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

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Abstract

Political institutions often grant executive policymakers authority on the premise that they have the expertise to craft effective solutions to difficult policy issues. Executives are often criticized, however, for choosing policies that exaggerate the degree of action required to address the problem. This is caused either by well-informed executives overreacting to their information or ill-informed executives posturing and acting boldly despite their lack information. Such policies can have severe consequences and undermine the expertise rationale for delegation. To analyze overreacting and posturing, I develop a model of elections in which officeholders differ in their expertise. In equilibrium, politicians are motivated to enact extreme policies in order to appear informed to voters. Increased polarization between the candidates can exacerbate overreacting and posturing. Furthermore, polarization has different empirical and welfare implications if it is caused by only the incumbent or if it is due to extremism by both candidates. The model also makes a number of empirical predictions that contrast with previous studies of accountability. Consequently, it can help identify issues on which elections encourage overreacting and posturing.

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1 Introduction

Executive policymakers are often granted authority on the premise that they have the expertise to craft effective solutions to difficult policy issues.[1] Although voters cede authority to the executive, they can use elections to discipline officeholders.[2] Despite this accountability, executives are frequently criticized for choosing policies that exaggerate the degree of action required to address a situation. Scholars have argued that governments have implemented these disproportionate policies in response to a number of issues, such as public health crises (Maor, Tosun and Jordan, 2017), terrorist attacks (Mueller, 2006), and recessions (De Francesco and Maggetti, 2018). Two policymaking behaviors are particularly important for understanding excessive policy responses.

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. CIA estimates of Soviet military spending at the time suggest that, while Soviet military expenditures were significant, the extent of Reagan's response was unnecessary (Holzman, 1989).

Second, the executive may have little policy-relevant information, and yet *posture* by acting boldly, instead of proceeding cautiously in the face of uncertainty (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 to "do something" and ordered military action, despite having very little information about the on-going situation (Bohn, 2016).

Overreacting and posturing undermine the expertise-based rationale for delegation. Furthermore, the consequences for implementing policies poorly suited to a given situation can be severe. In the case of the Reagan build-up, later studies argue there is little evidence that the degree to which the U.S. increased military spending helped cause the collapse of the Soviet Union, with some claiming it prolonged tensions by emboldening hardliners in the U.S.S.R. (e.g., Chernoff, 1991; Fitzgerald, 2001; Wilson, 2008). As for the *Mayaguez* incident, Ford's handling of the situation led to numerous civilian deaths, and was ultimately criticized as an excessive use of force. Given the repercussions for implementing disproportionate polices, it is important to identify the conditions under which such responses are most likely to be problematic.

What causes overreacting and posturing? To address this question, I develop a model of

[1] This rationale underlies the trustee theory of representation which, briefly put, argues that politicians should choose policies that they deem best (see, for example, Mill (1861) and Fox and Shotts (2009)). Delegation of policymaking authority to the bureaucracy is also often justified on the grounds that bureaucrats have superior expertise (e.g., Holmstrom et al., 1982; Gailmard and Patty, 2012).

[2] I focus on the relationship between voters and executive politicians, however, expert accountability arises in many economic and political hierarchies.

elections. I find that overreacting and posturing arise when voters observe the executive's policy choice, but may not learn whether the policy was effective before the election. In this case, electoral accountability motivates politicians to choose extreme policies in order to appear informed to voters, even without ideological disagreements. One benefit of explicitly modeling this mechanism is that I am able to incorporate ideology and study how it interacts with overreacting and posturing. In competitive elections, I find that polarization exacerbates these behaviors. In general, however, changes in polarization between the incumbent and challenger can have non-monotonic effects on the incumbent's probability of reelection and on voter welfare.

The equilibrium analysis also yields a number of empirical implications. Two findings on executive policy choices stand out. First, the model predicts there should be less variance in the policy choices of term-limited executives, relative to those who can run for reelection. Second, it implies that executives implement policies that are more popular in their final term, compared to their first. These predictions differ from commonly studied models that analyze pandering or adverse selection over ideology (e.g., Canes-Wrone, Herron and Shotts, 2001; Bernhardt, Dubey and Hughson, 2004). Consequently, they may be useful for identifying issues on which elections encourage overreacting and posturing.

These results emerge from a two-period model of executive policymaking and 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 which policy should be chosen. After the incumbent chooses the first period policy, the voter decides to reelect the incumbent or to elect 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 strategic tension arises from the low-quality type attempting to appear informed in order to get reelected, without knowing the correct policy. These uninformed officeholders favor moderate policies because they face greater uncertainty about the type of policy response required. By contrast, an informed politician is relatively more willing to choose an extreme policy in the direction of her information. Consequently, in equilibrium, extreme policies signal expertise and the voter only reelects the incumbent if she chooses a policy far from the ex ante optimum. Thus, the model provides a logic for why moderate responses may be viewed unfavorably by the public, even if the public does not believe an extreme response is necessary. 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).

Next, I extend the model to include ideological heterogeneity between the incumbent, challenger, and voter. I show that policy disagreements play an important in role in overreacting and posturing. If the election is competitive, in the sense that neither candidate is much more extreme than the other, then increasing polarization between candidates exacerbates overreaction and posturing by policymakers. A more extreme challenger makes the incumbent more motivated to retain office. However, if either the incumbent or challenger is overly extreme relative to the other, then disproportionate policy reactions disappear. I derive predictions for how polarization affects reelection probabilities and implications for voter welfare. Relatively symmetric polarization increases the probability of the incumbent retains office and decreases voter welfare. On the other hand, polarization due to the incumbent can have non-monotonic effects on both reelection probabilities and voter welfare.

The predominant accountability failure studied in the literature is that elections can incentivize politicians to pander to the electorate. That is, politicians try to improve their reelection chances 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).[3] Overreacting and posturing are the opposite behaviors of pandering: executives choose policies further away from the policy the voter would choose. Furthermore, for pandering to explain exaggerated policy responses requires the voter to ex ante believe that the extreme policy is more likely to be correct. By 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 and, thus, I derive an apparent voter preference for extreme actions that is fully endogenous to equilibrium play.[4] Finally, while politicians may choose the "wrong" policy, in these pandering models there is no overreacting to information.[5]

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. Correspondingly, the model in this paper best apply to policy areas in which competence and information are crucial for obtaining successful outcomes, e.g., responding to an economic crisis, rather than areas in which preferences over policies are solely a matter ideological taste.

[3]For general overviews of the electoral accountability literature see Ashworth (2012) and Duggan and Martinelli (2017).

[4]In fact, the model in this paper would generate disproportionate policy reactions even if extreme actions are never optimal, and this is known by all the players ahead of time.

[5]Acemoglu, Egorov and Sonin (2013) and Duggan and Martinelli (2015) 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 differ from mine, and the previously cited pandering models, as there is not incomplete information over the optimal policy for the voter. Thus, the interpretation of an extreme policy choice in these papers is different from overreacting and posturing policy in this paper.

