*

(i) If $e = 1$*,* $c = 0$*, and* $\psi_i > 0$*.*

(ii) If $e = 1$*,* $c = \eta$*, and* $\alpha_i = 1$*.*

Politician: *If* $Q \geq Q^*(c)$*, then choose* $d = 1$*. Otherwise choose* $d = 0$*.*

Voter Election Decision: *(i) If* $|\theta| > |\psi_i|$*, then vote* $v_i = 1$*.*

(ii) If $|\theta| \leq |\psi_i|$ *and* $\psi_i \geq 0$*, then vote* $v_i = 1$ *if* $d = 1$*, and vote* $v_i = 0$ *if* $d = 0$*.*

(iii) If $|\theta| \leq |\psi_i|$ *and* $\psi_i < 0$*, then vote* $v_i = 1$ *if* $d = 0$*, and vote* $v_i = 0$ *if* $d = 1$*.*

Beliefs follow Bayes' rule where possible. In the off-equilibrium event that $c = \eta$ *and* $Q > Q^*(\eta)$*, then the politician forms the same beliefs about voters as in the* $Q = Q^*(\eta)$ *case.*

Specific conditions governing the existence of the above PBNE are described in detail in the Appendix.

Firm. The firm's equilibrium strategy depends upon expected stakeholder participation in an event, as determined by the signal it receives about the voters' issue preference profile, compared to the politician's voter participation thresholds, $Q^*(c)$. The firm will organize an event only if its private signal about voter preferences indicates there is a sufficiently high number of voters willing to participate in an event that meets the politician's threshold for implementing the policy. If the firm expects there will be insufficient support,

it will not pay the cost of organizing an event.[11] The firm's decision on the type of stakeholder event to organize is determined by the expected number of willing participants for each type, $\hat{N}_p(0)$ and $\hat{N}_p(\eta)$. In equilibrium, when there is a sufficiently large group of supporters (either weak or strong) – specifically, if $\hat{N}_p(0) > Q^*(0)$ – the firm will organize a zero participation cost event, such as an online petition, to convey the breadth of support for the firm. Even if the politician believes that only a fraction of the petition signatories are strong supporters of the policy (i.e. supportive switchers), as long as the number of signatures is sufficiently high the politician will revise upwards her beliefs about the number of supportive vote-switchers, and revise downwards her beliefs about the number of opposed vote-switchers, leading her to implement the policy.

If there is insufficient weak support for a petition but sufficient strong support (i.e. among switchers), the firm will organize a rally to demonstrate narrower but deeper support for the policy proposal (i.e. if $\hat{N}_p(\eta) > Q^*(\eta)$ and $\hat{N}_p(0) < Q^*(0)$). If the rally is sufficiently costly for voters to participate in, the politician will infer that each participant is a supportive switcher for whom the issue will decide their election vote. Moreover, since the firm organizes participation in the rally by precisely the threshold number of voters – so that each is pivotal – the politician will also infer that there are other supportive switchers beyond the observed participants of the rally whose vote will depend on the politician's decision.

Figure 3 illustrates how the distribution of voter preferences affects the ability of a firm to mobilize voters in an event to credibly demonstrate support to a politician for a new policy favored by the firm. The blue line depicts a distribution profile where a majority of voters prefers the policy proposal, but the support is 'shallow' – the preference intensity is below the vote-switching limit. Out of this majority, there is a small number of voters with strong supportive preferences who are vote-switchers on the policy issue (shown by the segment of the blue line that is above the horizontal line). There is a minority

[11] There is a qualitatively similar equilibrium when the cost of organizing is $k = 0$, wherein the firm at the very least organizes a costless event. Similar intuition applies to that case.

of voters with opposing preferences – a small number with weak opposing preferences and a small number with strong opposing preferences. For expositional purposes, we refer to this as an 'Uber' type distribution where weak supporters can be interpreted as actual and potential customers (who moderately prefer the price and convenience attributes of ride-sharing to traditional taxi service), strong supporters as Uber drivers, and opposers as taxi-industry drivers and companies. In this example, the number of strong supportive voters (vote-switchers) is less than the politician's required threshold for a rally, but the total number of supporters exceeds the threshold for a petition. The firm will hence organize a petition, which will be signed by all supporters, causing the politician to infer that the number of supportive vote-switchers is larger than the number of opposing vote-switchers if she approves the issue. Uber has in fact regularly organized petitions of its riders and drivers – which are easily implemented through its app – to illustrate support for ride-sharing, in some cases achieving almost one million signatures (Holburn and Raiha, 2017).

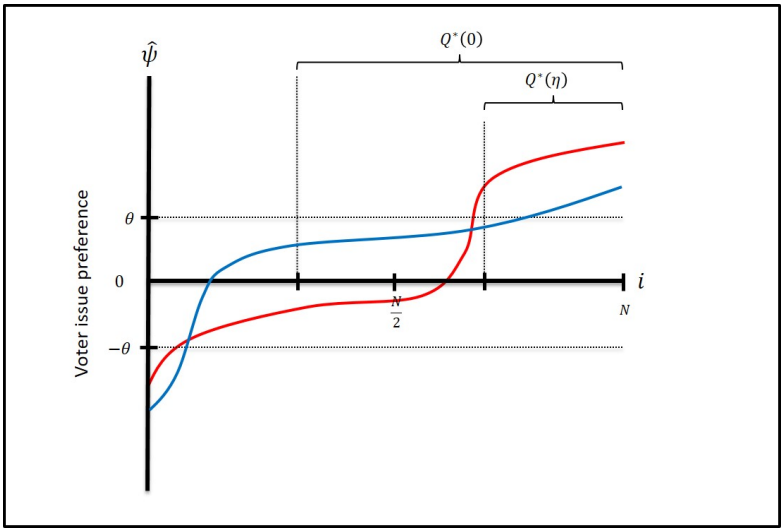

Figure 3: Voter preference profiles

By contrast, the voter distribution profile depicted by the red line has only a minority of voters that supports the policy, but most of these supporters have strong preferences for the issue (i.e. the portion of the red curve above

θ). A majority of the voters are in fact weak opposers, with a very small number of opposing switchers. In this case, the number of opposing vote-switchers is smaller than the number of supporting vote-switchers. We refer to this as an 'AirBnb' type of distribution – a small number of travelers (who are likely to reside outside the electoral district) and local home owner-renters are loyal clients of AirBnb while a large number of voters in the district are somewhat negatively affected by impacts on local rental markets, property values and neighborhood environments. In this case, the number of supporters falls far short of the politician's threshold for a petition but the number of strong supporters exceeds the threshold for a rally, which the firm is able to successfully organize. AirBnb has commonly organized home-owner public rallies at local city halls and legislatures, but not petitions, as part of its political advocacy strategy in various jurisdictions (e.g. Said (2015), Noto (2018)).

