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The Voters' Curses:

Why We Need Goldilocks Voters*

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Abstract

Scholars have long deplored voters' lack of interest in politics and argued in favor of greater political engagement. We present a formal theory of elections where successful communication of campaign messages requires both effort by candidates and attention from voters. Voters' interest in politics affects their attention, and impacts the effectiveness of the electoral process as a screening and disciplining device. In line with existing theories, there exists a *curse of the uninterested voter*: When voters have little interest in politics, the electoral process performs poorly, and voters' attention to politics is low. Surprisingly, we uncover a *curse of the interested voter*, by which the same happens when voters have a strong interest in politics. Our results highlight the importance of distinguishing between voters' interest and attention, two notions often conflated in empirical studies. Moreover, policy interventions aimed at subsidizing the cost of acquiring political information can have unintended consequences.

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Democracies require an active electorate to perform well. While few dispute that a representative's incentive to act in voters' interests requires their attention and oversight (Tocqueville, 1840; Mill, 1861), the extent to which voters are able to fulfill this role is heavily debated. Copious studies question voters' competence (Campbell et al., 1960; Delli Carpini and Keeter, 1996), the consistency of their beliefs (Lippmann, 1925; Converse, 1964; Zaller, 1992), and their ability to correctly attribute responsibility (Wolfers, 2002; Achen and Bartels, 2002; Leigh, 2009; Healy and Malhotra, 2009). Other scholars argue that "voters are not fools": They often choose what's best for them given the set of available alternatives (Key, 1966), the information presented to them (Popkin, 1991; Sniderman et al., 1993; Lupia and McCubbins, 1998), and the cost and benefit of collecting political information (Downs, 1957; Page, 1978). Despite this disagreement, these scholars share a common premise: A more engaged electorate increases the responsiveness of the democratic system. "Citizens do need to be more engaged in politics" and government should facilitate the fulfillment of this goal, as claimed by Delli Carpini and Keeter (1996, p.21).

This paper questions the assumption embedded in democratic theory that more political engagement always benefits voters. To this end, we present a theory of elections that distinguishes between voters' *interest* (their evaluation of the importance of politics, captured by their payoff from policy change) and *attention* (their cognitive involvement with the electoral process, captured by their effort in learning candidates' platforms). Unlike most formal models of electoral politics or political agency, our theory builds on the notion that voters choose how much political information to acquire under significant cognitive constraints. Contrary to most studies of voting behavior, we explicitly consider how strategic interactions between voters' attention and candidates' behaviors determine the set of policy options available to the electorate.

Consistent with existing theories of democratic responsiveness, we find that when voters have little interest in politics, the performance of the democratic system—measured in term of voters' welfare—is low. We term this phenomenon the *curse of the uninterested voter*. More surprisingly, we uncover a *curse of the interested voter*, whereby voters' welfare and attention to politics might also be low when voters' interest in politics is high. Our theory indicates that like Goldilocks who "likes her porridge not too cold, not too hot, likes it just

right," the best policy outcomes occur when voters care about politics not too little and not too much.

These results stem from candidates' strategic responses (policy and campaigning choices) to voters' attention, which affects the extent to which voters can actually learn from the electoral campaign. Our theory points to the importance of distinguishing between two notions of political engagement: interest and attention, which have previously been conflated empirically (e.g., Verba et al., 1997; Solt, 2008). In fact, we show that voters' lack of attention to politics is not necessarily evidence of their lack of interest. Our results also highlight how well-intentioned interventions aimed at decreasing the cost of acquiring political information might prove unsuccessful, or even counter-productive.

Our baseline theory builds upon a formal model of elections where a representative voter chooses between two candidates, who can be either competent or non-competent.[1] Candidates commit either to a status quo policy or to a new policy, which is costly to implement and more costly for a non-competent type. The new policy is beneficial to the voter only if implemented by a competent candidate and is welfare-reducing otherwise. The difference in the voter's payoff between a successful reform and the status quo policy corresponds to the voter's gain from change, and captures the notion of interest in our set-up.

Building upon Dewatripont and Tirole (2005), we propose a novel modeling approach to electoral communication, which requires communication effort by a candidate *and* attention from the voter. Specifically, the voter cannot directly observe a candidate's competence but can learn the candidate's policy platform during the electoral campaign. In line with Zaller's (1992) "reception axiom," greater attention from the voter (and greater communication effort by the candidate) increases the probability that the voter learns what the candidate will do in office. This information, however, is only an indirect and potentially imperfect signal of the candidate's competence. In our theory, while the probability of receiving candidates' campaign messages depends on the voter's attention, the quality of this signal depends on candidates' equilibrium behaviors.

For the voter, the electoral process performs best (voter welfare is higher than in any other possible equilibrium) when candidates play a separating strategy: A candidate campaigns on the new policy only if competent. Candidates' platforms are then perfect signals of

[1] Henceforth, we use the pronouns "she" and "he" for the voter and candidate, respectively.

competence. Despite the fact that commitment to the new policy entails a cost (it is not cheap talk) and this cost is lower for competent candidates (the single-crossing condition holds), the existence of a separating equilibrium also requires that the voter's gain from change lies in an intermediate range.

A separating equilibrium does not exist when the gain from change is low. Even if (only) competent candidates were to propose the new policy, the voter would pay little attention to the campaign. Consequently, there would be a low probability that the voter learns a competent candidate's commitment to a reformist platform, and the electoral reward for committing to the new policy would be too low to offset the cost of implementing it. Competent candidates therefore prefer to propose the status quo policy. When voter's interest is low, the voter would pay *too little* attention to politics to sustain the welfare-maximizing separating equilibrium. This is the *curse of the uninterested voter*.[2]

More surprisingly, a separating equilibrium does not exist when the gain from change is high. If only competent candidates were to propose the new policy, the voter would pay close attention to the campaign. There would be a high probability of successful communication and a high electoral reward for committing to the new policy. Consequently, even a non-competent candidate would prefer to campaign on the new policy (despite the high policy cost of implementing it) to improve his electoral prospects. When the voter's interest is high, the voter would pay *too much* attention to politics to sustain the welfare-maximizing separating equilibrium. This is the *curse of the interested voter*.

When the voter's interest is high, the electoral system becomes over-responsive. Non-competent candidates propose the new policy despite their inability to carry-out welfare-improving changes. Platforms become an imperfect signal of competence, and a skeptical voter decreases her attention to the campaign. High interest leads to poor democratic performance and low political attention.

While the analysis in the main text focuses on a representative voter to facilitate the comparison with existing models of political agency, the results are robust to the inclusion of multiple voters (see Section 5). Since the acquisition of political information is akin to public good provision, voters tend to free ride on each other's effort. However, they always have some incentives to pay a small but positive level of attention to the campaign. As a

[2]The term "curse" refers to situations in which the welfare-maximizing equilibrium is unattainable because of the voter's behavior.

result, the two curses persist even in large electorate, and the curse of the interested voter can become more severe as the electorate grows large.

