Overreacting and Posturing: How Accountability and Ideology Shape Executive Policies*

Peter Bils†

Abstract

Voters rely on executive politicians to craft effective solutions to difficult problems such as crises. Executives are frequently criticized, however, for exaggerating the degree of action required to address a problem. In this paper, I develop a model of elections in which the incumbent must respond to a crisis. In equilibrium, the executive exaggerates policy in order to appear informed to voter. This exaggeration can be due to well-informed executives *overreacting* to their information, or uninformed executives *posturing* and acting boldly, despite their lack of information. I show that limits on executive authority can improve policy responses, but may backfire by limiting discretion and encouraging posturing. Finally, I find that ideological disagreement over how to respond to the crisis can increase overreacting and posturing.

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†Dept. of Political Science and Dept. of Economics, Vanderbilt University (peter.h.bils@vanderbilt.edu).

Voters rely on executive politicians to respond effectively to crises.[1] Although voters cede considerable authority to the executive in these situations, they can use elections to discipline officeholders. In turn, executives can take advantage of a crisis to demonstrate their competence to voters and improve their electoral prospects. To be successful, bold and decisive action is often thought to be important for presidents to win reelection (Cohen, 2015; Howell, 2015). Furthermore, the literature on disproportionate policies argues that governments exaggerate policies in response to a number of crises, such as public health issues (Maor, Tosun and Jordan, 2017), terrorist attacks (Mueller, 2006), and recessions (De Francesco and Maggetti, 2018).

Why do elections encourage executives to respond boldly to crises? Do limits on executive authority improve outcomes? And how does polarization affect policy responses? To address these questions I develop a model of electoral accountability.

Two key features of the policymaking environment drive exaggerated responses in the model. The first is that voters care about the politician's ability to make correct decisions. The second is that voters observe the executive's policy choice, but may not learn whether the policy was effective before the election. Because low ability officeholders face greater uncertainty about the correct policy response, they favor moderate policies to offset their uncertainty. In contrast, high ability politicians are better informed and, thus, relatively more willing to choose an extreme policy in the direction of their information. Consequently, in equilibrium, exaggerated policies signal high ability and the voter only reelects the incumbent if she chooses a policy far from the ex ante optimum.

These exaggerated responses arise from two types of policymaking behavior.

First, the executive may *overreact* to policy-relevant information. In his first term in office, Ronald Reagan led a massive increase in U.S. defense spending in response to the Soviet Union. Although Soviet military expenditures were significant, CIA estimates of Soviet military spending at the time suggest that the extent of Reagan's response was unnecessary (Holzman, 1989). Second, the executive may be uncertain about the correct course of action, and yet *posture* by acting boldly instead of proceeding cautiously (Gersen and Stephenson, 2014). For example, in 1975 the Khmer Rouge seized the American cargo ship the SS *Mayaguez*. Forgoing more measured options, Gerald Ford quickly decided he needed to do something and ordered military action, despite having very little information about the on-going situation (Bohn, 2016).

Overreacting and posturing negatively impact voter welfare. As such, limits on executive power may improve crisis policy responses. Although limitations prevent extreme policies, they also make it easier for low ability incumbents to imitate competent officeholders. Ad-

[1]This rationale underlies the trustee theory of representation, see Mill (1861) and Fox and Shotts (2009).

ditionally, constraints hamper the executive's ability to effectively react when an extreme response is warranted. Under some conditions, the executive should be unconstrained. Otherwise, the executive should be relatively constrained but given some leeway. It is never optimal, however, to either place weak constraints on the executive or to completely remove executive discretion. I also show that increasing the probability the incumbent is informed can decrease voter welfare.

Finally, I extend the model to include ideological heterogeneity between the incumbent and challenger. I show that ideology plays an important role in overreacting and posturing. If the election is competitive, then greater polarization between the candidates exacerbates the degree of policy exaggeration. Polarization makes the incumbent more motivated to win in order to prevent the challenger from taking office. Symmetric polarization increases the probability the incumbent retains office and decreases voter welfare. On the other hand, increasing only incumbent extremism can have non-monotonic effects on both reelection probabilities and voter welfare.

These results emerge from a two-period model of electoral accountability. In each period, there is uncertainty over which policy delivers the best outcome. The officeholder is either high quality, and knows the correct action to take, or low quality, and uncertain about how to respond to the crisis. After the incumbent chooses the first period policy, the voter either reelects the incumbent or elects a challenger of unknown quality. The voter's decision is not straightforward, however, as he does not learn the effectiveness of the first-period policy before the election, and must infer the incumbent's quality from only her policy choice.

The model best captures executive policymaking in crisis situations. The common values aspect of the model assumes there is agreement on what constitutes a good policy outcome, e.g., ending a recession, and how the optimal policy changes with the state of the world. For example, in response to the 2008 financial crisis President Bush pushed for a $700 billion bailout for banks, and this garnered the support of most Republicans and Democrats in the House and Senate. Additionally, in the model, voters do not observe the effectiveness of the policy choice. Often it may take years for voters to learn whether a crisis response should be considered a success or failure, making it difficult for voters to judge the incumbent based on outcomes. Finally, the executive in the model has authority to act unilaterally in responding to the crisis. In many crisis situations executives are able to exert significant discretion over how to respond. In the United States, this is especially true of the president's powers for conducting wars and foreign policy (Howell, 2011; Young, 2013).

The set-up of the model captures an incentive problem in which the incumbent must try to appear informed to the voter while also balancing her policy payoffs. The set-up is comparable to previous models of electoral accountability, such as: Harrington Jr (1993), Canes-Wrone, Herron and Shotts (2001), Levy (2004), and Fox and Stephenson (2011), making it possible to identify the assumptions driving new results.[2] One important difference with these previous works is that I model a richer policy space. Indeed, many policy areas of interest, particularly those concerned with overreaction, are best characterized by allowing multiple degrees of response, e.g., military spending or economic stimulus. Although previous models contain similar ingredients, they often assume a binary policy space.[3] This rules out overreacting to information and studying the extent to which actions are exaggerated.

This difference in set-up yields different results in terms of how accountability distorts outcomes. The predominant accountability failure studied in the literature is pandering. That is, politicians try to improve their electoral prospects by choosing the policy that voters believe is ex ante optimal (Canes-Wrone, Herron and Shotts, 2001; Maskin and Tirole, 2004; Morelli and Van Weelden, 2013). This paper is especially related to Canes-Wrone, Herron and Shotts (2001). They also study an environment with uncertainty over the optimal policy choice and executives who try to signal expertise. Overreacting and posturing are the opposite behaviors of pandering: the executive chooses policy away from the voter's ex ante preferred policy to win reelection. Furthermore, for pandering to explain exaggerated or bold policy responses requires the voter to ex ante believe that the extreme policy is more likely to be correct. In contrast, the necessity of reelecting incumbents who adopt extreme policies in my model is independent of the voter's prior belief that the policy is optimal. Hence, I derive an apparent voter preference for extreme actions that is fully endogenous to equilibrium play.

Overreacting and posturing in my model has commonalities with a number of other works. For example, Fox and Stephenson (2011) analyze when judicial review acts to prevent posturing by officeholders. Levy (2004) studies a similar "anti-herding" behavior, and finds conditions under which executives forgo advice from advisors. Judd (2017) shows that executives may take unilateral action, even when this leads to inferior policy. Beyond focusing on a different set of issues, in these papers there is a binary policy space, which again rules out overreacting to information.

Prendergast and Stole (1996) also find a similar two-sided effect of overreacting to information in a model of investment decisions where the manager cares about his reputation. However, as the agent is unable to be replaced, they study different issues, such as when the manager is incentivized to stick to a chosen policy. Whereas I study how differences between

[2] For general overviews of this literature see Ashworth (2012) and Duggan and Martinelli (2017).

[3] Acemoglu, Egorov and Sonin (2013) and Duggan and Martinelli (2020) study pandering with a continuous policy space. In these models, politicians choose overly extreme, or populist, policies as a means of signaling congruence. Politicians, however, all choose policies in the same direction. Their models also do not have incomplete information over the optimal policy for the voter.

the incumbent and challenger affect exaggerated polices and voter welfare. Recent work also studies how elections can induce this type of overreacting (Almasi, Dagher and Prato, 2018). However, they focus on how this affects regulation and, as such, do not incorporate a number of features of the electoral environment studied here.

My model is also linked to work studying policy distortions in Downsian models of electoral competition with uncertainty over optimal policy choices. Honryo (2013) studies equilibria in which an informed politician chooses the left or right policy despite learning that the moderate policy is optimal. As with the my model, this distortion is generated by trying to signal competence. However, there is not a continuous policy space, so politicians cannot overreact. Second, Kartik, Squintani and Tinn (2015) study overreacting away from the voter's prior. In their paper, the mechanism that causes candidates to overreact to their information is very different from that studied in this paper. In Kartik, Squintani and Tinn (2015) overreacting is not generated by politicians trying to signal expertise. Instead, the voter aggregates information from both candidates' policies and this updating causes the voter to prefer policies that are more extreme than the unbiased choice of either individual candidate. Additionally, neither paper investigates the effects of polarization.

Finally, previous theories of elections argue that overreactions arise from differences in the types of available policies rather than information. For example, some papers argue that executives overreact to terrorist attacks due to the observability of different actions to the public (De Mesquita, 2007; Dragu, 2017). Others argue that leaders take drastic risky actions and hope for a positive turnout (Downs and Rocke, 1994). Still others use psychological theories to explain disproportionate policy responses, such as overconfidence on the part of the politician (Maor, 2012). In contrast to these explanations, I show that accountability alone is sufficient for politicians to overreact to information. In practice, it may be that the accountability mechanism I find works in tandem with previously studied features to generate further distortions.

Moving beyond elections, Patty and Turner (2021) study how expert policy choices are influenced by a political superior who can veto the agent's policy choice. They show that oversight creates incentives for the agent to propose overly large policy changes in order to convince the overseer that the status quo should be revised. In their model, the overseer's reversal decision is driven by uncertainty about the correct policy, and divergence in policy preferences between the agent and overseer is necessary for exaggeration. On the other hand, in my model exaggeration is driven by the incumbent's career concerns and uncertainty about the incumbent's ability, and overreactions occur even absent differences in policy preferences. However, in both papers exaggeration disappears when there is high uncertainty about the correct policy. Also outside the elections literature, Chen and Suen (2021) find that revolutionary leaders may overreact in order to convince followers that a significant reform to the status quo is necessary.

The Model

Policymaking occurs over two periods, $t \in \{1, 2\}$. In each period, an executive chooses a policy $x_t \in X = \mathbb{R}$. At the end of the first period, a representative voter decides whether to reelect the incumbent or elect an untried challenger. Thus, there are three actors in the model: an incumbent (I), a challenger (C), and a voter (V).

In each period, there is a state of the world that determines the optimal policy response. All players want the chosen policy to match the state of the world, however, the state is unknown. In period t the state is given by ω_t. The state ω_t is commonly known to be drawn from a distribution F, with probability density f. I assume the distribution has mean 0, finite variance $\sigma^2 > 0$, and full support over $\mathbb{R}$. Furthermore, I assume that ω_1 and ω_2 are uncorrelated.

A politician can be either high quality or low quality, representing her competence. Types are drawn independently across politicians and independently from the state. Furthermore, a politician's type is her private information. If a politician is high quality, then she knows ω_t in each period. In contrast, low quality politicians (as well as the voter) only know the distribution of ω_t. Let $q_I \in (0, 1)$ be the common prior belief that the incumbent is high quality and, thus, the incumbent is low quality with probability $1 - q_I$. Similarly, the challenger is high quality with probability $q_C \in (0, 1)$. A high quality type may have greater ability to assemble and manage her advisors and the bureaucracy, or be better informed due to her background and expertise on issues. Different prior beliefs about the incumbent and challenger may arise due to differences in the candidate's background, e.g., voters may think that a former general is more likely to be competent in the event of a military crisis.[4]

To start, Nature determines the state of the world for the first period, as well as the quality of the incumbent and challenger. Next, the incumbent chooses the first period policy response $x_1 \in \mathbb{R}$.

The voter observes the policy choice x_1 but does not observe his utility from the policy. Next, the voter decides to reelect the incumbent or elect the challenger. Thus, when deciding whether to reelect the incumbent, the voter knows what policy was chosen but does not know

[4]Given the important role the bureaucracy plays in developing executive policies, quality could also capture some dimension of ideological alignment between the executive and the relevant agency. Greater ideological alignment should make communication easier between the agency and executive, increasing the executive's information. Extending the model in this direction represents an interesting avenue for future research.

the effectiveness of that policy.

Nature next draws the state of the world for the second period. If the winner of the election is high quality, then she observes ω_2. Finally, the second period officeholder chooses a policy $x_2 \in \mathbb{R}$, the game ends, and utilities are realized.

In the baseline model, I assume players have the same policy preferences, which are represented by an ideal point at ω_t. Utility is quadratic over policy and given by $-(x_t - \omega_t)^2$. Additionally, a politician gets an office benefit $\beta \in (0, \infty)$ for each period in which she holds office. Thus, a politician's payoff in period t is:

$$-(x_t - \omega_t)^2 + \mathbb{I}_t \beta,$$

where $\mathbb{I}_t$ indicates whether or not the politician holds office in period t. Dynamic payoffs are given by the sum of utility in each period.

To recap the timing of the game:

1. Nature draws ω_1 and the types of the politicians.
2. If I is high quality, then she observes ω_1.
3. I chooses $x_1 \in \mathbb{R}$, which is observed by V.
4. V reelects I or elects C.
5. Nature draws ω_2.
6. If the winner is high quality, then she observes ω_2.
7. The winner chooses x_2.
8. Payoffs are realized.

Results

I study perfect Bayesian equilibrium of the model. A mixed strategy for the voter is a mapping $\rho : X \to [0, 1]$, where $\rho(x)$ indicates the probability of reelection following policy choice x. A mixed strategy for the officeholder in period t is given by the mapping π_t : $\mathbb{R} \cup \{\phi\} \to \Delta(X)$, where $\Delta(X)$ denotes the space of probability measures on X and ϕ indicates the politician is uninformed.

To start, consider the optimal policy choice for each politician based only on her policy preferences. If the politician is informed, then the action that maximizes her policy utility is the policy that matches the state of the world, $x_t = \omega_t$. On the other hand, if the politician is uninformed, then her optimal policy choice is the expectation of the distribution of the state, $x_t = 0$. In the last period the politician does not face any reelection constraints. Thus, the winner of the election chooses $x_2 = \omega_2$ when she is high quality and chooses $x_2 = 0$ when she is low quality.

Given second period policymaking, the voter's expected utility for electing a high quality incumbent is $-(\omega_t - \omega_t)^2 = 0$, and his expected utility for a low quality incumbent is $\int_{\mathbb{R}} -\omega^2 dF(\omega) = -\sigma^2$. Therefore, the voter's decision is based on his belief about the incumbent officeholder's ability. Let $\tilde{q}(x_1)$ be the voter's belief that the incumbent is high quality, following policy choice x_1, and this belief is updated according to Bayes' rule whenever possible. In equilibrium, if $\tilde{q}(x_1) > q_C$, then the voter must reelect the incumbent. If $\tilde{q}(x_1) < q_C$, then he must elect the challenger. Finally, if $\tilde{q}(x_1) = q_C$, then the voter is indifferent and, as such, he can reelect the incumbent with any probability $\rho(x_1) \in [0, 1]$.

For the remainder of this section I study first-period policy choices.

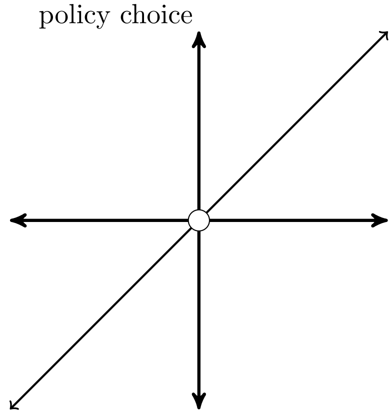
First-best Outcomes

I begin by characterizing the first-best outcome for the voter. Because the voter only cares about policy outcomes, this is equivalent to the incumbent making the myopically optimal policy choice given her information. Consequently, the first-best outcome is for an informed incumbent to choose $x_t = \omega_t$ and an uninformed incumbent to choose $x_t = 0$. Figure 1 illustrates these policy choices.

In this case, the only loss in voter welfare is from an uninformed type being unable to match the state. Furthermore, under such a configuration the voter always reelects the incumbent after seeing any $x_1 \neq 0$, because this indicates the incumbent is high quality. The voter always removes the incumbent after seeing $x_1 = 0$, because with probability 1 the policy was chosen by the uninformed type. Thus, this configuration of policy choices provides the voter with his highest static and dynamic payoffs. While this profile of actions is optimal for the voter, is it possible to support such behavior as an equilibrium?

Under the first-best strategy profile a high quality incumbent never deviates, because she obtains her best policy outcome and gets the office benefit in each period. Therefore, all that remains is to verify that the low quality type of the incumbent does not want to choose a different policy. In particular, the low quality incumbent must prefer choosing her ideal policy and getting removed from office over choosing any other policy and getting reelected.

Figure 1: First-best policy choices.



Note: Figure 1 depicts the policy choices for the incumbent in a first-best strategy profile. The line gives the policy choices for an informed incumbent as a function of her information. The circle represents the policy choice of an uninformed incumbent. As shown, in the first-best outcome for the voter policy choices for informed types lie on the 45 degree line and the uninformed type chooses the expectation of the state.

Formally, this holds when

$$\begin{aligned} &-\sigma^2 + \beta - (1 - q_C)\sigma^2 \geqslant -2\sigma^2 + 2\beta, \\ &\Leftrightarrow q_C\sigma^2 \geqslant \beta. \end{aligned} \tag{1}$$

Equation (1) reveals that the first-best outcome can be supported as an equilibrium when office benefits are not too high.[5]

Overreacting and Posturing

I now precisely define overreacting and posturing policy responses. If the incumbent learns that $\omega > 0$ and chooses a policy $x > \omega$, or if $\omega < 0$ and she chooses a policy $x < \omega$, then I say the incumbent overreacts to her information. This definition is akin to the definitions used in Prendergast and Stole (1996) and Kartik, Squintani and Tinn (2015).

