Signaling Ability Through Policy Change

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Abstract

I consider a model in which a voter is uncertain about an incumbent's ability to develop high-quality policies. The incumbent develops an alternative to an inherited status quo, observes the alternative's quality, and decides whether to implement it. The voter observes this decision but not the quality of the alternative and decides whether to reelect the incumbent. I show that the incumbent engages in ability signaling: she implements the alternative even if its quality is lower than what she would implement under complete information about her ability. I then show that requiring the incumbent to secure the agreement of a second policymaker with whom she is electorally competing creates the opposite distortion, ability blocking: the second policymaker blocks alternatives he would allow under complete information. Hence, uncertainty about the incumbent's policymaking ability produces policy churn under unilateral policymaking but leads to excessive gridlock under a super-majoritarian institution. I extend the model to study the timing of policymaking and show that, in some cases, the incumbent prefers to develop her alternative later in her term to minimize the information that voters receive about the alternative's quality before the election. Finally, I allow the incumbent to choose the ideological bent of her alternative. In that case, the incumbent sometimes moderates. This moderation, however, arises not to make the alternative more attractive to the voter but because the incumbent can improve the voter's inference about the alternative's quality by choosing an alternative further away from her ideal point.

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1 Introduction

Voters want to choose policymakers who share their policy goals, work hard, understand which policies should be chosen, and can develop high-quality policies. However, these traits are difficult for voters to observe. Policymakers recognize this and often take action to demonstrate their type. This phenomenon has been discussed with respect to politicians' ideology (Fearon, 1999), effort (Austen-Smith and Banks, 1989; Banks and Sundaram, 1993), and understanding of which policies should be chosen (Canes-Wrone et al., 2001; Ashworth and Shotts, 2010; Bils, 2023; Kartik et al., 2015); I study how a policymaker's desire to signal her ability to develop high-quality policies affects policymaking.

Suppose an incumbent inherits a status quo policy and decides whether to retain or replace it after developing her highest-quality alternative policy. Assume the incumbent's ability to develop a high-quality policy today—characterized by attributes such as a low cost-benefit ratio or the policy's ability to achieve goals valued by everyone like increasing GDP—is positively correlated with her ability to develop a high-quality policy tomorrow. The voter observes whether the policymaker changes the status quo and reelects her if the expected quality of the policy the incumbent will develop tomorrow is sufficiently high. If the incumbent cares about policy quality and reelection, and if the voter knows the quality of the policy the incumbent will develop tomorrow, the incumbent replaces the status quo when the alternative policy's quality exceeds the quality of the status quo. However, if the voter does not know the quality of the policy the incumbent will develop tomorrow, and the voter believes the incumbent changes the status quo if and only if the alternative policy's quality exceeds the quality of the status quo, changing the status quo may be electorally advantageous for the incumbent as it signals the ability to develop high-quality policies in the future.

In this paper, I explore this simple logic using a formal model. In the model, policies have ideology and quality. An incumbent policymaker, driven by policy goals and the prospect of reelection, decides whether to maintain an inherited policy of publicly known ideology and quality or to change it to a policy with her preferred ideology. Before deciding whether to change the policy, the incumbent privately learns the quality of her alternative policy, which is drawn from a distribution that depends on her ability. Notably, a higher-quality policy is more likely to be developed by a high-ability policymaker. A voter observes the incumbent's decision but not the quality of the alternative policy and reelects the incumbent if the probability of the incumbent having high ability is sufficiently high. Otherwise, he elects the challenger.

I begin by analyzing the benchmark case where the voter knows the incumbent's ability. Consequently, the incumbent's decision whether or not to change the status quo does not affect the election's outcome. Hence, the incumbent changes the status quo when her ideological benefit is larger than the net change in quality.

I then solve the model where the incumbent's type is unknown. Sometimes, the incumbent's equilibrium strategy coincides with her strategy in the benchmark. In the remaining cases, the incumbent changes the status quo for lower realizations of quality than she does in the benchmark. I refer to this additional policy change as *ability signaling* and show that it leads to decreased expected policy quality relative to the benchmark. Whether ability signaling arises in equilibrium depends on the incumbent's ideological aversion to the status quo, which affects how discerning the incumbent is about the quality of the alternative policy required for her to change the status quo and which affects what the voter learns from the incumbent's decision. In particular, ability signaling arises when the voter ex-ante prefers the incumbent, and the incumbent has a strong ideological aversion to the status quo, and when the voter ex-ante prefers the challenger, and the incumbent has a weak ideological aversion to the status quo.

Whether ability signaling arises in equilibrium is also related to the degree of ex-ante electoral competition between the incumbent and challenger. When the incumbent either leads the challenger or trails the challenger by a significant degree, she has no incentive to engage in ability signaling because her decision does not affect the election's outcome. But, as political competition increases, the incumbent's decision becomes electorally relevant. This is when the incumbent engages in ability signaling. Hence, we see distorted policymaking when electoral competition is fiercest.

In the baseline model, I assume the voter does not learn the quality of the alternative policy before the election. In reality, whether he does may depend on when policy change occurs relative to the election. When policy change happens well before the election, the probability the voter learns about the policy's quality is higher than if policy change happens right before an election. To account for this, I extend the model to assume there is an exogenous probability that the alternative policy's quality is revealed if the incumbent changes the status quo. As this probability increases, the incumbent has less incentive to engage in ability signaling if she knows she will not be reelected if the quality of her alternative policy is revealed. Hence, as the probability of quality revelation increases, the extent of ability signaling decreases. This implies that a policymaker will distort policymaking most at the end of her term. Yet, even if the quality of her alternative policy is certain to be revealed, the incumbent still engages in ability signaling for some regions of the parameter space. So, distorted policymaking may arise at any point in the incumbent's term.

In light of this, one might conjecture that if given the choice of when to develop an alternative to the status quo, the incumbent will wait until the end of her term in case her alternative turns out to be low quality. I explore this possibility and show that unless the incumbent trails and has a strong ideological aversion to the status quo, the revelation of information about the quality of her alternative policy only hurts her. In this case, if given the choice of when to develop her alternative, the incumbent waits until the end of her term. But, if the incumbent trails and is very ideologically opposed to the status quo, simply changing the status quo is not enough to win the incumbent reelection. For her to win, her policy must be shown to be sufficiently high quality. Hence, the revelation of information about the quality of the alternative helps the incumbent. In this case, the incumbent develops her alternative immediately to maximize the probability the voter learns her alternative is high-quality. Hence, when the incumbent trails and has a strong ideological aversion to the status quo, her behavior is similar to the behavior predicted by the "honeymoon hypothesis," where politicians use their early-term political capital to enact new policies (McCarty, 1997; Beckmann and Godfrey, 2007). Otherwise, her behavior looks more like the behavior predicted by the political business cycles literature: an incumbent pursuing policies with short-term benefits at the end of her term to boost her electoral prospects (Nordhaus, 1975; Drazen, 2000).

Policymakers are not required to develop policies that match their ideal point; they may choose more moderate or extreme policies. I study the model under the alternative assumption that the incumbent publicly chooses the ideology of her alternative policy before learning its quality and is not required to choose her ideal point. I then show that despite being able to change the status quo unilaterally, for some parameters, the incumbent develops a policy that differs from her ideal point. In doing so, the incumbent makes policy change less attractive as the ideological benefit is smaller. This means the incumbent must have a higher-quality alternative to warrant changing the status quo. As a result, in equilibrium, changing the status quo is a stronger signal of high ability, and retaining the status quo is a weaker signal of low ability. Due to this, the incumbent can sometimes win reelection with a higher probability than if she proposed a policy with her ideal ideology. Notably, unlike other papers where policy has ideological and quality dimensions, the incumbent does not propose a policy that differs from her ideal point to make it more attractive to another actor with more moderate policy preferences but to affect the information conveyed by her decision whether to change the status quo (Hirsch and Shotts, 2012, 2018; Hitt et al., 2017).

Since at least the early days of the United States, some have worried that elections produce policy churn (Madison, 1788a; de Tocqueville, 2003). One argument for this depends on policymakers' ideological preferences. In Federalist 62, James Madison writes, "Every new election in the states, is found to change one half of the representatives. From this change of men must proceed a change of opinions; and from a change of opinions, a change of measures.(Madison, 1788a). Analysis of the benchmark model shows this fear is warranted. In a model with complete information about the incumbent's ability, the incumbent's ideological opposition to the status quo incentivizes additional policy change beyond what would be done just to improve policy quality. However, a key insight from the model is that there is an additional reason to fear elections might lead to policy churn: the desire of a policymaker to signal her ability to develop high-quality policies.