The rest of the paper is organized as follows. Section 1 discusses how our theory contributes to the formal literature on electoral signaling and accountability. Section 2 presents our theory of elections and some general preliminary results. Section 3 describes the curses of the uninterested voter and of the interested voter. Section 4 discusses the model's normative and policy implications. Section 5 shows that our results are robust to alternative environments, including the introduction of multiple voters. Section 6 concludes. Proofs and additional results are collected in the Supplemental Appendices.[3]

1 Formal literature on signaling and accountability

Our approach to electoral communication emphasizes the idea that voters' knowledge is endogenous to both their attention level *and* to candidates' strategic decisions. In that respect, our model shares important similarities with the formal theory of deliberation in groups (Hafer and Landa, 2007; Dickson et al., 2008; Landa and Meirowitz, 2009), where the quality of information transmission is determined by the strategic interaction between receiver's choices and sender's incentives. In this literature, communication is aimed at solving a problem of information aggregation. The focus of this paper, instead, is on how electoral communication can address the problem of screening and disciplining elected representatives.

These moral hazard and adverse selection concerns are also the key departure between our paper and Dewatripont and Tirole's (2005). Our model of the communication stage builds on their model of imperfect learning. In Dewatripont and Tirole's paper, however, the sender does not face a problem of moral hazard, nor is the receiver concerned about screening competent senders. Those aspects are critical for our substantive results and cannot be foreseen from Dewatripont and Tirole's analysis.[4]

Our paper also intersects with the formal literature on political accountability, especially signaling in elections. Prominent contributions in this literature investigate the extent to

[3]The Supplemental Appendices can be found on the authors' websites: `https://sites.google.com/site/carloprato1982/research` and `http://home.uchicago.edu/swolton/Research.html`

[4]While this is beyond the scope of this paper, Dewatripont and Tirole's setting can be obtained, with slight modification, as a special case of our set-up where moral hazard (e.g., because a competent type faces no cost of implementing the new policy) and adverse selection (e.g., because a non-competent type's policy cost is greater than his benefit from holding office) are absent.

which voters can learn, via the electoral process, about politicians' competence. These studies yield important insights into two broad themes: (i) the extent to which elections can effectively screen competent politicians (Caselli et al. 2014; Gersbach, 2010; Gordon and Landa, 2009) and (ii) the extent to which suboptimal outcomes can arise as a result of politicians' incentives to use policy choices to credibly reveal information to voters (Rogoff, 1990; Fu and Li, 2014).[5] But these papers do not investigate how voter's rational (in)attention can affect political accountability: Voters face no cost in collecting and interpreting political information.[6] As our theory shows, this is not without loss of generality.

By treating voters' attention to politics as endogenous, we find a critical link between voters' interest in politics and candidates' behavior, with important implications for the performance of the electoral process as a disciplining and screening device. This inter-dependence between voters' payoffs and candidates' behavior is absent from most of the formal literature on signaling in elections, where candidates' actions depend only on their benefit from holding office. Our focus on the determinants of voters' attention allows us to recover a critical insight from signaling games. Since Spence's (1973) model of education as signaling, it is well known that a firm can screen high productivity applicants through education only if the wage premium is not too low and not too high. As a result of voters' endogenous attention, a similar feature arises in our set-up despite the fixed nature of the electoral reward (the value of holding office). But unlike a firm that can design an optimal wage schedule, voters have no way to commit to a certain level of attention. Compared to economics, signaling in electoral politics is less effective due to the curses of the uninterested and interested voters.

[5] Another important strand of the literature studies the effect of informational asymmetries regarding a politician's competence and/or policy preference in a political agency set-up, which typically results in pandering (Canes-Wrone et al. 2001; Maskin and Tirole, 2004; Prat, 2005; Fox, 2007; Ashworth and Shotts, 2010; Fox and Van Weelden, 2012; Morelli and Van Weelden, 2013), overly active politicians (Levy, 2007), or overly cautious politicians (Ashworth and Bueno de Mesquita, 2014). In a similar vein, Dewan and Hortala-Vallve (2013) show that electoral competition can induce too much risk-taking.

[6] An exception is Hortala-Vallve et al. (2012), who focus on the control of candidates vis-a-vis redistributive issues in an environment where voters can exert costly attention but candidates can reach the voters costlessly (for an application to democratic consolidation, see also Svolik, 2013). Several other papers examine voters' incentives to acquire information (Austen-Smith and Feddersen, 2009; Gershkov and Szentes, 2009; Oliveros, 2013), but in settings where alternatives are fixed, and thus moral hazard and adverse selections concerns are absent. In contrast, both moral hazard and adverse selection are central to our theory.

2 A theory of elections and preliminary results

Our theory of elections builds upon a formal model featuring a one-period, three-player game with two candidates (1 and 2) and a representative voter.[7] Candidates compete for an elected office, which they value. Before the campaign, each candidate $j \in \{1, 2\}$ privately observes his type $t \in \{c, n\}$ (where c denotes competent and n denotes non-competent politician), and chooses a platform: either a status quo policy ($p_j = 0$) or a new policy ($p_j = 1$), which is costly to implement. It is common knowledge that the proportion of competent candidates is $Pr(t = c) = q \in (0, 1)$.

The voter's main electoral concern is competence in implementing policy change. Compared to the status quo policy, the new policy is beneficial to the voter only when implemented by a competent politician. The new policy can be thought of as a change in the economic paradigm (such as Latin American countries' transition from import substitution industrialization to free markets in the 1980s), an institutional reform (such as Bolivia's decentralization in 1994; see Grindle, 2000), or an overhaul of an important policy domain (such as Nixon's environmental reform in 1970, Obamacare in 2010, or New Zealand's labor market reforms in the 1990s).

Competent politicians can more successfully determine the scope and pacing of this type of reforms, the adequate compensation of winners and losers (Haggard and Webb, 1993), and can avoid the large costs that badly engineered policy change can impose on society (as in Latin America in the 1980s; see Dornbusch, 1988 and Krueger, 1993). Using Carmines and Stimson's (1980) terminology, the new policy corresponds to a *hard issue*, a technical issue for which a candidate's personal ability is of paramount importance. In contrast, our definition of a new policy is less suitable for the study of soft issues: purely redistributive issues or social issues (e.g., abortion or religion), for which competence arguably matters less.