When the executive is uninformed, she should choose the policy that is ex ante expected to be correct, i.e., $x = 0$. If the uninformed type instead chooses a different policy, $x \neq 0$,

[5]Note, the voter removes from office the $\omega_1 = 0$ type of informed incumbent — meaning he does not actually perfectly screen the types. Additionally, in analyzing when the low quality type would not deviate from the first-best strategy, this is technically not an equilibrium, as the $\omega_1 = 0$ type has a best-response problem. I ignore the issue, as this type has measure zero and, hence, does not affect the voter's welfare. Furthermore, if there was a messaging stage where the incumbent could state if she was high or low quality, then a separating equilibrium exists, which is sufficient for the discrepancy to disappear. Finally, this issue does not arise in the main equilibrium analysis.

I say that the incumbent postures. Put differently, an incumbent postures if she adopts an overly bold or extreme action in order to appear informed and capable to the electorate, despite being uncertain about the correct course of action. This definition of posturing extends the behavior studied in Fox and Stephenson (2011) to a continuous policy space.

Given these definitions, politicians may choose policies that overreact to the left or right, or posture in either direction. Consider the stylized example of a policymaker deciding how to respond to an economic crisis. Assume the public believes government spending should be moderately increased in order to combat the crisis. The executive, however, has information suggesting that a somewhat larger increase in spending is optimal. The incumbent overreacts to this information if she implements a much larger stimulus plan than what her information suggests. If the policymaker instead learns that the best method for navigating the crisis is a small increase in government spending, then she can overreact to this information by adopting severe austerity measures. Alternatively, exaggerating policy to the left could interpreted as underreacting and exaggerating to the right as overreacting.

Equilibrium Behavior

What if office benefits are not low? For many positions in which the executive has significant decision-making power it is natural to think that office benefits are quite high and, all else equal, that the incumbent prefers to get reelected even if she is low quality. The remainder of the section is devoted to studying policymaking distortions that arise in this case. Moving forward, assume $\beta > q_C\sigma^2$.

For characterizing behavior, it is convenient to define $\overline{x}$ and $\underline{x}$ as the positive and negative solutions, respectively, to

$$-\sigma^2 + \beta - (1 - q_C)\sigma^2 = -x^2 - 2\sigma^2 + 2\beta. \tag{2}$$

The left-hand side of equation (2) gives the expected utility to a low quality incumbent for choosing $x = 0$ and being removed from office. The right-hand side gives the low quality type's expected utility for choosing policy x and being reelected. Thus, $\underline{x}$ and $\overline{x}$ make the uninformed type indifferent between choosing her ideal policy and getting kicked out, or choosing one of these cut-points and being retained. The first proposition shows that these cut-points play an important role in determining equilibrium behavior by the uninformed type.

Proposition 1. *In equilibrium, the uninformed type never chooses $x_1 > \overline{x}$ or $x_1 < \underline{x}$.*

By definition of $\overline{x}$ and $\underline{x}$, a low quality incumbent prefers to choose $x_1 = 0$ and lose the election, rather than pick an extreme policy ($x_1 < \underline{x}$ or $x_1 > \overline{x}$) and win reelection. Uncertainty faced by the uninformed type limits the extent of the incumbent's willingness to choose policies that are too extreme in either direction. As shown below, in equilibrium this leads to the voter updating negatively about the incumbent following a moderate policy choice ($x_1 \in [\underline{x}, \overline{x}]$).

Before characterizing equilibrium behavior, it useful to separately define the cut-point ω^* in the state space as

$$\omega^* = \sqrt{\beta - q_C \sigma^2}.$$

Additionally, define $\overline{\Pi}$ and $\underline{\Pi}$ as

$$\overline{\Pi} = \frac{q_I(1-q_C)}{(1-q_I)q_C}\Big(F(\omega^*) - F(0)\Big)$$
$$\underline{\Pi} = \frac{q_I(1-q_C)}{(1-q_I)q_C}\Big(F(0) - F(-\omega^*)\Big).$$

With these cut-points in hand, the next proposition characterizes the selection of equilibria I study moving forward.

Proposition 2. *There exist perfect Bayesian equilibria of the model characterized as follows:*

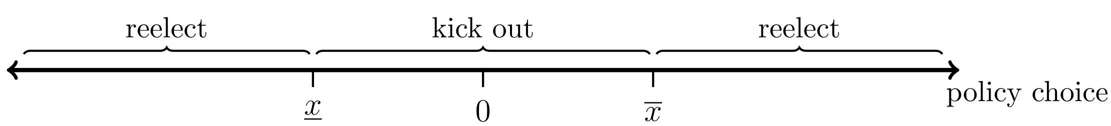
1. *Voting Behavior:*
   (a) *If $x_1 \leqslant \underline{x}$ or $x_1 \geqslant \overline{x}$, then the voter reelects the incumbent.*
   (b) *If $x_1 \in (\underline{x}, \overline{x})$, then the voter kicks out the incumbent.*
2. *Informed Incumbent:*
   (a) *If $\omega_1 \in [0, \omega^*)$, then I* ***overreacts to the right*** *and chooses $x_1 = \overline{x}$.*
   (b) *If $\omega_1 \in [-\omega^*, 0)$, then I* ***overreacts to the left*** *and chooses $x_1 = \underline{x}$.*
   (c) *If $\omega_1 \leqslant -\omega^*$ or $\omega_1 \geqslant \omega^*$, then I chooses the* ***first-best*** *policy $x_1 = \omega_1$*
3. *Uninformed Incumbent:*
   (a) *With any probability $\overline{\pi} \in [0, \min\{1, \overline{\Pi}\}]$, I* ***postures to the right*** *and chooses $x_1 = \overline{x}$.*
   (b) *With any probability $\underline{\pi} \in [0, \min\{1-\overline{\pi}, \underline{\Pi}\}]$, I* ***postures to the left*** *and chooses $x_1 = \underline{x}$.*
   (c) *With probability $1 - \underline{\pi} - \overline{\pi}$, I chooses the* ***first-best*** *policy $x = 0$.*

Off the path of play assume the voter believes the incumbent is uninformed with probability 1.

Proposition 2 demonstrates that policy choices are distorted compared to the first-best outcome when $\beta > q_C\sigma^2$. If the first-period policy is in the interval $(\underline{x}, \overline{x})$, then the voter chooses to elect the challenger rather than the incumbent. In equilibrium, the voter cannot reelect the incumbent following policies that are too moderate, because the low quality type would deviate and choose this policy. For this reason, the voter only reelects the incumbent when the policy is sufficiently extreme, $x_1 > \overline{x}$ or $x_1 < \underline{x}$, because the low quality type is unwilling to choose such extreme policies. Furthermore, the voter is willing to reelect when $x_1 = \overline{x}$ or $x_1 = \underline{x}$, because the uninformed type chooses the boundaries with low enough frequency. Figure 2 illustrates electable policies.

If the incumbent learns that the state of the world is extreme relative to the expected state, $\omega_1 \leqslant -\omega^*$ or $\omega_1 \geqslant \omega^*$, then she chooses the optimal policy and is reelected. Hence, there is no distortion in policymaking by these types.

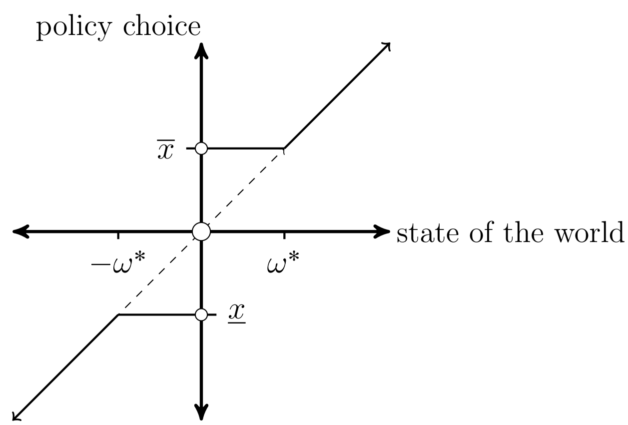
Figure 2: Equilibrium voting



On the other hand, if the incumbent knows that the correct policy choice is a moderate action near 0, then she overreacts to this information. Specifically, if the incumbent learns $\omega_1 \in [0, \omega^*)$, then she exaggerates policy in the direction of this information, and chooses $x_1 = \overline{x}$. By construction, $\overline{x}$ makes a low quality incumbent indifferent between choosing $x_1 = \overline{x}$ and choosing $x_1 = 0$. Thus, because $\overline{x}$ is closer to ω_1 than it is to 0, the high quality incumbent strictly prefers choosing $x_1 = \overline{x}$ and being reelected over choosing $x = \omega_1$ and being kicked out. Furthermore, an informed incumbent is more motivated to get reelected relative to a low quality type, because her reelection ensures that the second period policy choice is made by a high quality type. Analogous reasoning explains why the officeholder chooses $x_1 = \underline{x}$ when $\omega_1 \in (-\omega^*, 0)$. Figure 3 summarizes policy choices as a function of the incumbent politician's information.

Finally, consider policymaking by a low quality incumbent. An uninformed incumbent never chooses a policy more extreme than $\overline{x}$ or $\underline{x}$, because this yields strictly worse policy utility and does not change her probability of reelection. Similarly, she never chooses a policy in the interval $(\underline{x}, \overline{x})$ that is different from 0. When the uninformed type chooses $\overline{x}$ or $\underline{x}$,

Figure 3: Equilibrium policy choices



Note: The black arrows represent policy choices by an informed incumbent. The circles depict the policies over which an uninformed incumbent mixes. The dashed line shows the first-best policy choice, given the officeholder's information.

she is posturing by adopting an extreme policy, despite having no information that suggests the correct policy lies in that direction. Alternatively, choosing $x = 0$ signals that she is uninformed and, thus, she is removed from office for certain. The incumbent is willing to forgo reelection in this case, because she obtains her highest expected policy payoff.

In equilibrium, the uninformed incumbent is indifferent over $\underline{x}$, 0, and $\overline{x}$, thus, she is willing to mix with any probability over these policies. However, the probability she can place on choosing a reelectable policy is bounded above by the probability that the policy is chosen by a high quality incumbent. The low quality incumbent cannot choose $\underline{x}$ or $\overline{x}$ too often because doing so causes the voter's belief that the incumbent is high quality to fall below q. As a result, the voter would no longer be willing to reelect after seeing $\underline{x}$ or $\overline{x}$. Although a fully separating equilibrium exists, posturing by the low quality type is crucial in the later section on executive policymaking under constraints, or under the alternative assumption that the policy space is bounded.

Proposition 2 characterizes an equilibrium, but does not address what other behavior can arise in equilibrium. Especially given the continuous action space, it may be that many behaviors can be supported in a perfect Bayesian equilibrium. The following proposition and discussion considers how the D1 refinement (Cho and Kreps, 1987) applies to the model.

Proposition 3. *The equilibria characterized by Proposition 2 survive D1.*

Any policy $x \in (\underline{x}, \overline{x})$, with $x \neq 0$, is off the path of play. In this case, D1 requires the voter to update that the incumbent is the uninformed type. Although both types can potentially benefit from choosing $x \in (\underline{x}, \overline{x})$ and winning with positive probability, the gain to the uninformed type is relatively larger. The equilibrium payoff to both the uninformed and an informed type with $\omega \in (0, \overline{x})$ is pinned down by the utility from choosing $\overline{x}$ and winning with probability 1. However, the uninformed type's ideal policy is $x = 0$ and the informed type's ideal policy is $x = \omega > 0$. Thus, by concavity, the gains to the uninformed type from deviating are relatively larger. Additionally, the informed type is relatively less willing to deviate because winning reelection ensures the second period policy is made by a high quality officeholder.

When $\underline{\Pi} + \overline{\Pi} \leqslant 1$ every PBE that survives D1 is characterized by Proposition 2. Note, that a sufficient condition for this to hold is that $q_C \geqslant q_I$. If $\underline{\Pi} + \overline{\Pi} > 1$, then there exist other PBE that survive D1 when q_I is sufficiently large relative to q_C. In particular, they are described by cut-points $\underline{x}', \overline{x}'$, with $\underline{x} < \underline{x}' < \overline{x}' < \overline{x}$. In such an equilibrium, a low quality incumbent only mixes over $\underline{x}'$ and $\overline{x}'$ and always wins reelection. Overall, because these equilibria induce similar behavior as those characterized in the Proposition 2, I do not focus on them. Thus, when $\overline{\Pi} + \underline{\Pi} > 1$, the results should be viewed as selecting the equilibria with the maximal amount of overreacting, or as selecting the equilibria in which the low quality type does not always mimic a high type. See Propositions A1 and A2 in the Appendix for further details.

Finally, notice that overreacting and posturing can increase in two ways. First, the probability the executive exaggerates policy can increase. This probability increases if the set of types that overreact to information increases, or if the uninformed type postures more often. In equilibrium, the probability the incumbent overreacts or postures is given by $q\Big(F(\overline{x}) - F(\underline{x})\Big) + (1-q)\Big(\underline{\Pi} + \overline{\Pi}\Big)$. Second, the degree to which policy is exaggerated can increase. Proposition 4 studies how increasing office benefit impacts overreacting and posturing.

Proposition 4. *Increasing office benefit increases $\overline{x}$, $\frac{\partial \overline{x}}{\partial \beta} > 0$, and decreases $\underline{x}$, $\frac{\partial \underline{x}}{\partial \beta} < 0$. Furthermore, if $\beta \to \infty$, then $\underline{x} \to -\infty$ and $\overline{x} \to \infty$.*

If $\overline{x}$ increases and $\underline{x}$ decreases, then policy distortions are more extreme. Additionally, the probability of overreacting and posturing increase, because more high quality types overreact and low quality types can posture more often. This implies that increasing office benefit decreases voter welfare. Moreover, if office benefit becomes large then the distortions from overreacting and posturing also become large. Note that increasing office benefit can also be interpreted as decreasing the weight the incumbent places on policy utility versus winning the election.

Although Proposition 4 shows what happens if office benefit becomes large, it does not characterize equilibrium outcomes if $\beta = \infty$. Specifically, it is important for the results that politicians place some weight on policy outcomes. If not, i.e., politicians only care about winning reelection, then the different types of the incumbent do not have differential costs for policy choices and the strategic interaction is significantly altered. However, if politicians place any positive weight on policy outcomes, i.e., $\beta < \infty$, then the characterization from Proposition 2 applies.

Voter Welfare

I now consider the effects of overreacting and posturing on voter welfare. The first proposition studies the effect of candidate quality on voter welfare.

Proposition 5. *Increasing q_C increases voter welfare. If β is sufficiently high, then increasing q_I decreases voter welfare.*

Stronger challengers always improve welfare. They limit the extent of overreacting by making the incumbent less concerned about losing. Additionally, it decreases the probability of posturing by making the voter more willing to elect the challenger. On the other hand, stronger incumbents can decrease welfare when office benefit is large. Specifically, increasing q_I makes the voter worse off in this case since the probability of overreacting offsets the probability the informed type follows her signal. Moreover, this increases the maximal amount of posturing that can be supported in equilibrium.

Although increasing office benefit decreases voter welfare, it does not necessarily imply that elections are always bad for the voter. Indeed, elections help the voter select high quality officeholders for policymaking in the second period.[6] An alternative to granting authority to an elected executive is to have the ex ante optimal policy implemented. Substantively, this could be interpreted as the bureaucracy simply maintaining the ex ante optimal policy, that policy is decided via direct democracy, or that it is chosen by the principal in non-electoral applications. Doing so removes distortions due to overreacting and posturing, however, it is costly as policymaking is poorly informed in both periods for certain.

The next implication pulls together Proposition 4 and this discussion.

Implication 1. If office benefit is sufficiently low, then policy should be made by an elected executive. Otherwise, the executive should not be given policymaking authority.

When office benefit is high the distortions from accountability eventually outweigh the selection effects. This result also differs from the welfare implications in Canes-Wrone, Herron

[6] This reinforces the point made by Fearon (1999) and subsequent authors that there may be a tension in controlling versus selecting politicians.

and Shotts (2001), where accountability and signaling expertise creates pandering. In their model, it is always better to have an elected official than to commit to implementing the ex ante optimal policy. Why is this? With pandering choices are distorted towards the ex ante popular policy, and the high quality type always makes the optimal choice. Thus, the worst-case scenario is that all the low types choose the ex ante optimal policy. Consequently, committing to always implement the ex ante optimal can only decrease voter welfare.

Alternatively, the voter can remove distortions created by electoral accountability by committing to always keep the incumbent in office.

Implication 2. If office benefit is sufficiently low, then policy should be made by an elected executive. Otherwise, the voter should commit to always reelecting the incumbent.

Similar to the previous implication, if the distortions from overreacting and posturing are sufficiently severe, then voter welfare is higher if the incumbent does not have to worry about winning reelection. The downside to such an arrangement is that the uninformed type is also always reelected, leading to worse policy in the second period. Related, Patty and Turner (2021) find that removing bureaucratic oversight can be beneficial by eliminating overreacting by bureaucrats. Removing oversight is optimal when there is policy disagreement between the agent overseer and there is not much uncertainty about the state. This is similar in flavor to the result here that when office benefit is low it is better to have no constraints on the incumbent.

Finally, a more nuanced mechanism is to limit the executive's policymaking options without fully removing her discretion. Constraints can be implemented through a number of sources, such as constitutional restrictions, legislative oversight, or judicial review. To address this possibility, modify the model so that the executive is constrained to choosing policies from the interval $[-\Psi, \Psi]$. Although I take a reduced form approach, modeling the details of specific institutions could uncover important new behaviors.

To start, note that if $\Psi \geqslant \overline{x}$, then constraints have no effect on incumbents who are overreacting or posturing, their behavior is still characterized by $\overline{x}$ and $\underline{x}$. However, types for whom $|\omega| > |\Psi|$ now must choose Ψ or $-\Psi$ instead of $x = \omega$. Additionally, such constraints dampen voter welfare in the second period of policymaking. Consequently, *weak* constraints create new distortions, while doing nothing to mitigate the original problem.

Having established the inferiority of weak constraints, I now characterize equilibrium behavior when executive constraints are strong. Let $V_C(\Psi)$ be the expected policy utility from electing the challenger given constraint Ψ.

