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Abstract

Can public mood swings that make *all* voters undergo ideological shifts towards a policy, hurt the electoral performance of that policy? The answer has an interesting connection with the operations of an apolitical, viewership-maximizing dominant media. The media chooses news quality about fundamental uncertainties. Ex-ante preferences and news quality affect the voters' value for information and viewership, influencing ex-post policy preferences and votes. We find that public mood swings in a policy's favor can hurt its electoral performance by affecting the news quality, crowding out the mass ideological gain that initiates the favorable swing.

Keywords: Mood swings, Media coverage, Media viewership, Elections.

JEL Codes: D02, D72, D82.

1 Introduction

Political parties welcome favorable shifts in public mood. Such shifts bolster their ideological stand irrespective of whether they are strategically orchestrated or exogenously caused. Terror attacks nudge voters to become ideologically more aligned with parties who are expected to support enhanced vigilance. Financial

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scams push citizens closer to political ideologies that advocate stringent regulatory policies. Economic slowdowns increase the popularity of politicians known for taking bold decisions in the past.¹

In this paper, we show that favorable mood swings can lead to a reduction in electoral support when a non-partisan viewership-maximizing media supplies information about underlying uncertainties. This observation adds a new dimension in the political economy literature. We point out that mood swings bring about changes in the demand for information about fundamental uncertainties that can in turn impact the quality of media coverage. We then show that the altered nature of news can affect the voting behavior adversely and reduce the expected votes for the policy that gains such an ideological advantage. It can even defeat the favored policy!

A ‘perverse’ possibility such as this is indeed not expected to be universal. Our theoretical objective is to provide conditions under which it can occur. We employ a canonical model of elections with a continuum of voters. Each voter has to choose between two fixed policies and the social decision is reached via majority voting. These policies are agendas of ideologically stringent political parties who are unable to credibly change their well-established platforms, at least in the short run. The optimal policy for each voter depends on her single-peaked ideological preference and the common prior over an uncertain binary state. A public mood swing induces a shift of the bliss points of *all* voters in the same direction.

Prior to voting, each voter has an option to incur a personal cost and obtain additional information about the uncertain state from the media. We look at the operations of a dominant media outlet that has no ideological interest in politics. The media estimates the demand for news that constitutes the mass of voters who are willing to incur the cost to access the media. This demand depends on the size of the existing uncertainty, the two contesting policies, the distribution of the voters’ bliss points, and the quality of coverage. Coverage is costly to the media and the media chooses the coverage quality in order to maximize its viewership net of coverage costs.

As a viewership driven organization, the media cares only about those voters for whom there is value for the information that the media can provide. We call them the ‘potential swing voters.’ These voters are ideologically centrist in

¹There is a large literature (De Neve (2013), Durr (1993), Kim and Fording (2001), Markussen (2008), Rockey and Pickering (2011), and Kayser (2009)) asserting that changing economic conditions deeply influence ideological positions of voters.

general, and their votes depend critically on the information that the media can generate.² We show that a public mood swing hurts the expected vote share of the party that is favored by the shift only if either (i) the distribution of voters' bliss points is concave, both before and after the mood swing, and the quality of media coverage goes down once the shift is experienced, *or* (ii) the distribution is convex, both before and after the mood swing, and the quality of media coverage goes up. In the former case, mood swings dampen public information. This shrinks the mass of swing voters, leading to polarization. In addition, it makes the media more likely to suppress good news for the favored party, hurting (and overcrowding) its electoral gains from the mood swing. In the latter case, it improves public information and enlarges the mass of swing voters. This reduces polarization but exposes the shortcomings, if any, of the same party. As a consequence, the favored party's expected vote share falls. We then show that this surprising possibility extends even to the probability of electoral victory.

The remainder of the paper is structured as follows. The model is formally described in Section 2. Sections 3, 4 and 5 deal with the analysis and the main result. We conclude in Section 6 with a literature review and a broad discussion about the implications of the theory. Technical proofs are provided in an appendix.

2 Model

A continuum of voters with unit mass are identified by their ideological bliss points $v \in \mathbb{R}$ that are distributed according to a distribution $F(\cdot)$ with density function $f(\cdot)$. The voters choose one of two policies $t \in \{x, y\}$, $x < y$, through a majoritarian election. They face an uncertain state $\omega \in \{\omega_1, \omega_2\}$ such that $\omega_1 < \omega_2$, with p being the common prior probability that the state is ω_1 . The payoff of voter v in state ω from policy t is

$$u(t|v, \omega) = -(v + \omega - t)^2.$$

Information about the unknown state ω can be obtained from a media outlet. In particular, any voter can access the media at an individual cost of $S > 0$ and,

²To obtain clear results, we impose a regularity condition on the distribution of voters' bliss points so that on the ideology-domain of the potential swing voters, the cumulative distributions are either concave or convex or linear. This restriction still allows for a large class of distributions, including the Normal distribution, since the relevant subdomain of swing voters can be appropriately chosen. In addition, our main result is not hostage to this restriction. However analytical characterizations for arbitrary distributions do not add anything to the insights of the phenomenon we showcase.

conditional on access, the media reveals the true state with probability Q (while with probability $1 - Q$, media is uninformative) to all its viewers. We interpret Q as the size of media coverage and hence a proxy for quality of media news. The media incurs a cost $C(Q)$ to supply Q , where C is twice continuously differentiable with $C'(\cdot) \geq 0$, $C''(\cdot) \geq 0$ and $C(0) = 0$. The media knows the distribution F and the two contesting policies, and its sole objective is to choose Q in order to maximize viewership net of the cost of coverage.