In line with the literature on voter behavior, we consider an imperfectly informed voter. The voter cannot directly observe candidates' competence and can only learn candidates' platforms if she pays attention to the electoral campaign (e.g., watching TV news reports, debates, etc.). The voter chooses a level of attention $x \in [0, 1]$ towards the campaign, each candidate j exerts communication effort $y_j \in [0, 1]$, and the probability that the voter

[7] We discuss the extension to multiple voters in Section 5.

observes candidate j's platform is $y_j x$ (Figure 1).[8] After the campaign, the voter elects one of the two candidates, denoted by $e \in \{1, 2\}$.

Our assumptions regarding the campaigning technology imply that, fixing the voter's attention, greater communication effort by a candidate (e.g., increased number of ads) increases the probability that the voter becomes informed about what the candidate will do if elected. In turn, for a given number of ads from a candidate, greater voter attention increases the probability that she learns the candidate's platform. Our campaigning technology satisfies Zaller's (1992, p.42) reception axiom, which states that "the greater a person's level of cognitive engagement with an issue, the more likely he or she is to be exposed to and comprehend—in a word, receive—political messages concerning that issue." It is also in line with empirical evidence documenting that voters learn incrementally (Neuman et al., 1992).[9]

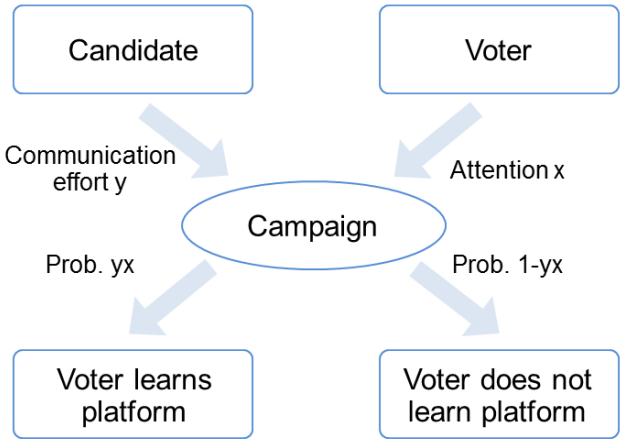


Figure 1: Campaign as a team effort

For the voter, attention to politics entails costly cognitive efforts (e.g., effort required to decipher a candidate's message) and/or an opportunity cost (e.g., reading about the election rather than more entertaining alternatives). This cost is parametrized by the thrice continuously differentiable function $C_v(\cdot)$ satisfying $C_v'(0) = 0$, $C_v'(1) = 1$, $C_v''(0) = 0$, and

[8] See Dewatripont and Tirole (2005) for applications of this learning technology to set-ups where moral hazard and adverse selections concerns are absent.

[9] Several studies stress that during campaigns, voters learn about candidates and their platforms (Franklin, 1991; Brians and Wattember, 1996; Alvarez, 1997) and candidates "*inform, persuade, and mobilize*" voters (Norris, 2002 p.128, emphasis in the text; see also Salmore and Salmore, 1989; Holbrook, 2011). But how much voters learn depends on their attention to the campaign (McAllister, 2002; Franz, 2011; Murphy, 2011). For a review of existing evidence on how campaigns influence voters' knowledge, opinions, and behavior, see Jacobson (2015).

strict convexity on $(0, 1]$. To simplify the exposition, we also assume that $C_v'(\cdot)$ is weakly convex.[10]

The voter's utility function depends on the policy implemented by the elected candidate. If the elected politician implements the status quo policy, the voter's payoff is (normalized to) 0. If the elected politician implements the new policy, the voter's payoff depends on the candidate's competence. When the elected candidate is competent, the voter gets a utility gain of $0 < G \leq 1$. When he is non-competent, she experiences a utility loss of $L < 0$. G corresponds to the voter's *gain from change*, and captures her interest in politics in the context of our theory. The voter's utility function is thus:

$$u_v(p_e, x) = \begin{cases} p_e G - C_v(x) & \text{if } e \text{ is competent} \\ p_e L - C_v(x) & \text{otherwise} \end{cases} \tag{1}$$

Candidates are office-motivated. We normalize their payoff from being outside of office to 0. If elected, a politician gets a payoff of 1 if he implements the status quo policy and $1 - k_t,\ t \in \{c, n\}$ if he implements the new policy ($p = 1$). The policy cost of implementing the new policy depends on the candidate's competence: $0 < k_c < k_n < 1$. As noted by Hall and Deardoff (2006), any policy change entails a cost for politicians promoting it: the cost of collecting information, striking a bargain with veto players, etc. We suppose that a competent politician is more able to undertake these tasks.[11]

We also suppose that communicating with the voter is costly for candidates (function $C(\cdot)$). Candidates can either make broad statements without substance or announcements detailing a specific plan of action (Dewan and Hortala-Vallve, 2013). We focus on the second type of discourse, which we deem more costly than vague statements. This cost captures the difficulty of defining and disseminating (e.g., airing ads, organizing meetings, holding conventions and press conferences, etc.) a clear and effective message to the voter in a noisy environment. We assume that a politician's cost of communication $C(\cdot)$ has the same

[10] The convexity of $C_v'(\cdot)$ guarantees that communication strategies are unique when candidates play a separating strategy profile but does not drive any result. When there are multiple communication levels, our results carry through under the additional requirement of selecting the highest communication level, which provides the highest expected welfare to the voter.

[11] A type c candidate's policy cost can also be lower if politicians care about their place in history books, which depends on the impact of policy changes (Howell, 2013). While it complicates the analysis, our results hold in an environment in which politicians care about the voter's welfare (as long as its weight in the politicians' utility functions is small enough).

properties as the voter's communication cost function. Candidate j ($j \in \{1, 2\}$)'s utility is:

$$u_j(p_j, y_j; t) = \begin{cases} 1 - k_t p_j - C(y_j) & \text{if elected} \\ -C(y_j) & \text{otherwise} \end{cases} \tag{2}$$

To summarize, the timing of the game is:

1. Nature draws the type $t \in \{c, n\}$ of candidate $j \in \{1, 2\}$.

2. Candidate j observes (only) his type and chooses a platform: the status quo policy ($p_j = 0$) or the new policy ($p_j = 1$).

3. The electoral campaign takes place. Candidates 1 and 2, and the voter simultaneously choose their communication efforts and level of attention: y_1, y_2, and x, respectively. With probability $y_j x$, communication is successful: The voter observes candidate j's platform p_j. Otherwise, the voter does not learn p_j.

4. The voter elects one of the two candidates: $e \in \{1, 2\}$.

5. The elected candidate e implements p_e and payoffs are realized.

To ensure that electoral communication plays an important role, we assume that $qG + (1 - q)L < 0$. This assumption captures the idea that voters are unwilling to simply act as a rubber stamp to an ambitious reformist agenda (Rodrik, 1996), but rather need to be convinced of a candidate's ability to successfully carry out policy changes.