Although mobilizing voters through costly participation events such as rallies conveys credible information to politicians on the minimum number of vote-switchers on an issue, petitions can also be informative, depending on the distribution profile of voter preferences. In the example in Figure 4, all voters support the policy issue. Most of the voters are weak supporters, with a small fraction being strong supporters. Implementing a petition – which would be signed by all voters – enables the firm to credibly demonstrate to the politician that there is no opposition whatsoever to the policy. While in this example the number of strong supporters is less than the politician's threshold for a rally, even if it exceeded the threshold, the firm would still prefer to organize a petition rather than a rally: the former would conclusively demonstrate the absence of opposition while the latter would still leave the politician uncertain about the number of strong opposers. Admittedly, this is an extreme scenario. However, it illustrates the informational value to a politician of a petition: as the number of petition signatories increases, the number of possible opposers to the policy issue correspondingly shrinks, causing politicians to lower their expectations of the number of opposing vote-switchers.

We note that the equilibrium profile in Proposition 1 is a PBNE for a

certain set of model parameters. However, for some parameter values there also exists a very similar PBNE wherein if the firm believes either type of event is likely to garner sufficiently high participation, then the firm chooses to organize a costly event rather than a costless event. Since this profile is very similar to the one above we present the full equilibrium profile in the Appendix. [12]

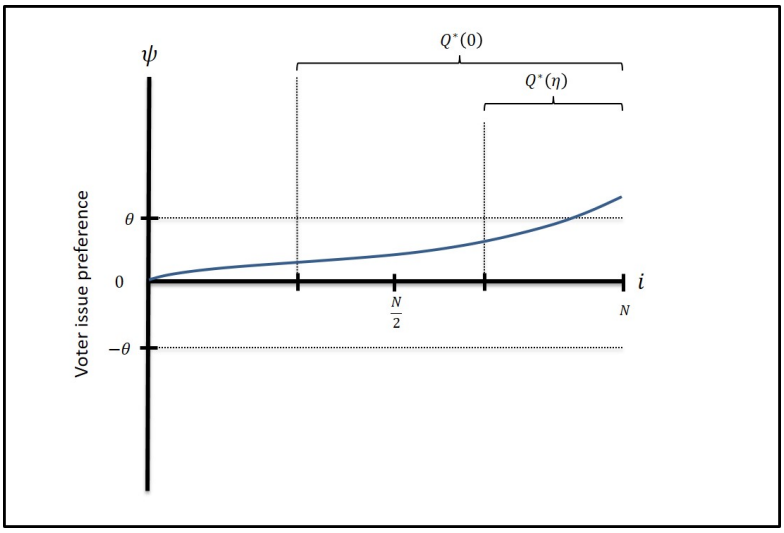

Figure 4: Extensive, shallow voter support

Politician. The politician observes whether a stakeholder event occurs and, if so, the cost of voter participation c and the level of participation Q. Based on her observations of c and Q, the politician updates her beliefs about the distribution of voter preferences over the issue. In equilibrium, the politician has a threshold strategy wherein she chooses to implement the policy

[12]When there is sufficient support for both types of events, the firm organizes the single event that it expects is most likely to succeed in the situation that its observed profile $\hat{\psi}$ is incorrect. The focus on the scenario of an incorrect profile is to due the fact that the firm is indifferent between the two types of events when its observed profile is correct (since both succeed with certainty), but each event may have a different likelihood of succeeding purely by chance. One advantage of the costless event is that all supporters of the issue, regardless of the intensity of their preference or likely pivotality, are willing participants. This can make it more likely that an event succeeds, purely by chance, even if the firm's information is not correct.

$d = 1$ if and only if she observes a sufficient level of voter participation in an event. The thresholds are $Q^*(0)$ and $Q^*(\eta)$. It can easily be shown that $Q^*(0) > Q^*(\eta)$ – that is, the politician requires a greater level of participation in a costless event than in a costly event in order to implement the policy. The thresholds are the levels of participation where the politician is indifferent between choosing $d = 1$ or $d = 0$. Each threshold is defined as the lowest number of observed participants, Q, such that the politician believes there is a greater number of supportive switchers than opposing switchers. As noted above, we assume that the politician's prior belief – i.e. the distribution F – is that there is greater opposition to the policy than there is support. However, if a large enough group of voters publicly participate in an event, this can cause the politician to update her beliefs about voters' issue preferences and hence implement the policy.

The equilibrium participation threshold for a costless event is greater than for a costly event since the set of willing participants, $N_p(0)$, contains more voters than just supportive switchers. For instance, supportive voters would be willing to sign an online petition, but only a fraction of them would hold preferences strong enough to switch their vote based on the issue.

The politician's determination of participation thresholds also accounts for the firm's equilibrium choices, namely (i) whether an event is organized, and (ii) the type of event. When the politician observes an event being organized, since the cost of organizing is non-zero, the politician can infer that the firm observed a sufficiently optimistic signal about the voters' issue preference profile. However, the politician also knows that the firm's information could be incorrect, which is why she must observe the actual event participation level in part to verify whether the firm's information was actually correct or not. If the politician observes the firm organizing an event with a positive voter participation cost, such as a rally, then she knows that the firm observed $\hat{N}_p(0) < Q^*(0)$ – that is, the firm believes there are too few willing participants for a costless event to succeed. This is accounted for in the politician's equilibrium threshold $Q^*(\eta)$.

Figure 5 illustrates the impact of the politician's prior beliefs about voter

preferences on the politician's required event participation thresholds in two different scenarios. In the first scenario, the politician's beliefs result in petition and rally participation thresholds represented by the dotted vertical black lines. We can see that, given the actual distribution of voter preferences as shown by the green line, there are sufficient participants for the firm to organize either a petition or a rally in this case. In the second scenario, the politician is more skeptical that voters are supportive of the policy proposal, which leads to the politician requiring higher levels of voter participation in events in order to update prior beliefs – represented by blue dotted participation threshold lines located to the left of the black dotted lines. In this new situation, there are not enough supporters to reach the petition threshold but there are sufficient supportive switchers to justify a rally. These scenarios show how the optimal choice of event type can differ based on prior beliefs, even though the underlying realized preference profile $\hat{\psi}$ is constant.