The timing of events and activities are as follows. First, nature determines the true state ω that remains unknown to all, with common prior p . Then media announces a coverage quality Q . Upon observing Q , each voter decides whether to incur the cost S and access the media or not. If a voter does not access the media, then he votes based only on the prior p ; otherwise, if a voter accesses the media, then he observes the outcome of media coverage and then votes according to his post-coverage information. We study the perfect Bayesian equilibrium of this game. We are interested in how the expected vote shares of the two policies change when the distribution $F(\cdot)$ undergoes a first-order-stochastic-dominance (FOSD) shift. Such shifts capture an aggregate mood swing towards policy y .³

3 Media access and voting

Voters are expected utility maximizers and vote sincerely.⁴ That is, depending upon the information they have, each voter votes for the policy that, if implemented, yields higher expected utility. Let $\bar{t} = \frac{x+y}{2}$. For each prior p , define the cutoff voter

$$v_p = \bar{t} - (p\omega_1 + (1-p)\omega_2).$$

Without media coverage (viz. $Q = 0$), all voters $v < v_p$ vote for x and all voters $v > v_p$ vote for y . Clearly, the cutoff v_p is independent of the distribution of voter ideologies.

Additional information from the media is valuable for a voter only if he expects such information to alter his behavior from what is specified above. As a consequence, those who are far on the left of the ideology line will be expected to vote for policy x irrespective of the state, while those far to the right would be expected to vote for policy y . As acquiring media access comes with a positive

³When all voters undergo a rightward shift in their bliss points, it leads to an FOSD shift in F . However, the reverse is not necessarily true. Our results apply for any FOSD shift.

⁴Sincere voting is a natural assumption given the large election framework.

cost S , this would imply that centrist voters (with bliss points relatively close to v_p) are those who are likely to pay the access fee S .

For a fixed Q , define two cutoff voters

$$\underline{v}(Q) = \min \left\{ \bar{t} - \omega_2 + \frac{S}{2Q(1-p)(y-x)}, v_p \right\}$$

and

$$\bar{v}(Q) = \max \left\{ v_p, \bar{t} - \omega_1 - \frac{S}{2Qp(y-x)} \right\},$$

and note that for any $0 \leq p \leq 1$ and $0 \leq Q \leq 1$, we have

$$v_p = p\bar{v}(Q) + (1-p)\underline{v}(Q).$$

The following lemma identifies voters who access media coverage and then describes the voting behavior of all voters in the presence of media activity.

Lemma 1. *Suppose the media supplies coverage of quality Q . Voters $v < \underline{v}(Q)$ and $v > \bar{v}(Q)$ do not access media coverage and vote for x and y respectively. The rest of the voters with valuation $\underline{v}(Q) < v < \bar{v}(Q)$ access the media; moreover, (i) if coverage reveals the true state, then they all vote for x if the revealed state is ω_1 , and otherwise all vote for y , and (ii) if coverage reveals no information, then all $v < v_p$ vote for x and all $v > v_p$ vote for y .*

We call voters in the interval $[\underline{v}(Q), \bar{v}(Q)]$ the *swing voters*. Absent media information, those amongst them who fall to the left of v_p vote for x while those to the right vote for y . However, with the arrival of media news, they vote according to what the media reveals. Figure 1 depicts the dependence of the identity and size of these swing voters on the quality of coverage Q . As Q rises, the range of the swing voters' domain becomes larger, spreading on both sides of v_p .

In Figure 1 we also depict the potential swing voter's domain $[v_{min}, v_{max}]$ defined as $\underline{v}(1)$ and $\bar{v}(1)$ respectively, and given by

$$v_{min} = \bar{t} - \omega_2 + \frac{S}{2(1-p)(y-x)} \text{ and } v_{max} = \bar{t} - \omega_1 - \frac{S}{2p(y-x)}.$$

Voters outside this interval will never access the media. The media's attention will therefore be restricted to the voters in the set $[v_{min}, v_{max}]$.

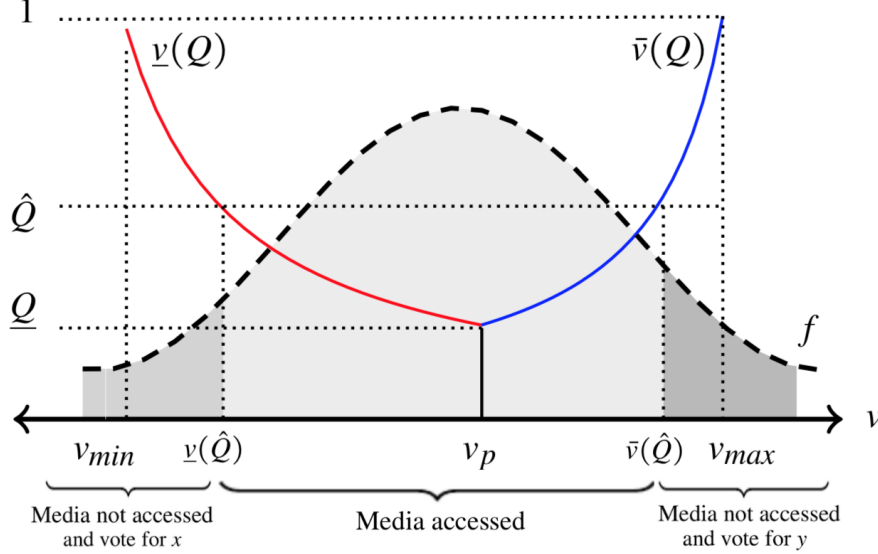


Figure 1: Voting behavior and the potential swing voters for an arbitrary coverage quality \hat{Q}