One solution to policy churn is to require multiple actors to agree to change the status quo, and many policymaking institutions have this requirement. I study an extension of the baseline model where the incumbent, or the majority, chooses whether to propose an alternative policy, which is implemented if and only if the challenger, or the minority, agrees to the proposed policy change. Before deciding, the minority observes the quality of the majority's proposed alternative.

Relative to the baseline, when the minority must agree to change the status quo, the probability of policy change is weakly lower, and the expected quality of policy conditional on policy change is weakly higher. This difference arises for two reasons. The first is ideological. The minority may be more amenable to the status quo than the majority, in which case the minority's presence prevents the majority from making some policy changes that the majority would pursue if she could change the status quo unilaterally. Perhaps more interestingly, the second reason is that sometimes the minority blocks proposed changes because doing so is electorally advantageous. In equilibrium, successful policy change weakly increases the probability the majority wins reelection relative to the case where the status quo is maintained. In these cases, the minority blocks proposed changes to improve his probability of winning reelection. In fact, even if the majority and minority have the same ideological preferences, under incomplete information, the minority blocks policy changes he would allow if there was complete information about the majority's ability. This result captures the strategic, electorally motivated opposition we see in roll-call voting in Congress, even on non-ideological issues (Lee, 2009).

Analysis of this extension also reveals that the need to secure the minority's agreement to change the status quo is sometimes electorally beneficial for the majority in that she can win reelection in cases where she would not be able to if she could unilaterally change the status quo. Because the minority blocks some policy changes that the majority would make if she could act unilaterally, securing the minority's agreement is a stronger signal of high ability, and failing to secure the minority's agreement is a weaker signal of low ability.

Summarizing, my model shows that when there is uncertainty about a policymaker's ability to develop high-quality policies and she can change the status quo unilaterally, she engages in ability signaling. This distortion results in policy churn as the incumbent changes the status quo more than she would without uncertainty about her type. Moreover, this distortion leads to lower expected policy quality. Under an institution that requires agreement between two policymakers to change the status quo, the distortion of ability signaling is ameliorated. However, it is replaced by a different distortion, ability blocking: the second policymaker blocks policy change that would be allowed under complete information. Hence, when designing policymaking institutions in a world where there is uncertainty about policymakers' ability to develop high-quality policies, there is a choice between policy churn and excessive gridlock.

1.1 Related Literature

This paper considers how uncertainty about a policymaker's ability to develop high-quality policies affects her policymaking decisions. To do this, I study a game-theoretic model where policy has two dimensions: ideology and quality. In this modeling choice, I build upon a small but growing literature of formal models where policy has an ideological component and a valence component, and where the valence component usually represents the policy's quality (Hirsch and Shotts, 2012, 2015, 2018; Hitt et al., 2017; Londregan, 2000). Many of the papers within this literature build upon the same basic model where a policymaker makes a costly investment in developing the quality of an alternative to the status quo. By doing this, the policymaker makes her alternative policy more attractive to a different player with ideological preferences that differ from the policymaker's and who must agree to change the status quo to the alternative policy. With one exception, Hitt et al. (2017), policymakers in the existing models have the same ability to develop high-quality policies. In contrast, in my model, some policymakers have more ability than others. Moreover, unlike Hitt et al. (2017), I study a setting with incomplete information about the policymaker's ability.

This paper is also closely related to the literature on electoral accountability when there is uncertainty about a policymaker's type. Previous work focuses on uncertainty about what a policymaker knows about the state of the world (Canes-Wrone et al., 2001; Ashworth and Shotts, 2010; Kartik et al., 2015; Bils, 2023) and about a policymaker's ideal point (Fearon, 1999) among other topics. In all cases, uncertainty leads to distorted policymaking relative to when there is complete information: policymakers pander or anti-pander when there is uncertainty about what they know about the state of the world and moderate when there is uncertainty about their ideal points. I examine a distinct source of uncertainty, uncertainty about a policymaker's ability to craft high-quality policies, and show that this leads to distortions in the form of additional policy change that decreases expected policy quality.

Within this literature, my paper is closest to Judd (2017), who studies a model where a policymaker unilaterally chooses whether or not to change the status quo. If the policymaker changes the status quo, she directly reveals her skill, which a voter cares about when choosing whether or not to reelect the policymaker. In my model, the incumbent cannot perfectly reveal her ability because the voter observes the incumbent's decision but not the quality of her alternative policy. An additional distinction between Judd (2017) and the model in this paper is that in this model, the incumbent has ideological preferences, which incentivize policy change. Since the voter does not learn the quality of the alternative policy before the election, ideology affects the information he learns from the incumbent's choice to retain or change the status quo. This alters the incumbent's incentive to change the status quo.

This paper is also related to the literature on when politicians act. Some studies focus on how policy considerations affect when politicians act (Ostrander, 2016; Binder and Maltzman, 2002; Thrower, 2018).[1] Others focus on the effect of position-taking considerations on when politicians act (Huang and Theriault, 2012). I study a distinct consideration: how uncertainty about a policymaker's ability affects when she acts. Gibbs (2024) studies a similar question, although using a model where the policymaker's ability is related to the quality of her information about the right policy rather than her ability to develop high-quality policies.

Finally, in an extension of the baseline model, I study a setting where a majority party and minority party must agree to change the status quo while engaged in zero-sum electoral competition. The minority's behavior in equilibrium is reminiscent of the strategic, electorally motivated opposition we see in roll-call voting documented by Lee (2009, 2016).

2 Model

There are three players: an incumbent policymaker (I, "she"), a challenger (C, "he"), and a voter (V, "he"). Each policymaker, $j \in \{I, C\}$, either has high ability ($\tau_j = \overline{\theta}$) or low ability ($\tau_j = \underline{\theta}$), and their types are unknown to all players. At the start of the game, the policymakers' types are independently and identically drawn from a Bernoulli distribution such that the prior probability that policymaker j has high ability is $p \in (0, 1)$.

There is a publicly observed status quo, $\pi_{sq} = (x_{sq}, q_{sq})$, which consists of ideology, $x_{sq} \in \mathbb{R}$, and quality, $q_{sq} \geq 0$. The incumbent has the option to maintain this status quo, $\pi = \pi_{sq}$, or replace it with an alternative policy, π_I, which has an exogenously determined ideology, $\hat{x} \geq 0$, and quality, $q_I \geq 0$. [2] While the incumbent and the voter know $\hat{x}$, only the

[1] Also see the literature on political business cycles (Nordhaus, 1975; Drazen, 2000).

[2] In Section 6, I explore an extension where the incumbent chooses $\hat{x} \in \mathbb{R}$.

incumbent knows q_I, which she privately learns before publicly deciding whether to change the status quo. Observing this decision, but without observing q_I, the voter chooses between reelecting the incumbent and replacing her with the challenger, $e \in \{I, C\}$.

The quality of the incumbent's alternative policy, q_I, is drawn from one of two distributions depending on her type. Let $f(q_I)$ be the prior distribution of q_I if the incumbent has high ability, and let $g(q_I)$ be the prior distribution of q_I if the incumbent has low ability. I assume $f(q_I) > 0$ and $g(q_I) > 0$ for $q_I \in [0, \infty)$ and $f(q_I)$ and $g(q_I)$ have the strict monotone likelihood ratio property (MLRP) such that $\frac{f(q_I)}{g(q_I)}$ is strictly increasing in q_I (Milgrom, 1981).[3]

The timing of the model is summarized below:

1. Nature privately draws the policymakers' types and q_I.
2. The incumbent privately learns q_I.
3. The incumbent chooses whether to retain the status quo or change it.
4. The voter observes the incumbent's decision but not q_I.
5. The voter chooses whether to elect the incumbent or the challenger.

Payoffs The incumbent cares about the quality and ideology of policy and winning reelection. Her utility from a policy with ideology x and quality q is

$$u_I(x, q) = -(x_I - x)^2 + q + \mathbb{1}_{e=I} r,$$

where x_I is the incumbent's ideal point and r represents office rents. I begin by assuming $\hat{x} = x_I$, that is, the ideology of the incumbent's alternative policy matches her ideal point. But, in Section 6, I allow the incumbent to choose a policy with an ideology that differs from her ideal point.

The voter cares about the quality and ideology of policy and the policymakers' ability. His utility from a policy with ideology x and quality q is

$$u_V(x, q) = \mathbb{1}_{e=I}\mathbb{1}_{\tau_I=\bar{\theta}} + \mathbb{1}_{e=C}(\mathbb{1}_{\tau_C=\bar{\theta}} + \eta) - x^2 + q,$$

where the voter's ideal point is zero, and $\eta \in \mathbb{R}$ represents the voter's preference for or against the challenger for reasons other than ability and captures a notion of ex-ante electoral

[3] Assuming $f(q_I)$ and $g(q_I)$ have the strict MLRP ensures there is a unique threshold in the incumbent's strategy such that the voter is indifferent between the incumbent and challenger. Without this assumption, the substantive results would be the same but there might be more equilibria. See Section A.2 of the Appendix for more information.

competition. If $\eta > 0$, the incumbent ex-ante *trails* the challenger, and if $\eta < 0$, the incumbent ex-ante *leads* the challenger.