Overreacting and posturing in my model, however, 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 precludes overreacting to information. On the other hand, Prendergast and Stole (1996) also find a similar two-sided effect of overreacting to information, in a model of investment decisions in which 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, rather than how differences between the incumbent and challenger affect disproportionate polices or voter welfare. Furthermore, Prendergast and Stole focus on fully separating equilibria, while the opportunity for the low-quality type to pool with some high-quality types plays an important role in my analysis.[6]

Outside the accountability literature, my model is linked to work studying policy distortions in Downsian models of electoral competition, where candidates commit to policies, with uncertainty over optimal policy choices. Two papers in particular are related. First, Honryo (2013) shows there sometimes exist equilibria in which an informed politician chooses the left or right policy despite learning that the moderate policy is optimal. As with the disproportionate responses I study, this distortion is generated by trying to signal competence. However, as there is not a continuous policy space, politicians do not overreact in the direction of their information. Second, Kartik et al. (N.d.) study overreactions, and also use a continuous policy space. In their paper, the mechanism that causes candidates to overreact to their information is very different from that studied in this paper. In Kartik et al. there is no difference in competence; as such, there is no posturing and overreacting to information is not generated by politicians trying to signal expertise. Instead, the voter aggregates information from both candidates' policies and this updating can create a situation where the voter prefers policies that are more extreme than the unbiased choice of either individual candidate. On the other hand, politicians in my model are always at least weakly better informed than the voter. Additionally, neither paper investigates the effects of polarization and ideological extremism studied here.[7] Moving beyond elections, Patty and Turner (Forthcoming) 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

[6] Prendergast and Stole focus on the manager's incentives to stick to a policy once chosen, see also Majumdar and Mukand (2004).

[7] Kartik et al. do show that their main results are robust to the introduction of some degree of policy preferences, but do not further analyze the effects of ideology.

agent to overly large policy changes in order to convince the overseer that the status quo should be revised.

Finally, previous theories of elections argue that overreactions arise from differences in the types of available policies rather than information, as in my model. For example, some authors 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 actions that are risky 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 all these explanations, I provide an institutional theory and show that accountability alone may be sufficient for politicians to overreact to information. While my results do not require these other features to be present, they are not mutually exclusive. In practice, it may be that the accountability mechanism I find works in tandem with these previously studied features to generate further policy distortions.

2 The Model

There are two periods, $t \in \{1, 2\}$. In each period an executive makes a policy choice $x_t \in X = \mathbb{R}$. 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 choice. 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, which is drawn independently from a distribution F with mean 0, finite variance $\sigma^2 > 0$, full support over $\mathbb{R}$, and admits pdf f.[8]

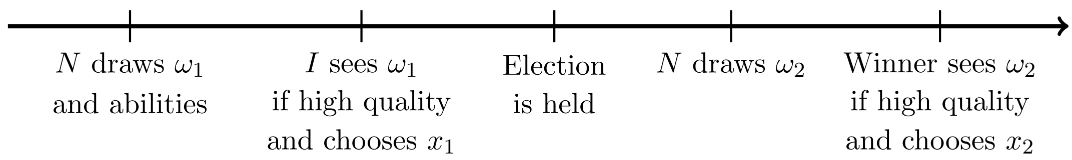
Each politician is either high quality or low quality. If the politician is high quality, then she knows ω_t in each period. By contrast, low quality politicians are uninformed and have no private information about the realization of ω_t. A politician's quality is her private information. A politician is high quality with probability $q \in (0, 1)$ and low quality with probability $1 - q$.

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

Following the officeholder's choice, the voter decides to reelect the incumbent or elect the challenger. The outcome of the incumbent politician's policy choice, however, is not revealed. Thus, the voter must decide to reelect the politician having observed the policy choice x_1,

[8] Similar results hold if ω persists across periods.

Figure 1: Summary of electoral game



but without knowing the quality of the policy choice. On many important issues it may take years for voters to learn whether a policy is a success or failure, e.g., the effectiveness of a financial bailout.

Nature next draws the second period policy choice. If the winner of the election is high quality 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 $u_i(x_t) = -(x_t - \omega_t)^2$. Additionally, a politician gets an office benefit $\beta > 0$ for each period in which she holds office. Dynamic payoffs are given by the sum of utility each period.[9]

2.1 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 et al. (N.d.).

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, $x \neq 0$, 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 this definition, 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

[9]I assume no discounting between periods as it does not qualitatively affect the results and reduces notation.

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 both what the public expects and 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.

In other instances, moving in either direction can be interpreted as changing policy along a liberal-conservative dimension. For example, following a mass shooting, the incumbent could overreact to her information in one direction by significantly deregulating firearms, or overreact to her information in the other direction by drastically restricting access to firearms. Alternatively, the direction could indicate the degree of action, with higher policies indicating more aggressive interventions. Thus, an executive deciding how to address a public health crisis could do too much to prevent the spread of a disease, or do too little. Here, an exaggerated policy in one direction would correspond to the classic idea of an overreaction, and the other direction an underreaction to the situation.

On some issues, the bidirectional nature of this definition may seem at odds with what is observed empirically. Following terrorist attacks scholars are often concerned that governments overreact to the threat by doing too much (e.g., Mueller, 2006). However, if F is not symmetric around the mean, then in equilibrium the probability of overreaction to the right will differ from the probability of overreaction to the left.[10]

2.2 Comments on the Model

Before proceeding, a few comments on the model are in order. In particular, I discuss two important features of the model.

First, although stylized, 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. Additionally, the set-up remains comparable to previous work on the subject, 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. One important difference with these previous works is that I model a richer policy space. Indeed, many policy areas of interest, particularly when concerned with overreaction, are best characterized by allowing multiple degrees of response, e.g., military spending, economic stimulus. While previous models contain similar ingredients, i.e., they incorporate accountability, an unknown optimal policy, and differing politician abilities, they often assume a

[10]Such asymmetries can also arise in a number straightforward extensions of the baseline model. For example, if utility functions are asymmetric around the ideal point, then policies will be observed more often in that direction.

binary policy space. This rules out overreacting to information and studying the extent to which actions are disproportional. Furthermore, note that the important point of departure is that the policy space is richer, and not that there is a continuum of states of the world. To see this, consider there being only two states of the world, but the policy space is the real line. In this case, the low quality type is still incentivized to choose a moderate policy and mitigate her risk, while high quality types are relatively more willing to choose extreme policies in the direction of the true state.

Second, a key assumption of the model for studying polarization and policy reactions in Section 4 is that the incumbent cares about the second period policy even if she loses the election. This assumption is a cornerstone of citizen-candidate models of electoral accountability (e.g., Osborne and Slivinski, 1996; Besley and Coate, 1997; Duggan, 2000). It is also similar in spirit to the assumption that the loser of a Downsian election still incurs utility from the winner's policy. Additionally, it is consistent with the observation that officeholders in high level executive positions often continue caring about policy outcomes after leaving office. For example, John Adams is said to have worked until midnight on his last day in office, approving judicial appointments in order to curb the influence of the incoming Thomas Jefferson. More recently, 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.[11,12,13]

3 Baseline Results

As there is incomplete information over ability and the state of the world, I study perfect Bayesian equilibrium of the model. Given the continuous action space, many behaviors can potentially be supported as equilibrium. As such, I focus my analysis on equilibria that survive the D1 refinement (Cho and Kreps, 1987). For the voter a mixed strategy 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 $\pi_t : \mathbb{R} \cup \{\phi\} \to \Delta(X)$, 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

[11] Alana Abramson, "Barack Obama Criticizes '50th or 60th' Attempt to Repeal the Affordable Care Act," *Time Magazine*, September 20, 2017, http://time.com/4949837/obamacare-repeal-barack-obama-graham-cassidy/.