4 Media coverage

The media anticipates the voting behavior depicted in Figure 1 and, for each choice of Q , can compute the size of viewership $\mathcal{V}(Q)$ (the light grey area in Figure 1 under the density function f) given by

$$\mathcal{V}(Q) = \int_{\underline{v}(Q)}^{\bar{v}(Q)} f(v) dv.$$

Thus, the media's problem reduces to:

$$\text{Max}_{Q \in [0,1]} \Pi(Q) = \mathcal{V}(Q) - C(Q). \quad (1)$$

It is easy to verify (as shown in Figure 1) that if $Q \leq \underline{Q} = \frac{S}{2p(1-p)(y-x)(\omega_2 - \omega_1)}$, we have $\underline{v}(Q) = \bar{v}(Q) = v_p$, which means no one is buying information for coverage quality below this threshold. We assume that the distribution of voters' ideal points and the media's cost of coverage are such that there is a unique interior solution in the interval $[\underline{Q}, 1]$, characterized by the first order conditions $\frac{d\Pi}{dQ} = 0$. We denote that solution by Q_f^* . We also note that the restrictions on the

distribution function required to fulfil this assumption need only be over the interval $[v_{min}, v_{max}]$ of the potential swing voters. In what follows we will consider distributions that satisfy the following *regularity condition* with respect to this important subdomain: for any $F(\cdot)$ defined over \mathbb{R} , F is either concave, or convex, or linear over $[v_{min}, v_{max}]$.

5 Mood swing, media reaction, and votes

The expected vote share $\mu(x|Q^*; F)$ of policy x when the media optimally selects the coverage quality Q_f^* given by

$$\mu(x|Q_f^*; F) = (1 - Q_f^*)F(v_p) + Q_f^*[pF(\bar{v}(Q^*)) + (1 - p)F(\underline{v}(Q^*))]. \quad (2)$$

We assume that the original distribution F becomes G such that, for each $v \in \mathbb{R}$, we have $F(v) \geq G(v)$. In other words, the mood swing favors policy y . Denote by Q_g^* as the (possibly new) optimal response of the media under $G(\cdot)$ and let $\Delta(x|F \rightarrow G) = \mu(x|Q_g^*; G) - \mu(x|Q_f^*; F)$ denote the change in the expected vote share of policy x due to this mood swing. Then,

$$\begin{aligned} \Delta(x|F \rightarrow G) &= (Q_g^*[pG(\bar{v}(Q_g^*)) + (1 - p)G(\underline{v}(Q_g^*))] + (1 - Q_g^*)G(v_p)) \\ &\quad - (Q_f^*[pF(\bar{v}(Q_f^*)) + (1 - p)F(\underline{v}(Q_f^*))] + (1 - Q_f^*)F(v_p)). \end{aligned} \quad (3)$$

First note that $\Delta(x|F \rightarrow G) > 0$ only if $Q_f^* \neq Q_g^*$. This implies that while the media may not be sufficient for an unfavorable mood swing to become useful for policy x , it is indeed necessary in our set up that the media exists and its coverage is sensitive to mood swings. For the media to increase (decrease) coverage after the mood shift, it must be that $\mathcal{V}''(Q_f^*|g) > (<) \mathcal{V}''(Q_f^*|f)$. This implies that $Q_g^* > Q_f^*$ if and only if

$$[f(\underline{v}(Q_f^*)) - g(\underline{v}(Q_f^*))] \frac{d\underline{v}(Q_f^*)}{dQ} > (<) [f(\bar{v}(Q_f^*)) - g(\bar{v}(Q_f^*))] \frac{d\bar{v}(Q_f^*)}{dQ}. \quad (4)$$

We now state our result. It provides a set of necessary conditions for $\Delta(x|F \rightarrow G) > 0$.

Proposition 1. *Suppose G is a FOSD of F and $\Delta(x|F \rightarrow G) > 0$. Then either (i) F and G are both concave on the subdomain $[v_{min}, v_{max}]$ and $Q_f^* > Q_g^*$, or (ii) F and G are both convex on the subdomain $[v_{min}, v_{max}]$ and $Q_f^* < Q_g^*$.*

Proposition 1 shows that the only two situations where a favorable mood swing can be detrimental for policy y are when both the distributions are concave or both are convex on the domain of potential swing voters. The main driving force for this result is certainly not hostage to the regularity assumption (that we have imposed on the distributions to obtain clear results). It lies in the fact that irrespective of the nature of the distributions, it is necessary that a mood swing changes the quality of media coverage in a particular way. Under any mood swing favoring policy y , the vote share of policy x , when media reveals no information, can only (weakly) fall (since $F(v_p) \geq G(v_p)$). So the crucial element that overpowers this loss is the gain, if any, in the vote share of policy x when the media is informative. When media provides the information, it is ω_1 with probability p and ω_2 with probability $1 - p$. Hence, the vote share of policy x is $pF(\bar{v}(Q_f^*)) + (1 - p)F(\underline{v}(Q_f^*))$ under F and $pG(\bar{v}(Q_g^*)) + (1 - p)G(\underline{v}(Q_g^*))$ under G . If F and G are regular but not both concave or not both convex, as G FOSD F , it follows that for any p , $pF(\bar{v}(Q_f^*)) + (1 - p)F(\underline{v}(Q_f^*))$ is (weakly) larger than $pG(\bar{v}(Q_g^*)) + (1 - p)G(\underline{v}(Q_g^*))$. Hence, it is necessary for $\Delta(x|F \rightarrow G) > 0$ that either both the distributions are concave or both are convex. In addition, when both are concave, a decrease in coverage (the condition for which is given in (4)) as a result of the mood swing from F to G becomes necessary as well. It is the only way some convex combination of $F(\bar{v}(Q_f^*))$ and $F(\underline{v}(Q_f^*))$ can be lower than the same convex combination of $G(\bar{v}(Q_g^*))$ and $G(\underline{v}(Q_g^*))$, providing a scope for $pG(\bar{v}(Q_g^*)) + (1 - p)G(\underline{v}(Q_g^*))$ to rise above $pF(\bar{v}(Q_f^*)) + (1 - p)F(\underline{v}(Q_f^*))$. Finally, when both the distributions are convex, the exact opposite reaction from the media is necessary. These features are clearly shown in Figures 2 and 3 below.