The voter's utility function means his voting decision does not affect his utility from policy. Hence, the voter prefers the incumbent if his posterior belief about the incumbent's ability is higher than $p+\eta$, prefers the challenger if his posterior belief is lower than $p+\eta$, and is indifferent otherwise. In Section 8.2, I study a version of the model where the election's outcome affects policy.

I make two assumptions about the parameters of the model. The first is about ideology of the status quo relative to the incumbent and voter's ideal points.

Assumption 1. $|x_{sq}| \leq x_I$.

This assumption implies that the incumbent's ideological benefit from policy change is weakly larger than the voter's ideological benefit from policy change.

The second assumption is about the voter's preference for or against the challenger for reasons other than ability.

Assumption 2. $\eta \in (\underline{\eta}, \overline{\eta})$, *where* $\underline{\eta} < 0 < \overline{\eta}$.

This assumption means that the incumbent never ex-ante leads or trails by a sufficient margin that the election's outcome is predetermined. $\underline{\eta}$ and $\overline{\eta}$ depend on p, $f(q_I)$, and $g(q_I)$, and are defined in the Section A.2 of the Appendix.

Equilibrium

1. The incumbent's strategy is a function $\sigma_I(\cdot) : \mathbb{R}_+ \to \Delta\{\pi, \pi_I\}$;
2. The voter's strategy is a function $\sigma_V(\cdot) : \{\pi, \pi_I\} \to \Delta\{I, C\}$.

A perfect Bayesian equilibrium surviving D1 with minimum policy change, referred to in the paper as an "equilibrium," satisfies the following:

(1) Each player's strategy is sequentially rational given her or his beliefs and the other players' strategies.

(2) The voter's belief about the incumbent's ability satisfies Bayes' rule on the equilibrium path.

(3) The voter's belief about the incumbent's ability satisfies the D1-criterion off the equilibrium path.

(4) There is no other equilibrium with lower probability of policy change.

The first two conditions are the conditions for a perfect Bayesian equilibrium, and the third is the D1-criterion from Cho and Kreps (1987), which restricts the belief the voter holds when the incumbent chooses an action that is off the equilibrium path. The fourth condition is an equilibrium selection criterion I adopt in light of the existence of multiple equilibria. For much of the parameter space, a unique perfect Bayesian equilibrium satisfies the first three conditions, but elsewhere, multiple perfect Bayesian equilibria surviving D1 exist. Adopting the fourth condition ensures uniqueness, except for in some knife-edge cases. Below, I show that uncertainty about the policymaker's type distorts policymaking in the form of additional policy change. By focusing on the equilibrium with minimum policy change, I focus on the equilibrium where this distortion is minimized. Notably, the comparative statics results derived when I focus on the equilibrium with minimum policy change are the same as those if I focus on the equilibrium with maximum policy change.

3 Discussion of the Model

Policy Quality I model policy as having two dimensions. The first dimension, the ideology of the policy, represents where the policy falls along the left-right ideological dimension. The second dimension, the quality of the policy, represents aspects of the policy that all players value, such as cost-effectiveness, lack of susceptibility to corruption and fraud, and the extent to which the policy achieves agreed-upon goals like economic growth. In this way, policy quality is similar to a party or a politician's valence (Stokes, 1963). To illustrate these dimensions, consider the example of the Paycheck Protection Program (PPP), established through the CARES Act during the COVID-19 crisis, which provided low-interest loans to business owners to cover payroll. The ideology of the PPP can be represented by a point along the left-right policy dimension, and this ideology differs from the ideology of other policies that might have aimed to support businesses during the COVID-19 crisis. Additionally, there are aspects of the PPP that are separate from ideology that contribute to the quality of the policy. For example, the PPP was highly susceptible to fraud—by some estimates, 10 percent of the money dispersed was for fraudulent claims—due partly to the way applications were screened (Griffin et al., 2023; Brooks, 2023).[4] Relative to a version of the PPP that was drafted in a way that was less susceptible to fraud, this policy has lower quality.

[4]The Small Business Administration used outside lenders to screen applications and to make loans. Because these lenders collected a processing fee but were not liable for the loss on bad loans, they had little incentive to scrutinize applications closely. See Brooks (2023) for more information.

Learning about Quality I assume the incumbent knows the quality of her alternative policy when deciding whether to change the status quo, but the voter does not. This asymmetry reflects that the policymaker is a policy expert, but the voter needs time to observe the policy after its implementation to learn about its quality. The baseline model represents a situation where there is insufficient time for the voter to learn about quality before the election, so if the incumbent changes the status quo, the voter does not observe the quality of the alternative policy before he votes. In Section 5, I relax this assumption by allowing the voter to learn the quality of the alternative policy with some probability if the incumbent changes the status quo, either through experience or learning from some other policy expert.

Ability to Craft High-Quality Policy In the model, the policymakers differ in their ability to develop high-quality policies. Policymakers differ in this regard because of their personal characteristics—their intelligence, experience, or knowledge of a particular issue—and because of factors like the quality of the policymaker's staff or her ability to utilize lobbyists and interest groups to help craft the policy.

This ability is related to issue ownership, where particular policymakers or parties are associated with greater competence in an issue area (Petrocik, 1996). One reason a policymaker might own an issue is that she is perceived as able to develop high-quality policies in that area. Existing work typically begins with the assumption that voters know which policymakers own which issues (Krasa and Polborn, 2010; Ascencio and Gibilisco, 2015; Hummel, 2013). In contrast, in this model, the policymaker can influence the voter's perception of whether she has high ability. In the model, the incumbent and the challenger both have the same prior probability of having high ability. Importantly, by varying η, the incumbent may begin the game leading or trailing the follower. Hence, one could allow the voter to have asymmetric priors about the incumbent and challenger, and nothing would change. That is, the voter could believe the incumbent or challenger has some degree of issue ownership over the policy area in question.

Timing In the model, the policymaker learns the quality of her alternative policy and then decides whether to change or retain the status quo. This feature of the model represents how, after drafting a piece of legislation, a policymaker has the choice of whether to proceed with implementing it. For example, after designing an executive order with her staff, a mayor might choose not to issue it. Or, after some of their members draft a piece of legislation, a party's leadership might decide not to schedule a vote. This is what happened to the Graham-Cassidy amendment in 2017. Republican Senators Lindsey Graham and Bill Cassidy developed and introduced an amendment that would overhaul or repeal significant pieces of the Affordable Care Act, replacing them with block grants to states (Frostenson, 2017). Although the amendment had support among most Senate Republicans, key votes like Susan Collins and John McCain stated they opposed the bill. In a statement explaining her opposition, Collins wrote:

> "Sweeping reforms to our health care system and to Medicaid can't be done well in a compressed time frame, especially when the actual bill is a moving target... The CBO's analysis on the earlier version of the bill, incomplete though it is due to time constraints, confirms that this bill will have a substantially negative impact on the number of people covered by insurance." (Collins, 2017)

In light of this opposition, Republican leadership in the Senate decided not to put the legislation up for a vote.[5]

4 Analysis

4.1 Benchmark: No Uncertainty about the Incumbent's Type

I begin by considering the benchmark case where there is complete information about the incumbent's type. Denote this game by $\hat{\Gamma}$. When the voter knows whether the incumbent has high ability, his voting decision is unrelated to the incumbent's decision whether to change the status quo. Therefore, the incumbent changes the status quo if and only if the change increases her utility from policy, which is when:

$$q_I \geq \max\{q_{sq} - (x_I - x_{sq})^2, 0\}. \tag{1}$$

As long as the incumbent has some degree of ideological opposition to the status quo, she sometimes changes it to a relatively lower-quality policy. Moreover, as the incumbent's ideological opposition to the status quo increases, so does the probability she changes the status quo.

4.2 Full Model: Uncertainty about the Incumbent's Type

I now turn to the full model described in Section 2, denoted by Γ. When the voter chooses whether to reelect the incumbent, his strategy is a mapping from the incumbent's decision to a vote choice. Therefore, there are three potential types of equilibria. In the first, the

[5] At the time, Republicans controlled the House, Senate, and presidency, and hence, if the party had been unified, would have been able to unilaterally change the status quo.

voter's choice does not depend on the incumbent's decision, in which case the incumbent changes the status quo if and only if condition (1) is satisfied, which is the same threshold she uses in $\hat{\Gamma}$.[6]

In the remaining potential equilibria, the incumbent's probability of reelection depends on whether she changes the status quo. One possibility is that in equilibrium, the incumbent's probability of reelection is strictly greater when she retains the status quo than when she changes it. Suppose such an equilibrium exists. In this equilibrium, the incumbent's utility from retaining the status quo does not depend on q_I. However, her utility from changing the status quo is increasing in q_I. Hence, she must use a threshold strategy where she changes the status quo when q_I is sufficiently large.