[12] Eugene Scott, "Obama touts Paris accord despite 'temporary absence of US leadership"' *CNN*, July 4, 2017, https://www.cnn.com/2017/07/03/politics/obama-korea-speech-trump/index.html.

[13] Alana Abramson, "'So Misguided.' Barack Obama Weighs In On Trump's Decision to Pull U.S. From Iran Nuclear Deal" *Time Magazine*, May 18, 2018, http://time.com/5270065/obama-iran-deal-trump/.

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, by quadratic utility, 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 $\tilde{q}(x_1) > q$, then the voter must reelect the incumbent. If $\tilde{q}(x_1) < q$, then he must elect the challenger. Finally, if $\tilde{q}(x_1) = q$, 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 the section I study first-period policy choices.

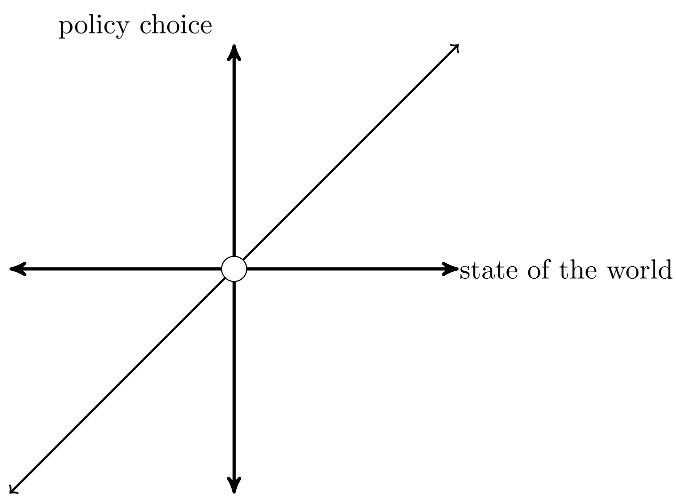
3.1 First-best Outcomes

I begin by characterizing the first-best outcome for the voter. That is, given the officeholder's information, what is the best policy choice for the voter? As 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 $x_t = 0$.[14] Figure 2 illustrates these policy choices.

In this case, there is no distortion in policy outcomes. 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 $x_1 \neq 0$, as this indicates the incumbent is high quality. The voter always removes the incumbent after seeing $x_1 = 0$, as with probability 1 the policy was chosen by the uninformed type. This reelection decision is depicted in Figure 3. Thus, this configuration of policy choices provides the voter with his highest static and dynamic payoffs because he also always keeps an informed incumbent and always removes an uninformed incumbent. While this profile of actions is optimal for the voter, is it possible to support such behavior as an equilibrium? That is, when would the incumbent not deviate from playing such a strategy profile?

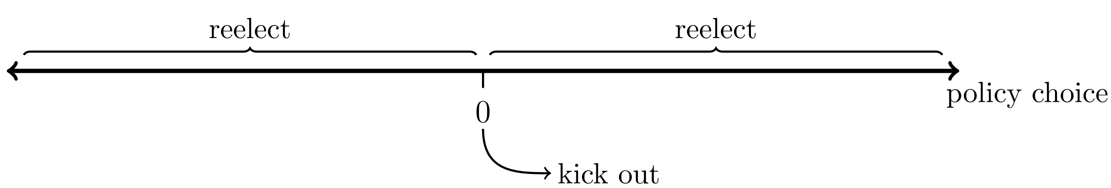
[14] In the second period, it is clear that the officeholder optimally chooses the policy that is best for the voter.

Figure 2: First-best policy choices.



Note: Figure 2 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.

Figure 3: Voting with first-best outcomes



Note: Figure 3 shows which policy choices lead to reelection for the incumbent under the first-best outcome.

Under the first-best strategy profile a high quality incumbent never deviates, as 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. Formally, this holds if

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

Equation (1) reveals that the first-best outcome can be supported as an equilibrium when office benefits are not too high.[15] This is possible because the incumbent cares about policy outcomes. As such, when office benefits are sufficiently low the uninformed type is willing to forgo reelection so that a potentially high quality challenger can make policy in the second period.

3.2 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 $\beta > q\sigma^2$.

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

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

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 in office. Similarly, it useful to separately define a cut-point ω^* in the state space as

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

Finally, define $\overline{\Pi}(\omega^*)$ and $\underline{\Pi}(\omega^*)$ as

$$\begin{aligned}\overline{\Pi}(\overline{x}) &= F(\omega^*) - F(0)\\ \underline{\Pi}(\underline{x}) &= F(0) - F(-\omega^*).\end{aligned}$$

With these cut-points in hand, the first proposition characterizes equilibrium behavior

[15] 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.

for the voter and incumbent.

Proposition 1. *Every perfect Bayesian equilibrium of the model that survives D1 is 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 $\overline{\pi} \in [0, \overline{\Pi}]$, I* ***postures to the right*** *and chooses $x_1 = \overline{x}$.*
   (b) *With any probability $\underline{\pi} \in [0, \underline{\Pi}]$, 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 $x = 0$.*

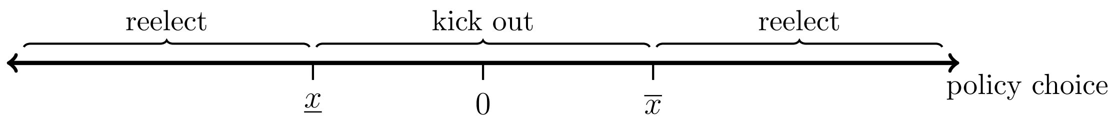
Off the path of play assume the voter believes the incumbent is uninformed with probability 1.

Proposition 1 demonstrates that policy choices are distorted compared to the first-best outcome, when $\beta > q\sigma^2$.

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, as the low quality type would deviate and always choose this policy. For this reason, the voter 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 $x_1 = \underline{x}$, as the uninformed type chooses these boundaries with low enough frequency. Figure 4 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 4: Equilibrium voting



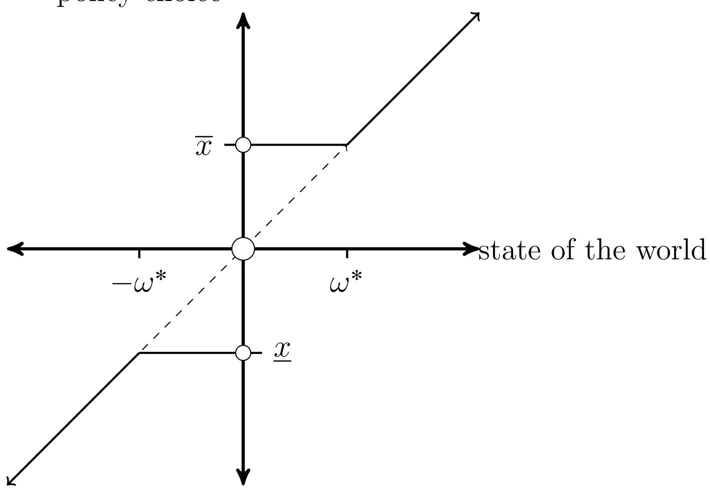
Note: Figure 4 shows which policy choices lead to reelection in equilibrium. If x_1 is below the lower cut-point $\underline{x}$ or above the upper cut-point $\overline{x}$ then the voter reelects the incumbent. On the other hand, if x_1 is between $\underline{x}$ and $\overline{x}$, then the voter instead elects the challenger.

