Strategic Mobilization of Stakeholders

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November 2018

Abstract

In addition to lobbying and making political campaign contributions, firms can mobilize their stakeholders – customers, employees, suppliers – through public rallies, petitions and letter-writing campaigns to exert pressure on politicians. Firms such as Uber and AirBnb have regularly used these tactics in recent years, but most politically-active firms in fact tend to lobby rather than mobilize stakeholders. We develop a model of stakeholder mobilization that delineates the strategic mechanisms through which stakeholder action provides useful and credible information to policymakers and is effective in influencing policymakers' decisions. Our model shows that the intensity of voters' preferences, in addition to number of supporters, is the key factor governing the type of mobilization campaign organized. Firms with a large number of stakeholder with moderate intensity preferences are more likely to organize their stakeholders via low cost events – such as online petitions. Firms with a smaller number of stakeholders, but those with a sufficiently high preference intensity, are more likely to organize their stakeholders via high cost events – such as public rallies. Furthermore, we find that stakeholder events are effective only for important policy issues, when the policymaker is uncertain about voter preferences for the policy, and when the firm possesses more accurate information on voter preferences.

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Introduction

Collective public demonstrations of support for public policy proposals through rallies, protests and petitions are a staple of liberal democracies as they offer a way for citizens to directly communicate their preferences to government and to potentially influence policy decisions. Such events typically are not spontaneous but are coordinated by groups such as non-governmental organizations (NGOs), labor unions, or firms, who have an interest in the policy outcome and the resources to cover the costs of organization. While media reports often focus on NGO-organized protests about environmental and social policies, firms also sometimes mobilize their stakeholders – customers, employees, or suppliers – when seeking support for changes in legislation or regulations that affect their business operations (Baron, 1995). Uber, for instance, has frequently organized consumer petitions when entering new cities, AirBnb has sponsored accommodation host rallies, and the pharmaceutical industry is known for organizing patient advocacy groups when new drugs are under regulatory consideration (Holburn and Raiha, 2017).

Surveys of government relations experts and legislators have found that organized stakeholder activities can be highly effective in shaping policy outcomes, especially compared to the impact of lobbying and financial contributions to political election campaigns (Lord, 2000). Anecdotal evidence also finds that firm-organized petitions and rallies have been influential in some policy debates (Holburn and Raiha, 2017). Among firms that do mobilize their stakeholders, some appear to systematically utilize rallies (e.g. AirBnb) while others tend to use customer petitions (e.g. Uber). However, casual observation suggests that most firms do not in fact engage in such activities – instead, lobbying and campaign contributions are much more common political influence tactics. Why, then, do many firms eschew an ostensibly effective approach to managing their political environment? And what explains the choice of method among firms that do mobilize their stakeholders? As far as we are aware, no research to date has addressed these questions.

In this paper we contribute to political economy and strategic management research by developing a new theoretical model that analyzes the conditions under which firms choose to mobilize their stakeholders as well as the method used, specifically through petitions or rallies. The model includes three sets of actors: first, a firm that decides whether or not to organize an event that publicly demonstrates the level of support from its stakeholders for a specific policy issue favored by the firm and, if so, the type – either a low participation-cost event such as an electronic petition or a higher cost public rally. The goal of the event is to persuade a politician to implement the policy, which affects all voters (not just the firm's stakeholders, who are a subset of the voter base). Second, the model incorporates the firm's stakeholders who individually decide whether to voluntarily participate in an organized event; stakeholders support the policy being promoted by the event but 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 a pivotal election issue in their vote for a political candidate. The third actor in the model is an elected politician who, uncertain about the extent and intensity of broad voter preferences for the policy, decides whether or not to implement the policy after observing the level of voter participation in a petition or rally (if one is organized).

Our model builds upon prior research in some aspects and is novel in others. Most related to ours is work by Lohmann (1993), Lohmann (1994), and Battaglini (2017), which shows that voters may rationally attend public demonstrations, despite the private cost of participation, since doing so can send a credible signal to policy-makers about aggregate voter support for a policy. While these models articulate the benefits of mass participation for voters, they lack a strategic interest group that organizes events. Public events, in these models, are assumed to occur exogenously. This limits the ability of the models to address our key research questions on when and how firms strategically decide to mobilize their supporters. In contrast to existing models, we endogenize a firm's strategic decision to organize a public event, as well as the particular type, which allows us to examine the rationale behind firms' strategic mobilization of stakeholders.

Our model predicts that firms will mobilize their stakeholders when a number of conditions are satisfied. Firms are more likely to organize low-cost events such as electronic petitions when they have a larger number of stakeholders as a fraction of voters in a jurisdiction with moderate intensity preferences for the policy issue; and they will tend to organize high-cost events such as rallies when they have a smaller set of stakeholders with sufficiently intense preferences (meaning they will switch their vote for the politician depending on whether the politician implements the policy). If firms have stakeholders who account for too small a fraction of voters then neither petitions nor rallies will be feasible, irrespective of the intensity of preferences. However, firms do not need to obtain a majority of voters to attend a rally in order to positively impact the politician's decision. In fact, 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 attending a rally is a costly exercise for voters, a small number of participants can be persuasive as the politician's electoral prospects are determined by the number of voters who will switch votes based on the politician's policy decision – not the number of voters with moderate intensity preferences who will not switch their vote. 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.

The profile of a firm's stakeholders – the number of supporters and the intensity of preferences – is not sufficient, however. In addition, politicians need to be uncertain about voter preferences for the policy issue, making information conveyed by stakeholder participation in an event valuable in updating prior beliefs. Uncertainty may arise especially for novel issues pertaining to new industries or businesses that disrupt existing markets and where there is little historical precedent to evaluate the impact on a range of stakeholders. Politician's beliefs may also change over time in response to exogenous events and news media about an issue – negative media reports, for instance, may cause politicians to become more skeptical about the benefits to voters of a firm's operations. Greater skepticism leads to a higher threshold for participation in an event such as a rally or petition to persuade a politician to update beliefs sufficiently to implement the policy. If, on the other hand, politicians are perfectly informed about voter preferences then there is no informational benefit from the firm organizing a stakeholder event.

The remainder of the paper is organized as follows. In the next section we review the relevant economics and strategic management literature on stakeholder mobilization and constituency building strategies. In the third section we present a model of stakeholder mobilization that includes voters, a political decision-maker, and a firm that may organize a stakeholder event. The fourth section presents the model's main results – an equilibrium profile of the game and 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 also discuss potential extensions of the model and future research directions before concluding.