The fact that $f(q_I)$ and $g(q_I)$ satisfy strict MLRP means that if the incumbent uses a threshold strategy, changing the status quo signals high ability while retaining the status quo signals the opposite.[7] As a result, there cannot be an equilibrium where the incumbent's probability of reelection is higher when she retains the status quo than when she changes it. This rules out the possibility that this potential equilibrium exists.

In the final potential equilibrium, the incumbent's probability of reelection is strictly greater when she changes the status quo than when she retains it. I refer to this as an *equilibrium with consequential policy change*. The same argument about the incumbent's threshold strategy applies here. Hence, she uses a threshold strategy and changes the status quo when q_I is sufficiently large.

Lemma 1. *In any equilibrium, the incumbent uses a threshold strategy and changes the status quo if and only if $q_I \geq q_{sq} + y^*$, where $y^* \in [-q_{sq}, \infty)$.*

I refer to y^* as the incumbent's *quality threshold*. The higher the incumbent's quality threshold, the more discerning she is about how high quality her alternative policy must be to warrant policy change.

In an equilibrium with consequential policy change, the incumbent's desire for reelection is an additional incentive for policy change. This additional incentive produces distortions relative to the benchmark without uncertainty about the incumbent's type.

Proposition 1. *There are regions of the parameter space where an equilibrium with consequential policy change exists. Moreover, relative to $\hat{\Gamma}$, in the equilibrium with consequential policy change,*

[6] This includes equilibria where the incumbent chooses one action on the equilibrium path, but the voter's action would be the same if the incumbent chose her action off the equilibrium path.

[7] This and additional properties of the voter's posterior belief when the incumbent uses a threshold strategy are derived in Section A.2 of the Appendix.

(a) the probability of policy change is strictly higher,

(b) and the expected quality of policy is strictly lower.

Consider an incumbent in the benchmark model who, given the quality of her alternative policy, is indifferent between changing the status quo and retaining it. If there is uncertainty about the incumbent's type and changing the status quo increases her probability of reelection, she has an extra incentive to change the status quo relative to the benchmark. This extra incentive leads to additional policy changes. I refer to this additional policy change as *ability signaling.*

Definition 1. *Let y^*_Γ be the incumbent's quality threshold in an equilibrium of Γ. If $q_{sq} - (x_I - x_{sq})^2 > 0$ and*

$$y^*_\Gamma < -(x_I - x_{sq})^2,$$

the incumbent engages in ability signaling. Moreover,

$$D(y^*_\Gamma) = \begin{cases} 0 & \text{if } q_{sq} - (x_I - x_{sq})^2 \leq 0 \\ -(x_I - x_{sq})^2 - \max\{y^*_\Gamma, 0\} & \text{if } q_{sq} - (x_I - x_{sq})^2 > 0 \end{cases}$$

is the extent of ability signaling.

When the incumbent engages in ability signaling, she sometimes changes the status quo to a lower quality policy than she would be willing to change to without uncertainty about her ability. Essentially, the incumbent trades office rents tomorrow for policy quality today, decreasing the overall expected policy quality.

Proposition 1 demonstrates that an equilibrium with consequential policy change exists and that the incumbent engages in ability signaling in this equilibrium. But under what conditions does ability signaling arise?[8] In the following proposition, I provide precise conditions for the existence of an equilibrium with consequential policy change.

Proposition 2. *Fix π_{sq}. An equilibrium with consequential policy change exists if and only if*

(a) $\eta > 0$ and $-(x_I - x_{sq})^2 > \overline{y}(q_{sq}, \eta)$;

(b) $\eta = 0$ and $-(x_I - x_{sq})^2 > r - q_{sq}$;

(c) or $\eta < 0$ and $-(x_I - x_{sq})^2 \in (r - q_{sq}, \underline{y}(q_{sq}, \eta))$,

[8] In Section A.2 of the Appendix, I provide a full characterization of all PBE surviving D1.

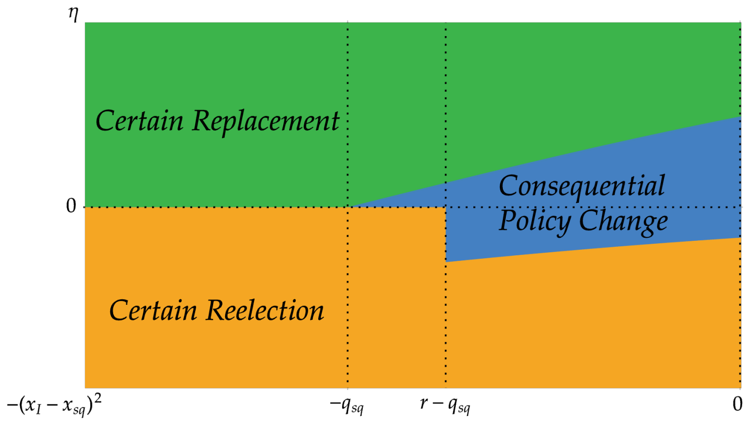

Figure 1: Regions of equilibria with minimum policy change for $q_{sq} = 1$, $r = \frac{1}{4}$, $f(q_I) = e^{-q_I}$, $g(q_I) = 2e^{-2q_I}$, and $p = \frac{1}{2}$.

where $\overline{y}(q_{sq}, \eta)$ *and* $\underline{y}(q_{sq}, \eta)$ *solve*

$$\frac{(1 - F(q_{sq} + \overline{y}(q_{sq}, \eta)))p}{(1 - F(q_{sq} + \overline{y}(q_{sq}, \eta)))p + (1 - G(q_{sq} + \overline{y}(q_{sq}, \eta)))(1 - p)} = p + \eta$$

$$\frac{F(q_{sq} + \underline{y}(q_{sq}, \eta))p}{F(q_{sq} + \underline{y}(q_{sq}, \eta))p + G(q_{sq} + \underline{y}(q_{sq}, \eta))(1 - p)} = p + \eta$$

Otherwise, the incumbent's strategy coincides with her strategy in $\hat{\Gamma}$.

As depicted in Figure 1 where the blue region is the region of the parameter space where an equilibrium with consequential policy change exists, whether such an equilibrium exists depends on three things: the degree of ex-ante electoral competition (y-axis), the incumbent's ideological opposition to the status quo (x-axis), and office rents (on the x-axis). When the incumbent trails, she is never reelected if she retains the status quo, but she may be reelected if she changes it. In this case, ability signaling arises in equilibrium when the incumbent is not very ideologically opposed to the status quo. Otherwise, the incumbent's strong ideological preference for policy change means changing the status quo is a weak signal of high ability.[9]

When the incumbent leads, she is always reelected if she changes the status quo but may not be reelected when she retains it. In particular, the existence of an equilibrium with

[9] In an equilibrium with consequential policy change when the incumbent trails, the voter reelects the incumbent with probability $\rho^* \in (0, 1]$ if she changes the status quo and elects the challenger otherwise. As long as $\overline{y}(q_{sq}, \eta) < -(x_I - x_{sq})^2$, there exists a $\rho^* \in (0, 1]$ such that $\overline{y}(q_{sq}, \eta) < -(x_I - x_{sq})^2 - \rho^* r$, which is the condition for existence of an equilibrium with consequential policy change. See Section A.2 of the Appendix for more information.