Each part of Proposition 1 also allows for *robust existence* of the phenomenon we are after. An example under case (i) is as follows (see Figure 2, not drawn to scale). The two contesting policies are $x = -1$ and $y = 0.85$. The two uncertain states are $\omega_1 = -1$ and $\omega_2 = 1$ with prior $p = 0.6674$. Suppose the personal cost borne by the voters to acquire media coverage is $S = 0.5$. Given these values, the domain of potential swing voters is $[v_{min}, v_{max}] = [-0.6687, 0.7225]$ and $v_p = 0.2598$. Let $F(\cdot)$ be the initial distribution such that for each $v \in [-0.6687, 0.7225]$, it takes the form $F(v) = \sqrt{v + \frac{779}{1000}} - \frac{1}{4}$. Let the cost of coverage borne by the media be $C(Q) = \frac{35Q^2}{100}$. The media's optimal response turns out to be $Q_f^* = 0.9942$ that yields itself a viewership range of $[\underline{v}_f(Q_f^*), \bar{v}_f(Q_f^*)] = [-0.6663, 0.7213]$. The expected vote share of policy x is 0.6796. Suppose now that there is a mood swing and F undergoes a FOSD shift to a new distribution G such that on $[v_{min}, v_{max}]$, we have $G(v) = \frac{22}{10} \log(v + \frac{16}{10}) + \frac{6}{40}$. As a consequence, the op-

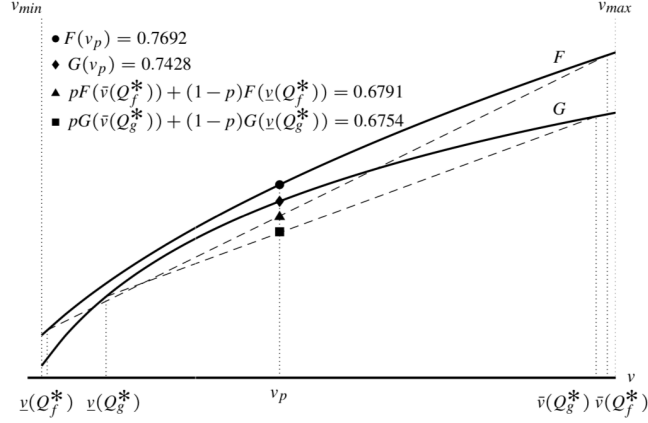


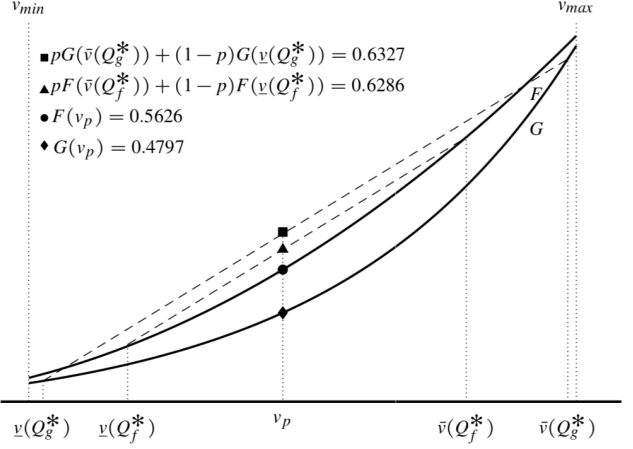
Figure 2: Mood swing, media activity, and vote share with concave F and G .

timal coverage drops to $Q_g^* = 0.8805$ and the new viewership range shrinks to $[\underline{v}_g(Q_g^*), \bar{v}_g(Q_g^*)] = [-0.6135, 0.6950]$. The expected vote share of policy x rises to 0.6834.

Our next example is on part (ii) of the Proposition 1 when both distributions are convex on the domain of swing voters. Figure 3 depicts the details (not drawn to scale). In this example the two policies are $x = -1.1$ and $y = 0.8$ and the two states are $\omega_1 = -1$ and $\omega_2 = 1$ with prior $p = 0.54$. The critical voter $v_p = -0.07$. The coverage cost is linear and given by $C(Q) = \frac{43Q}{100}$ and the voter's access cost is equal to $S = 0.6$. We start with the original distribution F that, over the domain $[v_{min}, v_{max}] = [-0.8067, 0.5576]$, is given by $F(v) = \frac{1}{2}(\frac{56v}{100} + \frac{11}{10})^2$. The media optimally sets coverage $Q_f^* = 0.9108$ for which it obtains a viewership range of $[\underline{v}_f(Q_f^*), \bar{v}_f(Q_f^*)] = [-0.7731, 0.5289]$. The expected vote share of policy x is 0.6227. From here, the electorate experiences an FOSD shift and we obtain a new distribution G that, over the domain $[v_{min}, v_{max}]$, is $G(v) = \frac{1}{2}e^{\frac{12v}{10}} + \frac{2}{100}$. The media now increases its coverage to $Q_g^* = 0.9879$, thereby increasing its coverage base to $[\underline{v}_g(Q_g^*), \bar{v}_g(Q_g^*)] = [-0.8025, 0.5540]$. The expected vote share of policy x rises to 0.6308.