Proposition 6. *Assume constraints are strong, $\Psi < \overline{x}$.*

1. *Suppose the incumbent is popular, $q_I > q_C$.*

- *Informed Incumbent: If* $\omega \geqslant 0$ *then* I *chooses* $x_1 = \Psi$*. If* $\omega < 0$ *then* I *chooses* $x_1 = -\Psi$*.*
- *Uninformed Incumbent:* I *chooses* $x = \Psi$ *with probability* $1 - F(0)$ *and* $x = -\Psi$ *with probability* $F(0)$*.*
- *The voter always reelects the incumbent on the path of play.*

2. *Suppose the incumbent is unpopular,* $q_I < q_C$*.*
   - *Informed Incumbent: If* $\omega \geqslant 0$ *then* I *chooses* $x_1 = \Psi$*. If* $\omega < 0$ *then* I *chooses* $x_1 = -\Psi$*.*
   - *Uninformed Incumbent:* I *chooses* $x = \Psi$ *with probability* $\frac{q_I(1-q_C)}{q_C(1-q_I)}\Big(1 - F(0)\Big)$ *and* $x = -\Psi$ *with probability* $\frac{q_I(1-q_C)}{q_C(1-q_I)}F(0)$*.*
   - *Following* $x_1 = \Psi$ *or* $x_1 = -\Psi$ *the voter reelects the incumbent with probability* $\rho(\Psi) = \rho(-\Psi) = \frac{\Psi^2}{\beta - \sigma^2 - V_C(\Psi)}$*.*

By removing the incumbent's freedom to choose increasingly extreme policies, strong constraints make it impossible to separate a high ability incumbent from a low ability incumbent. In the model without constraints, an equilibrium with no posturing always exists. However, posturing is an integral component of policy responses when the executive does not have unlimited discretion to react to the crisis.[7] Thus, constraints mute the selection benefits of accountability. When the incumbent is popular both the high and low quality types always win reelection. When the incumbent is unpopular the voter cannot always reelect following $x_1 \in \{-C, C\}$, as the challenger is ex ante more likely to be high quality. Thus, the voter must mix over reelecting the incumbent or electing the challenger in order to make the uninformed type indifferent. In turn, this requires the uninformed type to choose the the bounds of the constraint set with high enough probability to make the voter indifferent.

I now study the choice of constraints Ψ that maximize voter welfare. From earlier, it is clear that $\Psi \in (\overline{x}, \infty)$ cannot be optimal. Thus, I compare welfare under the optimal $\Psi \in [0, \overline{x}]$ to welfare under no constraints. Given the interest in maximizing voter welfare, I select the equilibrium in which the low quality type separates from the high ability type in the no constraints case.

Proposition 7. *There exists* $\hat{\beta}$ *such that the voter's optimal constraint is* $\Psi^* \in (0, \overline{x})$ *if and only if* $\beta > \hat{\beta}$*.*

[7] Fox and Stephenson (2011) also find that judicial review can incentivize an uninformed incumbent to posture. However, as noted earlier, their model has a binary policy space and thus their analysis does not account for overreacting by informed politicians.

When office benefit is large, Proposition 4 implies that policy responses become arbitrarily distorted if the officeholder is unconstrained. Consequently, despite their downsides, constraints are optimal if the executive is highly office motivated. Otherwise, no constraints are optimal. No constraints reap the benefits of electoral selection and officeholder ability.

If constraints are optimal,then Ψ^* is bounded away from $\overline{x}$. Setting $\Psi^* = \overline{x}$ has the same problem as weak constraints. Thus, constraints should be fairly limiting when they are placed on the executive. However, Ψ^* is also always strictly positive. Fully constraining the executive is never optimal because there are large gains from giving a small amount of discretion in the event of an extreme realization of ω, relative to the loss from allowing small degree and probability of overreacting and posturing.

The Effects of Ideology

I now incorporate ideological differences into the model. The players may disagree over the extent of action that is warranted, even when the state of the world is known. Assume the incumbent has bias R, the challenger bias L, and $L < 0 < R$. In state ω_t, the payoff for policy x is $-(x - \omega_t - R)^2$ to the incumbent, and is $-(x - \omega_t - L)^2$ to the challenger.[8] The voter's payoff remains $-(x - \omega_t)^2$. To focus on differences driven by ideology, assume $q_I = q_C = q$. Define *polarization* in the model as the difference between the incumbent and the challenger's bias. In order to further simplify expressions, define $\underline{R}$, $\overline{R}$, and ω_R^* as

$$\begin{aligned} \underline{R} &= \sqrt{\max\{0, L^2 - q\sigma^2\}}, \\ \overline{R} &= \sqrt{L^2 + (1-q)\sigma^2}, \\ \omega_R^* &= \sqrt{\beta - q\sigma^2 + (R-L)^2}. \end{aligned}$$

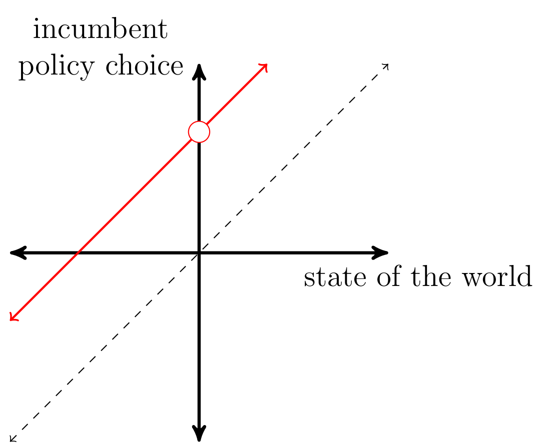
The voter may always prefer a politician from the ideologically closer party. If $R \in (0, \underline{R})$, then the voter prefers to reelect a low quality incumbent over the challenger. Alternatively, if $R > \overline{R}$, then the voter prefers the challenger, even if the incumbent is high quality. In either case, I say the election is *lopsided*. Otherwise, if $\underline{R} \leqslant R \leqslant \overline{R}$, then the election is *competitive*. Proposition 8 summarizes lopsided elections.

[8] For the results on polarization it is important that the incumbent cares about the second period policy. This assumption is a cornerstone of citizen-candidate models of electoral accountability (e.g., Osborne and Slivinski, 1996; Besley and Coate, 1997). Additionally, it is consistent with the casual observation that officeholders in high level executive positions often continue caring about policy outcomes after leaving office. For example, after leaving office Barack Obama criticized later attempts to repeal the Affordable Care Act, Donald Trump's decisions to withdraw from the Paris Accord, and the decision to withdraw from the Iran nuclear deal.

Proposition 8. *Assume the election is lopsided. If the incumbent is high quality, then* $x_1 = R + \omega$*. If the incumbent is low quality, then* $x_1 = R$*. The voter always reelects the incumbent when she is advantaged. By contrast, the voter always elects the challenger when the incumbent is disadvantaged.*

Overreacting and posturing disappear when the incumbent has a strong electoral advantage due to ideology. Because the voter always reelects the incumbent, the incumbent's incentives to distort policy disappear and she chooses her myopically optimal policy. In this way, large ideologically differences can act as a commitment device for the voter, and potentially improve welfare. Figure 4 plots a biased incumbent's policy choice in a lopsided election against the first-best choice. A similar conclusion holds if the incumbent is ideologically disadvantaged.

Figure 4: Lopsided election policy choices



Note: The red arrow gives policy choices by an incumbent with bias R in a lopsided election, while the red circle represents the policy chosen by an uninformed incumbent. The dashed line illustrates the optimal policy choice for the voter.

In a competitive election, however, the incumbent can still win or lose the election. To characterize equilibrium, let $\overline{x}_R = R + \omega_R^*$ and $\underline{x}_R = R - \omega_R^*$. Additionally, define $\overline{\Pi}_R$ and $\underline{\Pi}_R$ as

$$\overline{\Pi}_R = \left(\frac{q}{1-q}\frac{1-q-\frac{R^2-L^2}{\sigma^2}}{q+\frac{R^2-L^2}{\sigma^2}}\right)\Big(F(\omega_R^*) - F(0)\Big)$$

$$\underline{\Pi}_R = \left(\frac{q}{1-q}\frac{1-q-\frac{R^2-L^2}{\sigma^2}}{q+\frac{R^2-L^2}{\sigma^2}}\right)\Big(F(0) - F(-\omega_R^*)\Big).$$

The next proposition summarizes equilibrium behavior in competitive elections, and explores how changes in polarization between the candidates affects policymaking.

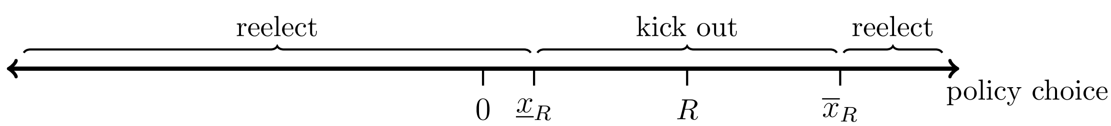
Proposition 9. *Assume the election is competitive.*

1. *Substituting in $\omega_R^*, \overline{x}_R, \underline{x}_R, \overline{\Pi}_R$, and $\underline{\Pi}_R$, there exist perfect Bayesian equilibria characterized analogously to Proposition 2.*

2. *The cutoff ω_R^* is increasing in polarization.*

Behavior is again characterized by an interval of policies, where $\underline{x}_R$ and $\overline{x}_R$ are given by an indifference condition for the low quality type. In this case, the non-reelection interval is shifted to center around R. Figure 5 illustrates voting behavior, while Figure 6 shows policy choices by an ideologically biased incumbent.

Figure 5: Voting in competitive elections



Note: Figure 5 shows which policy choices lead to reelection when the incumbent has an ideological bias and the election is competitive. If x_1 is below the lower cut-point $\underline{x}_R$ or above the upper cut-point $\overline{x}_R$ then the voter reelects the incumbent. If x_1 is in between then the voter instead elects the challenger.

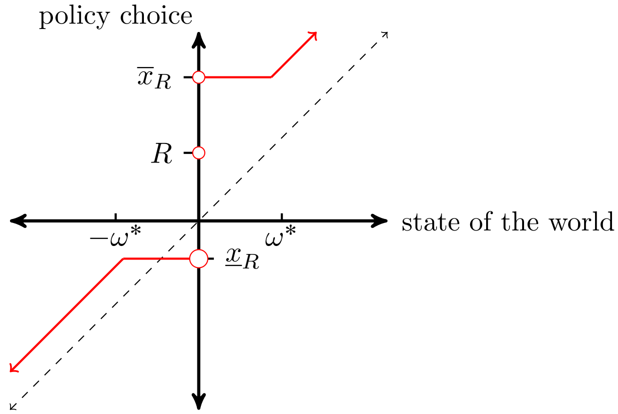
Part 2 of Proposition 9 analyzes the effects of increasing polarization between the candidates. It implies that greater polarization increases the degree to which the incumbent overreacts and postures in competitive elections. This effect exists because increasing polarization makes losing the election worse for the incumbent in terms of her policy payoffs.[9] As a consequence, the cut-points $\underline{x}_R$ and $\overline{x}_R$ push further apart, increasing the frequency and extent of overreaction. This also implies that the incumbent chooses more extreme policies when posturing. However, the probability of posturing may increase or decrease. This depends on whether polarization is due to the incumbent or challenger becoming more extreme.

Implication 3 pulls together Propositions 8 and 9 to study the overall effect of incumbent extremism on policymaking.

Implication 3. If the election is competitive, then increasing R increases overreacting. If the election is lopsided, then there are no policy distortions. Furthermore, overreacting is non-monotonic in the incumbent's ideological bias.

[9] Bernhardt et al. (2009) and Van Weelden (2013) also find that party competition can make officeholders more responsive to voters. In these papers, however, this effect leads to beneficial moderation or higher effort by officeholders, whereas here it incentivizes detrimental extremism.

Figure 6: Policy choices in competitive elections



Note: The red arrows depict the policy choices of a high quality incumbent with bias R in a competitive election. If $\omega \in (-\omega^*, \omega^*)$, then the incumbent overreacts to her information. The circles represent mixing over $\underline{x}_R$, R, and $\overline{x}_R$ by an uninformed incumbent.

The logic for this implication follows from Propositions 8 and 9. When the election is competitive, the voter's reelection decision is contingent on his beliefs about the incumbent's competence. Consequently, the incumbent is incentivized to exaggerate policy in order to win reelection. However, if one candidate is significantly more ideologically aligned with the voter, then the election is lopsided and the voter's decision does not depend on his beliefs. As a result, the incentive to overreact and posture disappears. This also implies that exaggerated responses are non-monotonic in the ideological extremism of the incumbent. When the incumbent is much further from the voter than the challenger, the election is lopsided in favor of the challenger. As R moves in towards 0, the incumbent gets closer to the voter ideologically, eventually the election becomes competitive, and this creates exaggerated policy choices. Finally, as R approaches 0 either $\overline{x}_R - \underline{x}_R$ reaches its minimum value, or the incumbent becomes much closer to the voter than the challenger and the election again becomes lopsided.

When $\sigma^2 \approx 0$ this captures the case where there is no crisis. As there is no uncertainty over the optimal policy, the election is lopsided and the voter always elects the ideologically closer candidate. As such, a significant crisis (σ^2 sufficiently large) provides an ideologically disadvantaged incumbent the opportunity to win reelection. This implies there is an incentive for ideologically unpopular incumbents to exaggerate the extent of the crisis, and popular incumbents to downplay the size crisis. With no crisis, the voter's beliefs about the competence of the politician are irrelevant. Since the voter has uncertainty about the incumbent's competence, whether the incumbent is ahead or not on the known dimension of ideology determines whether she wants to make the unknown aspect salient to the election. Future work could build on this model to explore these dynamics further. Similarly, crises may provide the incumbent an opportunity to move policy on other dimensions.

Polarization and Reelection

I now analyze how the incumbent's reelection probability changes as polarization increases.

High quality politicians are always reelected in equilibrium. Thus, any changes in the probability of retaining the incumbent are due to changes in how often the low quality type is reelected in the equilibrium with maximum posturing. Throughout, I focus on changes in the maximum amount of posturing that can be supported in equilibrium, i.e., changes in $\overline{\Pi}_R$ and $\underline{\Pi}_R$. There are two channels through which ideology affects this probability. First, the extremism of the incumbent relative to the challenger affects the voter's reelection standard. Specifically, it alters how certain the voter must be that the incumbent is the high type in order to reelect. If the incumbent is more extreme, the voter must be more certain that the officeholder is high quality, in order to mitigate the downside of the known bias. The second channel is that the extremism of the incumbent relative to the challenger impacts the incumbent's desire to get reelected. If the incumbent is more incentivized to hold onto office, then the high quality type overreacts for a larger set of states, and this allows the low type to posture more often. Depending on how polarization increases, it may have different effects through these two channels.

Proposition 10. *(Symmetric Polarization)*
Suppose the challenger and incumbent have biases that are equally distant from the median voter. Symmetrically increasing polarization weakly increases the probability that the incumbent wins reelection.

If the challenger and incumbent are relatively similar distances from the voter, then increasing the extremism of both candidates increases the incumbent's probability of victory. The first channel is mitigated because the candidates have similar degrees of bias and, thus, the second channel determines the probability of victory. Because greater polarization increases the incumbent's desire to win re-election, high types are more likely to overreact. Consequently, the low type can posture more frequently in equilibrium, resulting in a higher observed re-election rate.

On the other hand, large asymmetries in the extremism of the candidates force us to account for both effects. Additionally, polarization's effect depends on whether it is primarily driven by the incumbent becoming more extreme, or if it is due to the challenger.

Proposition 11. *(Challenger Driven Polarization)*
Increasing the challenger's ideological bias weakly increases the probability that the incumbent wins reelection.

If polarization increases because of the challenger, then both effects work in the same direction and the incumbent's probability of winning increases. In contrast, incumbent-driven polarization may increase the incumbent's probability of victory.

Proposition 12. *(Incumbent Driven Polarization)*
Assume F is log-concave, twice differentiable, and f is symmetric about 0. Suppose the incumbent and challenger are initially unbiased. There exists a threshold on office benefit, $\beta^* > q\sigma^2$, such that if $\beta \in (q\sigma^2, \beta^*)$, then increasing the incumbent's ideological bias weakly increases the probability the incumbent wins reelection.

In this case, the two channels work in opposite directions, small increases in incumbent extremism can increase the observed incumbent probability of victory. Increased incumbent bias increases the reelection rate if office benefits are not too large. With low office benefit, the incumbent's increased motivation to prevent the challenger holding office outweighs the voter's more stringent reelection standards. Of course, the incumbent always loses reelection if she is too extreme. Thus, overall, incumbent driven polarization has a non-monotonic effect on the incumbent's probability of victory, under these conditions.

Finally, Implication 4 provides insight into how the candidates' relative extremism affects the quality of politicians who win reelection.

Implication 4. Conditional on being reelected, an incumbent who is more biased than the challenger is more likely to be high quality than an incumbent who is less biased than the challenger.

If the incumbent is ideologically closer to the voter than the challenger, $|R| < |L|$, then the voter is willing to reelect the incumbent, even if she is less likely to be high quality than the challenger. As such, the uninformed type is able to posture more frequently and still get reelected. By contrast, consider when the incumbent favors more extreme interventions relative to the challenger, $|R| > |L|$. In this case, the voter is more inclined to elect the challenger, which means the uninformed type cannot posture as frequently. Therefore, there is better selection of high quality types from an incumbent more biased than the challenger, relative to the voter's preference.

Ideology and Voter Welfare

The next two propositions consider the effects of ideological extremism on voter welfare.

Proposition 13. *Assume f is symmetric about 0. Suppose the incumbent and challenger have ideological biases equally distant from the voter, thus, the election is competitive. Symmetrically increasing polarization decreases voter welfare.*

Proposition 13 shows that if the incumbent and challenger are similarly extreme, then symmetrically increasing polarization decreases voter welfare. There is both the direct effect of making the incumbent more biased, and the indirect effect where the incumbent becomes more incentivized to distort policy in order to prevent the challenger from winning. Additionally, because the incumbent and challenger are relatively similar distances from the voter, the incumbent does not change how often she postures.

The previous result only considers competitive elections, since it assumes that the incumbent and challenger are equally distant from the voter's ideal point. If the election can become lopsided, then the non-monotonicity of overreacting and posturing in ideology indicates that voter welfare may also be non-monotonic. Lopsided elections remove the incumbent's electoral accountability because the voter always reelects or always kicks out the incumbent. Altering the ideology of the incumbent creates an avenue through which there can be commitment to keeping or removing the incumbent.