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 $x_1 = \overline{x}$. As $\overline{x}$ makes a low quality incumbent indifferent between choosing $x_1 = \overline{x}$ and choosing $x_1 = 0$, the high quality incumbent strictly prefers choosing $x_1 = \overline{x}$ and being reelected over choosing $x = \omega_1$ and being kicked out. This is because $\overline{x}$ is closer to ω_1 than it is to 0, and so a high quality incumbent is more willing to choose $\overline{x}$ than the low quality incumbent. 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 5 summarizes policy choices as a function of the incumbent politician's information.

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

In equilibrium, the uninformed incumbent is indifferent over $\underline{x}$, 0, and $\overline{x}$, hence, 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 $\overline{x}$.

Figure 5: 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.

4 The Effects of Ideology

I now incorporate ideological differences into the model. Therefore, the players may disagree over the extent of action that is warranted, even if 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. The voter's payoff remains $-(x - \omega_t)^2$. 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^* as

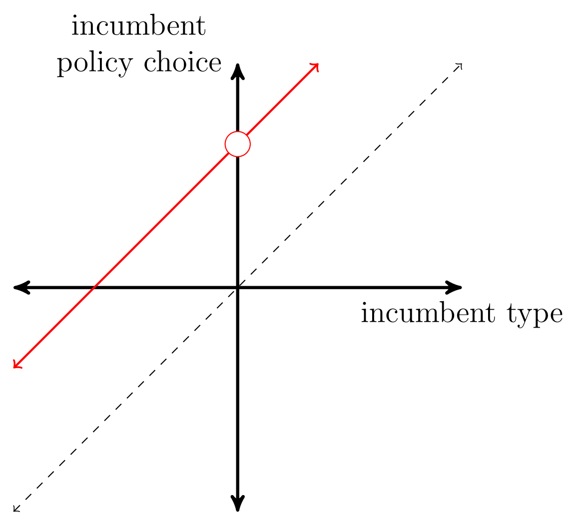
$$\begin{aligned}\underline{R} &= \sqrt{\max\{0, L^2 - q\sigma^2\}},\\ \overline{R} &= \sqrt{L^2 + (1-q)\sigma^2},\\ \omega^*_R &= \sqrt{\beta - q\sigma^2 + (R-L)^2}.\end{aligned}$$

With the introduction of ideology, the voter may always prefer a politician from the ideologically closer party. If $R < \underline{R}$, 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. The incumbent is advantaged in the former case and disadvantaged in the latter. In either case, I say the election is *lopsided*. Otherwise, if $\underline{R} \leqslant R \leqslant \overline{R}$, then the election is *competitive*. Proposition 2 summarizes lopsided elections.

Proposition 2. *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.*

Disproportionate reactions disappear when the incumbent has a strong electoral advantage due to ideology. As the voter always reelects the incumbent, the latter's incentives to distort policy disappear, and she chooses her myopically optimal policy. A similar conclusion holds if the incumbent is ideologically disadvantaged. In this case, the voter always removes the incumbent from office, as the voter prefers to elect an untried challenger with ideology L over a a known high quality incumbent with ideology R. Again this removes the incentive for an uninformed type to try and posture to get reelected which, in turn, eliminates overreacting by a high quality incumbent.

Figure 6: 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, a politician of either ideology can be elected if the voter thinks it is sufficiently likely the incumbent is low or high quality. To characterize equilibrium, let $\overline{x}_R = R + \omega_R^*$ and $\underline{x}_R = R - \omega_R^*$. Additionally, define $\overline{\Pi}_R(\omega_R^*)$ and $\underline{\Pi}_R(\omega_R^*)$ as

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

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

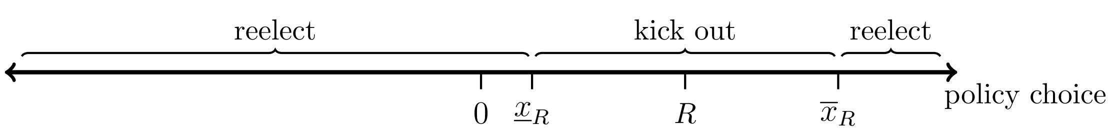
Proposition 3. *Assume the election is competitive.*

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 1.*

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

Similar to the model without ideology, behavior can be characterized by an interval of policies, where the bounds of the interval, $\underline{x}_R$ and $\overline{x}_R$, make the low quality type indifferent between choosing her ideal policy and getting kicked out or choosing the bound and getting reelected. In this case, the interval is shifted to center around R. Informed incumbents who learn that the state is in the corresponding interval of states overreact to this information, and choose the closest bound, while informed incumbents outside the interval choose their ideal policy. An uninformed incumbent mixes over $\underline{x}_R$, R, and $\overline{x}_R$. Figure 7 illustrates voting behavior, while Figure 8 shows policy choices by an ideologically biased incumbent.

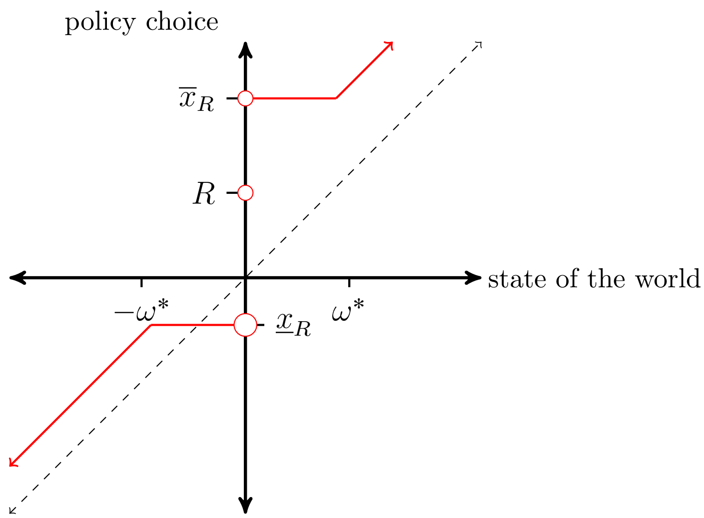
Figure 7: Voting in competitive elections



Note: Figure 7 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 3 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, as the challenger implements an ideologically more distant policy in the second period. This increases the incumbent officeholder's incentive to get reelected.[16] 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. Proposition 4 in the following section goes into more detail.

Figure 8: 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.

Implication 1 pulls together Propositions 2 and 3 to study the overall effect of incumbent extremism on policymaking.