5.1 On electoral victory

We have so far looked at the impact of mood swings on the expected vote shares. We now study the impact on electoral victory. This depends on the relative loca-

Figure 3: Mood swing, media activity, and vote share with convex F and G .

tions of the median voters of the two distributions F and G , vis á vis those of the critical voters $v_f(Q_f^*)$, $v_g(Q_g^*)$, $\bar{v}_f(Q_f^*)$, $\bar{v}_g(Q_g^*)$ and v_p .

We use the above two examples along with a third one to illustrate two features of mood swings and votes. First, that favorable mood swings can hurt a party in both expected vote share as well as its winning probability. Second, that one does not imply the other. Let v_f^m and v_g^m be the two median voters under the distributions F and G respectively, and, given G FOSSD F , it follows that $v_g^m > v_f^m$.

Rise in vote share and victory probability of policy x: Consider the first example (as in Figure 2) where both F and G are concave in the domain of media interest and where a favorable mood swing for policy y increases the expected vote share of party x . The locations of the critical voters are given by: $v_f(Q_f^*) = -0.6663$, $v_g(Q_g^*) = -0.6135$, $v_f^m = -0.2165$, $v_g^m = -0.1576$, $v_p = 0.2598$, $\bar{v}_g(Q_g^*) = 0.695$ and $\bar{v}_f(Q_f^*) = 0.7213$ with $Q_f^* = 0.9942$, $Q_g^* = 0.8805$ and $p = 0.6674$. Since both v_f^m and v_g^m are less than v_p , a majority votes for policy x under both the distributions when the media brings no additional information (that occurs with probability $1 - Q_f^*$ and $1 - Q_g^*$ under F and G respectively). On the other hand, when the media reveals the state, policy x gains a majority under both the distributions only when the revealed state is ω_1 since $v_f(Q_f^*) < v_f^m < \bar{v}_f(Q_f^*)$ and $v_g(Q_g^*) < v_g^m < \bar{v}_g(Q_g^*)$. Thus, $\Pr(x \text{ wins under } F) = (1 - Q_f^*) + Q_f^*p = 0.6693$ and $\Pr(x \text{ wins under } G) = (1 - Q_g^*) + Q_g^*p = 0.7071$. So this is an example where both the vote share and the probability of electoral victory for policy x rise as the public mood shifts towards

policy y .

Rise in vote share and fall in victory probability of policy x : Consider next the second example (Figure 3) where both F and G are convex in the domain of media interest and where a favorable mood swing for policy y again increases the expected vote share of party x . The critical values in this example are given by: $\underline{v}_g(Q_g^*) = -0.8025$, $\underline{v}_f(Q_f^*) = -0.7731$, $v_f^m = -0.1786$, $v_p = -0.07$, $v_g^m = -0.034$, $\bar{v}_f(Q_f^*) = 0.5289$ and $\bar{v}_g(Q_g^*) = 0.5540$, with $Q_f^* = 0.9108$, $Q_g^* = 0.9879$ and $p = 0.54$. Under the original distribution F , we have $v_f^m < v_p$ and $\underline{v}_f(Q_f^*) < v_f^m < \bar{v}_f(Q_f^*)$. Hence, like in the above example, $\Pr(x \text{ wins under } F) = (1 - Q_f^*) + Q_f^*p = 0.5810$. On the other hand, under the new distribution, $v_g^m > v_p$. Thus, when the media brings no information, policy x loses. Hence the only event when policy x wins is when the media brings information that the state is ω_1 , since $v_g^m < \bar{v}_g(Q_g^*)$. Thus, $\Pr(x \text{ wins under } G) = Q_g^*p = 0.5334$. So this is an example where the vote share of policy x rises but the probability of its electoral victory falls as the public mood shifts towards policy y .

Fall in vote share and rise in victory probability of policy x : We now construct a third example to show that the vote share of policy x can fall when the probability of its electoral victory rises as the public mood shifts towards policy y . Let the two policies be $x = -1.09$ and $y = 0.8$ and the two states be $\omega_1 = -1$ and $\omega_2 = 1$ with prior $p = 0.65$. The critical voter $v_p = 0.155$. The coverage cost is linear and given by $C(Q) = \frac{44Q}{100}$ and the voter's access cost is equal to $S = 0.6$. We start with the original distribution F that, over the domain $[v_{min}, v_{max}] = [-0.6914, 0.6107]$, is given by $F(v) = \frac{448e^v}{1000}$. The media optimally sets coverage $Q_f^* = 0.8303$ for which it obtains a viewership range of $[\underline{v}_f(Q_f^*), \bar{v}_f(Q_f^*)] = [-0.5987, 0.5608]$. The expected vote share of policy x is 0.5839. From here, the electorate experiences an FOSD shift and we obtain a new distribution G that, over the domain $[v_{min}, v_{max}]$, is $G(v) = \frac{4}{10}(v + \frac{111}{100})$. The media now decreases its coverage to $Q_g^* = 0.7964$, thereby decreasing its coverage base to $[\underline{v}_g(Q_g^*), \bar{v}_g(Q_g^*)] = [-0.5755, 0.5483]$. The expected vote share of policy x decreases to 0.506, confirming Proposition 1. The median voters of the two distributions are given by $v_f^m = 0.1098$, $v_g^m = 0.14$. Hence, the critical values have the following order: $\underline{v}_f(Q_f^*) = -0.5987$, $\underline{v}_g(Q_g^*) = -0.5755$, $v_f^m = 0.1098$, $v_g^m = 0.14$, $v_p = 0.155$, $\bar{v}_g(Q_g^*) = 0.5483$ and $\bar{v}_f(Q_f^*) = 0.5608$. Following the explanation under the first example above, we have $\Pr(x \text{ wins under } F) = (1 - Q_f^*) + Q_f^*p = 0.7093$ and $\Pr(x \text{ wins under } G) = (1 - Q_g^*) + Q_g^*p = 0.7212$.