Model

The game involves three different types of players: a firm (interest group), an incumbent politician, and a discrete set V of $N \in \mathbb{N}$ voters, where we assume N is large. In this game there exists an *issue* upon which a decision must be made, by the politician. For example, the issue could be a state's decision on whether to allow Uber to operate legally, or a city's decision on whether to allow AirBnb to operate. The decision on the issue is denoted $d \in \{0, 1\}$, where 1 is a "yes" decision (e.g. allow Uber to operate legally), and 0 is a "no" decision (e.g. prohibit Uber from operating). We assume the firm would like the politician to choose $d = 1$. The problem comes in the form of asymmetric information. The politician does not (ex ante) what the preferences of voters are on the issue, and thus does not know if choosing 1 or 0 will improve her electoral prospects. However, the politician can potentially learn from the actions of the firm and voters, both of whom possess more information than the politician.

The learning occurs through stakeholder mobilization. The firm has an opportunity to mobilize its supporters in an effort to convince the politician that she should approve the issue. The firm can organize an (single) *event* that voters can voluntarily participate in; $e \in \{0, 1\}$, where $e = 1$ means an event is organized. For example, the event could be a public rally held at city hall, or even simply an online petition distributed via email. An event is characterized by the cost of voter participation c – for instance, it is more costly for a voter to attend a public rally than to sign an online petition. Participation in an event can potentially convey information, not only on voters' preferences on the issue but also the intensity of voters' preferences – for example, attending a public rally may indicate a stronger personal intensity of preferences than signing an online petition. For simplicity we will assume there are two possible event costs the firm can select from – a costless event, $c = 0$ (e.g. online petition), or a costly event, $c = \eta > 0$ (e.g. public rally). From the firm's side, the cost of organizing an event of either type is $k > 0$. The event and issue decision occur some time prior to an election, at which point voters choose whether to reelect the incumbent or not.

Payoffs

Before discussing the precise timing and information in the game, it is helpful to first establish player payoffs. The firm's payoffs are simply $d - ek$. The firm benefits from the issue being approved (i.e. $d = 1$) – e.g. Uber benefits from being legalized – but also pays the cost k if it organizes a stakeholder event (i.e. $e = 1$). The politician's payoff is also straightforward – the politician wants to maximize the votes she receives in the election.

Voter payoffs are more complex. We let $i \in V$ denote a generic voter. We model voters as having two dimensions of preferences: (i) issue preference, and (ii) valence/other. Voters' issue preference is denoted by $\psi_i \in \mathbb{R}$, and valence preference is denoted by $\theta_i \in \mathbb{R}$. A voter's payoff is determined jointly by the issue decision of the politician, as well as the voter's participation and voting choices. A vote choice is denoted $v_i \in \{0, 1\}$ where $v_i = 1$ is a vote for the incumbent, and $v_i = 0$ is a vote for the challenger, while a participation choice is denoted $\rho_i \in \{0, 1\}$ where $\rho_i = 1$ means the voter participated in the firm organized event. The voter payoff is the value summarized in Table 1.

Table 1: Voter Payoffs

	$v_i = 1$	$v_i = 0$	
$d = 1$	$\theta_i + \psi_i$	0	if $\rho_i = 0$
$d = 0$	$\theta_i - \psi_i$	0	

	$v_i = 1$	$v_i = 0$	
$d = 1$	$\theta_i + \psi_i - c$	$-c$	if $\rho_i = 1$
$d = 0$	$\theta_i - \psi_i - c$	$-c$	

Voter payoffs are such that, in certain circumstances, the voter votes retrospectively. If a voter has an issue preference such that $\psi_i > 0$, then that voter prefers the issue is approved. Similarly, if a voter has preference $\theta_i > 0$, then it means that if there were no issue, the voter would prefer to re-elect the incumbent to electing the challenger. The payoffs (as described in the table) ensure that if the voter cares more about the issue than everything else (i.e. $|\psi_i| \geq |\theta_i|$), then her vote will change depending on the decision d. Alternatively, if the voter cares more about everything else than the issue (i.e. $|\psi_i| < |\theta_i|$), then she will base her vote solely upon θ_i. The cost of voter participation is simply subtracted from the voter payoff.

For simplicity, for the remainder of the paper we will assume that all voters share the same valence preference – i.e. $\theta_i = \theta$ for all $i \in V$ – and furthermore that $\theta > 0$.[1]

[1]Later it will be easy to see that the results are generalizable and robust to many different specifications of θ.

We let $\psi = (\psi_1, \psi_2, \ldots, \psi_N)$ denote the profile of voters' issue preferences. Without loss of generality, we will order voters in increasing order 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 a particular voter issue preference profile, depicted by a green curve.[2]

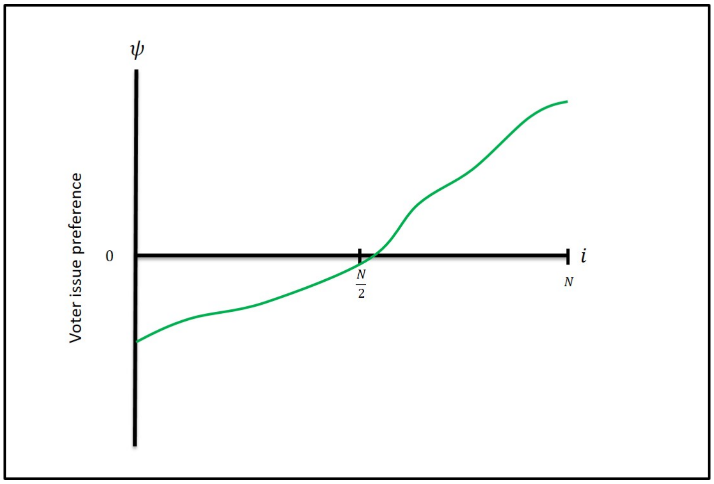

Figure 1: Voter Issue Preference Profile

The points on the curve above the x-axis show the voters who support the issue (i.e. voters for whom $\psi_i > 0$), while the points on the curve below the x-axis show the voters who oppose the issue (i.e. voters for whom $\psi_1 < 0$). In the example drawn in Figure 1, slightly more than half of voters prefer the politician to choose $d = 0$. However, when voting voters consider both dimensions of their preferences, which can influence which decision is electorally advantageous for the politician.