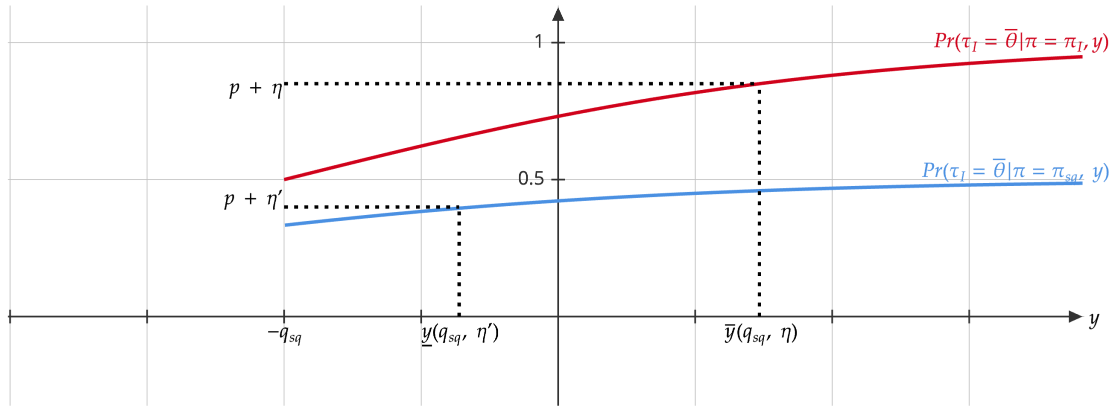

Figure 2: Voter's posterior, $\underline{y}(q_{sq}, \eta)$, and $\overline{y}(q_{sq}, \eta)$. $q_{sq} = 1$, $f(q_I) = e^{-q_I}, g(q_I) = 2e^{-2q_I}$, $p = \frac{1}{2}$, $\eta = \frac{7}{20}$, and $\eta' = -\frac{1}{10}$.

consequential policy change requires the incumbent to be sufficiently ideologically opposed to the status quo that when she retains the status quo she is not reelected because retaining is a strong signal of low ability. However, the existence of an equilibrium with consequential policy also requires the incumbent not to be too opposed to the status quo. When she is, she always changes the status quo and is always reelected on the equilibrium path.

In the remaining regions of the parameter space, there are two other types of equilibria: an *equilibrium with certain reelection*, where the incumbent is reelected regardless of whether she changes the status quo, and an *equilibrium with certain replacement*, where the incumbent is replaced whether she changes the status quo.[10]

Proposition 3. *In any equilibrium, the extent of ability signaling is*

(a) weakly increasing in ex-ante electoral competition (i.e. as η approaches zero),

(b) and weakly increasing in the office rents

There is a connection between the degree of ex-ante electoral competition, which increases as η gets closer to zero, and the extent of ability signaling.[11] Fix a status quo and the incumbent's ideal point, and suppose the incumbent leads. Proposition 2 introduces $\underline{y}(q_{sq}, \eta)$, which is the quality threshold such that if the incumbent uses this quality threshold, the

[10] If I do not restrict attention to the set of equilibria with minimum policy change, there is a band below the region with consequential policy change when the incumbent trails where two other types of equilibria exist. One is an equilibrium with consequential policy change where the incumbent is only reelected if she changes the status quo. The other is an equilibrium with consequential policy change where the incumbent is reelected if she changes the status quo and with probability $\rho^* \in [0, 1]$ if she retains the status quo. See Section A.2 of the Appendix for more information.

[11] I specify that this result holds for *any equilibrium* as a continuum of equilibria exists when $\eta = 0$ and the incumbent is sufficiently ideologically opposed to the status quo that she changes it for any q_I.

voter is indifferent between reelecting the incumbent and the challenger when the incumbent retains the status quo. This is depicted in Figure 2. When η is very negative, the voter has a strong ex-ante preference for the incumbent, which means that even if the incumbent is very ideologically opposed to the status quo, the voter will reelect her when she retains the status quo. In this case, there is no ability signaling. As the degree of ex-ante political competition increases—as η approaches zero—$\underline{y}(q_{sq}, \eta)$ also increases. Eventually, $\underline{y}(q_{sq}, \eta) > -(x_I - x_{sq})^2$, and the incumbent is no longer reelected when she retains the status quo. As a result, ability signaling arises, and the extent of ability signaling increases. Things are similar when $\eta = 0$. The incumbent either changes the status quo for all q_I or engages in ability signaling.

The logic is flipped when $\eta > 0$. When η is close to zero, the incumbent engages in ability signaling. But as η increases away from zero, so does $\underline{y}(q_{sq}, \eta)$. Eventually, $-(x_I - x_{sq})^2 \leq \overline{y}(q_{sq}, \eta)$, and the incumbent is never reelected. Hence, there is no ability signaling.

Additionally, there is a connection between the extent of ability signaling and office rents. When the incumbent trails and is never reelected, increasing the office rents does not affect the incumbent's incentive to change the status quo. But, if the incumbent is reelected when she changes the status quo, increasing office rents makes changing the status quo more attractive, and hence the extent of ability signaling increases. Eventually, the office rents increase to the point that changing the status quo no longer conveys a sufficiently strong signal of high ability for the incumbent to be reelected. To maintain equilibrium, the voter must reelect the incumbent with a lower probability when she changes the status quo. As r goes to infinity, this probability goes to zero. This decrease in the probability of reelection conditional on policy change as the office rents increase maintains the same probability of policy change in equilibrium, and hence, increasing office rents further has no effect on the extent of ability signaling.

When the incumbent leads, increasing the office rents does not affect the probability of policy change when the incumbent is always reelected. However, if she is only reelected when she changes the status quo, increasing the office rents makes policy change more attractive, leading to an increase in the extent of ability signaling.

4.3 Implications

Ability Signaling without Elections Although there is a voter and an election in the model, the implications of the model shed light on policymaking by policymakers who are not elected. Suppose the incumbent is the current superintendent in a school district, and the voter is either someone who could hire someone else to replace the current superintendent or someone who will potentially hire the current superintendent for a different job. It seems natural to suppose that, in this case, $\eta = 0$. That is, the voter's decision depends entirely on the incumbent's probability of having high ability relative to the challenger's. Then Proposition 1 shows that in equilibrium, the incumbent engages in ability signaling as long as she is not too ideologically to status quo that she changes it for all realizations of q_I. This may also be reasonable to assume in this context. Ability signaling is consistent with qualitative descriptions of policymaking by superintendents. In particular, Hess (1999) argues that the combination of superintendents' desire to improve their reputations—they care about their reputation for career concerns reasons—and their short time horizons—they seek to move to their next job quickly —leads to policy churn. Superintendents are incentivized to "assume the role of the reformer, initiating a great deal of activity" to bolster their reputations. Otherwise, they will be perceived as 'do nothing" and will be replaced by a more promising successor" (Hess, 1999, p. 43). The desire to signal ability leads to education policy churn.

Desire for Reelection Motivates Policymaking Propositions 1 and 2 show that in some regions of the parameter space, uncertainty about the incumbent's ability combined with her desire for reelection leads her to change policy more than she would without uncertainty. This result resonates with empirical work on state legislators that finds that reelection incentives motivate legislators to sponsor more bills, be more productive on committees, and attend more floor votes (Fouirnaies and Hall, 2022). Such effort benefits voters; productive committee work allows a policymaker to mark up legislation with her constituents' interests in mind, and attending roll call votes makes it easier for voters to infer their legislators' positions (Fouirnaies and Hall, 2022, p. 666). In contrast, this model demonstrates how additional policymaking efforts, motivated by reelection concerns, may harm voters.[12]

Proposition 4. *In any equilibrium of* Γ*, the voter's welfare is weakly lower than in* $\hat{\Gamma}$*.*

By Assumption 1, the incumbent has a weakly larger ideological benefit of policy change than the voter. This means that in the benchmark where there is complete information about the incumbent's ability, the incumbent changes the status quo too much relative to the amount that would maximize the voter's welfare. Incomplete information about the incumbent's ability exacerbates this since she sometimes engages in ability signaling, which means she changes the status quo even more.

Excessive Mutability of Laws Since the founding of the United States, some have feared that there's a connection between elections and policy churn. In Federalist 62, James Madison defended six-year Senate terms by arguing:

[12] Following others in the literature, I define the voter's welfare only in terms of his utility from policy (Canes-Wrone et al., 2001; Fox and Van Weelden, 2012).

> "The internal effects of a mutable policy are still more calamitous. It poisons the blessing of liberty itself. It will be of little avail to the people, that the laws are made by men of their own choice...if they be repealed or revised before they are promulgated, or undergo such incessant changes that no man, who knows what the law is to-day, can guess what it will be to-morrow" (Madison, 1788a)

Madison's concern was that political turnover would lead to excessive policy churn because different policymakers had different preferences.[13] There is a sense in which this concern is captured by my model.

Proposition 5. *Fix π_{sq}. In any equilibrium, the probability of policy change is weakly increasing in x_I.*

That said, my model identifies an additional reason why elections and policy churn might be connected: the desire of a policymaker to signal the ability to develop high-quality policies.

5 Quality Observability

As Mayor of New York City, Eric Adams has presided over developing a plan for a "Trash Revolution," which includes mandated trash bins, more vigorous enforcement of sanitary laws, and new garbage trucks (Lach, 2024; NYC, 2024). The rollout of this policy began in 2022 and will continue into spring 2025, which is a few months before the next mayoral election. Since the policy was implemented well before the next election, voters may learn the quality by the time they decide whether to reelect Adams or replace him.