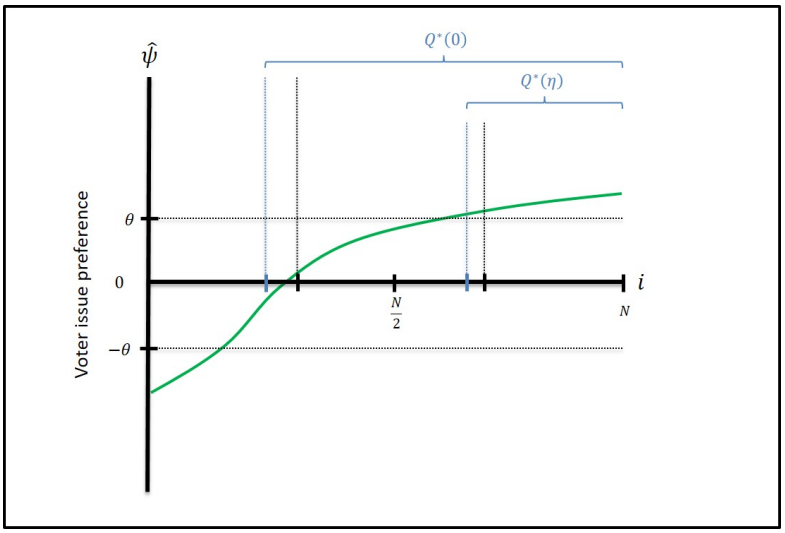

Figure 5: Politician prior beliefs and optimal mobilization tactics

Voters. The voters' equilibrium strategies are more straightforward than the strategies of the politician or firm. In the final stage of the game, after the politician has made a policy decision, d, the non-switchers automatically vote

for the incumbent politician. Supportive switchers will vote for the politician if $d = 1$ and the challenger if $d = 0$, while opposing switchers will do the opposite.

If the firm organizes an event, voters must also decide whether to participate. When the event is costless to participate in, voters participate if and only if they support the policy (i.e. $\psi_i > 0$). All voters who support the policy will participate, regardless of the intensity of their preferences. This increases the probability that an event succeeds purely by chance, even if the firm's information about the distribution of voter preferences is not correct. The voter's participation decision for a costly event is more complicated due to potential collective action problems. For a voter to bear the cost of participating, she requires some assurance that participation will be pivotal in convincing the politician to choose $d = 1$. When the firm chooses to organize a costly event, it signals its information about voters' policy preferences (i.e. $\hat{\psi}$) to voters, which tells the voter that as long as the firm's information is correct (which it is with probability π) then the event will succeed. The coordinator simply organizes voters to ensure that no surplus effort is wasted by inviting only a pivotal set of willing voters to participate.

Because of the underlying uncertainty about the voters' preference profile ψ, a feature of the equilibrium presented in Proposition 1 is that a variety of outcomes are possible along the equilibrium path. For example, it is possible the firm may mistakenly forgo organizing an event even though it would profit from doing so (e.g. when $\hat{\psi}$ is incorrect and more pessimistic than ψ), or it may organize an event that fails to persuade the politician (e.g. when $\hat{\psi}$ is incorrect and more optimistic than ψ). It is possible that voters may participate in events and find their efforts are in vain (i.e. the event fails to garner sufficient participation to persuade the politician). Moreover, the final decision made by the politician may not even be the electorally optimal one: even though there are more supportive switchers than opposing switchers, the number of supporters is insufficient to change the politician's beliefs. On the converse, there are circumstances where even if there are more opposing switchers than supportive switchers, since the firm only demonstrates support (rather than

opposition), the stakeholder event may convince the politician to implement the policy ($d = 1$), leading to a reduction in votes. Hence, the equilibrium in our model is consistent with the wide variety of voter event outcomes that are observed empirically.

IV Discussion

The previous section presents the focal equilibrium of the game where an interest group decides whether to mobilize voters in a public event in an effort to persuade a politician to implement a policy when the politician is uncertain about voter preferences and the subsequent impact of the policy on future election outcomes. Voter voluntary participation in events can convey credible information to a politician about voters' preferences – specifically the breadth and depth of support for a policy – which is otherwise unknown to the politician. When voter events such as public rallies are costly to participate in, they indicate not only the direction but also the intensity of voter preferences on an issue. This information is valuable for politicians (but cannot be readily gathered from a poll) since it is the number of election vote-switchers on an issue – those who sufficiently care about the issue to base their vote upon it – who influence election outcomes. Although the interest group is presented as being a firm in the model, it could instead be an NGO, social advocacy group, or labor union that is considering organizing its supporters in order to influence a policy decision.

Our model provides predictions about the conditions under which interest groups are likely to publicly mobilize voters in order to influence policy outcomes. First, when politicians are uncertain about voter preferences, mobilization events can provide information to the politician about the extent and depth of support for a policy issue. Political uncertainty is greater for novel policy issues, which may explain why stakeholder mobilization has been a common tactic employed by firms such as Uber, Airbnb, Tesla, as well as by medical cannabis companies and in sectors where new regulations are required – and where voter preferences are uncertain (Holburn and Raiha, 2017). Even

in established industries or policy arenas, politicians may be uncertain about voter preferences in specific geographic areas or demographic sub-groups, creating an opportunity for targeted stakeholder mobilization efforts to be beneficial. Public demonstrations and mobilization campaigns can also be especially persuasive when they are organized in response to new policy issues, where politicians are not fully informed about voter preferences.[13] For instance, when police brutality became a salient issue in 2020 after the death of George Floyd, the Black Lives Matter movement initiated a wave of marches across the country to demonstrate the depth of voter support for legislated reforms to police practices.

Second, voter mobilization is more likely to be employed by interest groups who have better information about their supporters' preferences than politicians possess. For example, app-based technology companies have detailed information about customers' locations and usage profiles, enabling them to gauge the scale and extent of potential support within a politician's electoral district and hence to predict participation in an organized mobilization event.

Third, voter mobilization will be utilized as an influence tactic for major policy issues that are important for voters in their election voting decisions. Politicians value information conveyed by mobilization events about the numbers of voters (opposers and supporters) who will switch their vote at the next election based on the focal policy. Public rallies and mobilization campaigns can indicate a high salience of an issue for a subset of voters and the willingness to switch election votes. Many policy issues, however, are not sufficiently salient or important for voters to induce vote-switching based on the politician's policy stance. For example, minor changes in fiscal policy or government procurement standards may be less likely to induce vote-switching behavior among voters, making organized voter mobilization events less valuable.

These conditions help explain the puzzle of why voter mobilization, which is

[13]For example, the environmental NGO Fridays for Future, started in 2018 by activist Greta Thunberg, organized high-school students to strike on Fridays (i.e. not attend school), and instead participate in demonstrations at local government legislatures in support of environmental policy changes to combat climate change. The environmental policy preferences of youths (i.e. future voters) are conveyed through such campaigns.

deemed by practitioners to be a particularly effective influence tactic, is seemingly under-utilized by firms, in comparison to lobbying activities or campaign contributions (Lord, 2000). Most regulatory and policy issues that affect firms are not election issues that will sway voters, and most policy debates are likely to concern existing issues around which politicians already understand the fault lines of voter support and opposition. As such, the set of opportunities for rallies and petitions to be valuable for politicians in informing their policy decisions may be limited.