Implication 1. If $R < \underline{R}$ there are no policy distortions. If $\underline{R} \leqslant R \leqslant \overline{R}$, then increasing R increases overreacting and posturing. Finally, for $R > \overline{R}$ there is again no policy distortions.

The logic for why disproportionate responses are non-monotonic in the ideological extremism of the incumbent follows from Propositions 2 and 3. When the incumbent is much further from the voter than the challenger, there is no distortion. As R moves in towards 0, the incumbent gets closer to the voter ideologically, eventually the election becomes competitive, and this creates disproportionate policy choices. As the incumbent continues to

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

move closer to the voter, however, polarization between the parties decreases, shrinking the distance between $\overline{x}_R$ and $\underline{x}_R$ and the extent of overreacting and posturing. 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 becomes lopsided.

5 Empirical Implications

I now highlight some implications of equilibrium behavior useful for empirical work studying executive policy choices. As the subsequent section discusses, issues for which overreacting and posturing predominate can yield different welfare implications than other types of accountability problems. Consequently, it is crucial to have methods to identify the issues on which politicians engage in posturing and overreacting.

It is challenging to empirically assess whether a policy is excessive. Determining whether a particular policy response is an overreaction requires comparing the decision to some benchmark of what the politician should have done. Even when it is possible to approximately determine the "correct" policy, this determination will depend on the particular circumstances of each issue. A related problem is that this determination may depend on the beliefs of voters.

As an example, consider a survey that asks voters if the government should be spending more or less on defense. Suppose a majority of voters believe there should be more. If the incumbent is observed engaging in more spending, this is consistent with overreacting and with pandering. Without rich survey data on the voters' beliefs about a range of policy options it may be difficult to distinguish between types of accountability failures. It is even more difficult to distinguish posturing from overreacting. This must be the case as, otherwise, posturing would not be a successful reelection strategy. Recalling Ford's response to the capture of the *Mayaguez*, many voters viewed Ford's aggressive approach favorably early on because they were initially unaware of the civilian casualties.

Based on these issues, concluding that a policy was exaggerated requires a good deal of background information and context that may not be amenable to large N analysis. Correspondingly, the literature on disproportionate responses has focused on case studies (e.g., Maor, 2012; Maor, Tosun and Jordan, 2017; Peters, Jordan and Tosun, 2017; see De Francesco and Maggetti, 2018 for an exception). Therefore, it may be productive to derive more indirect implications of overreacting and posturing to bring to data. Fortunately, the model makes predictions about policy choices that overcome some of these difficulties. Furthermore, these predictions are distinct from related theories. As such, they could be used to identify issues on which politicians appear likely to overreact and posture.

Consider the following observation about policymaking in the model. In the second period, the politician tries to match the state. As such, if policies are sometimes exaggerated in the first period, then, in expectation, policy should be closer to the ex ante optimal policy in the second period. This has the following empirical implication in terms of different behavior by term-limited executives.

Implication 2. The variance in policy choices of term-limited executives is less than the variance in policy choices for executives who can run for reelection.

In the second period, the politician tries to match the state. As such, if policy is initially disproportionate, then there is an overall reversion to the mean effect. Thus, the model predicts that the variance in the distribution of second period policy choices is less than the variance in the distribution of first period policies.

The next implication is similar, but considers the preferences of voters as it relates to policy choice.

Implication 3. In expectation, the executive chooses a policy that is ex ante more popular in her final term.

Both of these implications stand in contrast to Canes-Wrone, Herron and Shotts (2001), in which there is uncertainty over expertise but pandering is the accountability failure of interest. Specifically, with pandering, in the first period politicians are more often picking the popular policy, resulting in less variance. Similarly, if the incumbent panders in the first period, then she is choosing the most popular policy and, thus, the officeholder becomes more likely to choose the policy not ex ante preferred by the voters when not facing reelection. In a similar fashion, Implications 2 and 3 contrast with models with uncertainty over ideology (e.g., Bernhardt, Dubey and Hughson, 2004; Duggan and Martinelli, 2017). In these models, the incumbent is incentivized to choose policies closer to the median to get reelected. For example, if office benefit is high, then all incumbents converge to the median in the first period. Thus, there is no variance in the policy choice and all incumbents choose the median's ideal point. However, the officeholder chooses her ideal policy during her final term, which creates variation in the policy choices, and is less popular than the median's ideal.

The next proposition analyzes how the incumbent's reelection probability changes in competitive elections as polarization increases.

Proposition 4. *Assume the election is competitive.*

1. *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.*

2. *Increasing the challenger's ideological bias weakly increases the probability that the incumbent wins reelection.*

3. *Assume F is log-concave, twice differentiable, and 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.*

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. 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 she 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.

Firs, 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. If increased polarization 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. 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 type of politicians who are likely to be reelected.

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.

6 Voter Welfare

I now consider the effects of overreacting and posturing on voter welfare. To start, I isolate the effects of only accountability and focus on welfare in the baseline model with no ideological disagreement.

In this case, overreacting and posturing always distort outcomes away from the first-best. These behaviors can increase in two ways. First, the probability of an excessive 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. The equilibrium degree of distortion by the incumbent is the distance between what her information suggests is the optimal policy and the policy that she actually implements. For an informed incumbent, this is $|\overline{x} - \omega_1|$ or $|\underline{x} - \omega_1|$ while, for an uninformed type, this is simply $\overline{x}$ or $|\underline{x}|$.

As the bounds of the non-reelection interval make the uninformed type indifferent between choosing the bound and getting reelected, or choosing $x_1 = 0$ and getting kicked out, these end-points are affected by her incentives for reelection. This is particularly the case for office benefits. If office benefit increases, then the voter must only reelect for more extreme bounds to maintain indifference of the low quality type. The next result summarizes this effect.

Proposition 5. *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 the policy distortions are more extreme. Additionally, the probability of overreacting and posturing increase, as more high quality types overreact and low quality types can posture more often. The second part of Proposition 5 demonstrates that, as office benefit becomes large the incumbent overreacts to information with probability 1, and the degree of the distortion becomes arbitrarily large. Furthermore, more extreme bounds result in more posturing. This is because the uninformed type is now taking an action even further from the ex ante optimal policy. Additionally, both $F(\overline{x}) - F(0)$ and $F(0) - F(\underline{x})$ increase which, by Proposition 1, implies that the highest probability with which the uninformed type can choose each bound increases.

Proposition 5 also implies that increasing office benefit decreases voter welfare. This does not necessarily imply, however, that accountability is always bad for the voter. Indeed, elections help the voter select high quality officeholders for policymaking in the second period.[17] 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 the previous propositions and discussion.

Implication 5. If office benefit is sufficiently low, then policy should be made by an elected executive. Otherwise, the executive should not be given policymaking authority.

This implication arises because the distortions from accountability eventually outweigh the selection effects. Alternatively, this result can be reinterpreted as saying that policy should be made by elected executives if the variance σ^2 is high. Applied to fiscal policy, this implies that automatic stabilizers should be used to correct for small economic fluctuations, but executives should make decisions for large recessions.