In the model, the voter observes whether the incumbent changes the status quo but does not observe q_I before the election. However, as illustrated by the example of the Trash Revolution, depending on when a policy is enacted, voters may learn the quality of the policy before they vote next. What effect does the timing of when policy change occurs in relation to the next election have on the policymaker's incentives? To answer this question, I assume that if the incumbent changes the status quo, q_I is revealed before the election with probability $s \in [0, 1]$, where s is exogenous. We should expect s to be higher for policy change that occurs earlier in the incumbent's term.

Proposition 6. *In any equilibrium, the extent of ability signaling is weakly decreasing in s. However, the incumbent still engages in ability signaling for some parameters when $s = 1$.*

[13] Alexis de Tocqueville shared the same concern, writing, "The mutability of the laws is an evil inherent in democratic government, because it is natural to democracies to raise men to power in very rapid succession" (de Tocqueville, 2003).

When the incumbent changes the status quo, she does to one of two types of policies. The first is a policy that leads to her reelection even if its quality is revealed. The second is a policy that leads to her reelection only if its quality is not revealed. When it is unlikely the voter learns the quality of the alternative policy before the election, the distinction between these two types of policies matters little. But when the probability the quality of the alternative policy is revealed before the election is high, an incumbent for whom the quality of policy she can enact is too low to win reelection if revealed has less incentive to change the status quo.

However, an incumbent who can change the status quo to a policy that will win reelection, whether the quality is revealed or not, has the same incentive to change the status quo regardless of the probability that quality is revealed. This is why the incumbent may still engage in ability signaling in equilibrium if q_I is certain to be revealed. This case is very similar to Judd (2017), in which a policymaker chooses whether to reveal her ability by replacing the status quo with a policy that perfectly reveals the policymaker's ability. In equilibrium, when the status quo has high quality, high-ability incumbents "show off" by implementing policies that are lower quality than the status quo but that reveal the policymaker is of high enough skill to warrant reelection.

The primary implication of this result is that ability signaling will be more pervasive later on in a policymaker's term when it is less likely the quality of the alternative policy will be revealed before the election.[14] Another implication of this result is that the expected quality of policy decreases over the course of a policymaker's term.

Corollary 1. *In any equilibrium, the expected quality of policy is weakly increasing in s.*

One might wonder how the incumbent's ex-ante expected utility depends on the probability the voter learns the quality of her alternative if she changes the status quo.

Proposition 7. *Suppose $-(x_I - x_{sq})^2 > r - q_{sq}$.*

(a) If $\eta < 0$ and $-(x_I - x_{sq})^2 \leq \overline{y}(q_{sq}, \eta)$, the incumbent's expected utility is strictly increasing in s,

(b) and if $\eta < 0$ and $-(x_I - x_{sq})^2 \in (\overline{y}(q_{sq}, \eta), \overline{y}(q_{sq}, \eta) + (1-s)r]$, the incumbent's expected utility is not monotone in s.

(c) Otherwise, the incumbent's expected utility is weakly decreasing in s.

[14] This is similar to results in other models where policymaking distortions are related to the "political horizon" such as Canes-Wrone et al. (2001) and Gratton et al. (2015).

When the incumbent leads or when she trails but is not especially ideologically opposed to the status quo, she is reelected if she changes the status quo and her alternative's quality is not revealed.[15] In this case, information revelation about the alternative's quality can only hurt the incumbent since she loses the election if her alternative is revealed to be low quality. As a result, her expected utility is weakly decreasing in s.

In contrast, when the incumbent trails and is sufficiently ideologically opposed to the status quo, changing the status quo is not a strong enough signal of high ability for her to win reelection. In this case, the incumbent's only hope for reelection is to develop a high quality alternative, change the status quo, and have the voter learn the quality of the alternative policy. Hence, the incumbent's expected utility is increasing in s.

Consider a game where the incumbent chooses when to develop her alternative policy during her term and immediately chooses whether to change the status quo after learning the alternative's quality. The longer she waits in her term, the lower s is. Proposition 7 implies that when policy change without quality revelation leads to the incumbent's reelection, she will delay developing her alternative until the end of her term to minimize the probability the voter learns the alternative's quality before the election. This delayed policy development has a similar logic to the theory advanced by the political business cycles literature: policymakers pursue policies with short-term benefits at the end of their terms to boost their electoral prospects (Nordhaus, 1975; Drazen, 2000). However, the incumbent delays development because the voter will not learn her policy's quality, not because the voter will observe the policy's short-term benefits before the election.

But, if the incumbent is not reelected when she changes the status quo and her alternative's quality is not revealed, she will develop her alternative policy at the start of her term to maximize the probability the voter learns the alternative policy's quality in time for the election. This looks more like the behavior predicted by the "honeymoon hypothesis," where politicians pursue policies at the start of their term (McCarty, 1997; Beckmann and Godfrey, 2007). The conventional logic is that policymakers have the most political capital at the start of their term, which means that is when they have the most latitude to enact new policies. In this model, the logic is that when a policy needs to prove its quality for the incumbent to be reelected, the incumbent will develop it as early as possible.[16]

[15]The assumption that $-(x_I - x_{sq})^2 > r - q_{sq}$ implies that the incumbent retains and changes the status quo on the equilibrium path. When this assumption is not satisfied, and in particular $-(x_I - x_{sq})^2 \leq (1-s)r - q_{sq}$ and $\eta = 0$, the incumbent changes the status quo for all q_I, and a continuum of equilibria exist where the the incumbent is reelected with probability $\rho^* \in [0, 1]$ when she changes the status quo. In this region of the parameter space, whether the incumbent's expected utility is decreasing or increasing in s depends on the particular ρ^*.

[16]A similar logic leads to a honeymoon period in Gieczewski and Li (2022), where an incumbent pursues moderately implements moderately popular policies at the start of her term to give them time to prove their

In this sketch of a game, the incumbent does not choose when to implement her policy change after learning its quality. If she had that option, her choice of when to implement her change might convey information about the quality of her alternative. Analysis of the game where the incumbent chooses when to develop her alternative and then when to change the status quo is beyond the scope of this paper, but the preliminary insight offered by Proposition 7 suggests interesting trade-offs.[17] An incumbent who learns the quality of her alternative is low will want to delay policy change until the end of her term, and an incumbent who learns the quality of her alternative is high will want to do the opposite. But, of course, the voter will recognize this, and this incentive to separate will affect the voter's posterior when the quality of the alternative is not revealed.

6 Endogenous Choice of Ideology

The baseline model assumes the ideology of the incumbent's alternative policy is exogenously fixed at her ideal point. In a setting where the incumbent unilaterally changes the status quo, it may be reasonable to assume she will pursue her preferred policy since she does not require the agreement of any other actors. But, as Proposition 2 illustrates, whether policy change is electorally consequential depends on the incumbent's ideological opposition to the status quo. In light of this, does the incumbent have any incentive to propose a policy that differs from her ideal point? To answer this question, suppose the incumbent publicly chooses $\hat{x} \in \mathbb{R}$, then privately learns q_I, and then chooses whether to retain the status quo or replace it with $\pi_I = (\hat{x}, q_I)$.

Proposition 8. *When $\eta < 0$, there are parameters such that in any equilibrium, the incumbent proposes $\hat{x} \in \{\underline{\hat{x}}^*, \overline{\hat{x}}^*\}$, where $\underline{\hat{x}}^* = x_I - \epsilon$, $\overline{\hat{x}}^* = x_I + \epsilon$, and $\epsilon > 0$.*

Consider an equilibrium of the baseline game where the incumbent leads but only wins reelection if she changes the status quo. The reason the incumbent is not reelected if she retains is that retaining the status quo is a sufficiently strong signal of low ability. By proposing a policy that differs from her ideal point, the incumbent reduces her incentive to change the status quo because doing so will yield a lower ideological benefit from policy change.[18] That is, by proposing a policy that differs from her ideal point, the incumbent

quality.

[17]Building on the canonical setup from Canes-Wrone et al. (2001), Gibbs (2024) explores signaling through the timing of policy implementation and finds that policymakers may delay implementation to prevent the voter from learning the quality of a policy before an election.