The equilibrium concept is Perfect Bayesian Equilibrium (PBE) in pure strategies (with the caveat that the voter tosses a fair coin to decide which candidate to elect when indifferent), and excluding weakly-dominated strategies. A formal definition of the equilibrium can be found in Appendix A (see Definition 1). Henceforth, the term "equilibrium" refers to this class of equilibria.

This baseline set-up is the simplest that allows us to convey the intuition for our results, but can be extended in several directions (see Section 5). In particular, candidates can only communicate their platform; they cannot credibly reveal their type to the voter directly.[12]

[12]The main results of this paper still hold when the voter receives a signal of the candidate's competence as long as this signal is sufficiently noisy. This is because the voter does not care about competence per se but wants to elect a competent candidate *who commits to the new policy*. Therefore, the voter always has some incentive to pay some attention to learn a candidate's platform. Consequently, the mechanism driving

For analytic tractability, we assume that candidates implement the policy they have chosen.[13] This implies that communication affects only the candidates' chances of being elected, not their payoff once in office.

2.1 Preliminary analysis

We now present some general properties of the voter's and the candidates' equilibrium strategies. First, there always exists an equilibrium in which no candidate proposes the new policy. In this "status quo" equilibrium, the voter chooses to rationally ignore the campaign: She expects both candidates to propose the status quo policy regardless of their competence. Candidates, in turn, rationally anticipating that a commitment to the new policy is never observed by the voter, choose the status quo policy (whose implementation cost is lower). This status quo equilibrium is the benchmark to which we compare other equilibria.

Proposition 1. *For all parameter values, there exists an equilibrium in which both candidates (independently of their type) commit to the status quo policy without exerting communication effort, and the voter does not pay attention to the campaign.*

More generally, since there is no policy cost associated with it, committing to the status quo policy ($p = 0$) can be understood as a default option. A politician has no incentive to pay a cost to reveal that he commits to his default option. Consequently, the voter places high probability on a candidate promising no change when communication is unsuccessful. As a result, a candidate must exert strictly positive communication effort when committing to the new policy.

Lemma 1. *In any equilibrium, a candidate exerts strictly positive communication effort if and only if he commits to the new policy ($p = 1$).*

Lemma 1 implies that a candidate effectively faces a double cost of committing to the new policy: a policy cost k_t (borne only if he is elected) and a communication cost $C(y)$ (borne regardless of the electoral outcome).

the curse of the uninterested voter and the curse of the interested voter (described below) is still present with noisy signals.

[13] This can be justified by assuming, for example, that, in an unmodeled period 2, the voter receives information about candidates' platforms and is able to hold her elected representative accountable for upholding his commitment. Our results are also qualitatively robust to partial commitment, even when non-competent types are allowed to renege on them at a higher rate.

3 The voter's curses

We now study whether the electoral process can lead to a better outcome for the voter than the benchmark status quo equilibrium. As long as the screening problem faced by the voter is severe enough (k_n is not too large), the electoral process performs best for the voter (that is, the voter's ex-ante expected utility is higher than in any other possible equilibria, discussed in Section 4) when candidates commit to the new policy only if they are competent.[14] In this case, the voter always benefits from the new policy, and the campaign is highly informative: Learning a candidate's commitment to the new policy is a perfect signal of competence. In this section, we study the conditions under which the above described "separating equilibrium" exists.

By Lemma 1, a separating equilibrium exists only if, for a competent candidate, the electoral reward for committing to the new policy is greater than the policy cost and the communication cost; this is a competent candidate's incentive compatibility constraint. A non-competent candidate's incentive compatibility constraint is the reverse inequality: His communication and policy costs must be large enough compared to the electoral reward for committing to the new policy so that he prefers to propose the status quo policy.

As communication affects both the reward for and cost of committing to the new policy, we first study the players' communication choices when candidates play a separating strategy. The next lemma shows that candidates' and the voter's equilibrium communication choices are unique.

Lemma 2. *Suppose a separating equilibrium exists. The equilibrium communication efforts are unique and satisfy:*
(i) non-competent candidates exert no communication effort: $y_j^*(n) = 0,\ j \in \{1, 2\}$*;*
(ii) competent candidates' communication efforts and the voter's level of attention are strictly positive: $y_1^*(c) = y_2^*(c) \equiv y^*(c) > 0$ *and* $x^* > 0$*, where* $y^*(c)$ *and* x^* *solve*

$$C'(y^*(c)) = (1 - k_c)\frac{x^*}{2} \tag{3}$$

$$C_v'(x^*) = q(1 - q)Gy^*(c) \tag{4}$$

[14] See the Supplemental Appendix C for more details and formal proof of this claim.

A non-competent politician does not invest in communication, since he commits to the status quo policy (see Lemma 1). A competent candidate chooses his communication effort and the voter chooses her level of attention such that the marginal benefit of an additional unit of communication effort is equal to its marginal cost.

For the voter, the marginal benefit of attention is the reduced probability of an electoral mistake times the payoff gain from avoiding such a mistake: electing a non-competent candidate when his opponent is competent, commits to the new policy, and goes undetected. Therefore, as the policy gain G from selecting a competent politician increases, the voter pays higher attention to the electoral campaign. Due to the complementarity in the campaigning technology ($y_j x$), greater attention to the campaign increases the effectiveness of a competent candidate's communication effort. The benefit of investing in communication increases. As a result, a competent candidate's communication effort also increases with G.

For a competent candidate, the marginal benefit of effort is equal to the increased probability of being elected times the payoff from being in office. A competent candidate's benefit from holding office depends on the cost of implementing the new policy (k_c). When this cost increases, the benefit from holding office decreases, and competent candidates exert less communication effort. Due to the complementarity in communication, lower candidates' effort reduces the voter's ability to learn a competent candidate's commitment to the new policy. Her level of attention decreases with the policy cost. The above intuitions are summarized in the following Lemma:

Lemma 3. *When candidates play a separating strategy, the voter's level of attention (x^*) and competent candidates' communication efforts ($y^*(c)$)*
(i) increase with the gain from change (G);
(ii) decrease with competent candidates' policy cost (k_c)

Our next result shows how attention by the voter and communication effort by a competent candidate $j \in \{1, 2\}$ affect the opposing candidate's incentives to commit to the new policy.

Lemma 4. *When candidates play a separating strategy, an increase in attention by the voter or communication effort by competent candidate $j \in \{1, 2\}$:*
(i) relaxes the incentive compatibility constraint of the opposing candidate when competent;
(ii) tightens the incentive compatibility constraint of the opposing candidate when non-competent.