Even though the illustration of the model that we present is of an interest group (specifically, a firm) marshalling its supporters to influence the policy decision of an elected politician, the model can be applied more generally to other contexts where the policy decision-maker is an entity other than a politician. For example, the model can also be interpreted as describing the mobilization strategy of an environmental NGO considering whether to launch a public campaign against a firm, in order to convince the firm to change specific environmental practices. The targeted firm may be uncertain about the extent and intensity of broader customer support for the NGO's campaign demands, and hence may be susceptible to customer demonstrations organized by the NGO. Customer petitions, letters or public demonstrations can convey credible information to the firm about the scope and intensity of customer preferences for its campaign. While customers do not 'vote' in an electoral sense, they do express their preferences through their wallets in their buying decisions, potentially switching from the targeted firm to a competitor. In this setting, the policy decision-maker in the model is the firm, which must decide whether to implement the NGO's policy demand after observing customer participation in an NGO-organized campaign and making inferences about the distribution profile of broader customer preferences. This flexibility in interpreting our model expands its relevance for understanding a variety of phenomena involving collective voluntary participation, including those outside conventional political settings.

V Conclusion

In this paper, we develop a model that examines the conditions under which an interest group strategically mobilizes voters in a public event in order to convey information to a politician about the breadth and depth of voter preferences on a policy issue, thereby influencing the politician's policy decision. We build on prior political economy models of voter participation in mass events by incorporating a strategic interest group that organizes an event with varying participation cost and also by including in the model a saliency dimension of voter preferences. The model yields novel predictions about how the profile of voters' preferences and politicians' prior beliefs affect the incentive for an interest group to publicly mobilize its supporters in a low participation-cost event such as an online petition or a higher cost public rally.

Our model provides a foundation for extensions that can address related questions. A natural extension would be to include an opposing interest group which could mobilize its own supporters in order to counteract the effect of the first interest group's mobilization. Incorporating strategic interactions between two interest groups, voters, and the politician would significantly increase the complexity of the model and the equilibrium conditions. Another theoretical extension could explore strategic actions taken by the interest group that are designed to directly change the profile of stakeholder preferences. For example, Uber may offer lower fares to its customers or AirBnb may provide better insurance cover to home-sharers in a bid to increase the extent and/or depth of support among its supporters, making the organization of mobilization events more attractive. Such integrated competitive and political strategies have been studied in a few models though primarily in full information contexts (Baron, 1999; 2001; 2018; De Borger and Glazer, 2015). We leave these and other model enhancements for future research.

Appendix (for online publication)

Proof of Proposition 1

This proof shows that the strategy profile described in Proposition 1 is a perfect Bayes Nash equilibrium (PBNE). For notational ease, we let $s \in \{0, 1\}$ denote whether the firm's observation of the voter issue preference profile is correct; that is, $s = 1$ if and only if $\hat{\psi} = \psi$, and $s = 0$ if and only if $\hat{\psi} = \psi^0$. By definition, $\pi = P(s = 1)$.

Voter election decision

Case 1: Non vote-switcher ($|\theta| > |\psi_i|$)

If the politician selects policy $d = 0$, then the voter's payoff to voting in the election for the incumbent (i.e. $v_i = 1$) is $\theta - \psi_i$, while the payoff for voting for the challenger (i.e. $v_i = 0$) is 0. So the voter will vote for the incumbent if and only if $\theta - \psi_i > 0$. Since $\theta > \psi_i$, it is optimal for the voter to vote for the incumbent (i.e. choose $v_i = 1$).[14]

On the other hand, if the politician chooses policy $d = 1$, then the voter's payoff to voting for the incumbent (i.e. $v_i = 1$) is $\theta + \psi_i$, while the payoff for voting for the challenger (i.e. $v_i = 0$) is 0. The voter will thus vote for the incumbent if and only if $\theta + \psi_i > 0$. Since $\theta > \psi_i$, it is optimal for the voter to vote for the incumbent (i.e. choose $v_i = 1$).

Case 2: Supportive vote-switcher ($|\theta| < |\psi_i|$ and $\psi_i > 0$)

If the politician chooses policy $d = 0$, then the voter's payoff to voting for the incumbent (i.e. $v_i = 1$) is $\theta - \psi_i$, while the payoff for voting for the challenger (i.e. $v_i = 0$) is 0. The voter will thus vote for the incumbent if and only if $\theta - \psi_i > 0$. But since $\theta < \psi_i$, it is optimal for the voter to vote for the challenger (i.e. choose $v_i = 0$).

If the politician instead chooses policy $d = 1$, then the voter's payoff to voting for the incumbent (i.e. $v_i = 1$) is $\theta + \psi_i$, while the payoff for voting for the challenger (i.e. $v_i = 0$) is 0. The voter will vote for the incumbent if and

[14] This follows from our assumption that $\theta > 0$.

only if $\theta + \psi_i > 0$. Since θ and ψ_i are both positive, it is optimal for the voter to vote for the incumbent politician (i.e. choose $v_i = 1$).

Case 3: Opposing vote-switcher ($|\theta| < |\psi_i|$ and $\psi_i \leq 0$)

If the politician chooses policy $d = 0$, then the voter's payoff to voting for the incumbent (i.e. $v_i = 1$) is $\theta - \psi_i$, while the payoff for voting for the challenger (i.e. $v_i = 0$) is 0. The voter will hence vote for the incumbent if and only if $\theta - \psi_i > 0$. Since $\theta > \psi_i$, it is optimal for the voter to vote for the incumbent (i.e. choose $v_i = 1$).

If the politician chooses policy $d = 1$, then the voter's payoff to voting for the incumbent (i.e. $v_i = 1$) is $\theta + \psi_i$, while the payoff for voting for the challenger (i.e. $v_i = 0$) is 0. The voter will hence vote for the incumbent if and only if $\theta + \psi_i > 0$. Since $\theta < -\psi_i$, it is optimal for the voter to vote for the challenger (i.e. choose $v_i = 0$).

Politician's policy choice

Case 1: Costless-participation event ($c = 0$)

We begin by computing the politician's inference about the voters' issue preference profile when the politician observes Q participants in a costless event. We derive the threshold $Q^*(0)$, which is the lowest Q that satisfies the following inequality:

$$E(N^s|Q) \geq E(N^o|Q)$$

That is, the expected number of supportive vote-switchers is no less than the expected number of opposed vote-switchers, conditional on observating the actual level of voter participation. Willing participants in a costless-participation event are voters who support the issue (i.e. $\psi_i > 0$). All willing participants participate in a costless event, which involves no coordination, so the likelihood that the firm's signal of voter issue preferences $\hat{\psi}$ is accurate (i.e. $s = 1$), plays no role in the politician's inference. Having observed whether voters participate or not in an event, the politician updates based on the distribution F.