This result also differs from the welfare implications in settings where accountability and signaling competence create pandering. It is straightforward to show that in Canes-Wrone,

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

Herron and Shotts (2001) 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 worse case is that all the low types choose the ex ante optimal policy. On the other hand, when there is overreacting and posturing, choices are distorted away from the ex ante optimal by both the high and low types.

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

Proposition 6. *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.*

Proposition 6 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.

However, Proposition 6 does not account for the global effects of extremism, as eventually the election could become non-competitive. Indeed, the non-monotonicity of disproportionate responses in ideology indicates that voter welfare may also be non-monotonic in the ideology of the incumbent. This further suggests that the relationship between ideological extremism and voter welfare may not be straightforward. Proposition 7 examines this possibility for the case of incumbent ideology.

Proposition 7. *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, $R = 0$.*

Surprisingly, 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 enduring more ideologically extreme policies in order to eliminate distortions. If office benefits are instead relatively low, then the distortions from accountability are less severe. Hence, under this scenario, the voter prefers the incumbent be ideologically congruent. Finally, if the challenger is ideologically distant, then an incumbent with matching bias, $R = 0$, delivers the best of both worlds. When the challenger is ideologically extreme, setting $R = 0$ removes distortions due to ideology and creates a lopsided election which removes distortions due to accountability.

7 Conclusion

Public policy is rife with examples where analysts, either concurrently or retrospectively, note that executives have seemingly acted excessively in addressing a real world problem. Whether this is responding to information by exaggerating the degree of action required, or acting decisively despite a lack of information, many have found such actions problematic.

In this paper I have shown how electoral accountability incentivizes politicians to implement policies not proportionate to their information. The key driver of this behavior is that low quality politicians have the most motivation to choose moderate policies. As a consequence, high quality politicians adopt disproportionate policy responses to signal their competence. These distortions are further exacerbated when the officeholder and the challenger have strong ideological disagreements. These results suggest that, under some conditions, voter welfare is higher when the incumbent is not held accountable. Furthermore, I find that voters can prefer an incumbent with biased policy preferences over an ideologically congruent politician. Empirically, the model implies that policy issues prone to disproportionate responses are characterized by high variance in the policy choices of incumbents facing competitive elections.

In the future, there are a number of directions in which this analysis could be extended. First, while I have examined when the voter is better off with the politician having full authority, it may be possible to structure executive powers such that the offficeholder has an intermediate level of authority. That is, to study the delegation sets that optimally constrain the executive's policy choices. Similarly, it would be interesting to analyze how other features of the political environment, such as judicial review or the media, may limit or exacerbate disproportionate policy responses. Second, incorporating information acquisition by the executive may uncover new insights. For example, it may be optimal to have high office benefit to encourage information acquisition, even at the cost of increased policy distortion. Third, building in adverse selection over ideology may help identify conditions under which the incentives to appear competent by choosing extreme policies overcomes the incentives to appear congruent by choosing moderate policies. This may provide further guidance for empirically studying disproportionate policy responses. Finally, the policy distortion studied here should be robust to a number of generalizations, e.g., a policy space with multiple dimensions. It may be valuable to pursue such generalizations in order to understand the extent to which accountability creates incentives for experts to choose disproportionate policies.

A Proofs of Main Results

A.1 Proofs of Propositions 1 and 5

To start, note that solving equation (2) yields explicit solutions $\overline{x} = \sqrt{\beta - q\sigma^2}$ and $\underline{x} = -\sqrt{\beta - q\sigma^2}$. From this Proposition 5 immediately follows.

I split the proof into three 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. Finally, I prove that if a perfect Bayesian equilibrium satisfies D1, then it is characterized by the strategies in Proposition 1.

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,* $x_1 \in (\underline{x}, \overline{x})\backslash\{0\}$.

An arbitrary incumbent type is given by $\tau \in \mathbb{R} \times \{\phi\}$. Define $R_\sigma(\tau, x)$ as the set of reelection probabilities ρ 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 τ' 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 $\omega_1 \leqslant \overline{x}$, 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, in equilibrium she chooses $x_1 = \overline{x}$ and her equilibrium payoff is

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

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

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

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

$$\rho_{\hat{x}} > \frac{(\hat{x} - \omega_1)^2 - (\overline{x} - \omega_1)^2 + \beta + (1 - q)\sigma^2}{\beta + (1 - q)\sigma^2}. \tag{3}$$

Differentiating the RHS of (3) with respect to the type ω_1 yields

$$\frac{\partial RHS(3)}{\partial \omega_1} = \frac{2(\overline{x} - \hat{x})}{\beta + (1 - q)\sigma^2} > 0.$$

Therefore, the RHS of (3) is minimized at $\omega_1 = 0$ and and so 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

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

Now differentiating (4) with respect to ω_1 yields

$$\frac{\partial(4)}{\partial \omega_1} = \frac{2(\underline{x} - \hat{x})}{\beta + (1 - q)\sigma^2} < 0,$$

where the inequality follows from $\underline{x} < 0$. Thus, increasing $\omega_1 \in (\underline{x}, 0)$ decreases the RHS of (4). As letting $\omega_1 \to 0$ converges to the $\omega_1 = 0$ type's payoff 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

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

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

$$\rho_{\hat{x}} > \frac{\hat{x}^2 - \overline{x}^2 + \beta - q\sigma^2}{\beta - q\sigma^2}. \tag{5}$$

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 (3) and comparing to (5) yields

$$\frac{\hat{x}^2 - \overline{x}^2 + \beta + (1-q)\sigma^2}{\beta + (1-q)\sigma^2} > \frac{\hat{x}^2 - \overline{x}^2 + \beta - q\sigma^2}{\beta - q\sigma^2} \tag{6}$$

$$(\beta - q\sigma^2)(y + \beta + (1-q)\sigma^2) > (\beta + (1-q)\sigma^2)(y + \beta - q\sigma^2) \tag{7}$$

$$-\sigma^2(\hat{x}^2 - \overline{x}^2) > (\beta + (1-q)\sigma^2)(\beta - q\sigma^2) - (\beta - q\sigma^2)(\beta + (1-q)\sigma^2) \tag{8}$$

$$\sigma^2(\overline{x}^2 - \hat{x}^2) > 0. \tag{9}$$

Equation (6) is the condition that must hold. Equations (7) - (9) follow from manipulating the previous equation. Finally, (9) holds by $\overline{x} > \hat{x}$. Analogous arguments shows 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 1 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.