Proposition 14. *Assume office benefit is sufficiently large. If $L^2 < q\sigma^2$, then voter welfare is maximized at $R = \overline{R} > 0$. Otherwise, if $L^2 > q\sigma^2$, then voter welfare is maximized when the incumbent has a matching ideology, $R = 0$.*

Voter welfare can be higher when the incumbent has an ideological bias different from the voter. This is the case if office benefits are high and the challenger is not overly extreme. A lopsided election removes disproportionate policy responses and, consequently, the voter does better with an ideologically extreme incumbent in order to eliminate distortions. If office benefits are instead relatively low, then the distortions from accountability are less severe and the voter prefers a moderate incumbent.

Extensions

The main mechanism is robust to extending the baseline model in a number of directions. I show that the core characterization in which politicians distort policy away from the ex ante optimal policy continues to holds if: (i) the low quality incumbent observes a partially informative signal; (ii) there is some probability that the voter observes the effectiveness of the policy before the election; (iii) the state of the world in the second period is correlated with the state in the first period; (iv) some fraction of politicians always follow their signal;

or (v) ideological conflict is orthogonal to the crisis response. For further details, see the Appendix.

Noisy Signals. If the low quality type observes a noisy signal of the state, then she is less confident in choosing that policy relative to the high quality type who receives the same signal. Therefore, the distribution of ideal policies of the low type places more weight close to the ex ante optimal policy than the distribution of ideal policies of the high quality type. Thus, the voter continues to not reelect the incumbent if she chooses a policy close to 0, which again incentivizes exaggeration. Furthermore, increasing the accuracy of the low type's signal increases distortion. This is because the low type becomes more willing to choose the same policy as the high type that receives the same signal. As a result, separating a high quality politician from a low quality politician requires the voter only reelects the incumbent for even more extreme policies.

Policy Feedback. Assume the state is revealed with some probability before the election. In this case, the equilibrium non-reelection interval is a strict subset of $[\underline{x}, \overline{x}]$. Exaggerating policy becomes less appealing to the uninformed type, because it no longer guarantees re-election. Thus, as in related work, the possibility of revelation helps to mitigate distortions. This also creates a new incentive for uninformed types. If F is not symmetric around 0, then $\overline{x}$ and $\underline{x}$ may no longer be equidistant from 0. Because the state is revealed sometimes, the uninformed type is incentivized to try and get lucky by choosing the bound which has the higher probability to be "correct". In response, to maintain indifference, one bound must move further away from 0 than the other.

Correlated States. The baseline model assumes that ω_1 and ω_2 are uncorrelated. However, the model can be extended to allow for the two states to be correlated and still maintain similar equilibrium outcomes. In this case, after seeing the incumbent's policy choice the low type updates about the state of the world. As such, if elected, her policy choice is influenced by the incumbent's policy choice. Consider the strategy profile given in Proposition2. After observing $x_1 > \overline{x}$ the low ability type updates that $\omega_1 = x_1$. However, the voter believes the incumbent to be the high type, thus, the voter still weakly prefers to reelect the incumbent (and this preference is strict if the state is not perfectly persistent). If the incumbent chooses $x_1 = \overline{x}$ then the uninformed challenger updates that $\omega \in [0, \omega^*]$. This makes the low type relatively more attractive to the voter than in the baseline model. However, the low type is still strictly worse for the voter than a known high ability incumbent. Thus, in equilibrium, the voter always reelects the incumbent following $x_1 \in \{\underline{x}, \overline{x}\}$ and the low quality type can still posture with positive probability.

Behavioral Politicians. Assume some fraction of incumbents are behavioral types that always follow their signal. Strategic informed politicians continue to act as before. However, the behavior of the strategic low quality type and the voter becomes less stark over the $[\underline{x}, \overline{x}]$ interval. The low quality type with some probability mimics the behavioral type by continuously mixing over $(\underline{x}, \overline{x})$. In response, the voter reelects probabilistically for $x \in (\underline{x}, \overline{x})$, with the probability increasing away from 0.

Orthogonal Ideology. In the previous section I model ideological disagreement over responses to the crisis. That is, while players may agree that government spending should be increased during a recession, they disagree on the extent of the increase. Alternatively, ideological disagreement could occur on issues orthogonal to the crisis. For example, while voters may care about how well the incumbent manages a public health crisis, they also vote based on her positions on social issues. Specifically, player i's utility is $-(x-\omega)^2 - (\hat{y}_O - \hat{y}_i)^2$, where $\hat{y}_i$ is i's ideal point and $\hat{y}_O$ is the officeholder's. While some differences arise, qualitatively similar results in terms of the equilibrium characterization and the effects of polarization obtain under this alternative specification.

Conclusion

In this paper I have shown how electoral accountability incentivizes politicians to react to crises with policies that exaggerate their information. The key driver of this behavior is that low quality politicians have the most motivation to choose cautious responses. As a consequence, politicians implement extreme policy responses to signal their competence. This occurs even if voters do not believe an extreme response is likely to be warranted. In some cases, limiting the executive's discretion to respond to the crisis can improve voter welfare by preventing large overreactions. These distortions are further exacerbated in competitive elections where the officeholder and the challenger have strong ideological disagreements.

These logic behind these results have implications for the literature on executive politics that debates whether presidents are responsive to public opinion.[10] Some research finds that presidents choose policies that follow public opinion (Page and Shapiro, 1983; Erikson, MacKuen and Stimson, 2002; Edwards III, 2012). Other research argues that presidents lead public opinion (Jacobs and Shapiro, 2000; Rottinghaus, 2010). Still other scholars find that responsiveness is conditional on the prevailing political environment (Canes-Wrone and

[10] See Druckman and Jacobs (2010) and Canes-Wrone (2015) for overviews.

Shotts, 2004; Canes-Wrone, 2010). In my model, policy choices are informative about the correct course of action. The incumbent chooses policies away from what the voter believes to be optimal, yet the voter's beliefs change to follow the politician's choice. Consequently, the model provides a microfoundation for how presidents can lead public opinion and still win reelection.[11]

Given the mixed evidence on presidential responsiveness, scholars have concluded that policy is broadly responsive to the direction of public opinion but not highly congruent to specific policies (Canes-Wrone, 2015). The model is consistent with this conclusion. If the voter's belief about the expected correct policy choice shifts, then executive policy choices shift with it. However, there continues to be significant deviation away from the policy the voter himself would choose.

Additionally, presidents are often viewed unfavorably if they fail to demonstrate leadership (Cohen, 2015). Indeed, Howell (2015) argues that presidents must take "decisive" action. Interpreting the expected correct action as the status quo policy, the model provide a logic for why inaction may be viewed unfavorably by the public. For example, when Ford discussed taking military action against Cambodia with his advisors, he worried that voters would view him as incompetent if he took a more measured approach (Bohn, 2016). One interpretation of the expected correct policy is that it is the status quo. Thus, in the model, choosing expected correct action can be interpreted as doing nothing. Then, in equilibrium, inaction is viewed by voters as a sign of incompetence and leads to the incumbent being removed from office.

In this paper I focus on competence in responding to a crisis, however, the framework can be easily modified to study issues beyond this case. For example, assume party i has ideal policy $\hat{y}_i$ and the voter's ideal policy is given by the state of the world. In this case, types could differ in their degree of partisanship, i.e., the weight they place on the party's platform versus voter welfare. Such a model would have a similar characterization that involves choosing extreme policies away from $\hat{y}$. However, the interpretation, as well as empirical and welfare implications would be different. As such, the model provides a flexible and tractable framework for studying a number of issues related to electoral accountability.

[11] If the incumbent is allowed to send a cheap talk message before policymaking she can also influence beliefs about the correct course of action (but not about ability). Thus, the model is consistent with the use of presidential rhetoric to lead on issues as well.

A Baseline Model

Proposition 2. *There exist perfect Bayesian equilibria of the model that survive D1 characterized as follows:*

1. *Voting Behavior:*
   (a) *If $x_1 \leqslant \underline{x}$ or $x_1 \geqslant \overline{x}$, then the voter reelects the incumbent.*
   (b) *If $x_1 \in (\underline{x}, \overline{x})$, then the voter kicks out the incumbent.*
2. *Informed Incumbent:*
   (a) *If $\omega_1 \in [0, \omega^*)$, then I* ***overreacts to the right*** *and chooses $x_1 = \overline{x}$.*
   (b) *If $\omega_1 \in [-\omega^*, 0)$, then I* ***overreacts to the left*** *and chooses $x_1 = \underline{x}$.*
   (c) *If $\omega_1 \leqslant -\omega^*$ or $\omega_1 \geqslant \omega^*$, then I chooses the* ***first-best*** *policy $x_1 = \omega_1$*
3. *Uninformed Incumbent:*
   (a) *With any probability $\overline{\pi} \in [0, \min\{1, \overline{\Pi}\}]$, I* ***postures to the right*** *and chooses $x_1 = \overline{x}$.*
   (b) *With any probability $\underline{\pi} \in [0, \min\{1 - \overline{\pi}, \underline{\Pi}\}]$, I* ***postures to the left*** *and chooses $x_1 = \underline{x}$.*
   (c) *With probability $1 - \underline{\pi} - \overline{\pi}$, I chooses the* ***first-best*** *policy $x = 0$.*

Off the path of play assume the voter believes the incumbent is uninformed with probability 1.

Proposition 3. *The equilibria characterized by Proposition 2 survive D1.*

Proposition 4. *Increasing office benefit increases $\overline{x}$, $\frac{\partial \overline{x}}{\partial \beta} > 0$, and decreases $\underline{x}$, $\frac{\partial \underline{x}}{\partial \beta} < 0$. Furthermore, if $\beta \to \infty$, then $\underline{x} \to -\infty$ and $\overline{x} \to \infty$.*

Proofs of Propositions 2, 3 and 4. To start, recall that $\overline{x}$ and $\underline{x}$ solve

$$-\sigma^2 + \beta - (1 - q_C)\sigma^2 = -x^2 - 2\sigma^2 + 2\beta \tag{3}$$

Solving equation (3) yields explicit solutions $\overline{x} = \sqrt{\beta - q_C \sigma^2}$ and $\underline{x} = -\sqrt{\beta - q_C \sigma^2}$. From this, Proposition 2 immediately follows.

I split the proof into two parts. I first prove that if equilibrium strategies are characterized as in Proposition 1, then D1 forces the voter to believe that deviations off the path come from the low quality type. Next, I prove that the characterizations given in Proposition 1 yield perfect Bayesian equilibria.

Part 1. *Assume there is a perfect Bayesian equilibrium characterized by the strategies in Proposition 1. $D1$ requires the voter to believe the incumbent is low quality with probability 1 following any off path policy choice.*

An arbitrary incumbent type is given by $\tau \in \mathbb{R} \cup \{\phi\}$. Define $R_\sigma(\tau, x)$ as the set of reelection probabilities for which the τ type strictly prefers choosing policy x and getting reelected with probability ρ, over getting their equilibrium payoff in a PBE σ. Similarly, define $R^0_\sigma(\tau, x)$ as those reelection probabilities that make τ indifferent. If $\hat{x}$ is off the path of play, then $D1$ requires putting probability 0 on a type τ, if there exists a type τ' such that $R_\sigma(\tau, \hat{x}) \cup R^0_\sigma(\tau, \hat{x}) \subseteq R_\sigma(\tau', \hat{x})$. This implies that the voter should not believe the deviation came from type τ if there is another type who is willing to deviate to $\hat{x}$ and win reelection with a lower probability.

I first show that if the incumbent is informed, then the $\omega_1 = 0$ type has the strongest incentive to choose an off path action, thus, the voter should not believe that the deviation came from any type $\omega_1 \in \mathbb{R}/\{0\}$. Second, I eliminate that the deviation should come from the $\omega_1 = 0$ type by showing that the uninformed type is willing to deviate for a larger set of reelection probabilities than the $\omega_1 = 0$ type.

Clearly the voter should never believe that a deviation came from a type such that $\omega_1 \geqslant \overline{x}$ or $\omega_1 \leqslant \underline{x}$, as these types obtain their highest possible payoff and would not deviate to $\hat{x} \in (\underline{x}, \overline{x})$ for any reelection probability. Next, consider a type $\omega_1 \in [0, \overline{x}]$. In this case, she chooses $x_1 = \overline{x}$ in equilibrium, and her equilibrium payoff is

$$-(\overline{x} - \omega_1)^2 + 2\beta.$$

If she deviates to $x_1 = \hat{x}$, then her payoff, given reelection probability $\rho_{\hat{x}}$, is

$$-(\hat{x} - \omega_1)^2 + \beta + \rho_{\hat{x}}\beta - (1 - \rho_{\hat{x}})\Big((1 - q_C)\sigma^2\Big).$$

Comparing these payoffs and rearranging, we get that for any $\hat{x}$, the ω_1 type has an incentive to deviate from choosing $\overline{x}$ if

$$\rho_{\hat{x}} > \frac{(\hat{x} - \omega_1)^2 - (\overline{x} - \omega_1)^2 + \beta + (1 - q_C)\sigma^2}{\beta + (1 - q_C)\sigma^2}. \tag{4}$$

Differentiating the RHS of (4) with respect to the type ω_1 yields

$$\frac{\partial RHS(4)}{\partial \omega_1} = \frac{2(\overline{x} - \hat{x})}{\beta + (1 - q_C)\sigma^2} > 0.$$

Therefore, the RHS of (4) is minimized at $\omega_1 = 0$, and D1 requires putting probability 0 on the deviation coming from any type $\omega_1 \in (0, \overline{x})$, as the set of reelection probabilities for which these types strictly prefer or are indifferent to deviating to $\hat{x}$ is a subset of the reelection probabilities for which the $\omega_1 = 0$ type will deviate.

Now consider the incentive for a type $\omega_1 \in (\underline{x}, 0)$ to deviate to an off path action $\hat{x} \in (0, \overline{x})$. In this case, she is willing to deviate if

$$\rho_{\hat{x}} > \frac{(\hat{x} - \omega_1)^2 - (\underline{x} - \omega_1)^2 + \beta + (1 - q_C)\sigma^2}{\beta + (1 - q_C)\sigma^2}. \tag{5}$$

Now, differentiating (5) with respect to ω_1 yields

$$\frac{\partial(5)}{\partial \omega_1} = \frac{2(\underline{x} - \hat{x})}{\beta + (1 - q_C)\sigma^2} < 0,$$

where the inequality follows from $\underline{x} < 0$. Thus, increasing $\omega_1 \in (\underline{x}, 0)$ decreases the RHS of (5). Letting $\omega_1 \to 0$, this converges to the $\omega_1 = 0$ type's payoff. Thus, by D1 we must place probability 0 on a deviation to $\hat{x} \in (0, \overline{x})$ coming from any type $\omega_1 \in (\underline{x}, 0)$. Analogous arguments show that for a deviation to $\hat{x} \in (\underline{x}, 0)$ D1 places probability 0 on it coming from any informed type $\omega_1 \in (\underline{x}, \overline{x})/\{0\}$.

Finally, consider the uninformed type's incentive to choose $\hat{x} \in (0, \overline{x})$. Her equilibrium payoff is equivalent to choosing $\overline{x}$ and being reelected, i.e.,

$$-\overline{x}^2 - 2\sigma^2 + 2\beta.$$

Choosing $x_1 = \hat{x}$ and getting reelected with probability $\rho_{\hat{x}}$ gives an expected payoff

$$-\hat{x}^2 - \sigma^2 + \beta + \rho_{\hat{x}}(\beta - \sigma^2) - (1 - \rho_{\hat{x}})\Big((1 - q_C)\sigma^2\Big).$$

Comparing these payoffs and rearranging, we get that the uninformed type will deviate to $\hat{x}$ for any $\rho_{\hat{x}}$ such that

$$\rho_{\hat{x}} > \frac{\hat{x}^2 - \overline{x}^2 + \beta - q_C\sigma^2}{\beta - q_C)\sigma^2 + (L - R)^2}. \tag{6}$$

We need to show that the lower bound on the reelection probabilities for which the uninformed type deviates is lower than the lower bound for which the $\omega_1 = 0$ type deviates.

Setting $\omega_1 = 0$ in equation (4) and comparing to (6) yields

$$\frac{\hat{x}^2 - \overline{x}^2 + \beta + (1-q_C)\sigma^2}{\beta + (1-q_C)\sigma^2} > \frac{\hat{x}^2 - \overline{x}^2 + \beta - q_C\sigma^2}{\beta - q_C\sigma^2} \tag{7}$$

$$\Leftrightarrow \left(\beta - q_C\sigma^2\right)\left(y + \beta + (1-q_C)\sigma^2\right) >$$

$$\left(\beta + (1-q_C)\sigma^2\right)\left(y + \beta - q_C\sigma^2\right) \tag{8}$$

$$\Leftrightarrow -\sigma^2(\hat{x}^2 - \overline{x}^2) > (\beta + (1-q_C)\sigma^2)(\beta - q_C\sigma^2)$$

$$-(\beta - q_C\sigma^2)(\beta + (1-q_C)\sigma^2) \tag{9}$$

$$\Leftrightarrow \sigma^2(\overline{x}^2 - \hat{x}^2) > 0. \tag{10}$$

Equation (7) is the condition that must hold. Equations (8) - (10) follow from manipulating the previous equation. Finally, (10) holds by $\overline{x} > \hat{x}$. Analogous arguments show that a similar relationship holds for an off path action $\hat{x} \in (\underline{x}, 0)$. Therefore, if the voter puts probability 0 on an off path policy choice $\hat{x} \in (\underline{x}, \overline{x})$ coming from an informed type, these equilibria survive D1.

Part 2. *The strategies and beliefs given in Propostion 2 form a perfect Bayesian equilibrium.*

The expected first-period policy utility to an uninformed incumbent for policy x is $-x^2 - \sigma^2$. Hence, choosing $x_1 \in (\underline{x}, \overline{x})/\{0\}$ and getting kicked out is strictly worse than choosing $x_1 = 0$. Likewise, choosing $x_1 > \overline{x}$ or $x_1 < \underline{x}$ and getting reelected is strictly worse than choosing $\overline{x}$ or $\underline{x}$ and getting reelected. By construction, $\underline{x}$ and $\overline{x}$ make an uninformed incumbent indifferent between choosing $x_1 = \underline{x}$, $x_1 = \overline{x}$, and $x_1 = 0$. Therefore, an uninformed incumbent will not deviate from mixing over $\underline{x}$, $\overline{x}$, and 0.