When the voter pays more attention to the campaign, the return on committing to the new policy increases for *both* competent and non-competent candidates. This is a consequence of two effects. The first and main effect is that greater attention to politics implies that the voter is more likely to learn candidates' platforms (in particular, candidates' commitment to the new policy). Greater probability of successful communication increases a competent candidate's electoral chances. But better electoral prospects for a competent candidate j implies a lower probability of winning the election for the opposing non-competent candidate, who commits to the status quo policy. In addition, if a non-competent candidate campaigns on the new policy, his electoral chances improve since the voter is more likely to learn his platform. As a consequence, greater attention by the voter also implies that a non-competent candidate has a stronger incentive to commit to harmful policy change.[15]

The second effect of greater voter's attention, which reinforces the first, is that it also increases the effectiveness of candidates' communication efforts. Consequently, it is less costly for both competent and non-competent candidates to commit to the new policy. A candidate's incentive to propose the new policy thus increases. This additional effect follows from the complementarity assumed in our model of communication, but it is not necessary for Lemma 4.

Using Lemmas 3 and 4, we can determine under which conditions a separating equilibrium exists. The next proposition shows that a separating equilibrium exists if and only if the voter's gain from change is in an intermediate range.

Proposition 2. *There exists an open non-empty set of policy costs* $(k_c,\ k_n)$ *such that there exist a unique* $\underline{G} > 0$ *and* $\overline{G} \in (\underline{G}, 1]$*, which depend on all parameter values, such that a separating equilibrium exists if and only if the voter's gain from change is in an intermediate range:* $\underline{G} \leq G \leq \overline{G}$.

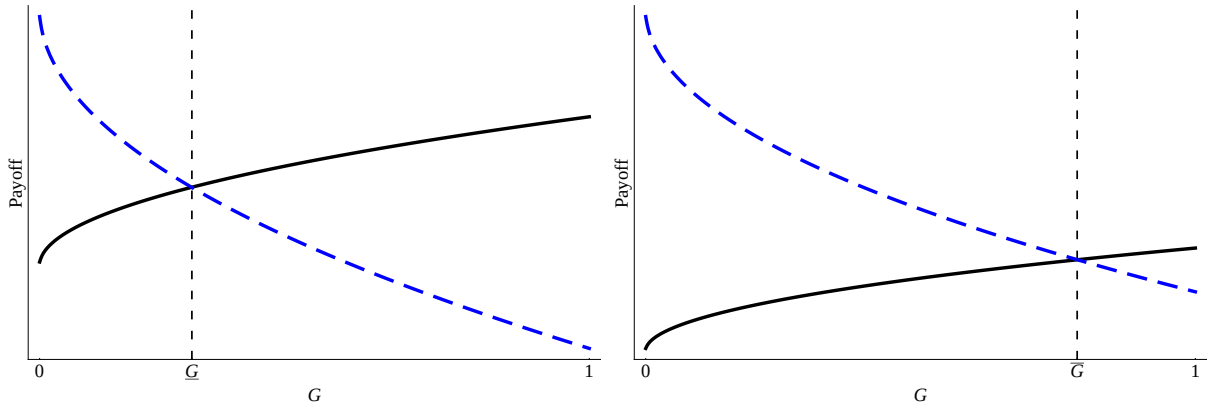
Suppose the voter anticipates that a candidate commits to the new policy only if competent. The benefit to the voter of detecting a competent candidate depends on the gain from change G. As G increases, the voter pays more attention to the campaign (Lemma 3). The probability that the voter learns a candidate's platform thus increases, as does the electoral reward for committing to the new policy. Consequently, as illustrated in Figure 2,

[15]Notice that the complementarity in the communication function plays no role in the reasoning above, which simply relies on the positive correlation between voter's attention and the probability of learning candidates' platform.

the expected payoff from committing to the new policy increases with G for both competent (Figure 2a, solid line) and non-competent (Figure 2b, solid line) candidates. In contrast, as the voter detects commitment to the new policy with greater probability, a candidate's electoral prospects from committing to the status quo policy decreases with G. As a consequence, the expected payoff from committing to the status quo policy decreases with G for both competent (Figure 2a, dashed line) and non-competent (Figure 2b, dashed line) candidates.

For a separating equilibrium to exist, it is necessary that a competent candidate prefers to commit to the new policy. However, when G is low, by the reasoning above, the voter pays little attention, and a competent candidate's expected payoff from committing to the new policy is lower (low electoral reward, high communication and policy costs) than the expected payoff from committing to the status quo policy. Therefore, a competent candidate prefers to propose the status quo policy and a separating strategy cannot be an equilibrium. When the voter's gain from change is low, the voter would pay *too little* attention for a separating equilibrium to exist. This is *the curse of the uninterested voter.*

When G is relatively high (above $\underline{G}$, see Figure 2a), a competent candidate has enough incentive to commit to the new policy. But this is not sufficient to guarantee the existence of a separating equilibrium. In fact, it must also be the case that a non-competent candidate prefers to commit to the status quo policy. However, when G is high, by the reasoning above, the voter exerts high attention effort and a non-competent candidate's expected payoff from committing to the status quo policy is lower than the expected payoff from committing to the new policy (despite the large policy cost). Therefore, a non-competent candidate prefers to propose the new policy and a separating equilibrium cannot exist. When the voter's gain from change is large, the voter would pay *too much* attention for a separating equilibrium to exist. This is *the curse of the interested voter.*



(a) Competent candidate (b) Non-competent candidate

Figure 2: Candidates' expected payoff as a function of platform choice

The dark line is the expected payoff from committing to the new policy; the blue dashed line is the expected payoff from committing to the status quo policy. (Parameter values: $q = 1/2$, $k_c = 1/8$, $k_n = 1/5$, $L = -1.01G$, $C_v(x) = x^\gamma/\gamma$, $C(y) = y^\gamma/\gamma$ with $\gamma = 4$. Equilibrium values: $\underline{G} \approx 0.28$, $\overline{G} \approx 0.79$.)

4 Implications

The previous section establishes that a separating equilibrium (when a candidate commits to the new policy only if competent) exists only if the gain from change (G) is intermediary. In our set-up, G captures how much the voter cares about politics. Hence, a separating equilibrium exists only if the voter's interest in politics is not too low and not too high. In this section, we discuss the normative and policy implications of our results.

4.1 Normative implications

As mentioned above, when the adverse selection problem faced by the voter is severe enough (k_n is not too large), the voter's expected welfare would be maximized if candidates commit to the new policy only if competent. As such, a direct consequence of Proposition 2 is that an increase in the voter's interest in politics (G) can result in a decrease in the voter's (ex-ante) welfare (see Figure 3a below for an illustration).