The likelihood that a participant in an event is a supportive switcher is:

$$\begin{aligned} & P(\psi_i > \theta | \rho_i = 1, \rho_{-i}, c) \\ = & \frac{P(\rho_i = 1, \rho_{-i}, c | \psi_i > \theta) \cdot P(\psi_i > \theta)}{P(\rho_i = 1, \rho_{-i}, c)} \\ = & \frac{1 \cdot P(\psi_i > \theta)}{P(\psi_i > 0)} \end{aligned}$$

The likelihood that a non-participant is an opposing switcher is:

$$\begin{aligned} & P(\psi_i \leq -\theta | \rho_i = 0, \rho_{-i}, c) \\ = & \frac{P(\rho_i = 0, \rho_{-i}, c | \psi_i \leq -\theta) \cdot P(\psi_i \leq -\theta)}{P(\rho_i = 1, \rho_{-i}, c)} \\ = & \frac{1 \cdot P(\psi_i \leq -\theta)}{P(\psi_i \leq 0)} \end{aligned}$$

In the costless event case, all supportive vote-switchers participate, and no opposing vote-switchers participate. The expected number of supportive vote-switchers is hence:

$$\begin{aligned} E(N^s|Q) &= Q \cdot P(\psi_i > \theta | \rho_i = 1, \rho_{-i}, c) \\ &= Q \cdot \frac{P(\psi_i > \theta)}{P(\psi_i > 0)} \end{aligned}$$

And the expected number of opposing vote-switchers is:

$$\begin{aligned} E(N^o|Q) &= (N - Q) \cdot P(\psi_i \leq -\theta | \rho_i = 0, \rho_{-i}, c) \\ &= (N - Q) \cdot \frac{P(\psi_i \leq -\theta)}{P(\psi_i \leq 0)} \end{aligned}$$

From these two expressions, $Q^*(0)$ can be solved in closed form.

Case 2: Costly-participation event ($c = \eta > 0$)

For ease of exposition, we illustrate the specific case where the voter cost of participation in a costly-participation event is $\eta = 2\theta\pi$, which results in the set of willing event participants being $N_p(\eta) = \{i : \psi_i > \theta\}$. The same

reasoning, however, applies for any $\eta > 0$.

The politician's threshold for voter participation in a costly event is defined, as before, as the lowest number of participants, Q, such that the following inequality holds:

$$E(N^s|Q) \geq E(N^o|Q)$$

Unlike the case of a costless event, $Q^*(2\theta\pi)$ is not in general solvable in closed form. The argument that $Q^*(2\theta\pi)$ exists is due to monotonicity: the expected number of supportive vote-switchers (i.e. $E(N^s|Q)$) is increasing in Q, and the expected number of opposing vote-switchers (i.e. $E(N^o|Q)$) is decreasing in Q. This, combined with the fact that when $Q = 0$ then $E(N^s|Q) < E(N^o|Q)$ and when $Q = N$ then $E(N^s|Q) > E(N^o|Q)$, yields the existence of Q^* that satisfies the inequality uniquely.

We also prove that it is optimal for the politician to carry out a threshold strategy where the politician selects the policy $d = 1$ whenever $Q \geq Q^*(2\theta\pi)$ and selects $d = 0$ whenever $Q < Q^*(2\theta\pi)$.

When $Q = Q^*(2\theta\pi)$, we can compute both $E(N^s|Q, c)$ and $E(N^o|Q, c)$. By definition we know that:

$$E(N^s|Q,c) = E(N^s|Q,c,s=1) \cdot P(s=1|Q,c) + E(N^s|Q,c,s=0) \cdot P(s=0|Q,c)$$

To compute $E(N^s|Q, c, s = 0)$, we note that all observed participants (based on equilibrium strategies) are supportive vote-switchers. We can thus compute the probability that a nonparticipant is a supportive vote-switcher:

$$\begin{aligned} P(\psi_i > \theta|\rho_i = 0, \rho_{-i}, c) &= \frac{P(\rho_i = 0, \rho_{-i}, c|\psi_i > \theta) \cdot P(\psi_i > \theta)}{P(\rho_i = 0, \rho_{-i}, c)} \\ &= \frac{P(\alpha_i = 0|\psi_i > \theta) \cdot P(\psi_i > \theta)}{P(\alpha_i = 0|\psi_i > \theta) + P(\psi_i \leq \theta)} \end{aligned}$$

Hence:

$$\begin{aligned} E(N^s|Q,c,s=0) &= Q + (N-Q)\cdot P(\psi_i > \theta|\rho_i = 0, \rho_{-i}, c) \\ &= Q + (N-Q)\cdot \frac{P(\alpha_i = 0|\psi_i > \theta)\cdot P(\psi_i > \theta)}{P(\alpha_i = 0|\psi_i > \theta) + P(\psi_i \leq \theta)} \end{aligned}$$

To compute $E(N^s|Q,c,s=1)$, we note that when $s=1$, the firm's information about voter preferences is correct, and therefore the decision to organize a costly-participation stakeholder event ($c = 2\theta\pi$) implies that $N_p(0) < Q^*(0)$. In particular, this means that $N - Q^*(0)$ voters are opponents of the issue. Therefore, the only voters who are potentially supportive vote-switchers among the set of nonparticipants is the set of voters numbering $Q^*(0) - Q$. From this observation we obtain:

$$\begin{aligned} E(N^s|Q,c,s=1) &= Q + (Q^*(0)-Q)\cdot P(\psi_i > \theta|\rho_i = 0, \rho_{-i}, c) \\ &= Q + (Q^*(0)-Q)\cdot \frac{P(\alpha_i = 0|\psi_i > \theta)\cdot P(\psi_i > \theta)}{P(\alpha_i = 0|\psi_i > \theta) + P(\psi_i \leq \theta)} \end{aligned}$$

Further, we compute $P(s=1|Q,c)$:

$$\begin{aligned} P(s=1|Q,c) &= \frac{P(Q|c,s=1)\cdot P(s=1)}{P(Q|c,s=1)\cdot P(s=1) + P(Q|c,s=0)\cdot P(s=0)} \\ &= \frac{P(Q|c,s=1)\cdot \pi}{P(Q|c,s=1)\cdot \pi + P(Q|c,s=0)\cdot (1-\pi)} \\ &= \frac{\lambda(Q, Q^*(0), P(\psi_i > \theta))\cdot \pi}{\lambda(Q, Q^*(0), P(\psi_i > \theta))\cdot \pi + \lambda(Q, N, P(\psi_i > \theta))\cdot (1-\pi)} \end{aligned}$$

where $\lambda(t,n,p)$ is defined as follows:

$$\lambda(t,n,p) \equiv 1 - \sum_{i=0}^{t-1} \binom{n}{i} p^i (1-p)^{n-i}$$

This is simply the binomial probability of observing at least t successes in n trials, with a probability of success of p.