Now consider an informed incumbent. If $\omega_1 \leqslant \underline{x}$ or $\omega_1 \geqslant \overline{x}$, then choosing $x_1 = \omega_1$ and getting reelected with certainty is clearly optimal. Next, assume $\omega_1 \in [0, \overline{x})$. The best policy payoff for choosing an x_1 that leads to reelection is $x_1 = \overline{x}$. The incumbent's greatest policy utility from a policy that leads to removal from office is $x_1 = \omega_1$. The expected utility for choosing $x_1 = \omega_1$ and being removed from office is $\beta - (1-q_C)\sigma^2$, while the expected utility for choosing $x_1 = \overline{x}$ and being reelected is $-(\overline{x} - \omega_1)^2 + 2\beta$. As the expected utility for choosing $\overline{x}$ is strictly decreasing in ω_1, if the $\omega_1 = 0$ type prefers $\overline{x}$ over choosing $x_1 = 0$ then every type $\omega_1 \in (0, \overline{x})$ will also prefer to choose $x_1 = \overline{x}$. This yields

$$-\overline{x}^2 + 2\beta > \beta - (1 - q_C)\sigma^2 \tag{11}$$
$$(1 - q_C)\sigma^2 + \beta > \overline{x}^2 \tag{12}$$
$$(1 - q_C)\sigma^2 + \beta > \beta - q_C\sigma^2 \tag{13}$$
$$\sigma^2 > 0. \tag{14}$$

Where (11) follows from rearranging the inequality (12). Inequality (13) follows from substituting in $\overline{x}$, and (14) from reducing (13). An analogous argument yields the optimality of choosing $\underline{x}$ if $\omega_1 \in (\underline{x}, 0)$.

Finally, given the strategy of the incumbent, the voter must be willing to reelect the incumbent following $x_1 \geqslant \overline{x}$ or $x_1 \leqslant \underline{x}$, and be willing to elect the challenger following $x_1 \in (\underline{x}, \overline{x})$. Policies $x_1 \in (\underline{x}, \overline{x})/\{0\}$ are off the path of play, thus, assigning any belief $\tilde{q}_I(x_1) \leqslant q_C$ it is optimal for the voter to elect the challenger. By Part 1 of the proof, anticipating the demands of $D1$, moving forward assume $\tilde{q}_I(x_1) = 0$ for $x_1 \in (\underline{x}, \overline{x})/\{0\}$. As only the uninformed type ever chooses $x = 0$ the voter updates that $\tilde{q}_I(0) = 0 < q_C$ and kicks out the incumbent as required. On the other hand, policies such that $x_1 > \overline{x}$ or $x_1 < \underline{x}$ are only ever chosen by the informed type. In this case, $\tilde{q}_I(x_1) = 1 > q_C$ and the voter reelects as required. If $x_1 = \overline{x}$, then for it to be optimal for the voter to reelect the incumbent requires

$$\tilde{q}_I(\overline{x}) \geqslant q_C \tag{15}$$
$$\frac{q_I\Big(F(\overline{x}) - F(0)\Big)}{q_I\Big(F(\overline{x}) - F(0)\Big) + (1 - q_I)\overline{\Pi}} \geqslant q_C \tag{16}$$
$$q_I\Big(F(\overline{x}) - F(0)\Big) \geqslant q_C\Big(q_I\Big(F(\overline{x}) - F(0)\Big) + (1 - q)\overline{\Pi}\Big) \tag{17}$$
$$\frac{q_I(1 - q_C)}{(1 - q_I)q_C}\Big(F(\omega^*) - F(0)\Big) \geqslant \overline{\Pi}. \tag{18}$$

Where (15) is the optimality requirement. (16) follows by using Bayes rule to find $\tilde{q}_I$. (17) rearranges (16), and (18) rearranges (17). Finally, (18) holds from the definition of $\overline{\Pi}$. Similarly, it is optimal for the voter to reelect the incumbent following $x_1 = \underline{x}$.

Proposition A1. *Assume $\underline{\Pi} + \overline{\Pi} \leqslant 1$. If an equilibrium survives $D1$, then it must be characterized by the strategies in Proposition 1.*

Proof of Proposition A1. To start, assume there exists an equilibrium such that $\hat{x} > \overline{x}$ is off the path of play. By definition of $\overline{x}$, if $\hat{x} > \overline{x}$, then for any reelection probability the uninformed type strictly prefers to choose $x = 0$ and get reelected with any probability ρ. In any equilibrium, the uninformed type's payoff must be at least as good as choosing $x_1 = 0$ and getting kicked out of office. Thus, $R_\sigma(\phi, \hat{x}) = \varnothing$, and so the voter must put probability 0 on the deviation coming from the uninformed type, e.g., at a minimum the $\omega_1 = \hat{x}$ type would certainly deviate for $\rho = 1$. Hence, in a perfect Bayesian equilibrium that survives D1, the voter must reelect the incumbent following an off path action $\hat{x}$. This implies, however, that there cannot be an equilibrium that survives D1 and has an off path action $\hat{x} > \overline{x}$, because the $\omega_1 = \hat{x}$ type would always strictly prefer to deviate from her equilibrium action in order to choose $x_1 = \hat{x}$, get reelected, and get her highest policy payoff. Similarly, there are no equilibria that survive D1 with off path actions $\hat{x} < \underline{x}$. Consequently, in every equilibrium that survives D1 it must be for $\omega_1 > \overline{x}$ and $\omega_1 < \underline{x}$ an informed incumbent chooses $x_1 = \omega_1$ and the voter reelects with probability 1.

Additionally, in an equilibrium, the voter must also reelect with probability 1 following $x_1 = \overline{x}$ and $x_1 = \underline{x}$. If not, the $\omega_1 = \overline{x}$ type would have a best response problem.

Let Σ^* be the set of policies in $[\underline{x}, \overline{x}]$ which the uninformed type chooses with positive probability in equilibrium. It must be that, for $x' \in \Sigma^*$, if $\rho(x') = 0$, then $x' = 0$. If $\rho(x') = 0$ and $x' \neq 0$ then the uninformed type can choose $x = 0$, obtain a higher expected policy utility and be reelected with weakly greater probability, contradicting that $x' \in \Sigma^*$.

Assume $\overline{\Pi} + \underline{\Pi} \leqslant 1$. Note, this always holds for $q_C \geqslant q_I$. I show that the uninformed type cannot only be choosing policies that lead to a positive probability of reelection. Assume otherwise. That is, assume $\rho(x) > 0$ for all $x \in \Sigma^*$. Thus, after observing $x \in \Sigma^*$, by Bayes' rule the voter believes that the incumbent is high quality with probability:

$$Pr(H|x \in \Sigma^*) = \frac{Pr(x \in \Sigma^*|H)Pr(H)}{Pr(x \in \Sigma^*)}$$
$$= \frac{Pr(x \in \Sigma^*|H)Pr(H)}{Pr(x \in \Sigma^*|H)Pr(H) + Pr(x \in \Sigma^*|L)Pr(L)}.$$

For the voter to reelect the incumbent with positive probability he must believe the incumbent is at least as likely to be high quality as the challenger. Note that $Pr(x \in \Sigma^*|L) = 1$, since the low quality type is only choosing policies in Σ^* and these all lead to a positive probability of reelection. Thus, the following sequence of expressions must hold:

$$
\begin{aligned}
&\frac{Pr(x \in \Sigma^*|H)Pr(H)}{Pr(x \in \Sigma^*|H)Pr(H) + Pr(x \in \Sigma^*|L)Pr(L)} \geqslant q_C \\
\Leftrightarrow\ &\frac{Pr(x \in \Sigma^*|H)q_I}{q_I Pr(x \in \Sigma^*|H) + (1-q_I)} \geqslant q_C \\
\Leftrightarrow\ & Pr(x \in \Sigma^*|H) \geqslant \frac{(1-q_I)q_C}{q_I(1-q_C)}.
\end{aligned}
$$

However, from our earlier argument, we know that for all ω such that $\omega > |\omega^*|$ the informed type chooses $x_1 = \omega$. Thus, $Pr(x \in \Sigma^*|H) \leqslant F(\omega^*) - F(-\omega^*) \leqslant \frac{(1-q_I)q_C}{q_I(1-q_C)}$, where the second inequality holds by $\overline{\Pi} + \underline{\Pi} \leqslant 1$. Hence, this contradicts that in equilibrium the low quality type is reelected with positive probability following every policy choice.

Thus, for some $x \in \Sigma^*$ it must be that $\rho(x) = 0$. However, from our earlier argument, this can only hold for $x = 0$. Therefore, in equilibrium, the uninformed type must be choosing $x_1 = 0$ with positive probability and losing reelection.

As the uninformed type must be indifferent over policies in Σ^* to be willing to mix, we have that for any $x' \in \Sigma^*$, such that $x' \neq 0$, it must be that

$$
\begin{aligned}
&-(x')^2 + \rho(x')(\beta - \sigma^2) - (1-\rho(x'))\Big((1-q_C)\sigma^2\Big) = -(1-q_C)\sigma^2 \\
&\Rightarrow \rho(x') = \frac{(x')^2}{\beta - q_C\sigma^2}. \qquad (19)
\end{aligned}
$$

Now I show that for $x' \in \Sigma^*$, it must be that $x' \in \{\underline{x}, 0, \overline{x}\}$. Assume not. Let $x' > 0$. Consider $\omega' \in [0, \overline{x}]$. The expected utility to the ω' type for choosing x' is

$$
-(x' - \omega')^2 + \rho(x')\beta - (1-\rho(x'))\Big((1-q_C)\sigma^2\Big),
$$

while her expected utility for choosing $x = \overline{x}$ is

$$
-(\overline{x} - \omega')^2 + \beta.
$$

I now show that ω' strictly prefers choosing $\overline{x}$. This holds if

$$-(\overline{x}-\omega')^2+\beta > -(x'-\omega')^2+\rho(x')\beta-(1-\rho(x'))\Big((1-q_C)\sigma^2\Big) \tag{20}$$

$$\Leftrightarrow (x'-\omega')^2-(\overline{x}-\omega')^2+\beta+(1-q_C)\sigma^2 > \rho(x')(\beta+(1-q_C)\sigma^2) \tag{21}$$

$$\Leftrightarrow 2\omega'(\overline{x}-x')-\overline{x}^2+(x')^2+\beta+(1-q_C)\sigma^2+ >$$

$$\frac{(x')^2}{\beta-q_C\sigma^2}(\beta+(1-q_C)\sigma^2) \tag{22}$$

$$\Leftrightarrow 1-\frac{\overline{x}^2-(x')^2}{\beta+(1-q_C)\sigma^2} > \frac{(x')^2}{\beta-q_C\sigma^2} \tag{23}$$

$$\Leftrightarrow \overline{x}^2 > (x')^2 \tag{24}$$

Where (20) is the incentive condition that must hold. (21) follows from rearranging the first line. Inequality (22) is derived by further rearranging and substituting in for $\rho(x')$. (23) follows from noting that for $\omega' \geqslant 0$ the LHS side of the inequality is minimized as $\omega' = 0$. Thus, this is a sufficient condition for the original inequality to hold. The final line follows from substituting in for $\overline{x}^2$ and then expanding and cancelling terms. Finally, note that (24) holds by the assumption that $x' < \overline{x}$.

A similar argument shows that any $\omega' < 0$ type prefers to choose $\underline{x}$ rather than x'. Furthermore, an analogous argument shows that no informed type will choose $x' \in (\underline{x}, 0)$ for $x' \in \Sigma^*$. As $\rho(x') > 0$ for these policies, this is a contradiction.

Consequently, in any equilibrium that survives D1 it must be that the uninformed type only chooses policies in $\{\underline{x}, 0, \overline{x}\}$. When $\omega_1 \in (\underline{x}, \overline{x})$, the high quality type also cannot choose policies other than these in equilibrium, otherwise the voter would reelect with probability 1 following this choice, and the uninformed type could profitably deviate to this policy. From Part 1 of the proof, D1 dictates that off the path the voter believes the deviation came from the low type, and, thus, elects the challenger. As such, all equilibria that survive D1 have the characterization in Proposition 1. Our earlier argument showed that these do, in fact, constitute an equilibria, completing the proof.

Proposition 2A. *Assume $\underline{\Pi}+\overline{\Pi} > 1$. If an equilibrium survives D1 then it is characterized by Proposition 2 or by cut-points $\underline{x}'$ and $\overline{x}'$ such that $\underline{x} < \underline{x}' < 0 < \overline{x}' < \overline{x}$. In the second case, if the incumbent is uninformed she chooses $\overline{x}'$ with probability $\overline{\pi}'$ and chooses $x_1 = \underline{x}$ with probability $\underline{\pi}'$, where $\overline{\pi}' + \underline{\pi}' = 1$. When the incumbent is informed, if $\omega \notin (\underline{x}', \overline{x}')$ she chooses $x_1 = \omega$, if $\omega \in (\underline{x}', 0)$ she chooses $x = \underline{x}'$, if $\omega \in [0, \overline{x}')$ she chooses $x_1 = \overline{x}'$.*

Proof of Proposition 2A. The earlier parts demonstrate that the characterization given in Proposition 1 yields a PBE that survives D1. Next, I show that the only other possible

PBE that survive D1 are characterized by $\underline{x}'$ and $\overline{x}'$ as described.

From the previous parts, we know that for all $x \notin (\underline{x}, \overline{x})$ the voter must reelect the incumbent with probability 1. Furthermore, the uninformed type never chooses $x \notin [\underline{x}, \overline{x}]$. Let Σ^* be the set of policies chosen by the uninformed type with positive probability in an equilibrium that survives D1. If the uninformed type chooses $\overline{x}$ or $\underline{x}$ with positive probability then, from the previous arguments, it is immediate that the equilibrium must be characterized by Proposition 2. Thus, assume $\Sigma^* \subset [\underline{x}, \overline{x}]$. Note we must have $\rho(x) > 0$ for all $x \in \Sigma^*$. Otherwise, if there is a policy z with $\rho(z) = 0$ it must be that $z = 0$ and, again, the previous arguments imply the equilibrium is characterized by Proposition 2.

I now show that there is at most two policies in Σ^*. Assume not, so there exist policies $a < b < c$. For any $x, y \in \Sigma^*$ the informed type when the state is ω prefers x over y if and only if

$$\begin{aligned}
&-(x-\omega)^2 + \rho(x)\beta - (1-\rho(x))(1-q_C)\sigma^2 > -(y-\omega)^2 + \rho(y)\beta - (1-\rho(y))(1-q_C)\sigma^2 \\
&\Leftrightarrow [\rho(x) - \rho(y)][\beta - q_C\sigma^2 + \sigma^2] > (x-\omega)^2 - (y-\omega)^2.
\end{aligned}$$

The uninformed type must be indifferent between all $x, y \in \Sigma^*$, which implies

$$\rho(x) = \frac{x^2 - y^2 + \rho(y)\overline{x}^2}{\overline{x}^2}.$$

Substituting this into the previous inequality and simplifying yields that the ω type prefers x over y if and only if

$$2\omega(x-y) > -(x^2 - y^2)\frac{\sigma^2}{\overline{x}^2}.$$

I now show that no informed type would choose policy b, contradicting that the voter reelects with positive probability following $x_1 = b$. For the ω type to choose policy b requires the following two inequalities to hold:

$$\begin{aligned}
2\omega(b-a) &> -(b^2 - a^2)\frac{\sigma^2}{\overline{x}^2} \\
2\omega(c-b) &< -(c^2 - b^2)\frac{\sigma^2}{\overline{x}^2}.
\end{aligned}$$

If $0 < a < b < c$ or $a < 0 < b < c$ then $b - a > 0$ and $c - b > 0$. Therefore, there exists an ω

such that the above inequalities hold if and only if

$$-(b+a)\frac{\sigma^2}{2\overline{x}^2} < -(c+b)\frac{\sigma^2}{2\overline{x}^2}$$
$$\Leftrightarrow c < a,$$

which never holds, by assumption. Analogous arguments hold for the cases where $a < b < 0 < c$ and $a < b < c < 0$. Thus, there are at most two policies in Σ^*. Let S be the policy in Σ^* with greatest absolute value.

Consider $x' \in (S, \overline{x}]$, I show that the voter must reelect the incumbent with probability 1. If x' is chosen by an informed type then clearly the voter reelects following $x_1 = x'$. Next, assume x' is off the path of play. For a contradiction assume the voter does not reelect with probability 1. In equilibrium, the $\omega = 0$ type must be choosing either S or the policy closest 0 that wins with probability 1.

First, assume that the $\omega = 0$ type chooses $x = S$ in equilibrium. Consider an off path deviation to $x' \in (S, \overline{x})$. The $\omega = 0$ type is willing to deviate if and only if

$$-(x')^2 + \rho(x')\beta - (1-\rho(x'))(1-q_C)\sigma^2 > -(S)^2 + \rho(S)\beta - (1-\rho(S))(1-q_C)\sigma^2$$
$$\Leftrightarrow \rho(x') > \frac{(x')^2 - (S)^2 + \rho(S)(\overline{x}^2 + \sigma^2)}{\overline{x}^2 + \sigma^2}.$$

The uninformed type is willing to deviate if and only if

$$-(x')^2 + \rho(x')(\beta - \sigma^2) - (1-\rho(x'))(1-q_C)\sigma^2 > -(S)^2 + \rho(S)(\beta - \sigma^2) - (1-\rho(S))(1-q_C)\sigma^2$$
$$\Leftrightarrow \rho(x') > \frac{(x')^2 - (S)^2 + \rho(S)\overline{x}^2}{\overline{x}^2}.$$

Note, $\frac{(x')^2-(S)^2+\rho(S)\overline{x}^2}{\overline{x}^2} > \frac{(x')^2-(S)^2+\rho(S)(\overline{x}^2+\sigma^2)}{\overline{x}^2+\sigma^2}$, by $x' > S$. Thus, the $\omega = 0$ type is willing to deviate to x' for a larger set of reelection probabilities than the uniformed type. Consequently, D1 requires putting probability 0 that the deviation to policy $x = x'$ is from the uninformed type. However, this implies that the voter reelects with probability 1. Thus, off the path, the voter must reelect with probability 1 for all $x \in (S, \overline{x})$. For there to not be a best response problem requires $\rho(S) = 1$ as well. Furthermore, this implies the voter must reelect with probability 1 for all $z < -S$ if $S > 0$ (and for all $z > -S$ if $S < 0$). Clearly the $\omega = z$ is willing to choose $x_1 = z$ for $\rho(z) < 1$, while the uninformed type would never strictly prefer to deviate from choosing $x_1 = S$ and winning with probability 1 to any $z \leqslant S$. Furthermore, there cannot be a policy choice in Σ^* such that $-S < z < S$. This would imply that the uninformed type is indifferent between z and S. However, the previous arguments imply that all types $\omega < 0$ would strictly prefer $x_1 = -S$ over choosing $x_1 = z$ and for all $\geqslant 0$ the informed type strictly prefers to choose $x_1 = S$, contradicting that the voter reelects with positive probability following $x_1 = z$.