[18]The model assumes the incumbent's utility from quality does not depend on the ideology of the policy. That is not necessary for this result. It is sufficient that fixing quality, the incumbent's utility from a policy is lower the farther the ideology of the policy is from her ideal point.

commits to a higher quality threshold. This makes retaining the status quo a relatively weaker signal of low ability. Of course, making such a commitment comes at a cost: successful policy change will yield a lower payoff—holding q_I fixed—but in some cases, the electoral benefit outweighs the ideological cost.[19]

When the incumbent proposes a policy that differs from her ideal point, the particular policy she proposes is chosen to be sufficiently far from her ideal point to make the voter indifferent between the incumbent and challenger. This means the incumbent is indifferent between two policies, one to the right of her ideal point and one to the left. Both choices will affect the voter's inference in the same way. However, there are many reasons why we might expect the incumbent to break her indifference between the two policies by choosing the policy that is more moderate than her ideal point. If there is a small amount of uncertainty about the incumbent's ideal point, she is incentivized to choose a policy close to the voter's ideal point as in Fearon (1999). Or if the incumbent cares about the longevity of her policy and the challenger has an ideal point that is less than zero, the incumbent has an incentive to choose a policy that is closer to the challenger's ideal point since this will reduce the challenger's incentive to change the incumbent's policy in the future. Using these arguments, Proposition 8 can be interpreted as saying the incumbent has an incentive to moderate.

It is illustrative to juxtapose this result with Hirsch and Shotts (2012, 2018) and Hitt et al. (2017), who also study models where policy has quality and ideology. In these models, moderation also emerges in equilibrium. However, it emerges because a policymaker needs to secure agreement from another player with a different ideal point. That is, moderation emerges from a Downsian logic—by moving the ideology of a policy closer to the other player's ideal point, the policymaker makes her policy more attractive. The moderation that emerges in this model emerges for a reason entirely unrelated to Downsian logic. The policymaker moderates because it affects the information conveyed by her decision to retain or change the status quo.

7 Super-Majoritarian Institutions

The baseline model assumes the incumbent can unilaterally change the status quo, and I show that in such a setting, uncertainty about the her ability and her desire for reelection leads to distorted policymaking in the form of ability signaling. This produces policy churn.

[19]When the incumbent trails, there are also parameters such that there are equilibria where the incumbent chooses a policy that differs from her ideal point. However, the parameters such that this type of equilibrium exists are the same parameters such that a mixed strategy equilibrium exists in the baseline. Moreover, the mixed strategy equilibrium continues to exist. Hence, I focus on the case where the ability to commit to $\hat{x}$ destroys some of the baseline equilibria.

Moreover, as shown in Proposition 4, this policy churn decreases the voter's welfare relative to a setting where there is no uncertainty about the incumbent's ability.

One might conjecture that a way to alleviate this policy churn is to change the institutional rules within which the incumbent makes policy. One possible rule change would be to require the incumbent to secure the agreement of another policymaker to change the status quo. This type of arrangement is a feature of many policymaking institutions. Moreover, it is common for policymakers to interact under the shadow of future electoral competition. For example, the incumbent might be the majority party in Congress that needs the support of the minority party, the challenger, to pass legislation. To study the effect of uncertainty about the ability to develop high-quality policies in this type of setting, I study an extended version of the baseline model, denoted Γ^{sm}, where:

1. Nature draws the policymakers' types and q_I.
2. The majority (incumbent) privately learns q_I.
3. **The majority chooses whether to retain the status quo, $\pi = \pi_{sq}$, or propose a policy change, $\tilde{\pi} = (x_I, q_I)$.**
4. **If the majority proposes a policy change, the minority (challenger) observes q_I and chooses whether to block the change, $\pi = \pi_{sq}$, or agree to it, $\pi = \tilde{\pi}$.**
5. **The voter observes the majority's decision and the minority's decision but not q_I.**
6. **The voter chooses whether to elect the majority or the minority.**

In this extension, the majority's utility function is the same as the incumbent's in the baseline model. The minority also cares about the quality and ideology of policy and winning reelection. Given a policy with ideology x and quality q, the minority's utility function is

$$u_C(x, q) = -(x_C - x)^2 + q + \mathbb{1}_{e=C} r,$$

where $x_C \leq 0$ is the minority's ideal point.

I make the following assumption about the location of the minority and majority's ideal points relative to the status quo.

Assumption 3. $(x_C - x_I)^2 - (x_C - x_{sq})^2 \geq -(x_I - x_{sq})^2$.

This ensures the minority's ideological benefit from policy change is weakly smaller than the majority's.

I also introduce an additional equilibrium condition. In addition to equilibrium conditions (1)-(4), I focus on equilibria in which:

(5) The majority proposes a policy change for all q_I.

Subsequently, I show that in any equilibrium, the minority uses a threshold strategy and agrees to a policy change if $q_I \geq q_{sq} + z^*$. I also show that, in equilibrium, the minority's quality threshold is weakly higher than the majority's quality threshold would be if she could change the status quo unilaterally. This means the minority will never agree to a policy change that the majority does not prefer to the status quo. This also means that as long as the probability the majority is reelected when she does not propose a policy change is the same as the probability she is reelected if she proposes a policy change and it is blocked, multiple equilibria exist where the majority proposes some policies knowing they will be blocked and does not propose others knowing they will be blocked if they are proposed. In light of this, and to simplify the exposition of the analysis, I focus on equilibria where the majority proposes a policy for all q_I.

Lemma 2. *In any equilibrium, the minority uses a threshold strategy and agrees to change the status quo if and only if $q_I \geq q_{sq} + z^*$, where $z^* \in [-q_{sq}, \infty)$.*

Suppose an equilibrium exists. In such an equilibrium, and for any proposed change, the minority's utility from blocking the proposed policy change is constant for all q_I. On the other hand, the minority's utility from agreeing to a proposed change is increasing in q_I. This implies that in any equilibrium, the minority uses a threshold strategy and accepts proposed changes that are sufficiently high quality. As a result, the voter updates about the majority's ability similarly to how he updates in the baseline model. When the minority agrees to the proposed change, the voter updates positively about the majority's ability, and when the minority blocks a proposed change, the voter updates negatively about the majority's ability.

One question to ask is how policymaking under a super-majoritarian institution compares to unilateral policymaking.

Proposition 9. *Relative to Γ, in any equilibrium of Γ^{sm},*

(a) the probability of policy change is weakly lower,

(b) and the expected quality of policy conditional on policy change is weakly higher.

Two forces explain why, when the majority needs to secure the minority's agreement, there is less policy change. The first is the ideological disagreement between the majority and the minority. Because the minority receives a weakly smaller ideological benefit from policy change, he is more discerning about the quality of alternative policy that must be developed to warrant changing the status quo. As a result, his presence prevents the majority from making some lower-quality policy changes that the majority would make without the minority's ability to block policy change. In this way, ideological disagreement between the majority and the minority means the minority acts as a salutary filter by blocking some low-quality policy changes.

While ideological disagreement between the minority and majority is sufficient to explain why there is less policy change, it is not necessary. To illustrate why this is the case, compare Γ^{sm} to the game where the minority must agree to change the status quo and the majority's ability is known, denoted $\hat{\Gamma}^{sm}$.

Proposition 10. *In any equilibrium of* Γ^{sm}*, the probability of policy change is weakly lower than in* $\hat{\Gamma}^{sm}$*.*

Suppose there is no uncertainty about the majority's type, and the minority is indifferent between accepting and blocking a proposed change. Now, suppose there is uncertainty about the majority's type. If the minority blocks a proposed change, the voter updates negatively about the majority's ability. Hence, independent of ideological concern, the minority sometimes has an electoral incentive to block a policy change proposed by the majority.

The key implication of Propositions 9 and 10 is that requiring the majority to gain the minority's support to change the status quo reduces policy churn because the majority is not able to engage in ability signaling. However, because the majority and minority are engaged in electoral competition, requiring the minority's agreement introduces an additional and distinct distortion: the minority blocks policy changes that he would allow absent uncertainty about the majority's ability. I refer to this as *ability blocking*.

This implication highlights a fundamental trade-off between making it easier and harder to make policy. In the words of James Madison writing in Federalist 73,

> "It may perhaps be said that the power of preventing bad laws includes that of preventing good ones; and may be used to the one purpose as well as to the other." (Madison, 1788b)

However this model offers, to my knowledge, a novel explanation for why a policymaker would block another policymaker's proposed change: to prevent the voter from updating about the proposer's ability to develop high-quality policy.

An additional implication of Propositions 9 and 10 is that the minority's behavior is consistent with the strategic, electorally motivated opposition we observe in roll-call voting in Congress. Notably, even if the minority and majority have the same ideological preferences, the minority will sometimes block policies she would allow if there was no uncertainty about the majority's type. This is reminiscent of Lee (2009), who uses roll-call votes to document the extent of disagreement between the democrats and republicans in the Senate on issues that lack a clear ideological valence.[20] However, this model offers a distinct strategic logic for why partisan disagreement arises even on non-ideological issues: uncertainty about policymakers' ability to develop high-quality policies.

Additionally, the extent of ability blocking that arises in equilibrium is connected to ex-ante electoral competition.