Figure 2 illustrates the three different categories that voters can be classified into. The set of voters corresponding to region A in Figure 2, are voters for whom $\psi_i \leq -\theta$. These voters strongly oppose the issue – for example, taxi drivers on the issue of Uber legalization. Since the intensity of their preference is sufficiently negative, these voters will vote for the incumbent politician if and only if the politician chooses $d = 0$ (e.g. Uber banned). By contrast, the set of voters corresponding to region C in Figure 2, are voters for whom $\psi_i > \theta$. These voters strongly support the issue – for example, Airbnb home sharers on Airbnb

[2]Since N is large, for visual ease, we will depict the preference profiles as a continuous curve, rather than a discrete set of points.

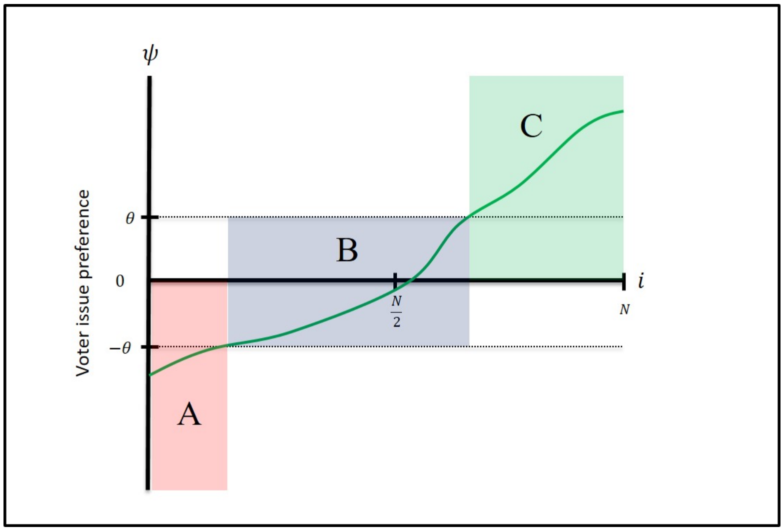

Figure 2: Categories of Voters

legalization. Since the intensity of their preference is sufficiently positive, these voters will vote for the incumbent if and only if the politician chooses $d = 1$ (e.g. Airbnb legalized). We will refer to voters in these two aforementioned categories as *switchers*, since they are the voters who switch their vote depending on the politician's decision d. We will refer to switchers who support the issue (i.e. $\psi_i > \theta$) as *supportive* switchers, and refer to swtichers who oppose the issue (i.e. $\psi_i < -\theta$) as *opposing* swtichers. In between these two categories of voters is the set of voters corresponding to region B in Figure 2, from whom $|\psi_i| < \theta$. These voters do not have a sufficiently strong preference on the issue for it to affect their voting decision. As such, we refer to these voters as *nonswitchers*.

Given that the incumbent politician cares about the number of votes she receives, she is less concerned about the total number of voters who are for or against the issue. Instead she is concerned with the number of supportive versus opposing switchers. For example, in the profile of Figures 1 & 2, there are more voters who oppose the issue than support it, but there are more voters who strongly support the issue that strongly oppose it – that is, there are more supportive switchers than opposing switchers. Because of this, the vote maximizing politician would prefer to choose $d = 1$ since this will result in more votes than if she chose $d = 0$, even though a majority prefers $d = 0$.

Information

If the politician knew exactly the preferences of voters her decision d would be an easy one. However, we assume that there is uncertainty about the issue preferences of voters, which opens the possibility of an informative stakeholder mobilization event. We assume that the preference profile $\psi = (\psi_1, \psi_2, \dots, \psi_N)$ 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. The politician holds beliefs in accordance with the distribution F. We assume F is non-degenerate and that these prior beliefs are such that $P(\psi_i > \theta) < P(\psi_i \leq -\theta)$; which implies that in the absence of new information the politician would optimally choose $d = 0$.

The firm possesses a superior but imperfect knowledge of the preference profile ψ. After nature determines ψ, the firm receives a signal $\hat{\psi} = (\hat{\psi_1}, \hat{\psi_2}, \dots, \hat{\psi_N})$, which with probability π is equal to the realized preference profile $\psi = (\psi_1, \psi_2, \dots, \psi_N)$, and with probability $1 - \pi$ is equal to a profile $\psi^0 = (\psi_1^0, \psi_2^0, \dots, \psi_N^0)$ 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 will generally assume that $\pi > 1 - \pi$; that the firm's information is more likely 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 feels it is likely to succeed to persuading the politician.

Each voter naturally knows their own issue preference ψ_i, but does not know any other voters' preferences. The common valence preference θ is known to all players.

Willing Participation and Coordination

In our model voters may voluntarily choose to participate in an event organized by the firm, and it is this event participation which may convey information about voter preferences and persuade the politician to choose $d = 1$. 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 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 reasonably high likelihood of being pivotal to the outcome.

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 $N_p(0) = \{i \in V : \psi_i > 0\}$; that 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 to participate. Since the firm observes $\hat{\psi}$, which is not necessarily the actual preference profile ψ, we also analoglously define $\hat{N}_p(c)$ as the set of (perceived) willing participants according to the firm's observation $\hat{\psi}$. We also let Q denote the actual number of observed participants – that is, $Q = \sum_{i \in V} \rho_i$.

Now we know that if the firm organizes a costly event, even voters who support the issue would prefer not to participate unless they reasonably expect to be pivotal in the politician's decision – otherwise the temptation to free-ride would be overwhelming. This idea is detailed in a large theoretical literature going back to Olsen (1965) and Palfrey and Rosenthal (1983), and is still the subject of contemporary research. However, since the focus of this paper in not on how collective action problems are overcome, we side-step these modeling challenges by assuming the existence of a *coordinator* – a dummy player who effectively knows the preferences of voters and can send signals to them, to indicate that their participation is likely to be pivotal when an event is costly. We assume that whenever the firm organizes an event with a cost of participation $c = \eta > 0$, then they delegate the retrieval of supporters to a coordinator who sends a signal $\alpha_i \in \{0, 1\}$ to each voter – the signal α_i is observable only to the voter who receives it. The coordinator will send the signal $\alpha_i = 1$ only to Q^c of willing participants, if such a set exists. If there does not exist Q^c willing participants (because there are too) then the coordinator simply sends $\alpha_i = 1$ to all willing participants.

Sequence

The sequence of the game is as follows:

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

2. The firm chooses whether to organize a (single) event for stakeholders to participate in; $e \in \{0, 1\}$ where $e = 1$ means an event is organized, while $e = 0$ means an event is not organized. 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 a costly event exists (i.e. $e = 1$ and $c = \eta$), a coordinator sends a signal $\alpha = (\alpha_1, \ldots, \alpha_N)$, where $\alpha_i \in \{0, 1\}$. The coordinator sends signal $\alpha_i = 1$ to Q^c voters from $N_p(c)$, if $Q^c \leq N_p(c)$, and otherwise sends $\alpha_i = 1$ to all voters in $N_p(c)$. Voters only observe their own signal α_i. These signals are not observed by any other player.