Proposition 3. *Let $V_v(G)$ denote the voter's ex ante expected equilibrium welfare as a function of her interest. There exists a non-empty open set of policy costs such that there exists $G^W > \overline{G}$ such that $V_v(\overline{G}) > V_v(G^W)$.*

Proposition 3 has important implications for the voters' role in democracy. Scholars have long debated voters' capacity to fulfill their democratic duties, under the common presumption that a more engaged electorate would improve the quality of democratic government. Our paper shows that this claim needs to be qualified. The curse of the interested voter implies that when voter's interest is high, the electoral process becomes too responsive and loses its effectiveness as a screening and disciplining device. Politicians start to propose the policy preferred by voters regardless of their ability to adequately implement changes. As such, greater interest in politics can lead to a decrease, rather than an increase, in the quality of democratic governance.

The over-responsiveness of the electoral process to voter's interest in politics has a second important implication in term of voters' attention. For very high gain from change, the voter faces either candidates who always propose the status quo policy (Proposition 1) or candidates who propose the new policy despite being non-competent. The latter case occurs when (i) candidate $j \in \{1, 2\}$ proposes the new policy independently of his type, while his opponent always proposes the status quo policy,[16] (ii) candidate j proposes the new policy independently of his type, while his opponent campaigns on the new policy only if competent, or (iii) both candidates propose the new policy independently of their level of competence. In each of these three cases, learning that a candidate commits to the new policy is still informative. The reason is that a competent candidate exerts more effort than a non-competent candidate due to his higher payoff from being in office (lower policy cost). However, learning a candidate's platform is only an *imperfect* signal of a candidate's competence. The voter risks electing the wrong type of candidate after successful communication, and her return on attention decreases. While her interest increases, the voter's level of attention decreases compared to the separating equilibrium level, $x^*(\cdot)$.

Proposition 4. *Denote $\overline{x}(G)$ the voter's highest equilibrium communication effort as a function of her interest. There exists a non-empty open set of policy costs such that:*
(i) $\overline{x}(G) = x^*(G),\ \forall G \in [\underline{G}, \overline{G}]$;

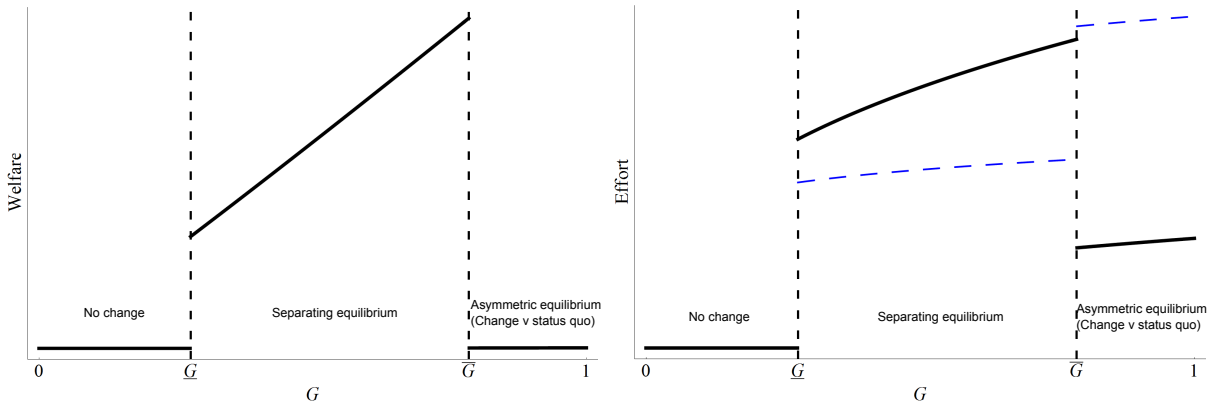
[16] As long as the ratio of the gain over the loss from change is sufficiently large, there exists an "asymmetric" equilibrium in which one candidate commits to the new policy independently of his competence, whereas his opponent commits to the status quo policy whether competent or non-competent (details available upon request).

(ii) $\overline{x}(G) < \overline{x}(\underline{G})$ *for all* $G < \underline{G}$*;*
(iii) there exists $\widehat{G} > \overline{G}$ *such that* $\overline{x}(G) < \overline{x}(\overline{G})$ *for all* $G \in (\overline{G}, \widehat{G})$*.*

The empirical literature on political engagement generally conflates voters' interest in politics with voters' attention to politics. Proposition 4 shows the importance of distinguishing between these two notions. For a given set of policy options, an increase in voter's interest always increases voter's attention to politics (see Figure 3b). But an increase in the voter's interest can change candidates' equilibrium behaviors. As non-competent candidates switch to proposing the new policy, the voter becomes skeptical about how informative the electoral campaign truly is. An increase in the voter's interest can lead to a decrease in the voter's attention. Proposition 4 shows that the voter's attention to electoral campaigns does not necessarily determine how much she learns from it, but rather *what* the voter can learn from the campaign determines how much attention she pays to it.

Figure 3a shows the voter's expected equilibrium welfare as a function of her gain from change. As indicated above, the voter's expected welfare is highest in a separating equilibrium. When no candidate proposes the new policy ($G < \underline{G}$), the voter gets a payoff of 0. When candidate 1 commits to the new policy independently of his competence and candidate 2 commits to the status quo regardless of his competence ($G > \overline{G}$), the voter gets a strictly positive expected payoff since electoral communication acts as an imperfect screening device: A competent candidate 1 still exerts more effort than a non-competent type, since he has a higher net payoff from being in office ($k_c < k_n$).

When it comes to voter's attention (Figure 3b), the voter exerts no effort when both candidates propose the status quo policy ($G < \underline{G}$), since she has nothing to learn from the campaign. In a separating equilibrium ($G \in [\underline{G}, \overline{G}]$), learning that a candidate proposes the new policy is a perfect signal of competence so the electoral campaign is highly informative. The voter then pays a high level of attention to the campaign. When her interest in politics is very high ($G > \overline{G}$) due to the over-responsiveness of the electoral process, candidate 1 proposes the new policy even when non-competent. Consequently, the voter becomes skeptical about the value of learning a candidate's platform and pays less attention to the electoral campaign despite an increase in candidate 1's effort.



(a) Voter's expected welfare (b) Communication efforts

Figure 3

In Figure 3a, the dark line is the voter's expected equilibrium welfare. In Figure 3b, the dark line is the voter's level of attention and the blue dashed line is candidate 1's average communication effort. (Parameter values: $q = 1/2,\ k_c = 1/8,\ k_n = 1/5,\ \tau = 1.01,\ C_v(x) = x^\gamma/\gamma,\ C(y) = y^\gamma/\gamma$ with $\gamma = 4$. Equilibrium values: $\underline{G} \approx 0.28$, $\overline{G} \approx 0.79$.)