6 Concluding discussion

In this paper, we identify the role of an apolitical viewership-seeking media in hurting a party's electoral performance, both in terms of reduced expected vote share and the probability of victory, when the party experiences a favorable mood swing. In electoral politics, parties generally run positive campaigns that extol the virtues of the party, or negative campaigns that belittle the achievements of its rival. In fact, most elections generate combinations of these two types of campaigns used by parties in order to generate mood swings in their favor. Our work provides careful qualifications to the effects of such mass campaigns. In particular, we show that when the dominant media chases viewership, the parties need to be cognizant of the repercussion that mood swings will have on the information disbursement mechanism, and the resultant composite effect that defines ultimate voter behavior. This suggests an interesting dimension to electoral tactics, where candidates can wilfully orchestrate moves to eulogize their opponents or malign themselves in controlled amounts, and increase the chances of winning the elections in the process.

Central to our theoretical narrative is the media whose defining role in a vibrant democracy cannot be overstated. The literature on media's influence on politics is large and mostly concerned with media bias.⁵ Mullainathan and Shleifer (2005) derive ex-post media bias as an outcome of viewership-maximizing news slants in order to attract readership from a population with heterogenous tastes. They show that a monopolist media facing rational voters with heterogenous preferences never engages in biased news.⁶ This behavior on the part of the media is ingrained into our framework. The media may vary its quality of coverage, but there is no scope for strategic slants.

The media we model is politically disinterested, and cares only about maximizing its viewership subject to the cost of coverage. Our results are robust to whether this objective is based on profit motives met through subscription fees, or popularity net of operational costs where revenues come from commercial advertisements. Prat (2018) shows that viewership is in fact instrumental in empirically determining the existing media power to influence electoral outcomes. The

⁵See for example, Andina-Diaz (2006), Della Vigna and Kaplan (2007), Chiang and Knight (2008), Duggan and Martinelli (2011), Anderson and McLaren (2012), Chakraborty et al. (2016), and Wolton (2018). For excellent surveys, see Prat and Stromberg (2013), Stromberg (2015), Stone (2015) and Gentzkow et al. (2014).

⁶See also Oliveros and Vardi (2014) and Galvis et al. (2016) for more on media market and strategic media bias.

assumption of viewership-maximizing behavior of the media is also consistent with the findings in Genztkow and Shapiro (2010) that the slant that a newspaper chooses is on average close to what it would have chosen if it had “independently maximized its own profits.” Moreover, according to George and Waldfogel (2006), the media not only slants the news but chooses the stories to cover or ignore. We show that the transformed viewership base owing to the mood swing may galvanize the media into disseminating more precise news that goes against the interests of the party. It may also lull the media into not covering news items that would have enlarged the voter base of the party. In either of these cases, the loss from the altered news quality may override the gain from the public mood swing, thereby making the party lose out.

If it comes to electoral competition in an environment where the voters face uncertainties, our framework is more in the spirit of the citizen candidate model a la Osborne and Slivinski (1996). The two contesting policies represent two citizens whose known platforms are the policies x and y . In addition, voters are not sure about how to evaluate these policies in face of uncovered fundamental uncertainties about which they need to acquire costly information from an outside source. Carrillo and Castanheira (2008) allow parties to choose platforms and invest in enhancing the quality of leadership strategically. Voters observe platform choices, are uncertain about the quality of each party, and obtain free information about it that is imperfect. Costly information acquisition on the part of the voters is studied in Matejka and Tabellini (2018). Voters are more attentive when their stakes are higher, when their cost of information is lower and prior uncertainty is higher. These features are present in our framework as well though in their model voters vary in their private information. In our framework, voters have a common prior but their ex-post information vary in equilibrium depending upon their bliss points that determine their decision about media access.

Another effect of an apolitical media can be found in Bandyopadhyay et al. (2019) where an unknown challenger with high quality deliberately takes unpopular platforms in order to generate value for information about his quality. Information is not free but can only be supplied by a profit-seeking media outlet. They show that totally apolitical profit-seeking motives of the media can generate extremist platforms. While the impact of profit motives on electoral outcomes has been studied, these papers do not look at mood swings. Strategic platform choice in the presence of a public mood swing and a viewership maximizing media remains an interesting question for future investigation.