Next 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 $\beta - (1-q)\sigma^2$, 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

$$-\overline{x}^2 + 2\beta > \beta - (1-q)\sigma^2 \tag{10}$$

$$(1-q)\sigma^2 + \beta > \overline{x}^2 \tag{11}$$

$$(1-q)\sigma^2 + \beta > \beta - q\sigma^2 \tag{12}$$

$$\sigma^2 > 0. \tag{13}$$

Where (10) follows from rearranging the inequality (11), (12) follows from substituting in $\overline{x}$, and (13) from reducing (12). 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 $x_1 \geqslant \overline{x}$ and $x_1 \leqslant \underline{x}$ 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 $\tilde{q}(x_1) \leqslant q$ it is optimal for the voter to elect the challenger. By Part 1 of the proof, anticipating the demands of $D1$, moving forward assume $\tilde{q}(x_1) = 0$ for $x_1 \in (\underline{x}, \overline{x})/\{0\}$. As only the uninformed type ever chooses $x = 0$ the voter updates that $q(0) = 0 < q$ 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, $q(x_1) = 1 > q$ 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

$$\tilde{q}(\overline{x}) \geqslant q \tag{14}$$

$$\frac{q\Big(F(\overline{x}) - F(0)\Big)}{q\Big(F(\overline{x}) - F(0)\Big) + (1-q)\overline{\Pi}} \geqslant q \tag{15}$$

$$F(\overline{x}) - F(0) \geqslant q\Big(F(\overline{x}) - F(0)\Big) + (1-q)\overline{\Pi} \tag{16}$$

$$F(\overline{x}) - F(0) \geqslant \overline{\Pi}. \tag{17}$$

Where (14) is the optimality requirement. (15) follows by using Bayes rule to find $\tilde{q}$. (16) rearranges (15) and (17) rearranges (16). Finally, (17) holds from the definition of $\overline{\pi}$. Similarly, it is optimal for the voter to reelect the incumbent following $x_1 = \underline{x}$.

Part 3. *If an equilibrium survives $D1$, then it must be characterized by the strategies in Proposition.*

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 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 $x' \in \Sigma^*$.

Next, 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:

$$\begin{aligned} PR(H|x \in \Sigma^*) &= \frac{Pr(x \in \Sigma^*|H)Pr(H)}{Pr(x \in \Sigma^*)} \\ &= \frac{Pr(x \in \Sigma^*|H)Pr(H)}{Pr(x \in \Sigma^*|H)Pr(H) + Pr(x \in \Sigma^*|L)Pr(L)}. \end{aligned}$$

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:

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

However, from our earlier argument, we know that for all ω such that $\omega > |\omega^*|$ the informed type chooses $x_1 = \omega$. Thus, $Pr(x \in \Sigma^*|H) \leqslant F(\overline{x}) - F(\underline{x}) < 1$, contradicting 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

$$
\begin{aligned}
&-(x')^2 + \rho(x')(\beta - \sigma^2) - (1 - \rho(x'))(1-q)\sigma^2 = -(1-q)\sigma^2 \\
&\Rightarrow \rho(x') = \frac{(x')^2}{\beta - q\sigma^2}. \qquad (18)
\end{aligned}
$$

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

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

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

$$-(x'-\omega')^2+\rho(x')\beta-(1-\rho(x'))(1-q)\sigma^2>-(\overline{x}-\omega')^2+\beta \tag{19}$$
$$\iff (x'-\omega')^2-(\overline{x}-\omega')^2+\beta+(1-q)\sigma^2>\rho(x')(\beta+(1-q)\sigma^2) \tag{20}$$
$$\iff 2\omega'(\overline{x}-x')-\overline{x}^2+(x')^2+\beta+(1-q)\sigma^2>\frac{\rho(x')^2}{\beta-q\sigma^2} \tag{21}$$
$$\iff 1-\frac{\overline{x}^2-(x')^2}{\beta+(1-q)\sigma^2}>\frac{(x')^2}{\beta-q\sigma^2} \tag{22}$$
$$\iff \beta-q\sigma^2=\overline{x}^2>(x')^2 \tag{23}$$

Where (19) is the incentive condition that must hold. (20) follows from rearranging the first line. Inequality (21) is derived by further rearranging and substitutes in for $\rho(x')$, using what we know from our earlier analysis. (22) 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 expanding and cancelling terms. Finally, note that (23) 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.

A.2 Proofs of Propositions 2 and 3

For Proposition 2, note that, 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 3, 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 $\omega_1 \notin (-\omega^*, \omega^*)$, 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, which 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

$$-(\omega^* - \omega_1)^2 + 2\beta \geqslant \beta - (1-q)\sigma^2 - (L-R)^2, \tag{24}$$

$$\beta + (1-q)\sigma^2 + (L-R)^2 \geqslant (\omega^* - \omega_1)^2, \tag{25}$$

$$\beta + (1-q)\sigma^2 + (L-R)^2 \geqslant (\omega^*)^2. \tag{26}$$

Where (24) is the incentive constraint, (25) follows from manipulating (24), and (26) from noting that because $\omega_1 \in (0, \omega^*)$ if (26) holds then (25) 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 will 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 will reelect the incumbent if

$$-R^2 - (1 - \tilde{q}(x_1))\sigma^2 \geqslant -L^2 - (1 - q)\sigma^2 \tag{27}$$
$$\Leftrightarrow \tilde{q}(x_1) \geqslant q + \frac{R^2 - L^2}{\sigma^2}. \tag{28}$$

Note, because the election is competitive the RHS of (28) is strictly less than 1 and greater than 0. If (28) 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 $q(x_1) = 1$ and, 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 and 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

$$\tilde{q}(\overline{x}_R) = \frac{q\Big(F(\omega_R^*) - F(0)\Big)}{q\Big(F(\omega_R^*) - F(0)\Big) + (1 - q)\overline{\Pi}_R}. \tag{29}$$

Substituting (29) into equation (28), the voter will reelect the incumbent if

$$\frac{q\Big(F(\omega_R^*) - F(0)\Big)}{q\Big(F(\omega_R^*) - F(0)\Big) + (1 - q)\overline{\Pi}_R} \geqslant q + \frac{R^2 - L^2}{\sigma^2}, \tag{30}$$
$$\left(\frac{q}{1 - q}\frac{1 - q - \frac{R^2 - L^2}{\sigma^2}}{q + \frac{R^2 - L^2}{\sigma^2}}\right)\Big(F(\omega_R^*) - F(0)\Big) \geqslant \overline{\Pi}_R. \tag{31}$$

where (31) simply rearranges (30). Inequality (31) 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 3 follows straightforwardly by differentiating ω_R^* with respect to $R - L$.

A.3 Proof of Proposition 4

The probability of reelection is given by

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

Expanding, this can be written as

$$q + (1-q)(\frac{q}{1-q}\frac{1-q-\frac{R^2-L^2}{\sigma^2}}{q+\frac{R^2-L^2}{\sigma^2}})(F(\omega_R^*) - F(-\omega_R^*)). \tag{32}$$

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

$$q + (1-q)(F(\omega_R^*) - F(-\omega_R^*)), \tag{33}$$

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

$$\frac{\partial(33)}{\partial R} = (1-q)(f(\omega_R^*) + f(-\omega_R^*))2\frac{\partial \omega_R^*}{\partial R}.$$

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, $\frac{\partial(33)}{\partial R} > 0$, as required.

For Part 2 of the proposition we fix R and consider how equation (32) changes in L. Differentiating we have

$$\begin{aligned}\frac{\partial(32)}{\partial L} = & (1-q)(\frac{2q\sigma^2 L}{(1-q)(R^2 - L^2 + q\sigma^2)^2})(F(\omega_R^*) - F(-\omega_R^*)) \\ & + (1-q)(\frac{q}{1-q}\frac{1-q-\frac{R^2-L^2}{\sigma^2}}{q+\frac{R^2-L^2}{\sigma^2}})(f(\omega_R^*) + f(-\omega_R^*))\frac{\partial \omega_R^*}{\partial L}\end{aligned} \tag{34}$$

Because $L < 0$, the first line of equation (34) is negative. The sign of the second 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, $\frac{\partial(32)}{\partial L} < 0$.