Analogously we find $P(s=0|Q,c)$:

$$\begin{aligned} P(s=0|Q,c) &= \frac{P(Q|c,s=0)\cdot P(s=0)}{P(Q|c,s=1)\cdot P(s=1)+P(Q|c,s=0)\cdot P(s=0)} \\ &= \frac{\lambda(Q,N,P(\psi_i>\theta))\cdot(1-\pi)}{\lambda(Q,Q^*(0),P(\psi_i>\theta))\cdot\pi+\lambda(Q,N,P(\psi_i>\theta))\cdot(1-\pi)} \end{aligned}$$

The terms of $E(N^o|Q,c)$ can be derived in the same way. By the definition of $Q^*(2\theta\pi)$, whenever $Q=Q^*(2\theta\pi)$ is observed, it is optimal for the politician to choose the policy $d=1$. However, $Q^*(2\theta\pi)$ cannot be solved in closed form.

The observation $Q>Q^*(2\theta\pi)$ occurs only off the equilibrium path. The PBNE solution concept does not put any restrictions on how off-equilibrium beliefs are specified. We select a reasonable set of off-equilibrium beliefs, such that when $Q>Q^*(2\theta\pi)$ is observed, the same beliefs about participants and nonparticipants is formed as when observing $Q=Q^*(2\theta\pi)$. Such beliefs are sufficient such that it is optimal for the politician to choose policy $d=1$.

The politician's other possible observation is that $Q<Q^*(2\theta\pi)$, for which we show that it is optimal for the politician to choose policy $d=0$, which we prove by contradiction.

First, we define $\overline{Q}$ as the threshold at which, if $Q>\overline{Q}$, then the politician believes there are more supportive switchers than opposing switchers, when the politician's prior belief is such that $P(\psi_i>\theta)=0$. The condition on prior beliefs means that the politician believes a voter is a supportive vote-switcher only if the voter participates in an event of cost $2\theta\pi$.

It is clear that $\frac{N}{2}>\overline{Q}$, since if more than half the voter population participates in the event, it is not possible for the number of opposing vote-switchers to be greater than the number of supportive vote-switchers. Thus, $\overline{Q}$ is the lowest Q that satisfies:

$$Q>(N-Q)\frac{P(\psi_i\leq-\theta)}{P(\psi_i\leq\theta)} \tag{1}$$

By this definition, $\overline{Q}>Q^*(2\theta\pi)$, since we have assumed that F is nondegenerate, and hence $P(\psi_i>\theta)>0$.

We now consider the expected number of supportive and opposing vote-switchers when the politician observes $Q < Q^*(2\theta\pi)$ participants. Based on the voters' equilibrium strategies and the role of the coordinator, if $Q < Q^*(2\theta\pi)$ is observed then the only supportive vote-switchers are the event participants – that is, $Q = N_p(2\theta\pi)$. This implies that the expected number of supportive vote-switchers, $E(N^s|Q, c)$, is equal to Q.

But what is the expected number of opposing vote-switchers (i.e. $E(N^o|Q, c)$)? Since all nonparticipants are potentially opposing vote-switchers, and the set of nonparticipants is precisely the set of voters for whom $\psi_i \leq \theta$, then $E(N^o|Q, c) = (N - Q)\frac{P(\psi_i \leq -\theta)}{P(\psi_i \leq \theta)}$. However, if $\overline{Q} > Q^*(2\theta\pi) > Q$, and $\overline{Q}$ is the lowest Q satisfying inequality (1) above, then it must be the case that

$$Q < (N - Q)\frac{P(\psi_i \leq -\theta)}{P(\psi_i \leq \theta)}$$

for the observed Q. This further implies that $E(N^s|Q, c) < E(N^o|Q, c)$, which makes it optimal for the politician to choose the policy $d = 0$.

Case 3: No event $(e = 0)$

If the politician observes that the firm does not organize an event, then this implies that the participation threshold for any event was not met in the firm's observation of $\hat{\psi}$. The politician thus revises downwards her beliefs about the expected level of voter support for the policy $d = 1$. From the computations of the previous two cases, it is clear that the politician optimally chooses the policy $d = 0$, knowing that $\hat{N}_p(0) < Q^*(0)$ and $\hat{N}_p(0) < Q^*(2\theta\pi)$ was observed by the firm.

Voter event participation

The voter makes an event participation decision only if the firm organizes an event (i.e. $e = 1$). There are two types of event – costless participation and costly participation.

In a costless-participation event ($c = 0$), it is straightforward to show that the voter's participation strategy is optimal. If $\psi_i > 0$, the voter strictly

prefers the politician choose the policy $d = 1$. Participating only increases the likelihood that the politician chooses $d = 1$, while at the same time participation is costless for the voter. By contrast, if $\psi_i \leq 0$, then the voter prefers that the politician choose $d = 0$. Since participation in the event would only increase the likelihood the politician chooses $d-1$, the voter rationally decides not to participate.

In a costly-participation event ($c > 0$), the voter's likelihood of being pivotal affects their participation strategy. There are two cases:

Case 1: Voter receives participation signal ($\alpha_i = 1$)

In this case, the voter is a willing participant (i.e. $i \in N_p(2\theta\pi)$), since the coordinator would not have sent the message otherwise. The payoff to the voter from participating in the event is:

$$\pi(\psi_i + \theta - c) + (1 - \pi)(\lambda(Q^*(2\theta\pi) - 1, N, P(\psi_i > \theta))(\psi_i + \theta) - c)$$

while the payoff to not participating is:

$$\pi(0) + (1 - \pi)(\lambda(Q^*(2\theta\pi), N, P(\psi_i > \theta))(\psi_i + \theta))$$

For notational ease, we define λ^Δ, which is the likelihood the voter is pivotal purely by chance when $s = 0$, as the following difference:

$$\lambda^\Delta \equiv \lambda(Q^*(2\theta\pi) - 1, N, P(\psi_i > \theta)) - \lambda(Q^*(2\theta\pi), N, P(\psi_i > \theta))$$

Given the payoffs to participating and not participating, the voter will participate only if:

$$\pi(\psi_i + \theta) + (1 - \pi)\lambda^\Delta \geq c$$

We note that as $N \to \infty$ then $\lambda^\Delta \to 0$. Since we assume N is sufficiently large, λ^Δ is approximately zero. Hence, the voter will participant only if $\pi(\psi_i + \theta) \geq c$. When the cost is $c = 2\theta\pi$, the set of willing participants is all voters for whom $\psi_i > \theta$.

Case 2: Voter does not receive participation signal ($\alpha_i = 0$)

If the voter has preference $\psi_i \leq 0$, then the voter prefers the policy $d = 0$, and hence would not participate in any event designed to persuade the politician to choose $d = 1$. If the voter has preference $\psi_i \in (0, \theta]$, then the voter prefers $d = 1$, but not intensely enough to warrant the cost of participation in an event.