7 Appendix

Proof of Lemma 1: If the voter buys no information then he votes according to his prior and his expected utility is given by $u(v)$.

$$u(v) = \begin{cases} -p(v + \omega_1 - x)^2 - (1-p)(v + \omega_2 - x)^2, & \text{if } v < v_p \\ -p(v + \omega_1 - y)^2 - (1-p)(v + \omega_2 - y)^2, & \text{if } v > v_p \end{cases}$$

If the voter pays S to get information then his expected utility is

$$-S + (1-Q)u(v) + Q(pu(v|\omega_1) + (1-p)u(v|\omega_2)),$$

where $u(v|\omega)$ is the utility when voter knows the true state ω , given by

$$u(v|\omega_1) = \begin{cases} -(v + \omega_1 - x)^2, & \text{if } v < \frac{y+x-2\omega_1}{2} \\ -(v + \omega_1 - y)^2, & \text{if } v > \frac{y+x-2\omega_1}{2} \end{cases}$$

$$u(v|\omega_2) = \begin{cases} -(v + \omega_2 - x)^2, & \text{if } v < \frac{y+x-2\omega_2}{2} \\ -(v + \omega_2 - y)^2, & \text{if } v > \frac{y+x-2\omega_2}{2} \end{cases}$$

We first show that for $p \in (0, 1)$, we have $\frac{y+x-2\omega_2}{2} < v_p < \frac{y+x-2\omega_1}{2}$. Pick any $p \in (0, 1)$. Since $\omega_2 > \omega_1$ and therefore, $\frac{y+x-2\omega_2}{2} < \frac{y+x-2\omega_1}{2}$. Since $v_p = \frac{y+x-2p\omega_1-2(1-p)\omega_2}{2} = \frac{y+x-2\omega_2}{2} + p(\omega_2 - \omega_1) > \frac{y+x-2\omega_2}{2}$. As $p < 1$, we get $\frac{y+x}{2} + p(\omega_2 - \omega_1) < \frac{y+x}{2} + (\omega_2 - \omega_1)$. Rearranging the terms, we get $v_p < \frac{y+x-2\omega_1}{2}$.

We now show that no one buys information for $v \in \left(-\infty, \frac{y+x-2\omega_2}{2}\right) \cup \left(\frac{y+x-2\omega_1}{2}, \infty\right)$.

Pick a $v \in \left(-\infty, \frac{y+x-2\omega_2}{2}\right)$. If voter does not buy information then his expected utility is

$$-p(v + \omega_1 - x)^2 - (1-p)(v + \omega_2 - x)^2 \quad (5)$$

If voter buys information then his expected utility is

$$\begin{aligned} & -S - (1-Q)(p(v + \omega_1 - x)^2 + (1-p)(v + \omega_2 - x)^2) \\ & -Q(p(v + \omega_1 - x)^2 + (1-p)(v + \omega_2 - x)^2) \\ & = -S - p(v + \omega_1 - x)^2 - (1-p)(v + \omega_2 - x)^2 \\ & < -p(v + \omega_1 - x)^2 - (1-p)(v + \omega_2 - x)^2. \end{aligned}$$

Next pick a $v \in \left(\frac{y+x-2\omega_1}{2}, \infty\right)$. If the voter does not buy information then his expected utility is

$$-p(v + \omega_1 - y)^2 - (1-p)(v + \omega_2 - y)^2 \quad (6)$$

If voter buys information then his expected utility is

$$\begin{aligned} & -S - (1-Q)(p(v + \omega_1 - y)^2 + (1-p)(v + \omega_2 - y)^2) \\ & -Q(p(v + \omega_1 - y)^2 + (1-p)(v + \omega_2 - y)^2) \\ & = -S - p(v + \omega_1 - y)^2 - (1-p)(v + \omega_2 - y)^2 \\ & < -p(v + \omega_1 - y)^2 - (1-p)(v + \omega_2 - y)^2. \end{aligned}$$

Lastly we show the existence of $\underline{v}(Q)$ and $\bar{v}(Q)$. Pick a $v \in \left(\frac{y+x-2\omega_2}{2}, v_p\right)$. If voter does not buy information then his expected utility is given by 5. If he buys information then his expected utility is

$$\begin{aligned} & -S - (1-Q)(p(v + \omega_1 - x)^2 + (1-p)(v + \omega_2 - x)^2) \\ & -Q(p(v + \omega_1 - x)^2 + (1-p)(v + \omega_2 - y)^2) \\ & = -S - p(v + \omega_1 - x)^2 - (1-p)(v + \omega_2 - x)^2 \\ & \quad + Q(1-p)((v + \omega_2 - x)^2 - (v + \omega_2 - y)^2) \end{aligned} \quad (7)$$

Note that 7 = 5 gives

$$-S + Q(1-p)((v + \omega_1 - x)^2 - (v + \omega_2 - y)^2) = 0$$

Solving this we get, $\underline{v} = \frac{S}{2Q(1-p)(y-x)} + \frac{y+x-2\omega_2}{2}$. Note that $\underline{v} > \frac{y+x-2\omega_2}{2}$

because $\frac{S}{2Q(1-p)(y-x)} > 0$. Therefore, we just need to ensure that $\underline{v} < v_p$ i.e.,

$$\frac{S}{2p(1-p)(y-x)(\omega_2 - \omega_1)} < Q \quad (8)$$

Note that when $Q \leq \frac{S}{2p(1-p)(y-x)(\omega_2 - \omega_1)}$ then $\underline{v} \geq v_p$, which is outside the given interval. Therefore, we can write

$$\underline{v}(Q) = \min \left\{ \frac{S}{2Q(1-p)(y-x)} + \frac{y+x-2\omega_2}{2}, v_p \right\}.$$

Also, notice that for any $v \in \left(\frac{y+x-2\omega_2}{2}, \underline{v}\right)$, then voter does not buy information and vote for policy x . And for $v \in (\underline{v}, v_p)$ then voter buys information and vote accordingly.