Next, assume that the $\omega = 0$ type chooses the policy closest to 0 that wins with probability 1. Denote this policy as z. Note, we must have $z > S$, otherwise the uninformed type would deviate to z. If $z > 0$ this implies that all types $\omega \in (0, z]$ also choose $x_1 = z$ in equilibrium. Since the uninformed type must prefer policy S and winning with probability $\rho(S)$ over choosing policy z and winning with probability 1, this also implies that the uninformed type would never deviate to policy $-z$. Therefore, if $-z$ is off the path then, by D1, the voter must believe that a deviation to $-z$ came from an informed type. Or $-z$ is on the path, which again implies that the voter reelects with probability 1. Therefore, all types $\omega < 0$ strictly prefer $x = -S$, contradicting that the voter reelects with positive probability less than 1 following $x = S$.

Thus, if there is a PBE that survives D1 that is not characterized by Proposition 2 it must be characterized by cut-points $\overline{x}'$ and $\underline{x}' = -\overline{x}'$, and the voter must reelect with probability 1 for $x \notin (\underline{x}', \overline{x}')$ and probability 0 for $x \in (\underline{x}', \overline{x}')$. This implies that the uninformed type only chooses $x_1 \in \{\underline{x}', \overline{x}'\}$, because, by construction of $\overline{x}$, the uninformed type prefers this over choosing $x = 0$ and losing. Similarly, all $\omega \in (0, x')$ choose $x_1 = x'$ and all $\omega \in (-x', 0)$ choose $-x'$.

B Executive Constraints

Proposition 5. *Increasing q_C increases voter welfare. If β is sufficiently high, then increasing q_I decreases voter welfare.*

Proof of Proposition 5. Voter welfare is

$$q_I\Big(\int_{-\omega^*}^{0} -(\underline{x}-\omega)^2 f(\omega)d\omega + \int_{0}^{\omega^*} -(\overline{x}-\omega)^2 f(\omega)d\omega\Big) + (1-q_I)(-\sigma^2 - (1-q_C)\sigma^2)$$

First, increasing q_C decreases $\overline{x}$ and ω^*, which decreases the probability and extent of overreacting. Note, it also decreases $\overline{\Pi}$ and $\underline{\Pi}$, which decreases the maximum amount of posturing that can be supported in equilibrium. Thus, increasing q_C increases voter welfare.

The derivative with respect to q_I is

$$\int_{-\omega^*}^{0} -(\underline{x}-\omega)^2 f(\omega)d\omega + \int_{0}^{\omega^*} -(\overline{x}-\omega)^2 f(\omega)d\omega + (2-q_C)\sigma^2.$$

This term is negative if $\sqrt{\beta - q_C\sigma^2}$ is sufficiently, thus, it is negative if β is sufficiently large, as required.

Proposition 6. *Assume constraints are strong, $\Psi < \overline{x}$.*

1. *Suppose the incumbent is popular, $q_I > q_C$.*
   - *Informed Incumbent: If $\omega \geqslant 0$ then I chooses $x_1 = \Psi$. If $\omega < 0$ then I chooses $x_1 = -\Psi$.*
   - *Uninformed Incumbent: I chooses $x = \Psi$ with probability $1 - F(0)$ and $x = -\Psi$ with probability $F(0)$.*
   - *The voter always reelects the incumbent on the path of play.*
2. *Suppose the incumbent is unpopular, $q_I < q_C$.*
   - *Informed Incumbent: If $\omega \geqslant 0$ then I chooses $x_1 = \Psi$. If $\omega < 0$ then I chooses $x_1 = -\Psi$.*
   - *Uninformed Incumbent: I chooses $x = \Psi$ with probability $\frac{q_I(1-q_C)}{q_C(1-q_I)}\Big(1 - F(0)\Big)$ and $x = -\Psi$ with probability $\frac{q_I(1-q_C)}{q_C(1-q_I)}F(0)$.*
   - *Following $x_1 = \Psi$ or $x_1 = -\Psi$ the voter reelects the incumbent with probability $\rho(\Psi) = \rho(-\Psi) = \frac{\Psi^2}{\beta - \sigma^2 - V_C(\Psi)}$.*

Proof of Proposition 6. Assume $q_C \leqslant q_I$. Given the strategy of the incumbent, after seeing $x_1 = C$ the voter's updated belief that the incumbent is high quality is

$$\tilde{q}_I(\Psi) = \frac{q_I(1 - F(0))}{q_I(1 - F(0)) + (1 - q_I)(1 - F(0)} = q_I \geqslant q_C.$$

Thus, the voter reelects the incumbent, as needed. A similar argument holds for $x_1 = -\Psi$.

Consider the uninformed type of the incumbent. Any $x \in (-\Psi, \Psi)$ is off-the-path, in which case assume the voter believes the incumbent is the low quality type and kicks out the incumbent. By definition of $\overline{x}$, the uninformed type strictly prefers $x_1 = \Psi$ and winning reelection over $x = 0$ and losing. Furthermore, the uninformed type is indifferent over Ψ and $-\Psi$, as they are equidistant from 0. Thus, she is willing to mix over the two, as required. Finally, clearly the informed type chooses the closest bound for $\omega < -\Psi$ or $\omega > \Psi$; and by definition of $\underline{x}$ and $\overline{x}$, if $\omega \in (-\Psi, \Psi)$, then she strictly prefers to choose the closest bound and win, over choosing $x \in (-\Psi, \Psi)$ and losing.

Now assume $q_C > q_I$. After observing $x_1 = \Psi$ the voter's updated belief that the incumbent is the informed type is

$$\tilde{q}_I(\Psi) = \frac{q_I(1 - F(0))}{q_I(1 - F(0)) + (1 - q_I)\tilde{\Pi}},$$

where $\tilde{\Pi}$ is the probability that the uninformed type chooses $x = \Psi$. For the voter to be willing to mix after seeing $x_1 = \Psi$ requires $\tilde{q}_I(\Psi) = q_C$. This gives the following condition:

$$\begin{aligned}
&\frac{q_I(1 - F(0))}{q_I(1 - F(0)) + (1 - q_I)\tilde{\Pi}} = q_C \\
&\Leftrightarrow \tilde{\Pi} = \frac{q_I(1 - q_C)}{(1 - q_I)q_C}\Big(1 - F(0)\Big),
\end{aligned}$$

where the second line follows by rearranging the first equality and the second equality holds by assumption that the uninformed type chooses $x_1 = \Psi$ with probability $\frac{q_I(1-q_C)}{(1-q_I)q_C}\Big(1 - F(0)\Big)$. A similar derivation shows that the voter is indifferent following $x = -\Psi$, given the conjectured strategy for the uninformed type. Let $\underset{\sim}{\Pi}$ be the probability with which the uninformed type chooses $x = -\Psi$.

As the uninformed type is the only type that chooses $x_1 = 0$, under the conjectured strategy profile, we have $\tilde{q}_I(0) = 0$. Therefore, the voter kicks out the incumbent following $x_1 = 0$. Define the expected utility from electing the challenger as

$$V_C(\Psi) = q_C\Big(\int_{-\infty}^{-\Psi} -(-\Psi - \omega)^2 f(\omega)d\omega + \int_{\Psi}^{\infty} -(\Psi - \omega)^2 f(\omega)d\omega\Big) - (1 - q_C)\sigma^2.$$

Mixing requires the uninformed type to be indifferent over $x_1 = \Psi$ and $x_1 = 0$. This yields the equality

$$\begin{aligned}
&-\sigma^2 + \beta - (1 - q_C)V_C(\Psi) = -\sigma^2 + \beta - \Psi^2 + \rho(\Psi)(\beta - \sigma^2) + (1 - \rho())V_C(\Psi) \\
&\Leftrightarrow \rho(\Psi) = \frac{\Psi^2}{\beta - \sigma^2 - V_C(\Psi)}.
\end{aligned}$$

Where the second equality follows from rearranging the first, and holds by the assumed strategy for the voter. Furthermore, as Ψ and $-\Psi$ are equidistant from 0 and $\rho(-\Psi) = \rho(\Psi)$, the uninformed type is also indifferent between $x = -\Psi$ and $x = \Psi$. Finally, by similar arguments as before, given that the uninformed type is indifferent over choosing $x = \Psi$ and winning reelection, or choosing her ex ante optimal policy and losing, any informed type with $\omega \in (-\Psi, \Psi)$ strictly prefers to choose the closest bound and win with probability $\rho(\Psi)$; and if $|\omega| > \Psi$ the informed type prefers to choose the closest bound over any policy in the interior.

Proposition 7. *There exists $\hat{\beta}$ such that the voter's optimal constraint is $\Psi^* \in (0, \overline{x})$ if and only if $\beta > \hat{\beta}$.*

Proof of Proposition 7. First, assume $q_C \leqslant q_I$. In this case, voter welfare is:

$$\begin{aligned}W(\Psi) =& q_I\Big(\int_{-\infty}^{0} -(-\Psi-\omega)^2 f(\omega)d\omega + \int_{0}^{\infty} -(\Psi-\omega)^2 f(\omega)d\omega + \int_{-\infty}^{-\Psi} -(-\Psi-\omega)^2 f(\omega)d\omega \\ &+ \int_{\Psi}^{\infty} -(\Psi-\omega)^2 f(\omega)d\omega\Big) - (1-q_I)(\Psi^2+2\sigma^2).\end{aligned}$$

The derivative with respect to Ψ is:

$$\begin{aligned}&q_I\Big(\int_{-\infty}^{0} 2(-\Psi-\omega)f(\omega)d\omega - \int_{0}^{\infty} 2(\Psi-\omega)f(\omega)d\omega + (\Psi-(-\Psi))^2 f(\Psi) + \int_{-\infty}^{-\Psi} 2(-\Psi-\omega)f(\omega)d\omega \\ &+ (\Psi-\Psi)^2 f(\Psi) + \int_{\Psi}^{\infty} -2(\Psi-\omega)f(\omega)d\omega\Big) - 2(1-q_I)\Psi \qquad (25)\\ &= q_I\Big(-2[1-F(0)]\Psi - 2\int_{-\infty}^{0}\omega f(\omega)d\omega - 2F(0)\Psi - 2\int_{-\infty}^{-\Psi}\omega f(\omega)d\omega \\ &+ 2\int_{\Psi}^{\infty}\omega f(\omega)d\omega - 2\Psi F(-\Psi) - (1-F(\Psi))2\Psi\Big) - 2(1-q_I)\Psi \qquad (26)\end{aligned}$$

By our earlier argument about weak constraints it must be that $\Psi^* < \overline{x}$. Next, note

$$\lim_{\Psi\to 0}\frac{\partial W}{\partial \Psi} = 4q_I\Big(\int_{0}^{\infty}\omega f(\omega)d\omega - \int_{-\infty}^{0}\omega f(\omega)d\omega\Big) > 0.$$

Thus, $\Psi^* > 0$.

By Proposition 2, we have that welfare under no constraints is strictly decreasing in β, goes to $-\infty$ as $\beta \to \infty$ and goes to the first best as $\beta \to q_C\sigma^2$. As $W(\Psi^*)$ is not a function of β, there exists $\overline{\beta} > q_C\sigma^2$ such that if $\beta > \overline{\beta}$, then constraint Ψ^* is optimal. Otherwise, if $\beta < \overline{\beta}$ then no constraints is optimal.

Now consider $q_C > q_I$. The expression for voter welfare is more complicated in this case. Specifically,

$$\begin{aligned}W(\Psi) = q_I\Bigg[&\int_{-\infty}^{0} -(-\Psi-\omega)^2 f(\omega)d\omega + \int_{0}^{\infty} -(\Psi-\omega)^2 f(\omega)d\omega \\ &+ \rho(\Psi)\Big(\int_{-\infty}^{-\Psi} -(-\Psi-\omega)^2 f(\omega)d\omega + \int_{\Psi}^{\infty} -(\Psi-\omega)^2 f(\omega)d\omega\Big) + (1-\rho(\Psi))V_C(\Psi)\Bigg] \\ &+ (1-q_I)\Bigg[\Big(\tilde{\Pi} + \underset{\sim}{\Pi}\Big)\Big(-\Psi^2 - \sigma^2 - \rho(\Psi)\sigma^2 + (1-\rho(\Psi))V_C(\Psi)\Big) \\ &+ \Big(1 - \tilde{\Pi} - \underset{\sim}{\Pi}\Big)\Big(-\sigma^2 + V_C(\Psi)\Big)\Bigg]\end{aligned}$$

As $W(\Psi)$ is continuous over a compact set $[0, \overline{x}]$ there exists a maximizer $\Psi^* \in [0, \overline{x}]$.

Since $W(\Psi^*)$ is not a function of β, by Proposition 2, we have that welfare under no constraints is strictly decreasing in β, goes to $-\infty$ as $\beta \to \infty$ and goes to the first best as $\beta \to q_C\sigma^2$. Again, there exists a cut-point in β, such that above this cut-point voter welfare is maximized by any constraint Ψ^*, and if β is below this cut-point then having no constraints is optimal.

I now show that any Ψ^* is strictly greater than 0. To start, differentiate V_C and ρ with respect to Ψ. This yields:

$$\frac{\partial V_C}{\partial \Psi} = 4q_C\Big(\int_{\Psi}^{\infty} \omega f(\omega)d\omega - F(-\Psi)\Psi\Big),$$
$$\frac{\partial \rho}{\partial \Psi} = \frac{(\beta - \sigma^2 - V_C(\Psi))2\Psi + \frac{\partial V_C}{\partial \Psi}\Psi^2}{(\beta - \sigma^2 - V_C(\Psi))^2}.$$

Differentiating $W(\Psi)$ with respect to Ψ we obtain:

$$\begin{aligned}
\frac{\partial W}{\partial \Psi} &= q_I\Bigg[\int_{-\infty}^{0} 2(-\Psi-\omega)f(\omega)d\omega - \int_{0}^{\infty} 2(\Psi-\omega)f(\omega)d\omega \\
&+ \frac{\partial \rho(\Psi)}{\partial \Psi}\Big(\int_{-\infty}^{-\Psi} -(-\Psi-\omega)^2 f(\omega)d\omega + \int_{\Psi}^{\infty} -(\Psi-\omega)^2 f(\omega)d\omega\Big) + \rho(\Psi)\Big((\Psi-(-\Psi))^2 f(\Psi) \\
&+ \int_{-\infty}^{-\Psi} 2(-\Psi-\omega)f(\omega)d\omega + (\Psi-\Psi)^2 f(\Psi) + \int_{\Psi}^{\infty} -2(\Psi-\omega)f(\omega)d\omega\Big) \\
&+ (1-\rho(\Psi))\frac{\partial V_C(\Psi)}{\partial \Psi} - \frac{\partial \rho(\Psi)}{\partial \Psi}V_C(\Psi)\Bigg] + (1-q_I)\Bigg[\Big(\underset{\sim}{\Pi} + \tilde{\Pi}\Big)\Big(-2\Psi - \frac{\partial \rho(\Psi)}{\partial \Psi}\sigma^2 - \frac{\partial \rho(\Psi)}{\partial \Psi}V_C(\Psi) \\
&+ (1-\rho(\Psi))\frac{\partial V_C(\Psi)}{\partial \Psi}\Big) + \Big(1 - \tilde{\Pi} - \underset{\sim}{\Pi}\Big)\frac{\partial V_C(\Psi)}{\partial \Psi}\Bigg] \\
&= q_I\Bigg[-2\Psi + 4\int_{0}^{\infty} \omega f(\omega)d\omega + \frac{\partial \rho(\Psi)}{\partial \Psi}\Big(\int_{-\infty}^{-\Psi} -(-\Psi-\omega)^2 f(\omega)d\omega + \int_{\Psi}^{\infty} -(\Psi-\omega)^2 f(\omega)d\omega\Big) \\
&+ 4\rho(\Psi)\Big(\int_{\Psi}^{\infty} \omega f(\omega)d\omega - F(-\Psi)\Psi\Big) + (1-\rho(\Psi))\frac{\partial V_C(\Psi)}{\partial \Psi} - \frac{\partial \rho(\Psi)}{\partial \Psi}V_C(\Psi)\Bigg] \\
&+ (1-q_I)\Bigg[\Big(\underset{\sim}{\Pi} + \tilde{\Pi}\Big)\Big(-2\Psi - \frac{\partial \rho(\Psi)}{\partial \Psi}\Big(\sigma^2 + V_C(\Psi)\Big) + (1-\rho(\Psi))\frac{\partial V_C(\Psi)}{\partial \Psi}\Big) + \Big(1 - \tilde{\Pi} - \underset{\sim}{\Pi}\Big)\frac{\partial V_C(\Psi)}{\partial \Psi}\Bigg]
\end{aligned}$$

Letting $\Psi \to 0$ we have

$$\lim_{\Psi\to 0} \rho(\Psi) = 0,$$
$$\lim_{\Psi\to 0} \frac{\partial \rho(\Psi)}{\partial \Psi} = 0,$$
$$\lim_{\Psi\to 0} V_C(\Psi) = -\sigma^2,$$
$$\lim_{\Psi\to 0} \frac{\partial V_C(\Psi)}{\partial \Psi} = 4q_C \int_{\Psi}^{\infty} \omega f(\omega) d\omega.$$

Thus,

$$\lim_{\Psi\to 0} \frac{\partial W}{\partial \Psi} = q_I \left(4 \int_0^{\infty} \omega f(\omega)\omega + 4q_C \int_0^{\infty} \omega f(\omega) d\omega \right) + (1-q_I) q_C \int_0^{\infty} \omega f(\omega) d\omega > 0.$$

Consequently, it must be that if Ψ^* is optimal then $\Psi^* > 0$.

C Ideological Model

Proposition 8. *Assume the election is lopsided. If the incumbent is high quality, then $x_1 = R + \omega$. If the incumbent is low quality, then $x_1 = R$. The voter always reelects the incumbent when she is advantaged. By contrast, the voter always elects the challenger when the incumbent is disadvantaged.*

Proposition 9. *Assume the election is competitive.*

1. *Substituting in $\omega_R^*, \overline{x}_R, \underline{x}_R, \overline{\Pi}_R$, and $\underline{\Pi}_R$, equilibrium behavior is characterized analogously to Proposition 2.*

2. *The cutoff ω_R^* is increasing in polarization.*

Proofs of Propositions 8 and 9. For Proposition 8, because the voter always kicks out or always elects the incumbent, the incumbent maximizes her policy payoff by choosing $x_1 = R + \omega_1$ if informed, and $x_1 = R$ if uninformed.