4. If an event of cost c exists, each voter decides whether to participate $\rho_i \in \{0, 1\}$ (where $\rho_i = 1$ means that voter i participates).

5. After observing event participation and cost, the politician decides on the issue – i.e. $d \in \{0, 1\}$.

6. Voters decide to re-elect incumbent politician (or not); that is, each voter i chooses $v_i \in \{0, 1\}$ where $v_i = 1$ is a vote for the incumbent and $v_i = 0$ is a vote for the challenger.

7. Payoffs are realized.

Equilibrium

The solution concept we use is perfect Bayesian Nash equilibrium (PBNE). In this game a PBNE will specify the following:

- For the firm, a decision on whether to organize an event and, if so, a cost of participation c for the event, for every signal $\tilde{\psi}$.

- For each voter i, a participation decision ρ_i for every cost of participation c.

- For the politician, an issue decision d, for any number of participants $Q(c)$ associated with an event cost c.

- For each voter i, a voting decision v_i for any issue decision d.

One nice feature of the model is that it can describe a variety of settings of stakeholder mobilization, even beyond the political influence strategies of firms. For instance, the firm could simply be a generic *interest group* such as an NGO, looking to mobilize its supporters for some cause. The decision-making politician could also just as easily be a firm deciding on some aspect of corporate social responsibility (e.g. an environmental or labour standard), and trying to maximize the number of their customers, while a customer group organizes a petition indicating how important the CSR initiative is to their continuing patronage of the company. Given the flexibility in interpreting the model, the findings that arise may have relevance to a wide variety of phenomena involving collective voluntary participation.

Results

With the model set up we now examine the equilibrium of the game where stakeholders are mobilized by the firm in an effort to persuade the politician. From the conditions and cases of this equilibrium we can highlight the key reasons that stakeholder mobilization is effective, under what circumstances it is used, and why a variety of events might be held.

The following proposition presents the equilibrium strategy profile, and is out main result:

Proposition 1. *Under certain conditions (on F), 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:*

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 $e^* = 0$.

Participation: *(i) If $e = 1$ and $c = 0$, then: if $\psi_i > 0$, then $\rho_i = 1$. Otherwise $\rho_i = 0$.*

(ii) If $e = 1$ and $c = \eta$, then: if $\alpha_i = 1$, then $\rho_i = 1$. Otherwise $\rho_i = 0$.

Politician: *If $Q \geq Q^*(c)$, then choose $d = 1$. Otherwise 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 $c = \eta$, and $Q > Q^*(\eta)$, then the politician forms the same beliefs about voters as in the $Q = Q^*(\eta)$ case.

In this equilibrium the politician has a threshold strategy, wherein she chooses $d = 1$ if and only if she observes a sufficient level of voter participation in a stakeholder event. The thresholds are $Q^*(0)$ and $Q^*(\eta)$, where $Q^*(\eta) < Q^*(0)$ – that is, the politician needs to see a greater level of participation in a costless event than she needs to see in a costly event, in order to be convinced to choose $d = 1$. The thresholds are the levels of participation where the politician is nearly 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 was mentioned, the politician selects d based on her updated beliefs about how many supportive and opposing switchers there are in the electorate. Based on her prior beliefs – i.e. the distribution F – the politician believes there is greater opposition to the issue 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 enough to convince the politician to choose $d = 1$.

The reason why the threshold for a costly event is lower than for a costless event – i.e. $Q^*(\eta) < Q^*(0)$ – is that when an event is costless to participate in, then the set of willing participants $N_p(0)$ likely contains many more voters than just supportive switchers. Many participants would be willing to sign a convenient online petition, but only a fraction of them would actually hold preferences strong enough to vote on the issue. Anticipating this, the politician accounts for this fact in her calculus of how many supportive versus opposing switchers there are.

Additionally, the politician also accounts for the firm's equilibrium choices, namely (i) that an event is held, and (ii) the type of event held. When the politician observes an event being organized, since the cost of organizing an event is non-trivial to the firm, the politician can infer that the firm observed a sufficiently optimistic signal in $\hat{\psi}$. However, the politician also knows that the firm's information could be incorrect, which is why she must carefully observe the actual event participation in part to verify whether the firm's information was actually correct or not. The politician also makes inferences from the type of event held. In particular, if the politician observes the firm organizing a costly event, 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 $Q^*(\eta)$.

The firm's equilibrium strategy depends upon the expected stakeholder support, as determined by the signal $\hat{\psi}$, compared to the thresholds $Q^*(c)$ set by the politician. In this equilibrium profile the firm will organize an event only if its inside signal about voter preferences $\hat{\psi}$ says that there are a sufficiently high number of voters willing to participate in a stakeholder event so as to persuade the politician to choose $d = 1$. If there is expected to be insufficient support, then the firm would prefer not to pay the cost of organizing an event that is likely to fail.[3] The decision on what type of stakeholder event to hold is determined by the relative values of $\hat{N}_p(0)$ and $\hat{N}_p(\eta)$ – that is, the expected number of willing participants for each type of event. In the equilibrium, whenever $\hat{N}_p(0) \geq Q^*(0)$ – that is, there is a sufficiently large group of supporters of the issue, both strong and weak – then the firm prefers to organize a costless event, such as an online petition, to convey the breadth of support for the firm. However, if $\hat{N}_p(\eta) \geq Q^*(\eta)$ and $\hat{N}_p(0) < Q^*(0)$ – that is, there is a sufficiently large group of strong supporters willing to participate in a costly event, and also insufficient weak support – then the firm prefers to organize the costly event, such as a public rally, to convey the more narrow but deeper support for the firm.

For example, when Uber organizes an online petition that receives hundreds of thousands of signatures, it conveys to politicians the wide-ranging broad support for its business-model and legalization. The politician likely believes that only a fraction of the signatories are actually strong supporters (i.e. supportive switchers), but as long as the number of signatures is high the politician will revise upwards their beliefs of how many strong supporters there are, and review downwards their beliefs of how much opposition there is. By contrast, when Airbnb organizes a public rally attended by hundreds of people, even though actual participants in the event are few compared to the overall size of the electorate, if the event is costly enough to participate in then the politician will infer that every participant is likely a supportive switcher for whom the issue will decide their vote. Moreover, given the personal cost of participation, it is likely that there are many other supportive switchers beyond the observed participants of the rally, whose vote will also turn on the politician's decision. The firm's choice depends on whether the firm believes it has a larger number of (possibly) weaker supporter versus a smaller number of stronger supporters.