4.2 Policy implications

So far, our focus has been on voter's interest in politics (G), which depends on her evaluation of the importance of a policy change—a factor that can hardly be affected by policy interventions.[17] Policy interventions, however, can affect the cost of paying attention to politics and, consequently, the value of $\underline{G}$ and $\overline{G}$, the bounds determining the existence of the welfare-maximizing equilibrium. Our theory predicts that such policy interventions can have unintended consequences.

We first consider the recommendation to provide voters with "access to better information about public policy" (Page and Shapiro, 1992, p.398). A common policy proposal is to decrease the cost of political information (e.g., Page and Shapiro, 1992; Delli Carpini and Keeter, 1996) via, for example, increased subsidies for public broadcasting service (Soroka et al., 2013; O'Mahen, 2013). In our set-up, this type of intervention would indeed increase the voter's attention, holding everything else constant. But greater attention, by the analysis above, would also increase the incentive for both competent and non-competent candidates to commit to the new policy. In terms of equilibrium bounds, a reduction in the cost of

[17] Candidates could, however, manipulate the voter's interest by choosing whether to campaign on issues for which there is either a high or low gain from change. While this also points to an alternative interpretation of the model (the electoral process performs comparatively better on issues of moderate importance), we leave the question of issue selection by candidates to future research.

attention decreases both $\underline{G}$ and $\overline{G}$. Whether such intervention is beneficial critically depends on the level of voter's interest. When interest is low (due, for example, to good economic performance), the effect of decreasing the cost of collecting information is likely to be positive since the curse of the uninterested voter is mitigated ($\underline{G}$ decreases). Attention and welfare are likely to increase. When interest is high (due, for example, to poor economic performance), the effect of decreasing this cost is likely to be negative since the curse of the interested voter is exacerbated ($\overline{G}$ decreases). Attention and welfare are likely to decrease because this policy intervention risks changing candidates' behavior.[18]

Similar unintended consequences could arise if media were required or encouraged to report more political news. To see that, assume that the probability of successful communication depends on media reporting: $Pr(m_j = p_j) = \rho x y_j$, where ρ captures media outlets' responsiveness to the electoral campaign. An increase in ρ has a similar effect as a decrease in the cost of attention for the voter: Since the return on attention to politics increases, the voter pays more attention to the campaign, and candidates' electoral reward for committing to the new policy increases. Consequently, the equilibrium thresholds ($\underline{G}$ and $\overline{G}$) decrease with ρ. When voter's interest is high, policy interventions aimed at increasing media's reporting about politics can then diminish voters' welfare and attention to politics.[19]

Given the relationship between ρ and the equilibrium bounds, we can use media congruence (a strong determinant of media responsiveness, Snyder and Strömberg, 2010) to empirically test our theory. In districts where media congruence is low (ρ is low), the curse of the uninterested voter is most problematic, and change is more likely to happen when interest is high (e.g., poor economic performance in the district). Inversely, in districts where media congruence is high (ρ is high), the curse of the interested voter is most problematic, and change is more likely to happen when interest is low (e.g., good economic performance in the district).

To summarize, our theory implies that evaluation of policies aimed at improving political information (through increased subsidies to public broadcasting or more responsive media) based on the assumptions that the set of alternatives available to the voter is fixed suffers

[18]This claim is formally proven in Proposition B.1 in Supplemental Appendix B.

[19]While the baseline model is amenable to a whole spectrum of more sophisticated extensions (which we leave to future research) that would endogenize ρ, as long as the media system responds to voter's anticipated demand for political news (relative to other stories), incentivizing media to report more political news (and in particular, reporting on issues of high importance relative to issues of only moderate importance) should exacerbate the curse of the interested voter and mitigate the curse of the uninterested voter.

from a fundamental flaw. It is critical to recognize that candidates strategically respond to changes in voters' behavior induced by the policy intervention.[20]

5 Extensions

We now discuss the robustness of our results to the introduction of multiple voters (with potentially heterogeneous gains from change), as well as asymmetries between candidates.

Multiple voters In order to directly contrast our results with traditional models of electoral accountability, the baseline setting focuses on a single representative voter. In this model, however, there is a greater urgency to address the considerations of robustness to multiple voters. A voter's individual incentive to acquire costly political information can be significantly affected by the presence of other voters, with varying interest in politics (gains from change). In this setting, paying attention to politics can be thought of as a form of public good provision, where well-known issues of free-riding could significantly affect the conclusions from the baseline model. In spite of these considerations, the model's key insights hold in large electorates.[21]

Consider an electorate composed of $N+1$ voters (so $N=0$ corresponds to the representative voter case described above), each indexed by the subscript i. Each voter has a gain from change $G_i = \lambda_i G$ and a loss $L_i = \lambda_i L$, with $\lambda_i > 0$ so $qG_i + (1-q)L_i < 0$ for all i. We denote the probability that voter $i \in \{1, ..., N+1\}$ observes the platform of candidate $j \in \{1, 2\}$ by $Pr(m_{ij} = p_j)$, and we allow for abstention. To partially offset the significant increase in analytical complexity, we adopt a common functional form for the cost functions: $C_v(x) = x^\gamma/\gamma$ and $C(y) = y^\gamma/\gamma$, with $\gamma \in (2, \infty)$.[22]

We assume that each voter independently pays attention to the campaign, and we explicitly consider two alternative models of public opinion.[23] In the *common knowledge model*, voters are able to pool their information before voting (for example, due to their ability to

[20] We are not aware of any study empirically investigating the effect of a lower cost of political communication on voter welfare. However, a recent empirical study by Hodler et al. (2012) shows that reducing the cost of voting might lead to worse policies.

[21] All of the claims are formally proven in Supplemental Appendices E and F.

[22] We also restrict our attention to symmetric equilibria in which voters with the same G_i exert the same level of attention.

[23] To focus on the issue of free-riding, we assume that candidates' efforts reach all voters (e.g., TV ads or debates). There is no micro-targeting.

share simple information cues). This model is of substantive theoretical interest because it isolates the effect of free-riding without significantly affecting the candidates' choice of effort, compared to the representative voter set-up. In the *private knowledge model*, on the other hand, voters are not allowed to communicate before the election and can only rely on the outcome of their attention to the campaign to form opinions about candidates. This model is more in line with the existing literature on information aggregation in large electorates (discussed below).