When the voter has preference $\psi_i > \theta$, the voter is a willing participant and supportive vote-switcher. However, if the voter does not receive a participation signal (i.e. $\alpha_i = 0$), there is only a negligible probability that participation by the voter would be pivotal to the politician's policy decision. If the firm's observation of the voter issue preference profile is correct (with probability π), a voter that does not receive a participation signal is not pivotal with certainty, given all other voters' equilibrium strategies. If the firm's observation is incorrect (with probability $1 - \pi$), the likelihood of the voter being pivotal is:

$$\lambda^{\epsilon} \equiv \binom{N}{Q^*(2\theta\pi) - 1} P(\psi_i > \theta)^{(Q^*(2\theta\pi)-1)} \left[1 - P(\psi_i > \theta)\right]^{N-(Q^*(2\theta\pi)-1)}$$

As with λ^{Δ}, when N is large, this likelihood is essentially zero. Therefore, there is no benefit to willing participants who do not receive the participation sign to participate in the event given that the chance of being pivotal is very small.

Firm event organization decision

After observing the voter issue preference profile $\hat{\psi}$, the firm has three options: organize no stakeholder even ($e = 0$); organize a costless-participation event ($e = 1$ and $c = 0$); or organize a costly-participation event ($e = 1$ and $c = 2\theta\pi$). Based on $\hat{\psi}$, there are four cases of expected voter support that the firm could observe:

(i) $\hat{N}_p(0) < Q^*(0)$ and $\hat{N}_p(0) < Q^*(2\theta\pi)$

(ii) $\hat{N}_p(0) > Q^*(0)$ and $\hat{N}_p(0) < Q^*(2\theta\pi)$

(iii) $\hat{N}_p(0) < Q^*(0)$ and $\hat{N}_p(0) > Q^*(2\theta\pi)$

(iv) $\hat{N}_p(0) > Q^*(0)$ and $\hat{N}_p(0) > Q^*(2\theta\pi)$

We derive the firm's optimal strategy for each case.

Case (i): $\hat{N}_p(0) < Q^*(0)$ and $\hat{N}_p(0) < Q^*(2\theta\pi)$
In this case, if the firm organizes an event, the number of participants would be lower than the politician's minimum threshold required to convince the politician to implement the policy $d = 1$ (when $s = 1$). Thus with probability π, the payoff to the firm from choosing $e = 1$ will be zero. However, if $s = 0$, then an event may succeed purely by chance.

If $c = 0$ and $s = 0$, the likelihood an event is successful in achieving sufficient participation is $\lambda\left(Q^*(0), N, P(\psi_i > 0)\right)$. If $c = 2\theta\pi$, and $s = 0$, the likelihood an event is successful in garnering enough participation is $\lambda\left(Q^*(2\theta\pi), N, P(\psi_i > \theta)\right)$.

Hence, the payoffs for each of the firm's options are as follows:

1. If $e = 0$, the payoff is 0.

2. If $e = 1$ and $c = 0$, the payoff is $(1-\pi)\lambda\left(Q^*(0), N, P(\psi_i > 0)\right) - k$.

3. If $e = 1$ and $c = 2\theta\pi$, the payoff is $(1-\pi)\lambda\left(Q^*(2\theta\pi), N, P(\psi_i > \theta)\right) - k$.

As long as $k > \max\left\{(1-\pi)\lambda\left(Q^*(0), N, P(\psi_i > 0)\right), (1-\pi)\lambda\left(Q^*(2\theta\pi), N, P(\psi_i > \theta)\right)\right\}$, then it is optimal for the firm to choose $e = 0$. However, since we assume that $k > 1 - \pi$ this condition is met.

Case (ii): $\hat{N}_p(0) > Q^*(0)$ and $\hat{N}_p(0) < Q^*(2\theta\pi)$

In this situation, the only event that can attract sufficient voter participation to persuade the politician to implement policy $d = 1$ is a costless event. The payoffs to each of the firm's options are:

1. If $e = 0$, the payoff is 0.

2. If $e = 1$ and $c = 0$, the payoff is $\pi + (1-\pi)\lambda\left(Q^*(0), N, P(\psi_i > 0)\right) - k$.

3. If $e = 1$ and $c = 2\theta\pi$, the payoff is $(1-\pi)\lambda\left(Q^*(2\theta\pi), N, P(\psi_i > \theta)\right) - k$.

Hence by assumption, $\pi > k > 1 - \pi$, it is optimal for the firm to choose $e = 1$ and $c = 0$.

Case (iii): $\hat{N}_p(0) < Q^*(0)$ and $\hat{N}_p(0) > Q^*(2\theta\pi)$

In this case, the only event that can succeed in attracting sufficient participants to convince the politician to implement policy $d = 1$ is a costly-participation event. The payoffs to each of the firm's options are:

1. If $e = 0$, the payoff is 0.
2. If $e = 1$ and $c = 0$, the payoff is $(1-\pi)\lambda\left(Q^*(0), N, P(\psi_i > 0)\right) - k$.
3. If $e = 1$ and $c = 2\theta\pi$, the payoff is $\pi + (1-\pi)\lambda\left(Q^*(2\theta\pi), N, P(\psi_i > \theta)\right) - k$.

Again, since $\pi > k > 1 - \pi$ by assumption, it is optimal for the firm to choose $e = 1$ and $c = 2\theta\pi$.

Case (iv): $\hat{N}_p(0) > Q^*(0)$ and $\hat{N}_p(0) > Q^*(2\theta\pi)$

In this case, either type of event can succeed when $s = 1$. The payoffs to the firm's options are:

If $e = 0$, the payoff is 0.

If $e = 1$ and $c = 0$, the payoff is $\pi + (1-\pi)\lambda\left(Q^*(0), N, P(\psi_i > 0)\right) - k$.

If $e = 1$ and $c = 2\theta\pi$, the payoff is $\pi + (1-\pi)\lambda\left(Q^*(2\theta\pi), N, P(\psi_i > \theta)\right) - k$.

Given that $\pi > k$, it is optimal for the firm to organize an event since each type has a positive expected payoff. The firm will select the event type with the greatest probability of succeeding when $s = 0$. The likelihood that a costless-participation event succeeds by chance is $\lambda\left(Q^*(0), N, P(\psi_i > 0)\right)$, while the likelihood that a costly-participation event succeeds by chance is $\lambda\left(Q^*(2\theta\pi), N, P(\psi_i > \theta)\right)$.

Based on model primitives, it is ambiguous which probability is larger. In general, $P(\psi_i > 0) > P(\psi_i > \theta)$, which makes the likelihood of a costless event

succeeding by chance higher, but also $Q^*(0) > Q^*(2\theta\pi)$, which means that a costless event requires a higher number of participants to succeed by chance.