The voters' equilibrium strategies are, in many ways, more straightforward

[3]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. Nearly identical intuition applies to that case.

than the strategies of the politician or firm. The voting strategies, in the final stage of the same, are an immediate consequence of the voters' payoffs, which are easy to determine once the politician has made an issue decision d. The non-switchers will vote for the incumbent politician. The supportive switchers will vote for the incumbent if $d = 1$, and the challenger if $d = 0$, while the opposing switchers will do the opposite. The voter participation decision when a costless event is organized is similarly easy. When the event is costless to participate in, then there are no issues of free-riding or collective action problems – voters participate if and only if they support the issue (i.e. $\psi_i > 0$).

The voter participation decision when a costly event is organized is the only complicated case as collective action problems become a potential issue. For a voter to bear the personal cost of participating they require some assurance that their participation will be pivotal in convincing the politician to choose $d = 1$. When the firm chooses to organize a costly event, it signals its inside information about voters' issue preferences (i.e. $\hat{\psi}$) to voters. This tells the voter that as long as the firm's information is correct (which it is with probability π) then the costly event will succeed. The coordinator simply organizes voters to ensure that no surplus effort is wasted, by only inviting a pivotal set of willing participants to participate. One advantage, however, 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.

Now despite the many different conditional actions in the equilibrium profile, because there is underlying uncertainty about the preference profile ψ, many different outcomes are possible along the equilibrium path. The firm may or may not choose to organize an event. The firm may 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 may organize an event that fails to persuade the politician (e.g. when $\hat{\psi}$ is incorrect and more optimistic than ψ). Voters may participate in events and find their efforts are in vain. Moreover, the final decision made by the politician may not even be the electorally optimal one. There will be circumstances where even though there are more supportive switchers than opposing switchers, the numbers of support are insufficient at changing the politicians beliefs. And on the converse, circumstances where even though there are more opposing switchers than supportive switchers, since the firm only demonstrates support (and reveals less about opposition), the stakeholder event may convince the politician to choose $d = 1$ even though choosing $d = 0$ would result in more votes.

Discussion

Why is stakeholder mobilization effective?

The previous section presented the equilibrium of the game where the firm mobilizes its supporters in an effort to persuade the politician to implement a policy. Stakeholder mobilization can be effective by conveying credible information to a politician about voters' preferences – such as the extent of support for a policy – which is otherwise unknown and electorally valuable to the politician. But stakeholder mobilization can convey more than simply who supports or opposes a policy – such information could instead be determined by a poll. Since stakeholder mobilization is costly for participants it can indicate not only the direction of voter preferences, but also the intensity of preferences on an issue. When voters gather in a public rally, or send hand-written letters to their representatives, these costly actions demonstrate how strongly voters feel about an issue, and indicate how the issue may influence their subsequent voting decisions in political elections. The intensity of voter preferences cannot be easily credibly gathered from a poll. However, this information is important for politicians since it is the vote-switchers on an issue – those who care about the issue sufficiently to base their vote upon it – who can influence election outcomes.

When is stakeholder mobilization useful?

At the outset of the paper we ask two main research questions. The first concerns the puzzling empirical finding that, even though stakeholder mobilization is considered to be a more effective political influence tactic than lobbying or campaign contributions, it is used with far less frequency (Lord, 2000). This finding suggests that there are boundaries around when stakeholder mobilization is beneficial. Our model provides several explanations and predictions for when stakeholder mobilization is likely to be observed.

First, firms are more likely to mobilize stakeholders when politicians are relatively uncertain about voter preferences, and hence are unsure which policy decision would be electorally beneficial. In such circumstances, the firm has an opportunity to provide credible information to the politician by mobilizing its stakeholders, thereby revealing preferences on a particular policy. Political uncertainty may be greater for novel policy issues. This may explain why stakeholder mobilization has been a popular tactic employed by new companies such as Uber, Airbnb, Tesla, as well as medical cannabis companies in sectors where novel regulations are required and where voter preferences are less established (Holburn and Raiha, 2017). By contrast, stakeholder mobilization may be less effective at persuading policymakers in well-known and established policy areas.

Second, stakeholder mobilization is more likely to be employed by firms who have better information about their stakeholders' preferences than politicians. Again, the examples of companies such as Uber and Airbnb are illustrative since each of these companies – through their app-based technology and electronic customer communications – have a great deal of information about customers' usage profiles. Uber has electronic records of where their customers use their service, and from these knows how many constituents in a jurisdiction value their business model. Similarly, Airbnb has information on who shares their homes and where their homes are located. Many other firms have much less detailed information on their stakeholders.

Third, stakeholder mobilization is more likely to be used to address important policy issues – such as the legality of a business model – rather than smaller issues. In the model, the key information being conveyed is how many supportive versus opposing switchers there are. By definition, switchers are voters for whom a particular policy issue is of sufficient importance that they will vote based on the politician's issue decision. Clearly, not every policy issue will induce such strong preferences among voters. For example, in many jurisdictions Uber has faced a sequence of policy challenges: first, whether to be legalized, and second, once legalized the details of regulation. Uber has typically mobilized its stakeholders to overcome the challenge of legalization, but once that issue is settled Uber has used more conventional lobbying tactics to shape the details of regulation. There may be many switchers on the issue of Uber's legality, but fewer switchers on smaller regulatory issues, such as the nuances of insurance requirements or fare schedules.

Why do stakeholder mobilization tactics vary?

The second main research question concerns the observed variation in stakeholder mobilization tactics. For example, Uber has systematically used online petitions as a means of mobilizing its supporters, while Airbnb has systematically organized public rallies to convey its support. What drives the variation in stakeholder mobilization tactics used by firms?

If a firm expects there is broad support then it will tend to mobilize voters through a costless event (such as a petition), while if the firm expects there is only a smaller number of strong supporters it will mobilize voters through a costly event such as a rally. Figure 3 shows illustrative voter preference profiles for Uber and Airbnb.