We first consider the common knowledge model. To reach the whole electorate, candidates simply need to successfully communicate with a single voter. Each voter, instead, values her attention only to the extent that her learning candidates' platform is decisive for the outcome of the election. Since all voters are informed when at least one voter is, each voter is decisive when she is the only one learning a candidate's platform. As such, a voter's communication effort is decreasing in other voters' effort: Voters have a strong incentive to free ride on other voters' attention. Nonetheless, we show that when candidates play a separating strategy, competent candidates' communication efforts and voter's attention are well-defined, positive, and increasing in G (the baseline gain from change which affects all voters). As such, greater gain from change implies greater electoral rewards for committing to the new policy as in the baseline set-up. Consequently, Proposition 2 generalizes to multiple voters with heterogeneous gains from change. For a separating equilibrium to exist, the policy gain G has to lie in an intermediate range: $G \in [\underline{G}(N), \overline{G}(N)]$.[24]

Unsurprisingly, the bounds of the separating equilibrium region depend on the size of the electorate (N). As the number of voters increases, a voter's incentive to free ride increases (the probability she becomes pivotal decreases). One might conjecture that free-riding by voters significantly mitigates the curse of the interested voter ($\overline{G}(N)$ increases as N increases). We show that the opposite is true: (i) for large enough electorates, the curse of the interested voter becomes more severe as the number of voters increases ($\overline{G}(N') < \overline{G}(N)$ for $N' > N$ and N sufficiently large), and (ii) when the electorate is large enough, the curse of the interested voter is more severe than in the model with a representative voter ($\overline{G}(N) < \overline{G}(0)$ for N large enough).

[24]The result holds for homogeneous (e.g., $\lambda_i = \underline{\lambda}$ for all i) as well as heterogeneous (e.g., $\lambda_i \neq \lambda_l$ for some $i \neq l$) gains from change. In fact, heterogeneity in voters' gains from change reduces the incentives to free ride and exacerbates the curse of the interested voter (i.e., $\overline{G}(N)$ can be smaller with heterogeneous gains).

The key to understanding these results is to notice that when candidates play a separating strategy, the electorate collectively faces the problem of detecting a "right" alternative (a competent candidate) against a "wrong" alternative (a non-competent candidate). In that sense, the environment is related to the Condorcet jury literature (Austen-Smith and Banks, 1996; Feddersen and Pesendorfer, 1996; McLennan, 1998; Duggan and Martinelli, 2001). When voters face a binary choice, either to acquire perfect costly information or to stay uninformed, the public good nature of information implies that as the number of voters increases, the probability that at least one voter acquires information decreases.[25] But as Martinelli (2006) shows, this conclusion is completely reversed when voters can choose the quality of their information continuously as in our set-up.[26] In fact, voters always have an incentive to "buy a small amount of information" (pay a small, but positive level of attention to the campaign). Rather than decreasing with the number of voters, the probability that at least one voter becomes informed (which determines the electoral reward for committing to the new policy) increases with the size of the electorate. In large electorates, the curse of the interested voter is *more severe*.[27]

In the private knowledge model, whether voter i learns candidate j's platform has no effect on the probability that voter $l \neq i$ learns it. However, each voter i always gets her preferred policy when at least one voter learns that candidate $j \in \{1, 2\}$ commits to the new policy. Since abstaining conditional on not detecting a competent type is optimal (Feddersen and Pesendorfer, 1996), a voter considers only the event that no other voter learns candidates' platform when choosing her communication effort. As a result, the voter has the same incentive to free ride as in the common knowledge model. Competition among candidates, on the other hand, is more intense. To increase his probability of winning the election, it is no longer enough for candidate j that at least one voter becomes informed, he must inform a (weakly) greater number of voters about his platform than his opponent. The candidate's

[25] This is the volunteer's dilemma (e.g., Diekmann, 1985).

[26] Some conditions—most notably, strict convexity—on the cost of acquiring information need to be satisfied, which is the case in our set-up.

[27] Despite the similarity in the intuition for the above result, our paper and Martinelli's (2006) differ in a fundamental aspect: In our environment, the set of alternatives is endogenous to candidates' decisions, not exogenously fixed. That is, our set-up adds moral hazard and adverse selection problems to typical Condorcet jury games. Technically, there is also a difference in the signal structure. In Martinelli's, the receiver chooses the quality of her signal. In our paper, she chooses the probability of receiving a signal which perfectly reveals the right alternative (candidates' platforms).

problem is thus significantly more complex.[28] Nevertheless, we show that when candidates play a separating strategy, candidates' communication efforts and voters' level of attention are well-defined for a homogeneous electorate. As candidates try to reach many voters, the probability of successful communication is higher than in the private knowledge case. As above, voters' attention, as well as the probability of successful communication, increases with the gain from change G. This allows us to prove that in large enough electorates, Proposition 2 still holds.[29]

Asymmetry among candidates To provide the simplest intuition for our results, we consider a set-up with symmetry between candidates. However, minor modification of our set-up (e.g., introducing some valence shock) easily allows us to relax this assumption. For example, one can assume that voters have more information about candidate 1's platform and competence level (for instance, due to his incumbency status). In Supplemental Appendix D, we show that the curse of the interested voter still arises in a simple model of incumbency.

6 Conclusion

In this paper, we show that the commonly believed premise that a more engaged electorate improves the performance of the democratic process needs to be qualified. In line with previous theories, we identify a curse of the uninterested voter: Voters need to care sufficiently about politics for elections to effectively screen and discipline politicians. More surprisingly, our theory also uncovers a curse of the interested voter. When voters care too much about politics, voters' welfare and attention to politics are low due to candidates' strategic behavior. The electoral process thus performs best when voters are like Goldilocks: They neither care too little nor too much about politics.

Our theory yields two important predictions for the study of voters' behavior and democracy. First, it is not possible to infer from voters' level of attention how much they care about politics. Second, policies meant to decrease the cost of voters' attention might have

[28] Assuming a homogeneous electorate of size $N+1$, the number of pivotal events which enters the communication effort decision of candidate $j \in \{1,2\}$ is all the vote tallies which guarantee victory or equality; that is $(N+1)(N+2)/2$. For 100 voters, this corresponds to 5,151 pivotal events.

[29] For a large enough electorate, free-riding implies that all voters choose a positive but small level of attention. Hence, the dominant pivotal event determining candidates' behavior is the probability of reaching one voter, and the reasoning is the same as in the common knowledge case.

unintended consequences on voters' welfare and attention to politics by inducing harmful changes in candidates' behavior.

Our paper is a first step towards a better understanding of how voters' attention choices under cognitive constraints affect politicians' incentives to act in voters' interest. Our focus has been on common value issues (among voters) for which competence plays a critical role. Extending the model to settings in which politicians might strategically choose between divisive/partisan issues and common-value issues might generate interesting effects that deserve further attention. We also study an environment where candidates are symmetric.[30] This is not always the case. Voters might have different evaluation of candidates' competence (reputation imbalance) or what their party stands for (partisan imbalance). How these different types of imbalances affect the performance of the electoral process in our framework is a promising avenue for future research.

[30]See, however, Supplemental Appendix D for an extension of our set-up in which voters have more information about an incumbent than a challenger.

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