Under the characterization in Proposition 9, if the incumbent is uninformed her expected utility from choosing R is $-\sigma^2 + \beta - (L-R)^2 - (1-q)\sigma^2$. Her expected utility for choosing $\overline{x}$ is $-(\overline{x} - R)^2 - 2\sigma^2 + 2\beta$. Similarly, her expected utility for $\underline{x}$ is $-(\underline{x} - R)^2 - 2\sigma^2 + 2\beta$. From the definitions of $\overline{x}$ and $\underline{x}$, we have that the uninformed type is indifferent between choosing $\overline{x}$, $\underline{x}$, or R. Using analogous arguments as before it is clear that the uninformed type will not deviate from mixing over these policies.

If the incumbent is informed and learns $\omega_1 \notin (-\omega_R^*, \omega_R^*)$, then choosing $x_1 = \omega_1 + R$ yields her highest policy payoff and she gets reelected. Thus, there is not a profitable deviation. If the incumbent is informed and she learns $\omega_1 \in (0, \omega^*)$, then her equilibrium payoff from choosing $\overline{x}_R$ is

$$-(\omega^* - \omega_1)^2 + 2\beta.$$

Her most profitable deviation is to instead choose $x_1 = R + \omega_1$, and be removed from office. This yields

$$\beta - (1-q)\sigma^2 - (L-R)^2.$$

Comparing expected utilities, we have that the incumbent will not deviate from $\overline{x}_R$ if

$$-(\omega^* - \omega_1)^2 + 2\beta \geqslant \beta - (1-q)\sigma^2 - (L-R)^2, \tag{27}$$

$$\beta + (1-q)\sigma^2 + (L-R)^2 \geqslant (\omega^* - \omega_1)^2, \tag{28}$$

$$\beta + (1-q)\sigma^2 + (L-R)^2 \geqslant (\omega^*)^2. \tag{29}$$

Where (27) is the incentive constraint, and (28) follows from manipulating (27). Line (29) follows from noting that, because $\omega_1 \in (0, \omega^*)$, if (29) holds then (28) will hold as well. Finally, note that the last inequality holds by the definition of ω^*. Therefore, the $\omega_1 \in (0, \omega^*)$ type incumbent does not want to deviate from her equilibrium action. Similarly, neither does a type such that $\omega_1 \in (-\omega^*, 0)$.

After observing x_1 and updating his belief, the voter's expected utility for reelecting the incumbent is

$$-R^2 - (1 - \tilde{q}(x_1))\sigma^2.$$

On the other hand, if the voter elects the challenger, then his expected utility is

$$-L^2 - (1-q)\sigma^2.$$

Comparing, we get that the voter reelects the incumbent if

$$-R^2 - (1 - \tilde{q}(x_1))\sigma^2 \geqslant -L^2 - (1-q)\sigma^2 \tag{30}$$

$$\Leftrightarrow \tilde{q}(x_1) \geqslant q + \frac{R^2 - L^2}{\sigma^2}. \tag{31}$$

Because the election is competitive, the RHS of (31) is strictly less than 1 and greater than 0. If (31) holds with equality, then the voter can reelect with any probability, and if the inequality is reversed, then he must elect the challenger.

As only high quality types choose $x_1 \notin (\underline{x}_R, \overline{x}_R)$, the voter's belief following such a policy is $q(x_1) = 1$. Hence, he reelects as required. As only the low quality type ever chooses $x_1 = R$, $q(R) = 0$ and electing the challenger is optimal. If $x_1 \in (\underline{x}_R, \overline{x}_R)$, this is off the path of play. Assuming for x_1 off the path of play we have $q(x_1) = 0$, then the voter will kick out the incumbent. Finally, if $x_1 = \overline{x}_R$ the voter's updated belief that the incumbent is high quality is

$$\tilde{q}(\overline{x}_R) = \frac{q\Big(F(\omega_R^*) - F(0)\Big)}{q\Big(F(\omega_R^*) - F(0)\Big) + (1-q)\overline{\Pi}_R}. \tag{32}$$

Substituting (32) into equation (31), the voter will reelect the incumbent if

$$\frac{q\Big(F(\omega_R^*) - F(0)\Big)}{q\Big(F(\omega_R^*) - F(0)\Big) + (1-q)\overline{\Pi}_R} \geqslant q + \frac{R^2 - L^2}{\sigma^2}, \tag{33}$$

$$\Leftrightarrow \Big(\frac{q}{1-q}\frac{1-q-\frac{R^2-L^2}{\sigma^2}}{q+\frac{R^2-L^2}{\sigma^2}}\Big)\Big(F(\omega_R^*) - F(0)\Big) \geqslant \overline{\Pi}_R. \tag{34}$$

where (34) simply rearranges (33). Inequality (34) is the definition of $\overline{\pi}_R$ and, thus, the voter is willing to reelect following $x_1 = \overline{x}_1$, as well as for $x_1 = \underline{x}_R$.

Part 2 of Proposition 9 follows by differentiating ω_R^* with respect to $R - L$.

Proposition 10. *(Symmetric Polarization)*
Suppose the challenger and incumbent have biases that are equally distant from the median voter. Symmetrically increasing polarization weakly increases the probability that the incumbent wins reelection.

Proposition 11. *(Challenger Driven Polarization)*
Increasing the challenger's ideological bias weakly increases the probability that the incumbent wins reelection.

Proposition 12. *(Incumbent Driven Polarization)*
Assume F is log-concave, twice differentiable, and f is symmetric about 0. Suppose the incumbent and challenger are initially unbiased. There exists a threshold on office benefit, $\beta^* > q\sigma^2$, such that if $\beta \in (q\sigma^2, \beta^*)$, then increasing the incumbent's ideological bias weakly increases the probability the incumbent wins reelection.

Proofs of Propositions 10, 11, and 12. In the equilibrium with maximum posturing, the probability of reelection is given by

$$q + (1-q)(\overline{\Pi}_R + \underline{\Pi}_R).$$

Expanding, this can be written as

$$q + (1-q)\left(\frac{q}{1-q}\frac{1-q-\frac{R^2-L^2}{\sigma^2}}{q+\frac{R^2-L^2}{\sigma^2}}\right)(F(\omega_R^*) - F(-\omega_R^*)). \tag{35}$$

To prove Part 1 of the proposition, set $R = -L$. This simplifies the probability of reelection to

$$q + (1-q)(F(\omega_R^*) - F(-\omega_R^*)), \tag{36}$$

where $\omega_R^* = \sqrt{\beta - q\sigma^2 + 4R^2}$. Differentiating with respect to R, we get

$$\frac{\partial(36)}{\partial R} = (1-q)(f(\omega_R^*) + f(-\omega_R^*))2\frac{\partial \omega_R^*}{\partial R}.$$

This expression has the same sign as the derivative of ω_R^*. Differentiating, we have

$$\frac{\partial \omega_R^*}{\partial R} = \frac{4R}{\sqrt{\beta - q\sigma^2 + 4R^2}} > 0.$$

Thus, $\frac{\partial(36)}{\partial R} > 0$, as required.

For Part 2 of the proposition, we fix R and consider how equation (35) changes in L. Differentiating, we have

$$\begin{aligned}\frac{\partial(35)}{\partial L} = (1-q)&\left(\frac{2q\sigma^2 L}{(1-q)(R^2-L^2+q\sigma^2)^2}\right)(F(\omega_R^*) - F(-\omega_R^*)) \\ &+(1-q)\left(\frac{q}{1-q}\frac{1-q-\frac{R^2-L^2}{\sigma^2}}{q+\frac{R^2-L^2}{\sigma^2}}\right)(f(\omega_R^*) + f(-\omega_R^*))\frac{\partial \omega_R^*}{\partial L}\end{aligned} \tag{37}$$

Because $L < 0$, the first line of equation (37) is negative. The sign of the second line will have the same sign as $\frac{\partial \omega_R^*}{\partial L}$. Differentiating yields

$$\frac{\partial \omega_R^*}{\partial L} = \frac{-(R-L)}{\sqrt{\beta - q\sigma^2 + (R-L)^2}} < 0.$$

Thus, $\frac{\partial(35)}{\partial L} < 0$.

To prove Part 3 we again differentiate equation (35), this time with respect to R. Doing so yields

$$\begin{aligned}\frac{\partial(35)}{\partial R} &= (1-q)\left(\frac{-2q\sigma^2 R}{(1-q)(R^2-L^2+q\sigma^2)^2}\right)(F(\omega_R^*)-F(-\omega_R^*)) \\ &\quad +(1-q)\left(\frac{q}{1-q}\frac{1-q-\frac{R^2-L^2}{\sigma^2}}{q+\frac{R^2-L^2}{\sigma^2}}\right)(f(\omega_R^*)+f(-\omega_R^*))\frac{\partial\omega_R^*}{\partial L}.\end{aligned} \tag{38}$$

Additionally,

$$\frac{\partial\omega_R^*}{\partial R} = \frac{R-L}{\sqrt{\beta-q\sigma^2+(R-L)^2}} > 0.$$

As $R>0$, the first line of equation (38) is negative. On the other hand, the second line of (38) is positive because $\frac{\partial\omega_R^*}{\partial R}>0$. Letting $R=0$, we get $\frac{\partial(35)}{\partial R}=0$. To complete the proof, I show that if $\beta<\beta^*$, then (35) has a local min at $R=0$. Otherwise, if $\beta>\beta^*$ then at $R=0$ (35) is at a local max.

Differentiating again with respect to R, we get

$$\begin{aligned}\frac{\partial^2(35)}{\partial R^2} =& \left(\frac{\beta-q\sigma^2}{(\beta-q\sigma^2+R^2)^{\frac{3}{2}}}(f(\omega_R^*)+f(-\omega_R^*)\right) \\ &+\frac{R}{\sqrt{\beta-q\sigma^2+R^2}}(f'(\omega_R^*)-f'(-\omega_R^*))\frac{\partial\omega_R^*}{\partial R}\left(\frac{1-q-\frac{R^2}{\sigma^2}}{q+\frac{R^2}{\sigma^2}}\right) \\ &+\frac{R}{\sqrt{\beta-q\sigma^2+R^2}}(f(\omega_R^*)+f(-\omega_R^*))\left(\frac{-2\sigma^2 R}{(q\sigma^2+R^2)^2}\right) \\ &-\frac{2\sigma^2(q\sigma^2-3R^2)}{(q\sigma^2+R^2)^3}(F(\omega_R^*)-F(-\omega_R^*)) \\ &-\frac{2\sigma^2 R}{(R^2+q\sigma^2)^2}(f(\omega_R^*)+f(-\omega_R^*))\frac{\partial\omega_R^*}{\partial R}.\end{aligned} \tag{39}$$

Letting $R=0$, equation (39) simplifies to

$$\frac{\partial^2(35)}{\partial R^2} = \left(\frac{1-q}{q}\right)\left(\frac{1}{\sqrt{\beta-q\sigma^2}}\right)(f(\omega_R^*)+f(-\omega_R^*)) - \frac{2((F(\omega_R^*)-F(-\omega_R^*)))}{q^2\sigma^2}.$$

Rearranging, we have $\frac{\partial(35)}{\partial R} > 0$ if and only if

$$\frac{q\sigma^2}{\sqrt{\beta - q\sigma^2}} > \frac{2(F(\omega_R^*) - F(-\omega_R^*))}{f(\omega_R^*) + f(-\omega_R^*)}.$$

Since f is assumed to be symmetric, we can rewrite the above as

$$\frac{q\sigma^2}{\sqrt{\beta - q\sigma^2}} > \frac{F(\omega_R^*) - F(-\omega_R^*)}{f(\omega_R^*)}. \tag{40}$$

The LHS of equation (40) is strictly decreasing in office benefit. Furthermore, $\lim_{\beta \to q\sigma^2} LHS(40) = \infty$ and $\lim_{\beta \to \infty} LHS(40) = 0$. Thus, it suffices to show that the RHS of (40) is strictly increasing in β.

Inspecting ω_R^*, we have that $\frac{\partial \omega_R^*}{\partial \beta} > 0$. Thus, simplifying notation, Part 3 of the proposition holds if

$$\frac{\partial}{\partial z} \frac{F(z) - F(-z)}{f(z)} > 0.$$

Differentiating, this inequality becomes

$$\begin{aligned} \frac{f(z)(f(z) + f(z)) - (F(z) - F(-z))f'(z)}{f(z)^2} &> 0 \\ \Leftrightarrow 2f(z)^2 &> f'(z)(F(z) - F(-z)). \end{aligned} \tag{41}$$

First, since $f(z)^2 > 0$ and $F(z) - F(-z) > 0$, if $f'(z) < 0$ then the equation holds immediately.

Second, assume that $f'(z) > 0$. Note that

$$2f(z)^2 \geqslant f(z)^2 \geqslant f'(z)F(z) \geqslant f'(z)F(z) - f'(z)F(-z).$$

The first inequality holds as $f(z)^2 > 0$. The second inequality holds by log-concavity. Finally, the third inequality holds as $F(-z) > 0$ and we have assumed $f'(z) > 0$.

Proposition 13. *Assume f is symmetric about 0. Suppose the incumbent and challenger have ideological biases equally distant from the voter. Symmetrically increasing polarization decreases voter welfare.*

Proof of Propositions 13. When R and L are equidistant from 0 we can write $L = -R$ and the election is always competitive. In this case, we can write voter welfare as

$$W(R) = q\Big[\Big(1-F(\omega_R^*) + F(-\omega_R^*)\Big)\Big(-R^2\Big) + \int_{-\omega_R^*}^{0}\Big(-(\underline{x}_R - \omega)^2\Big)f(\omega)d\omega$$
$$+ \int_{0}^{\omega_R^*}\Big(-(\overline{x}_R - \omega)^2\Big)f(\omega)d\omega - R^2\Big] + (1-q)\Big[\overline{\Pi}_R\Big(-\overline{x}_R^2 - \sigma^2 - R^2 - \sigma^2\Big)$$
$$+ \underline{\Pi}_R\Big(-\underline{x}_R^2 - \sigma^2 - R^2 - \sigma^2\Big) + (1 - \overline{\Pi}_R - \underline{\Pi}_R)\Big(-R^2 - \sigma^2 - R^2 - (1-q)\sigma^2\Big)\Big]. \tag{42}$$

First, consider the welfare effect of R through the informed type. Denote this

$$\hat{W}^I = -\Big(1 - F(\omega_R^*) + F(-\omega_R^*)\Big)R^2 - \int_{-\omega_R^*}^{0}(\underline{x}_R - \omega)^2 f(\omega)d\omega - \int_{0}^{\omega_R^*}(\overline{x}_R - \omega)^2 f(\omega)d\omega - R^2.$$

Applying Leibniz rule, we can differentiate $\hat{W}^I$ with respect to R. This yields

$$\frac{\partial \hat{W}^I}{\partial R} = -2R(1 + F(-\omega_R^*) - F(\omega^*)) - R^2(-f(\omega^*)\frac{\partial \omega^*}{\partial R} - f(-\omega^*)\frac{\partial \omega^*}{\partial R}) \tag{43}$$
$$-(\overline{x}_R - \omega_R^*)^2 f(\omega_R^*)\frac{\partial \omega^*}{\partial R} + \int_0^{\omega_R^*} -2\frac{\partial \overline{x}_R}{\partial R}(\overline{x}_R - \omega)f(\omega)d\omega \tag{44}$$
$$+ (\underline{x}_R - (-\omega_R^*))^2 f(-\omega_R^*)(-\frac{\partial \omega_R^*}{\partial R}) + \int_{-\omega_R^*}^{0} -2\frac{\partial \underline{x}_R}{\partial R}(\underline{x}_R - \omega)f(\omega)d\omega - 2R. \tag{45}$$

Grouping terms and using the symmetry of F, we can rewrite the above as

$$\frac{\partial \hat{W}^I}{\partial R} = -2R(1 + F(-\omega_R^*) - F(\omega^*)) - 2R \tag{46}$$
$$\int_0^{\omega_R^*} -2\frac{\partial \overline{x}_R}{\partial R}(\overline{x}_R - \omega)f(\omega)d\omega + \int_{-\omega_R^*}^{0} -2\frac{\partial \underline{x}_R}{\partial R}(\underline{x}_R - \omega)f(\omega)d\omega \tag{47}$$
$$2R^2 f(\omega^*)\frac{\partial \omega^*}{\partial R} - \frac{\partial \omega_R^*}{\partial R}f(\omega_R^*)((\underline{x}_R + \omega_R^*)^2 + (\overline{x}_R - \omega_R^*)^2) \tag{48}$$

Line (46) is clearly negative. From symmetry of F, we have that line (47) will be less than 0 if:

$$\begin{aligned}
&-\frac{\partial \overline{x}_R}{\partial R}\overline{x}_R - \frac{\partial \underline{x}_R}{\partial R}\underline{x}_R < 0 \\
&\Leftrightarrow -(1-\frac{\partial \omega_R^*}{\partial R})(R-\omega_R^*) < (1+\frac{\partial \omega_R^*}{\partial R})(R+\omega_R^*) \\
&\Leftrightarrow -R+\omega_R^* - \frac{\partial \omega_R^*}{\partial R}R + \frac{\partial \omega_R^*}{\partial R}\omega_R^* < R+\omega_R^* + \frac{\partial \omega_R^*}{\partial R}R + \frac{\partial \omega_R^*}{\partial R}\omega_R^* \\
&\Leftrightarrow 0 < R + \frac{\partial \omega_R^*}{\partial R}
\end{aligned}$$

where the first derivation expands terms, the second expands the previous, and the last expression eliminates like terms. Finally, the last line holds by $R > 0$ and $\frac{\partial \omega_R^*}{\partial R} > 0$.