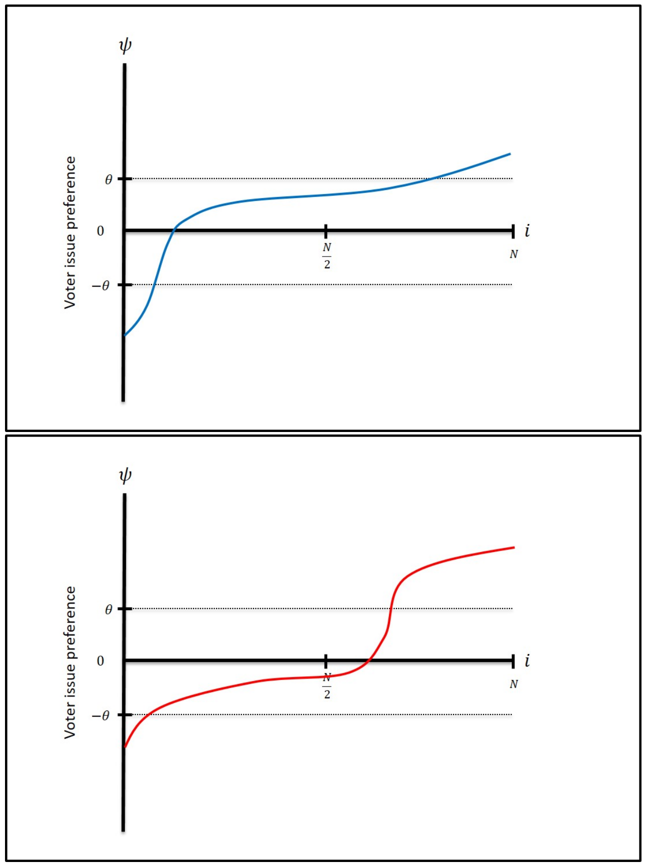

Figure 3: Uber and Airbnb Preference Profiles

The blue curve in the upper graph shows a voter issue preference profile where there is a large number of supporters for the issue. However, even though there are more supportive switchers than opposing switchers, there is not a large set of strong supporters for the issue. Most supporters have moderate intensity preferences. While there is evidence that many users perceive Uber's service quite favourably, especially compared to traditional taxi service based on price and convenience factors, for most voters (i.e. actual or potential riders) the improvement is incremental – Uber represents a modest improvement from the status quo.

In contrast, the red curve in the lower graph shows a voter issue preference profile where there are more opponents than supporters, but a larger number of strong supporters than strong opposers. We argue that this second profile is qualitatively similar to the profile facing Airbnb in many jurisdictions. Airbnb's main customers within a jurisdiction are residents who use the platform to share their homes – customers using the service for lodging typically reside outside the jurisdiction and are not part of that jurisdiction's electorate. As such, Airbnb's primary stakeholders – their home sharers – have a significant interest and stake in Airbnb's business model as it can generate new income. Airbnb home sharers, therefore, are depicted as having a strong preference for the legality of Airbnb. However, beyond the strong support from home-sharers, broader support for Airbnb may be more tenuous. In some markets voters have complained about negative externalities created by Airbnb, such as increased rental rates, noise, etc. Airbnb thus does not have the same level of broad voter support as Uber, even though it arguably has more intense support.

These profiles illustrate how Uber and Airbnb probably have different voter issue preference profiles, which result in different mobilization tactics. Since Uber enjoys broad support, they have generally employed online rider petitions distributed via email or through their app to make the process of participating as costless as possible. By contrast, since Airbnb enjoys smaller but more intense support from its home-sharers, they have typically organized public rallies of their supporters at local city halls and legislatures. Such rallies require costly time, effort, and coordination among their supporters, and participant numbers are far fewer compared to Uber's online petitions. However, Airbnb has nonetheless had success in various cities in gaining regulatory approvals.

Aside from underlying voter preference profiles, politicians' prior beliefs about voter preferences – and the degree of voter support or opposition – is another important determinant of a firm's mobilization strategy. The effect of political beliefs is illustrated in Figure 4. Based on the profile of voter preferences, the firm believes that there is a sufficient number of willing participants for either a petition or rally event to be successful.[4] However, it is possible that *a priori* the politician believes there are fewer voters who are supportive switchers compared to the number of voters who are supportive non-switchers (i.e. those with moderate intensity preferences) – in other words, the politician

[4]For ease of exposition in this example we assume that the set of willing participants is equivalent to the set of supportive switchers.

is more skeptical that any given signatory of a petition is in fact a switcher. The politician thus has a higher threshold for voter participation in both types of events in order to be persuaded that implementing the policy will increase her future election votes.

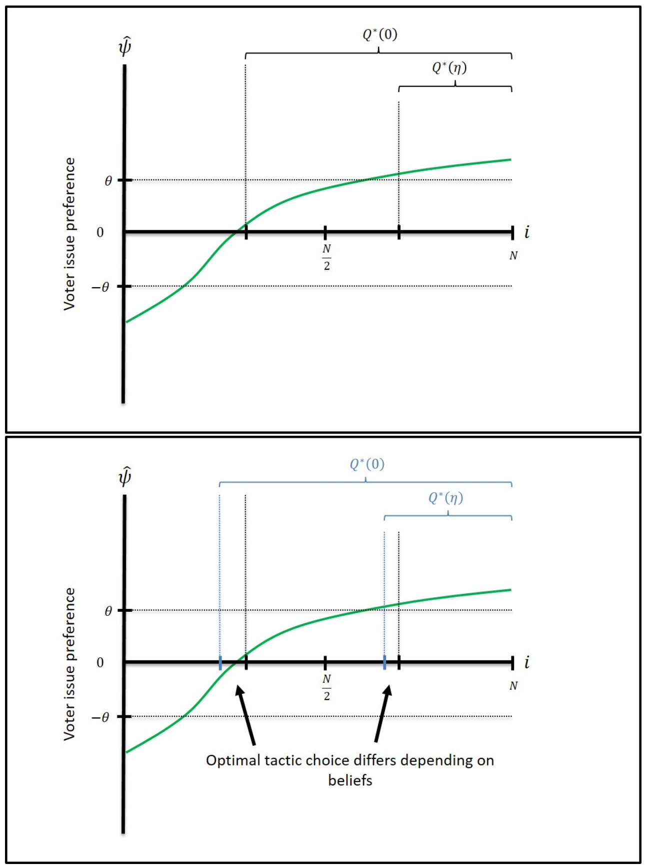

Figure 4: Beliefs and Tactic Selection

In the lower part of Figure 4, we can see that the shift in the politician's thresholds induces a change in type of event the firm organizes, since the voter preference profile indicates that only a costly event will generate sufficient participation to be successful. Even though the voter preference profile is unchanged, under alternative prior political beliefs the number of willing participants in a costless event is insufficient to cause the politician to infer that the policy would be beneficial.