To prove Part 3 we again differentiate equation (32), this time with respect to R. Doing so yields

$$\frac{\partial(32)}{\partial R} = (1-q)(\frac{-2q\sigma^2 R}{(1-q)(R^2-L^2+q\sigma^2)^2})(F(\omega_R^*)-F(-\omega_R^*)) \\ +(1-q)(\frac{q}{1-q}\frac{1-q-\frac{R^2-L^2}{\sigma^2}}{q+\frac{R^2-L^2}{\sigma^2}})(f(\omega_R^*)+f(-\omega_R^*))\frac{\partial \omega_R^*}{\partial L}. \tag{35}$$

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 (35) is negative. On the other hand, the second line of (35) is positive because $\frac{\partial \omega_R^*}{\partial R} > 0$. Letting $R = 0$ we get $\frac{\partial(32)}{\partial R} = 0$. To complete the proof, I show that if $\beta < \beta^*$ then at $R = 0$ (32) is at a local min, while if $\beta > \beta^*$ then at $R = 0$ (32) is at a local max.

Differentiating again with respect to R we get

$$\frac{\partial^2(32)}{\partial R^2} =(\frac{\beta - q\sigma^2}{(\beta - q\sigma^2 + R^2)^{\frac{3}{2}}}(f(\omega_R^*)+f(-\omega_R^*)) \tag{36}$$

$$+\frac{R}{\sqrt{\beta - q\sigma^2 + R^2}}(f'(\omega_R^*)-f'(-\omega_R^*))\frac{\partial \omega_R^*}{\partial R})(\frac{1-q-\frac{R^2}{\sigma^2}}{q+\frac{R^2}{\sigma^2}}) \tag{37}$$

$$+\frac{R}{\sqrt{\beta - q\sigma^2 + R^2}}(f(\omega_R^*)+f(-\omega_R^*))(\frac{-2\sigma^2 R}{(q\sigma^2+R^2)^2}) \tag{38}$$

$$-\frac{2\sigma^2(q\sigma^2-3R^2)}{(q\sigma^2+R^2)^3}(F(\omega_R^*)-F(-\omega_R^*)) \tag{39}$$

$$-\frac{2\sigma^2 R}{(R^2+q\sigma^2)^2}(f(\omega_R^*)+f(-\omega_R^*))\frac{\partial \omega_R^*}{\partial R} \tag{40}$$

Letting $R = 0$, equation (36) simplifies to

$$\frac{\partial^2(32)}{\partial R^2} = (\frac{1-q}{q})(\frac{1}{\sqrt{\beta - q\sigma^2}})(f(\omega_R^*)+f(-\omega_R^*)) - \frac{2((F(\omega_R^*)-F(-\omega_R^*)))}{q^2\sigma^2}.$$

Rearranging, we have $\frac{\partial(32)}{\partial R} > 0$ 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

$$\frac{q\sigma^2}{\sqrt{\beta - q\sigma^2}} > \frac{F(\omega_R^*) - F(-\omega_R^*)}{2f(\omega_R^*)}. \tag{41}$$

The LHS of equation (41) is strictly decreasing in office benefit. Furthermore, $\lim_{\beta \to q\sigma^2} LHS(41) = \infty$ and $\lim_{\beta \to \infty} LHS(41) = 0$. Thus, it suffices to show that the RHS of (41) 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, we have

$$\begin{aligned} \frac{f(z)(f(z) + f(z)) - (F(z) - F(-z))f'(z)}{f(z)^2} &> 0 \\ \iff 2f(z)^2 &> f'(z)(F(z) - F(-z)). \end{aligned} \tag{42}$$

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 $f'(z) > 0$.

A.4 Proof of Proposition 6

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:

$$W(R) = q\Big[\Big(1-F(\omega_R^*) + F(-\omega_R^*)\Big)\Big(-R^2\Big) + \int_{-\omega_R^*}^{0}\Big(-(\underline{x}_R-\omega)^2\Big)f(\omega)d\omega + \int_0^{\omega_R^*}\Big(-(\overline{x}_R-\omega)^2\Big)f(\omega)d\omega - R^2\Big] + (1-q)\Big[\overline{\Pi}_R\Big(-\overline{x}_R^2-\sigma^2-R^2-\sigma^2\Big) + \underline{\Pi}_R\Big(-\underline{x}_R^2-\sigma^2-R^2-\sigma^2\Big) + (1-\overline{\Pi}_R-\underline{\Pi}_R)\Big(-R^2-\sigma^2-R^2-(1-q)\sigma^2\Big)\Big]. \tag{43}$$

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

$$\frac{\partial \hat{W}^I}{\partial R} = -2R(1+F(-\omega_R^*)-F(\omega^*)) - R^2(-f(\omega^*)\frac{\partial \omega^*}{\partial R} - f(-\omega^*)\frac{\partial \omega^*}{\partial R}) \tag{44}$$

$$-(\overline{x}_R-\omega_R^*)^2 f(\omega_R^*)\frac{\partial\omega^*}{\partial R} + \int_0^{\omega_R^*} -2\frac{\partial \overline{x}_R}{\partial R}(\overline{x}_R-\omega)f(\omega)d\omega \tag{45}$$

$$+(\underline{x}_R-(-\omega_R^*))^2 f(-\omega_R^*)(-\frac{\partial\omega_R^*}{\partial R}) + \int_{-\omega_R^*}^{0} -2\frac{\partial \underline{x}_R}{\partial R}(\underline{x}_R-\omega)f(\omega)d\omega - 2R. \tag{46}$$

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

$$\frac{\partial \hat{W}^I}{\partial R} = -2R(1+F(-\omega_R^*)-F(\omega^*)) - 2R \tag{47}$$

$$\int_0^{\omega_R^*} -2\frac{\partial \overline{x}_R}{\partial R}(\overline{x}_R-\omega)f(\omega)d\omega + \int_{-\omega_R^*}^{0} -2\frac{\partial \underline{x}_R}{\partial R}(\underline{x}_R-\omega)f(\omega)d\omega \tag{48}$$

$$2R^2 f(\omega^*)\frac{\partial\omega^*}{\partial R} - \frac{\partial\omega_R^*}{\partial R}f(\omega_R^*)((\underline{x}_R+\omega_R^*)^2 + (\overline{x}_R-\omega_R^*)^2) \tag{49}$$

Line (47) is clearly negative. From symmetry of F, we have that line (48) will be less than 0 if:

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

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 (49) is equal to zero. For this to hold requires:

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

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 (44) that is multiplied by $1 - q$.

From the proof of Part 1 of Proposition 4, 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 (44), 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:

$$R^2 \leqslant \overline{x}_R^2 \tag{50}$$

$$R^2 \leqslant \underline{x}^2. \tag{51}$$

To show inequality (50) we have

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

To show inequality (51) we need

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

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

A.5 Proof of Proposition 7

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 $W_<(R) < W_\geqslant(\overline{R})$.

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