Next, pick a $v \in \left(v_p, \frac{y+x-2\omega_1}{2}\right)$. If voter does not buy information then his expected utility is given by 6. If he buys information then his expected utility is

$$\begin{aligned} & -S - (1-Q)(p(v+\omega_1-y)^2 + (1-p)(v+\omega_2-y)^2) \\ & -Q(p(v+\omega_1-x)^2 + (1-p)(v+\omega_2-y)^2) \\ & = -S - p(v+\omega_1-y)^2 - (1-p)(v+\omega_2-y)^2 + Qp((v+\omega_2-y)^2 - (v+\omega_2-x)^2) \end{aligned} \quad (9)$$

Note that 9 = 6 gives

$$-S + Qp((v+\omega_1-y)^2 - (v+\omega_2-x)^2) = 0$$

Solving this we get $\bar{v} = \frac{y+x-2\omega_1}{2} - \frac{S}{2Qp(y-x)}$. Note that $\bar{v} < \frac{y+x-2\omega_1}{2}$ because $-\frac{S}{2Qp(y-x)} < 0$. Therefore, we just need to ensure that $\bar{v} > v_p$. i.e

$$\frac{S}{2p(1-p)(y-x)(\omega_2-\omega_1)} < Q \quad (10)$$

Note that when $Q \leq \frac{S}{2p(1-p)(y-x)(\omega_2-\omega_1)}$ then $\bar{v} \leq v_p$, which is outside the given interval. Therefore, we can write

$$\bar{v}(Q) = \max \left\{ v_p, \frac{y+x-2\omega_1}{2} - \frac{S}{2Qp(y-x)} \right\}$$

Also, notice that for any $v \in (v_p, \bar{v})$, voter buys information and vote accordingly.

And for $v \in \left(\bar{v}, \frac{y+x-2\omega_1}{2}\right)$ then voter does not buy information and vote for policy y .

Proof of Proposition 1: Suppose G is a FOSD of F . On the subdomain $[v_{min}, v_{max}]$, suppose first that F is weakly convex and G is weakly concave. It follows that $F(v_p) - (pF(\bar{v}(Q_f^*)) + (1-p)F(\underline{v}(Q_f^*))) \leq 0$ and $G(v_p) - (pG(\bar{v}(Q_g^*)) + (1-p)G(\underline{v}(Q_g^*))) \geq 0$. If $\Delta(x|F \rightarrow G) > 0$, then it must be that

$$\begin{aligned} & Q_f^*[F(v_p) - (pF(\bar{v}(Q_f^*)) + (1-p)F(\underline{v}(Q_f^*)))] \\ & - Q_g^*[G(v_p) - (pG(\bar{v}(Q_g^*)) + (1-p)G(\underline{v}(Q_g^*)))] > F(v_p) - G(v_p) \geq 0, \end{aligned}$$

a contradiction.

Next, suppose F is weakly concave and G is weakly convex. Then

$$pF(\bar{v}(Q_f^*)) + (1-p)F(\underline{v}(Q_f^*)) \geq pG(\bar{v}(Q_g^*)) + (1-p)G(\underline{v}(Q_g^*)).$$

With $F(v_p) \geq G(v_p)$, we again have a contradiction.

Next suppose either F or G is linear. Note that if f is uniform on $[a, b] \supseteq [v_{min}, v_{max}]$ and G is an FOSD of F , then $\Delta(x|F \rightarrow G) \leq 0$. To see this, note that under F , the vote share of x is $F(v_p)$, while under G it is a convex combination of two values each not greater than $F(v_p)$, that is $(1 - Q_g^*)G(v_p) + Q_g^*(pG(\bar{v}(Q_g^*)) + (1-p)G(\underline{v}(Q_g^*))) < F(v_p)$. Also, if G is linear, for similar reasons, we will always have $\Delta(x|F \rightarrow G) \leq 0$ no matter what is F .

So given our regularity assumption on the distribution of voters' ideal point on $[v_{min}, v_{max}]$, what remains are cases (i) and (ii) in the statement of the proposition. So first suppose that F and G are both concave. If $Q_g^* > Q_f^*$, then $\underline{v}(Q_g^*) < \underline{v}(Q_f^*) < \bar{v}(Q_f^*) < \bar{v}(Q_g^*)$. Since G is FOSD F , it follows that $pG(\bar{v}(Q_g^*)) + (1-p)G(\underline{v}(Q_g^*)) \leq pF(\bar{v}(Q_f^*)) + (1-p)F(\underline{v}(Q_f^*))$, and $G(v_p) \leq F(v_p)$. Thus, $\Delta(x|F \rightarrow G) \leq 0$. Hence, if F and G are both concave then it must be that $Q_g^* > Q_f^*$. Finally, suppose F and G are both convex. If $Q_g^* < Q_f^*$, then $\underline{v}(Q_f^*) < \underline{v}(Q_g^*) < \bar{v}(Q_g^*) < \bar{v}(Q_f^*)$. As G is FOSD F and F and G are both convex, it follows that $pG(\bar{v}(Q_g^*)) + (1-p)G(\underline{v}(Q_g^*)) \leq pF(\bar{v}(Q_f^*)) + (1-p)F(\underline{v}(Q_f^*))$, and $G(v_p) \leq F(v_p)$. Thus, $\Delta(x|F \rightarrow G) \leq 0$.

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