This example illustrates the finding that the firm needs to mobilize stakeholder support in the way that the politician most values in order to be convinced about the broader distribution of voter preferences. In the alternative scenario example above, the politician believes there exists broad but only weak intensity support for the issue. Hence, if the firm organizes a petition, the politician will attribute most of the participation to supportive non-switchers, which will fail to persuade the politician that there are a sufficient number of supportive switchers. Under the alternative political beliefs, the firm needs to organize a costly event to persuade the politician to implement the policy, and to achieve large enough participation from voters that surpasses the politician's threshold.

Extensions of the model

Our model of strategic stakeholder mobilization, in addition to illustrating the mechanisms through which mobilization is effective and why firms may choose different types of mobilization campaigns, also provides a foundation for extensions that can address further questions.

One extension would be to include an opposing interest group that is also capable of mobilizing its stakeholders. A second strategic interest group would influence the interactions between the firm and the politician, and the firm would need to consider in its strategic calculus how a second opposing interest group would anticipate and respond to any mobilization campaigns it embarks upon. While this could be a promising avenue for future analysis, the complexity of extending the model in this way is beyond the scope of this paper to rigorously examine.

Another possible extension could examine the possibility that a firm could take strategic actions to influence the profile of voter preferences directly. For example, Uber could offer lower fares to induce greater support from its riders, or Airbnb could provide better insurance coverage and support for its home-sharers in an effort to galvanize their support. These would introduce a more integrated market and non-market strategy into the model, similar to models by Baron (1999), Baron (2001), De Borger and Glazer (2015), and Baron (2018), in which firms seek to maximize political and profit-maximizing objectives simultaneously. This type of extension may explain the early entry strategies of companies like Uber and Airbnb, who have systematically entered markets prior to being given full legislative approval, in order to demonstrate the value of their businesses to the electorate. We leave these and other related questions for future research.

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Appendix

Proof of Proposition 1

This proof shows that the strategy profile described in Proposition 1 is a perfect Bayes' Nash equilibrium (PBNE). The specifics of this proof, however, apply to the case where $\eta = 2\theta\pi$, which results in the set of willing participants being $N_p(\eta) = \{i \in V : \psi_i > \theta\}$. However, it is easy to see that the same broad reasoning, with algebraic tweaks, applies for any $\eta > 0$.

Vote

The voters' strategy are clearly optimal given how voter payoffs are specified. We omit the details of this part of the proof.

Politician

Case 1: $c = 0$

We begin with computing the politician's inference upon observing Q participants in a costless event. In computing this problem, we will derive the threshold $Q^*(0)$.

By definition, $Q^*(0)$ is the lowest Q that satisfies the following inequality:

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

With a costless event all willing participants will participate, and willing participants are any voters who support the issue (i.e. $\psi_i > 0$). The nice thing about a costless event is that participation involves no coordination, so the likelihood of $s = 1$ plays no role in the politician's inference. Having observed a participant (as well as a non-participant) the politician updates based on her prior.

The likelihood a participant is a supportive switcher is:

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

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

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

In the costless case, no supportive switchers fail to participate, and no opposing switchers participate. We therefore have that the expected number of supportive switchers is:

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

And the expected number of opposing 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 for in closed-form.

Case 2: $c = 2\theta\pi$

Unlike the previous case (a costless event) the threshold of participation for a costly event is not (in general) solvable in closed-form. Nonetheless, as before it is defined as the lowest Q such that the following inequality holds:

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

The questions become then: (1) how do we know $Q^*(2\theta\pi)$ always exists? and (2) what can we say about its properties?

The general argument that $Q^*(2\theta\pi)$ exists is made from monotonicity. It is intuitive that the expected number of supportive switchers (i.e. $E(N^s|Q)$) is increasing in Q, and that the expected number of opposing 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.

Aside from existence and uniqueness we must also prove that it is optimal for the politician to carry out a threshold strategy where $d = 1$ is chosen whenever $Q \geq Q^*(2\theta\pi)$ and $d = 0$ is chosen whenever $Q < Q^*(2\theta\pi)$. We proceed with subcases.

When $Q = Q^*(2\theta\pi)$, we need to 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, must be supportive switchers. So all that remains is to compute the probability a nonparticipant is a supportive switcher.

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

[5] So we have that:

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

To compute $E(N^s|Q,c,s=1)$, we need to account for the fact that when $s = 1$, the firm's information is correct, and therefore the choice $c = 2\theta\pi$ 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 switchers, among the set of nonparticipants, is the set of voters numbering $Q^*(0) - Q$. From this observation we get:

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

[5] Note that $P(\alpha_i = 0|\psi_i > \theta)$ is estimated by the politician, since he doesn't observe the set $N_p(2\theta\pi)$ as the coordinator does.

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 probability of observing at least t successes in n trials, with a probability of success of p.

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

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

In the same way all the terms of $E(N^o|Q,c)$ can be derived. However, it isn't particularly helpful to derive everything since $Q^*(2\theta\pi)$ cannot be solved in closed-form. In any case, by the definition of $Q^*(2\theta\pi)$, it is the case that whenever $Q=Q^*(2\theta\pi)$ is observed, then it is optimal for the politician to choose $d=1$.

The observation $Q>Q^*(2\theta\pi)$ can only occur off the equilibrium path. Under our solution concept – perfect Bayes Nash equilibrium – we can specify these in any way we like. We choose a very 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 sufficiently optimistic so that it is optimal for the politician to choose $d=1$.

The final possible observation is when $Q<Q^*(2\theta\pi)$. We want to show that it is optimal for the politician to choose $d=0$. This part is a proof by contradiction, that is somewhat circuitous.

Firstly, we derive a totally different threshold, which we denote by $\overline{Q}$. We define $\overline{Q}$ as the threshold at which if $Q>\overline{Q}$, then the politician believes there are more supportive switchers and opposing switchers, when the politician's prior belief is such that $P(\psi_i > \theta) = 0$. The condition on prior beliefs means that the only way to convince the politician that a voter is a supportive switcher is to participate in an event of cost $2\theta\pi$.

Now it must be the case that $\frac{N}{2} > \overline{Q}$, since if more than half the voter population participates, then there is no way for the politician to believe there are more opposing switchers, since by definition more than half the population are supportive switchers. More precisely, $\overline{Q}$ is defined as 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 thus $P(\psi_i > \theta) > 0$.