What condition ensures that a costless-participation event such as a petition is optimal? We define $\overline{Q}(0)$ as the lowest Q satisfying:

$$Q \cdot \frac{P(\psi_i > \theta)}{P(\psi_i > 0)} > (N - Q) \cdot \frac{P(\psi_i \leq -\theta)}{P(\psi_i \leq 0)}$$

We define $\overline{Q}(2\theta\pi)$ as the lowest Q satisfying:

$$Q + (N - Q) \cdot \frac{P(\alpha_i = 0|\psi_i > \theta) \cdot P(\psi_i > \theta)}{P(\alpha_i = 0|\psi_i > \theta) + P(\psi_i \leq \theta)} > (N - Q) \cdot \frac{P(\psi_i \leq -\theta)}{P(\alpha_i = 0|\psi_i > \theta) + P(\psi_i \leq \theta)}$$

Intuitively, $\overline{Q}(0)$ and $\overline{Q}(2\theta\pi)$ are the politician's thresholds of voter participation if the politician knows the firm's information is incorrect (and would be updating entirely based on the prior). It can be shown that $\overline{Q}(0) = Q^*(0)$ and that $Q^*(2\theta\pi) > \overline{Q}(2\theta\pi)$, which implies that $\lambda\left(\overline{Q}(0), N, P(\psi_i > 0)\right) = \lambda\left(Q^*(0), N, P(\psi_i > 0)\right)$ and $\lambda\left(\overline{Q}(2\theta\pi), N, P(\psi_i > 0)\right) > \lambda\left(Q^*(2\theta\pi), N, P(\psi_i > 0)\right)$. Hence, assuming the distribution F is such that the inequality:

$$\lambda\left(\overline{Q}(0), N, P(\psi_i > 0)\right) > \lambda\left(\overline{Q}(2\theta\pi), N, P(\psi_i > 0)\right)$$

is satisfied, then it follows that:

$$\lambda\left(Q^*(0), N, P(\psi_i > 0)\right) > \lambda\left(Q^*(2\theta\pi), N, P(\psi_i > 0)\right)$$

When this condition on F is satisfied (as noted after Proposition 1), it is optimal for the firm to choose $e = 1$ and $c = 0$. □

A similar PBNE obtains when the condition derived above (in Case (iv) of the firm's strategy) does not hold:

Firm: (i) If $\hat{N}_p(0) \geq Q^*(0)$ and $\hat{N}_p(\eta) < Q^*(\eta)$, then select $e^* = 1$ and $c^* = 0$.

(ii) If $\hat{N}_p(\eta) \geq Q^*(\eta)$, then $e^* = 1$, $c^* = \eta$, and $Q^c = Q^*(\eta)$.

(iii) Otherwise, select $e^* = 0$.

Voter Participation: Choose $\rho_i = 1$ if either (i) or (ii), below, hold. Otherwise choose $\rho_i = 0$.

(i) If $e = 1$, $c = 0$, and $\psi_i > 0$.

(ii) If $e = 1$, $c = \eta$, and $\alpha_i = 1$.

Politician: If $Q \geq Q^*(c)$, then choose $d = 1$. Otherwise choose $d = 0$.

Voter Election Decision: (i) If $|\theta| > |\psi_i|$, then vote $v_i = 1$.
(ii) If $|\theta| \leq |\psi_i|$ and $\psi_i \geq 0$, then vote $v_i = 1$ if $d = 1$ and vote $v_i = 0$ if $d = 0$.
(iii) If $|\theta| \leq |\psi_i|$ and $\psi_i < 0$, then vote $v_i = 1$ if $d = 0$ and vote $v_i = 0$ if $d = 1$.

Beliefs follow Bayes' rule where possible. In the off-equilibrium event that $c = \eta$, and $Q > Q^*(\eta)$, then the politician forms the same beliefs about voters as in the $Q = Q^*(\eta)$ case.

The only difference from the PBNE presented above is that if the firm determines that either a costly or costless event is likely to succeed, then the firm chooses to hold a costly event (rather than a costless one).

The condition that would make this an equilibrium is:

$$\lambda\left(\overline{Q}(0), N, P(\psi_i > 0)\right) < \lambda\left(\overline{Q}(2\theta\pi), N, P(\psi_i > 0)\right)$$

which would ensure that:

$$\lambda\left(Q^*(0), N, P(\psi_i > 0)\right) < \lambda\left(Q^*(2\theta\pi), N, P(\psi_i > 0)\right)$$

We note that the equilibrium thresholds here are different from than in Proposition 1. When the firm breaks 'ties' in favor of holding a costly event, this changes the inferences made by the politician upon observing the different types of events. In particular, the threshold for participation in a costless event is higher since the politician will infer that the firm observed $\hat{N}_p(0) < \overline{Q}(0)$. In a similar way the threshold for participation in a costly event is lower than before.

Other equilibria

Conventional equilibrium refinements such as the intuitive criterion or divinity are not readily applied in our model since meaningful deviations (i.e. deviations where the firm organizes an event and voters participate) would require the involvement of multiple players rather than a single player. Due to the continuum of voter issue preferences and the multiplicity of event types, there is no general rule for when voters of different types would benefit from being recognized by the politician as deviating.

In our model we focus on a specific PBNE where the least action occurs off the equilibrium path, making the focal PBNE more realistic. The only off-equilibrium circumstance occurs when a surplus number of voters attends a costly participation event (such as a rally). Naturally, other potential equilibria exist, such as where no stakeholder events occur or where the politician does not implement the firm's preferred policy when it would be electorally beneficial to do so. Such equilibria are possible only by specifying off-equilibrium path politician beliefs that are unrealistically negative. For example, the following profile is also a PBNE:

Firm: Select $e^* = 0$.

Participation: If $e = 1$, then $\rho_i = 0$.

Politician: Choose $d = 0$.

Vote: (i) If $|\theta| > |\psi_i|$, then vote $v_i = 1$.

(ii) If $|\theta| \leq |\psi_i|$ and $\psi_i \geq 0$, then vote $v_i = 1$ if $d = 1$ and vote $v_i = 0$ if $d = 0$.

(iii) If $|\theta| \leq |\psi_i|$ and $\psi_i < 0$, then vote $v_i = 1$ if $d = 0$ and vote $v_i = 0$ if $d = 1$.

Beliefs follow Bayes' rule where possible. In the off-equilibrium event that an event of any type is held, then the politician believes that any participant is an opposing switcher with probability 1 – i.e. $P(\psi_i \leq \theta | \rho_i = 1) = 1$.

In this PBNE, the firm does not organize an event, voters do not participate in events, and the politician defaults to choosing d = 0. However, this arises because the off-equilibrium beliefs of the politician are such that if she were to observe a voter participating in an event, she would believe that the voter was an opposing vote-switcher, which would only reinforce the politician's policy decision to choose d = 0. As a result, no event or level of voter participation would convince the politician to choose d = 1, and hence the firm and voters rationally do not attempt to change the politician's decision. However, if all voters were supportive vote-switchers (and the firm was aware of this), then it would be to the politician's benefit to be made aware of voter preferences via a stakeholder event. But in this PBNE, even in situations where voters, the firm, and the politician would benefit from the information generated by voter participation in an event, no events are held due to the unrealistically negative off-equilibrium path beliefs of the politician.

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