Finally, we show that the term on line (48) is equal to zero. For this to hold requires:

$$\begin{aligned}
&2R^2 f(\omega^*)\frac{\partial \omega^*}{\partial R} - \frac{\partial \omega_R^*}{\partial R} f(\omega_R^*)((\underline{x}_R+\omega_R^*)^2 + (\overline{x}_R-\omega_R^*)^2) = 0 \\
&\Leftrightarrow 2R^2 f(\omega^*)\frac{\partial \omega^*}{\partial R} = \frac{\partial \omega_R^*}{\partial R} f(\omega_R^*)((\underline{x}_R+\omega_R^*)^2 + (\overline{x}_R-\omega_R^*)^2) \\
&\Leftrightarrow R^2 = (\underline{x}_R+\omega^* R)^2 + (\overline{x}_R-\omega_R^*)^2 \\
&\Leftrightarrow R^2 = (R-\omega_R^*+\omega_R^*)^2 + (R+\omega_R^*-\omega_R^*)^2 \\
&\Leftrightarrow R^2 = R^2
\end{aligned}$$

Thus, welfare is decreasing from the informed type as R increases.

To finish proving the proposition, we need that welfare is decreasing through the low quality type as well. This is given by the term in equation (43) that is multiplied by $1-q$.

From the proof of Part 1 of Proposition 5, we have that $\overline{\Pi}_R$ and $\underline{\Pi}_R$ are increasing in R, while $1-\overline{\Pi}_R-\underline{\Pi}_R$ is decreasing. Thus, inspecting equation (43), to show that the part of voter welfare due to the low quality type is decreasing in R it is sufficient to show that the following inequalities hold

$$R^2 \leqslant \overline{x}_R^2 \tag{49}$$

$$R^2 \leqslant \underline{x}^2. \tag{50}$$

To show inequality (49), we need the following to hold

$$
\begin{aligned}
& R^2 \leqslant \overline{x}_R^2 \\
& \Leftrightarrow R^2 \leqslant (R + \omega_R^*)^2 \\
& \Leftrightarrow R^2 \leqslant R^2 + 2R\omega_R^* + \omega_R^{*2} \\
& \Leftrightarrow 0 \leqslant 2R\omega_R^* + \omega_R^{*2},
\end{aligned}
$$

which holds by $R > 0$ and $\omega_R^* > 0$. To show inequality (50), note

$$
\begin{aligned}
& R^2 \leqslant \underline{x}_R^2 \\
& \Leftrightarrow R^2 \leqslant (R - \omega_R^*)^2 \\
& \Leftrightarrow R^2 \leqslant R^2 - 2R\omega_R^* + \omega_R^* \\
& \Leftrightarrow 2R\omega_R^* \leqslant \omega_R^{*2} \\
& \Leftrightarrow 2R < \omega_R^* \\
& 2R = \sqrt{4R^2} < \sqrt{\beta - q\sigma^2 + 4R^2} = \omega_R^*.
\end{aligned}
$$

Therefore, $W(R)$ is decreasing in R.

Proposition 14. *Assume office benefit is sufficiently large. If $L^2 < q\sigma^2$, then voter welfare is maximized at $R = \overline{R} > 0$. Otherwise, if $L^2 > q\sigma^2$, then voter welfare is maximized when the incumbent has a matching ideology, $R = 0$.*

Proof of Proposition 14. To begin, note that if $L > q\sigma^2$, then at $R = 0$ the election is lopsided. As such, the voter's welfare from an incumbent with ideology $R = 0$ is $-(1-q)\sigma^2$, which is his payoff under first-best outcomes and, thus, optimal.

Next, if $R \geqslant \overline{R}$, then the voter always replaces the incumbent and welfare is $W(R \geqslant \overline{R}) = W_{\geqslant}(R)$, given by

$$W_{\geqslant}(R) = -R^2 - (1-q)\sigma^2 - L^2 - (1-q)\sigma^2.$$

As $W_{\geqslant}(R)$ is strictly decreasing in R, it is maximized at $R = \overline{R}$.

If $R < \overline{R}$, then, because $L < q\sigma^2$, the election is always competitive. Here, welfare is more complicated as the voter's first period payoff depends on the realization of the state and he may or may not reelect the incumbent. In this case, voter welfare is $W(R < \overline{R}) = W_<(R)$

$$W_<(R) = q\Big[\Big(1-F(\omega_R^*) + F(-\omega_R^*)\Big)\Big(-2R^2\Big) + \int_{-\omega_R^*}^{0}\Big(-(\underline{x}_R - \omega)^2 - R^2\Big)f(\omega)d\omega$$
$$+ \int_0^{\omega_R^*}\Big(-(\overline{x}_R - \omega)^2 - R^2\Big)f(\omega)d\omega\Big] + (1-q)\Big[\overline{\Pi}_R\Big(-\overline{x}_R^2 - \sigma^2 - R^2 - \sigma^2\Big)$$
$$+ \underline{\Pi}_R\Big(-\underline{x}_R^2 - \sigma^2 - R^2 - \sigma^2\Big) + (1 - \overline{\Pi}_R - \underline{\Pi}_R)\Big(-R^2 - \sigma^2 - L^2 - (1-q)\sigma^2\Big)\Big]$$

If $\beta \to \infty$, then $\omega^* \to \infty$ and $W_< \to -\infty$. As $W_<$ is continuous in β, there exists $\overline{\beta} < \infty$ such that if $\beta > \overline{\beta}$, then $W_<(R) < W_\geqslant(\overline{R})$.

D Extensions

Voter Learning. Following Canes-Wrone, Herron and Shotts (2001) and Maskin and Tirole (2004), modify the model so with probability r the state ω is revealed before the election and with probability $1 - r$ it is never revealed.

Proposition 15. *Assume $q_I = q_C = q$.*

1. *For cut-points $\underline{x}_r$ and $\overline{x}_r$, the incumbent's strategy is characterized analogously to Proposition 1.*

2. *When the state is not revealed, the voter reelects when $x \notin (\underline{x}_r, \overline{x}_R)$. When the state is revealed, the voter reelects if and only if one of the three following outcomes hold:*

   (a) $x = \omega$,

   (b) $x = \overline{x}_r$ and $\omega \in [0, \overline{x}_r)$, or

   (c) $x = \underline{x}_r$ and $\omega \in (\underline{x}_r, 0)$.

3. *For all $\overline{x}_r$ and $\underline{x}_r$, cut-points are ordered as follows: $\underline{x} < \underline{x}_r < \overline{x}_r < \overline{x}$.*

If F is twice differentiable and f is single-peaked at 0, then $\underline{x}_r$ and $\overline{x}_r$ are unique.

The expected utility to the uninformed type of choosing $x = 0$ is still $-\sigma^2 + \beta - (1-q)\sigma^2$. On the other hand, choosing $\overline{x}_r$ yields

$$-\overline{x}^2 - \sigma^2 + \beta + r\Big((F(\overline{x}) - F(0))(\beta - \sigma^2) - (1 - F(\overline{x}) + F(0))(1-q)\sigma^2\Big) + (1-r)\Big(\beta - \sigma^2\Big).$$

Thus, we have that the uninformed type is indifferent if $\overline{x}_r$ solves

$$x^2 = \left(1 - r + r\Big(F(\overline{x}) - F(0)\Big)\right)\left(\beta - q\sigma^2\right). \tag{51}$$

At $x = 0$ the LHS of (51) is equal to 0, while the RHS is $(1-r)(\beta - q\sigma^2) > 0$. On the other hand, letting $x \to \infty$, the LHS goes to ∞ while the RHS goes to $(1 - rF(0))(\beta - q\sigma^2) < \infty$. Thus, by continuity, $\overline{x}_r$ exists. Now suppose that $f(x)$ is single-peaked at 0. We show that if the LHS of (51) intersects the RHS of (51) at some x', then it cannot intersect again for any $x > x'$. The derivative of the LHS of (51) is $2x > 0$ and the second derivative is $2 > 0$. The derivative of the RHS is $rf(x)(\beta - q\sigma^2) > 0$ and the second derivative is $rf'(x)(\beta - q\sigma^2) < 0$, by $x > 0$ and f single-peaked at 0. Thus, for any $x > x'$ the LHS is increasing faster in x than the RHS, and so there cannot be another solution to (51). Analogous arguments yield $\underline{x}_r$.

Noisy Signals. In the baseline model I make the stark assumption that low quality executives are no better informed than voters. Additionally, in Canes-Wrone, Herron and Shotts (2001), pandering is driven by low quality types ignoring their signal to choose the ex ante popular policy. Here, I show that politicians are incentivized to choose policies away from the ex ante optimal, even if this assumption is relaxed.

Assume $q_I = q_C$. Let F be the normal distribution. Change the model so that the low quality type observes a signal $s = \omega + \epsilon$, where ϵ is drawn from a normal distribution with mean 0 and variance γ^2. Thus, $s \sim \mathcal{N}(0, \sigma^2 + \gamma^2)$.

Given this structure, we have

$$\hat{\omega} = \mathbb{E}[\omega|s] = \frac{\sigma^2}{\gamma^2 + \sigma^2}s.$$

In this case, ex ante $\omega \sim \mathcal{N}(0, \sigma^2)$ and $\hat{\omega} \sim \mathcal{N}(0, \hat{\sigma}^2)$, where $\hat{\sigma}^2 = \frac{\sigma^4}{\sigma^2 + \gamma^2}$. The first-best outcome is for all high quality types to choose $x = \omega$ and all low quality types to choose $x = \hat{\omega}$. Fix the first-best policy choices. Thus, the distribution of high quality policy choices is given by F, the distribution of ω and the distribution of low quality policy choices is given by $\hat{F}$, the distribution of $\hat{\omega}$. The voter reelects if and only if

$$\begin{aligned}
&\tilde{q}(x_1) \geqslant q \\
&\Leftrightarrow \frac{Pr(x_1|H)Pr(H)}{Pr(x_1)} \geqslant q \\
&\Leftrightarrow \frac{qf(x_1)}{qf(x_1) + (1-q)\hat{f}(x_1)} \geqslant q \\
&f(x_1) \geqslant \hat{f}(x_1).
\end{aligned}$$

Since $f(x_1)$ and $\hat{f}(x_1)$ have the same mean and different variances, they intersect at two points. Solving yields that in the first-best the voter reelects if

$$x_1 \geqslant \frac{\sqrt{\frac{4}{\sigma^2\hat{\sigma}^2}(\sigma^2 - \hat{\sigma}^2)\ln\left(\frac{\sigma^2}{\hat{\sigma}^2}\right)}}{2\left(-\frac{1}{\sigma^2} + \frac{1}{\hat{\sigma}^2}\right)} \tag{52}$$

$$\Leftrightarrow x_1 \geqslant \frac{\frac{\sigma^6}{\sigma^2+\gamma^2}\sqrt{\frac{\gamma^2}{\sigma^4}\ln\left(\frac{\sigma^2+\gamma^2}{\sigma^2}\right)}}{\frac{\sigma^2\gamma^2}{\sigma^2+\gamma^2}} \equiv \Gamma. \tag{53}$$

And also reelects if $x_1 \leqslant -\Gamma$. There is a unique signal s such that the low quality type that observes s has $\hat{\omega}(s) = \Gamma$. Let this signal and corresponding optimal policy be given by s_Γ and $\hat{\omega}(s_\Gamma)_\Gamma$, respectively. Define the variance in ω conditional on observing signal s as $\nu^2 = \frac{\sigma^2\gamma^2}{\sigma^2+\gamma^2}$.

Thus, the expected utility to a low type for choosing $\hat{\omega}$ and losing the election is $\beta - \nu^2 - (1-q)\nu^2$. The expected utility for choosing a policy x and winning is $\beta - (x-\hat{\omega})^2 - \nu^2 + \beta - \hat{\sigma}^2$.

Therefore, at $\overline{x}_\gamma = \hat{\omega}_\Gamma + \sqrt{\beta - q\nu^2}$, the s_Γ type is indifferent between choosing policy $\overline{x}_\gamma$ and winning, or $\hat{\omega}_\Gamma$ and losing.

For a high quality type, she prefers $\overline{x}_\gamma$ and winning over her ideal policy and losing if

$$\begin{aligned}
&\beta - (\overline{x}_\gamma - \omega)^2 + \beta \geqslant \beta - (1-q)\nu^2 \\
&\Leftrightarrow \omega \geqslant \overline{x}_\gamma - \sqrt{\beta + (1-q)\nu^2} \\
&\Leftrightarrow \omega \geqslant \hat{\omega}(s_\gamma) - \left(\sqrt{\beta + (1-q)\nu^2} - \sqrt{\beta - q\nu^2}\right).
\end{aligned}$$

Thus, all high quality types that observe $\omega \in (\hat{\omega}_\Gamma, \overline{x}_\gamma)$ overreact and choose $\overline{x}_\gamma$. Additionally, since $\beta + (1-q)\nu^2 > \beta - q\nu^2$, high quality types that see a lower signal also overreact. Specifically, those that see $\omega \in \left[\max\left\{0, \hat{\omega}(s_\gamma) - \left(\sqrt{\beta + (1-q)\nu^2} - \sqrt{\beta - q\nu^2}\right)\right\}, \hat{\omega}(s_\Gamma)\right)$ also overreact and choose $\overline{x}_\gamma$.

Given the indifference condition, all low quality types such that $\hat{\omega}(s) \in (\omega_\Gamma, \overline{x}_\gamma)$ posture and choose $\overline{x}_\gamma$. As $f(z) > \hat{f}(z)$ for $z > \overline{x}_\gamma$, after seeing $\overline{x}_\gamma$ the voter updates that $\tilde{q}(\overline{x}_\gamma) > q$ and reelects the incumbent.

Finally, for any low quality type such that $\hat{\omega}(s) > \overline{x}_\gamma$ she chooses $x = \hat{\omega}(s)$ as this maximizes her expected policy utility and wins reelection. Similarly, for a high quality type such that $\omega > \overline{x}_\gamma$. Again, by the condition on $\overline{x}_\gamma$, the voter is willing to reelect following these policy choices.

Now we can study what happens to $\overline{x}_\gamma$ as γ decreases, i.e., the low quality type's signal becomes more accurate. Differentiating yields $\frac{\partial \overline{x}_\gamma}{\partial \gamma} = \frac{\partial \hat{\omega}_\gamma}{\partial \gamma} - \frac{\sigma^4 \gamma}{(\sigma^2+\gamma^2)^2 \sqrt{\beta - \frac{\sigma^2\gamma^2}{\sigma^2+\gamma^2}}}$, where

$$\frac{\partial \hat{\omega}_\gamma}{\partial \gamma} = \frac{\sigma^2\Big(\gamma^2 - (\sigma^2+\gamma^2)\ln(1+\gamma^2/\sigma^2)\Big)}{\gamma(\sigma^2+\gamma^2)\sqrt{\gamma^2 \ln(1+\gamma^2/\sigma^2)}} < 0.$$

The inequality holds by $\gamma^2 - (\sigma^2+\gamma^2)\ln\Big(1+\gamma^2/\sigma^2\Big) < 0$. Thus, increasing the accuracy of the low type's signal (decreasing γ) increases $\overline{x}_\gamma$. Note that voter welfare may not be decreasing, however, as the low quality type is getting better information.

Additionally, $\lim_{\gamma\to 0} \overline{x}_\gamma = \sqrt{\sigma^2} + \sqrt{\beta} > \sqrt{\beta - q\sigma^2} = \lim_{\gamma\to\infty} \overline{x}_\gamma$.

Orthogonal Ideological Dimension. Amend the baseline model to include a separate policy dimension driven by ideological differences. Each player has a known ideal policy on this dimension. The voter has an ideal point at 0, the incumbent has ideal point R, and the challenger ideal point L. I assume $L \leqslant 0 \leqslant R$. In each period she holds office, the politician implements her ideal point on this dimension.

Given second period policymaking, the voter's expected utility for electing a high quality politician is $-(\omega_t - \omega_t)^2 - \hat{y}_i^2 = -\hat{y}_i^2$, and his expected utility for a low quality incumbent is $\int_{\mathbb{R}} -\omega^2 dF(\omega) - \hat{y}_i^2 = -\sigma^2 - \hat{y}_i^2$. Therefore, the voter's decision is based on his belief about the incumbent officeholder's ability, as well as the candidates' ideologies. Let $\tilde{q}_I(x_1)$ be the voter's belief that the incumbent is high quality, following policy choice x_1, and this belief is updated according to Bayes' rule whenever possible.

The expected utility to the voter for reelecting the incumbent is: $-(1-\tilde{q}_I(x_1))\sigma^2 - R^2$. On the other hand, the expected utility for electing the challenger is: $-(1-q_C)\sigma^2 - L^2$. Therefore, in equilibrium, if $\tilde{q}_I(x_1) > q_C + \frac{R^2-L^2}{\sigma^2}$, then the voter must reelect the incumbent. If $\tilde{q}_I(x_1) < q_C + \frac{R^2-L^2}{\sigma^2}$, then he must elect the challenger. Finally, if $\tilde{q}(x_1) = q_C + \frac{R^2-L^2}{\sigma^2}$, then the voter is indifferent and, as such, he can reelect the incumbent with any probability $\rho(x_1) \in [0,1]$.

The term $q_C + \frac{R^2-L^2}{\sigma^2}$ measures the popularity of the challenger relative to the incumbent. If the belief about the challenger's competence increases, the challenger becomes more ideologically moderate, or the incumbent becomes more extreme, then the voter's posterior belief that the incumbent is competent must increase for the incumbent to win reelection. If $q_C + \frac{R^2-L^2}{\sigma^2} > 1$, then the voter always prefers the challenger, even when certain the incumbent is high quality. Similarly, if $q_C + \frac{R^2-L^2}{\sigma^2} < 0$, then the voter reelects the incumbent, even when certain the incumbent is low quality. Thus, as in the previously studied ideological model, lopsided elections exist in which the incumbent always wins or always loses.

When the election is not lopsided, arguments similar to the proof of Propositions 1 and 2 imply that there is a PBE characterized $\underline{x}'$ and $\overline{x}'$ which solve an indifference condition for the uninformed type. That is, they solve

$$-\sigma^2 + \beta - (1 - q_C)\sigma^2 - (L - R)^2 = -x^2 - 2\sigma^2 + 2\beta \tag{54}$$

Solving equation (54) yields explicit solutions $\overline{x}' = \sqrt{\beta - q_C\sigma^2 + (L - R)^2}$ and $\underline{x}' = -\sqrt{\beta - q_C\sigma^2 + (L - R)^2}$.

Given the election is competitive, increasing polarization clearly increases overreacting and weakly increases posturing. Additionally, this decreases welfare. Again, creating a lopsided election can increase welfare if β is sufficiently high.

Note, unlike the ideological model in the paper, here the interval is centered around 0 rather than R. Thus, increasing polarization always distorts policy choices away from 0 on the crisis dimension and polarizes policies on the orthogonal dimension.

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