Now let's consider the estimated number of supportive and opposing switchers upon observing Q participants, when $Q < Q^*(2\theta\pi)$. From the equilibrium strategies, and the definition of the coordinator, if $Q < Q^*(2\theta\pi)$ is observed, then the only supportive switchers are the participants – that is, $Q = N_p(2\theta\pi)$. This means that $E(N^s|Q, c) = Q$. But what is $E(N^o|Q, c)$? It turns out that $E(N^o|Q, c) = (N - Q)\frac{P(\psi_i \leq -\theta)}{P(\psi_i \leq \theta)}$ since all nonparticipants are potentially opposing switchers, and the set of nonparticipants is precisly the set of voters for whom $\psi_i \leq \theta$.

But if we have that $\overline{Q} > Q^*(2\theta\pi) > Q$, and $\overline{Q}$ is the lowest Q satisfying inequality (1) above, then it must be that

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

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

Case 3: $e = 0$ (i.e. no event)

It is obvious that if no event is observed, then it is the case that neither threshold was met in the firm's observation. Since no participation can be observed, the politician can only update downwards her beliefs about the likely support for $d = 1$. From the computations of the previous two cases it is clear that the politician optimally chooses $d = 0$, knowing that $\hat{N}_p(0) < Q^*(0)$ and $\hat{N}_p(0) < Q^*(2\theta\pi)$ was observed by the firm.

Participation

The voter only has to make a participation decision if $e = 1$. If there is no event, the voter has nothing to participate in. If an event exists, then there are two broad cases.

First, if $c = 0$ then it is easy to show that the voter participation strategy is optimal. If $\psi_i > 0$, then the voter strictly prefers the politician chooses $d = 1$. Participating can only increase the likelihood that the politician chooses $d = 1$, while at the same time costs the voter nothing. By contrast, if $\psi_i \leq 0$, then the voter prefers the politician chooses $d = 0$. Participating only increases the likelihood the politician makes a decision the voter doesn't like, so even though participation costs the voter nothing, the voter does not want to increase the likelihood $d = 1$ is chosen.

The challenging case is when $c > 0$, as participation now bears a cost, so a voter's likelihood of being pivotal matters. There are two cases:

Case (i): $\alpha_i = 1$

This case implies that $i \in N_p(2\theta\pi)$ – i.e. the voter is a willing participant, since the coordinator would not have sent the message without it being the case. The payoff to participating is:

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

By contrast, 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 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 prefers to participate only if:

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

Now it is easy to show that as $N \to \infty$ then $\lambda^\Delta \to 0$. Since we assume N is large from the outset of the model, we will assume that the voter feels $\lambda^\Delta = 0$. This is intuitive as λ^Δ represents the likelihood the voter is pivotal purely by chance when $s = 0$.

Thus the condition for the voter to be a willing participant is $\pi(\psi_i + \theta) \geq c$. Therefore, when the cost is $c = 2\theta\pi$, the set of willing participants is any voter for whom $\psi_i > \theta$.

Case (ii): $\alpha_i = 0$

There are two subcases here, since many types of voters can receive this message from the coordinator. If $\psi_i \leq 0$, then the voter does not support $d = 1$, and at any cost would not participate in efforts to persuade the politician to choose $d = 1$. If $\psi_i \in (0, \theta]$, then the voter does support $d = 1$, but not intensely enough to justify the cost of participation. This follows immediately from the above computation in case (i).

The only challenging case is when $\psi_i > \theta$. Such a voter is a willing participant and supportive switcher. However, when $\alpha_i = 0$, there is an exceedingly small probability the voter will be pivotal. With probability π, then $s = 1$, and with certainty the voter is not pivotal (given all other voters' equilibrium strategies). With probability $1 - \pi$, then $s = 0$, in which case the likelihood of 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, again, there is no benefit to willing participants for whom $\alpha_i = 0$, to participate given that the chances of being pivotal are small.

Firm

After observing $\hat{\psi}$ the firm has three options available to it:

1. $e = 0$ – i.e. no event
2. $e = 1$ and $c = 0$ – i.e. event with costless participation
3. $e = 1$ and $c = 2\theta\pi$ – i.e. event with costly participation

Based on $\hat{\psi}$, there are four cases 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 first chooses to organize any event, then if $s = 1$, the event will fail to have a sufficiently high level of participation to convince the politician. Thus with probability π, the payoff choosing $e = 1$ will be zero. However, if $s = 0$, then an event may succeed purely by chance.

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

Therefore the payoffs to 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 $(1-\pi)\lambda\left(Q^*(2\theta\pi), N, P(\psi_i > \theta)\right) - k$.

So as long as $k > \{(1-\pi)\lambda\left(Q^*(0), N, P(\psi_i > 0)\right), (1-\pi)\lambda\left(Q^*(2\theta\pi), N, P(\psi_i > \theta)\right)\}$, then it is optimal for the firm to choose $e = 0$. This this definition isn't built on primitives, it's hard to make an assumption for k based on this. But an assumption such as $k > 1 - \pi$ would be a sufficient condition.

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

In this case the only event that can succeed is a costless event. The payoffs to 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 $\pi + (1-\pi)\lambda\left(Q^*(0), N, P(\psi_i > 0)\right) - k$.
3. If $e = 1$ and $c = 2\theta\pi$, the payoff is $(1-\pi)\lambda\left(Q^*(2\theta\pi), N, P(\psi_i > \theta)\right) - k$.

So as long as $\pi > k > 1 - \pi$ holds, then it is optimal for the firm to choose $e = 1$ and $c = 0$. As before, these inequality conditions on k are stronger than necessary – they are only sufficient conditions, but are nice in that they are based only on model primitives.

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 is a costly event. The payoffs to 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 $\pi + (1-\pi)\lambda\left(Q^*(2\theta\pi), N, P(\psi_i > \theta)\right) - k$.

So as long as $\pi > k > 1 - \pi$ holds, then 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 each of the firm's options are as follows:

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 not optimal for the firm to not hold an event. So the big question is: which type of event should the firm hold given that both are likely to be successful?

It all comes down to comparing $\lambda\left(Q^*(0), N, P(\psi_i > 0)\right)$ and $\lambda\left(Q^*(2\theta\pi), N, P(\psi_i > \theta)\right)$. Based on model primitives, it is ambiguous which one is larger. In general $P(\psi_i > 0) > P(\psi_i > \theta)$, which would make the likelihood of a costless event succeeding by chance higher, but also $Q^*(0) > Q^*(2\theta\pi)$, which means that a costless event also requires a higher number of participants to succeed by chance. We could make a vague assumption that says that F is such that this inequality tips in a particular direction, but it would be nice to do this based on primitives.

Another option is to not make any assumptions, and have two different PBNEs that depend on which way the inequality lies.

Anyways, this exhausts the firm's strategy choices, and shows what is indeed optimal.

$\square$