Definition 2. *Let $y^*_{\Gamma^{sm}}$ be the minority's quality threshold in an equilibrium of Γ^{sm}. If $y^*_{\Gamma^{sm}} > 0$ and*

$$y^*_{\Gamma^{sm}} > -(x_C - x_{sq})^2 + (x_C - x_I)^2,$$

the minority engages in ability blocking. Moreover,

$$D(y^*_{\Gamma^{sm}}) = \begin{cases} 0 & \text{if } y^*_{\Gamma^{sm}} \leq 0 \\ y^*_{\Gamma^{sm}} - \max\{-(x_C - x_{sq})^2 + (x_C - x_I)^2, 0\} & \text{if } y^*_{\Gamma^{sm}} > 0 \end{cases}$$

is the extent of ability blocking.

When $y^*_{\Gamma^{sm}} > 0$, the minority blocks some proposed policy changes he would allow under perfect information.

Proposition 11. *In any equilibrium, the extent of ability blocking is weakly increasing in ex-ante electoral competition (i.e. as η approaches zero).*

The intuition for this proposition parallels the intuition for (a) in Proposition 3. The minority's aversion to policy change for ideological reasons is constant, while his aversion to policy change for electoral reasons depends on whether or not policy change is electorally relevant.[21]

This result is consistent with theorizing about the connection between electoral competition and partisan conflict in Congress (Lee, 2016). When there is uncertainty about which party will be in the majority tomorrow, congressional parties are incentivized to take actions that promote their image and damage the other party's image. This argument is supported

[20] Lee (2009) finds that over one-third of party-line votes in the 97th-108th Congresses occurred on issues lacking a clear ideological dimension.

[21] This comparative static is the same if I focus on the equilibrium with maximum policy change.

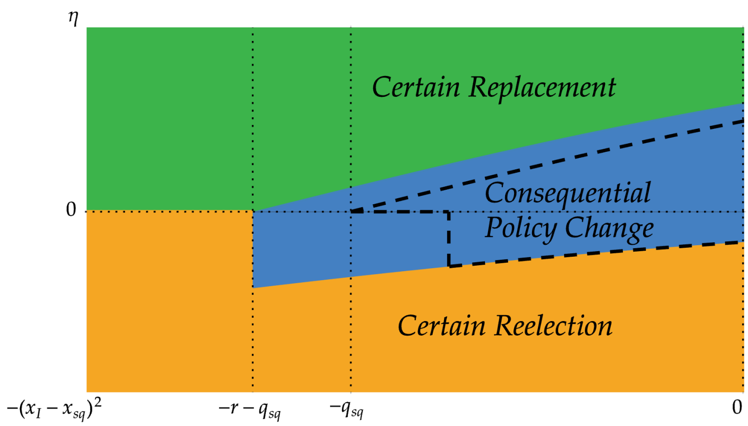

Figure 3: Regions of equilibria with minimum policy change for $q_{sq} = 1$, $r = \frac{1}{4}$, $f(q_I) = e^{-q_I}, g(q_I) = 2e^{-2q_I}, p = \frac{1}{2}$, and $x_I = x_C$. The dashed line outlines the region where there is an equilibrium with consequential policy change in Γ.

by evidence from staffers and legislators in the minority, who perceive blocking the majority as advantageous. For example,

> "In the minority, you don't want to fuel the success of the majority... Too much deal making can perpetuate them in the majority," - Senate leadership staffer, quoted in Lee (2016).

A final insight from this extension of the baseline model is that the need to secure the minority's agreement to change the status quo may be electorally beneficial for the majority.

Proposition 12. *For some parameters, the probability the majority is reelected in Γ^{sm} is higher than the probability the incumbent is reelected in Γ.*

The minority's ideological disagreement with the majority and his electoral considerations mean he blocks some policy changes the incumbent would implement in Γ. When this is the case, successful policy change is a relatively stronger signal of high ability, and failure to change the status quo is a relatively weaker signal of low ability. The implication is that the majority's probability of reelection in Γ^{sm} is sometimes higher than the incumbent's in Γ.

As shown in Figure 3, where the dashed line outlines the region where there is an equilibrium with consequential policy change in the baseline model, there is also a region of the parameter space where the incumbent's probability of reelection is lower in Γ^{sm} than in Γ. This is because requiring the majority to secure the minority's support to change the status quo expands the region of the parameter space where policy is retained and changed on the equilibrium path. In particular, this means that when $\eta < 0$, there are parameters for which there is an equilibrium with consequential policy change in Γ^{sm} when, for the same parameters, there is an equilibrium with certain reelection in Γ because the incumbent changed the status quo for all q_I.

8 Robustness

In Section B of the Appendix, I explore whether the model is robust to alternative assumptions.

8.1 Incumbent Knows Her Type

If the incumbent knows her type, then conditional on observing q_I, her utility from retaining the status quo is constant in q_I and does not depend on her type. Moreover, conditional on observing q_I, the incumbent's utility from changing the status quo is increasing in q_I and also does not depend on her type. This means that in equilibrium, both types of incumbents use threshold strategies. Furthermore, they use the same threshold.

8.2 Election Outcome Affects Policy

Suppose the election outcome affects policy. In particular, if the incumbent is reelected, the policy she chose is implemented, and if the challenger is elected, the status quo is retained regardless of the incumbent's choice. Then, in addition to selecting the policymaker who is more likely to have high ability, the election is a referendum on the incumbent's chosen policy.

When the incumbent is reelected in equilibrium with positive probability, she uses a threshold strategy.[22] This implies that changing the status quo is a signal of high ability, and retaining is a signal of low ability. Hence, when policy change is electorally consequential, the incumbent changes the status quo more than she does when policy change does not affect the outcome of the election.

9 Conclusion

I studied a model of policymaking where there is uncertainty about a policymaker's ability to develop high-quality policies. When the policymaker unilaterally changes the status quo,

[22] If, in equilibrium, she is never reelected, her decision whether to retain or change the status quo has no effect on her utility from policy. As a result, she no longer must use a threshold strategy in equilibrium.

she engages in ability signaling, which produces policy churn and lowers expected policy quality relative to when there is complete information about her type. Requiring her to secure the agreement of another policymaker under the shadow of future electoral competition ameliorates this initial distortion. Yet, it produces another: ability blocking, where the second policymaker blocks policy change he would allow under complete information. Hence, uncertainty about the incumbent's policymaking ability produces policy churn under unilateral policymaking but leads to excessive gridlock under a super-majoritarian institution. Importantly, these distortions are independent of ideological considerations. They arise solely because of incomplete information.

Two natural extensions of this model come to mind. First, one could endogenize the status quo by studying a model with two periods of policy change. In the first period, the incumbent chooses whether to implement a policy or retain the status quo and then the voter chooses whether to reelect the incumbent or replace them with a challenger without observing the quality of the incumbent's policy. In the second period, the winner of the election chooses whether to retain the status quo inherited from the previous period or to change it after learning the quality of her alternative policy. This is related to the extension described in Section 8.2, but there are important differences. For one, the voter's decision is more complicated since what the elected politician will do tomorrow depends on the quality of the status quo, and the voter does not observe the quality of the status quo when he votes.

Second, as discussed briefly in Section 5, one could allow the incumbent to choose when to change the status quo after learning the quality of her alternative policy. I showed that if the incumbent chooses when to develop an alternative and then chooses whether to change the status quo, she delays development until the end of her term in some cases and expedites development in others. When the incumbent chooses when to develop a policy and then whether to change the status quo, her choice conveys no information about quality. However, if the incumbent decides when to develop her alternative and then when to change the status quo after learning the alternative policy's quality, things are more complicated. An incumbent who learns her alternative is low quality has an incentive to delay policy change to minimize the probability the voter learns the policy's quality before the election. And an incumbent who learns her alternative is high quality has an incentive to act immediately to maximize the probability the voter learns the policy's quality before the election. But this means that *when* the incumbent changes the status quo conveys information.

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A Proofs of Claims in Main Text

A.1 Lemma 1

Proof. Suppose a perfect Bayesian equilibrium (PBE) exists where the voter reelects the incumbent with probability $\gamma^* \in [0,1]$ if she retains the status quo and with probability $\lambda^* \in [0,1]$ if she changes it. In this PBE, the incumbent must change the status quo if and only if $q_I \geq q_{sq} + y^*$, where

$$y^* = \begin{cases} -q_{sq} & \text{if } q_{sq} - (x_I - x_{sq})^2 + (\gamma^* - \lambda^*)r < 0 \\ -(x_I - x_{sq})^2 + (\gamma^* - \lambda^*)r & \text{if } q_{sq} - (x_I - x_{sq})^2 + (\gamma^* - \lambda^*)r \geq 0. \end{cases}$$

■

A.2 Propositions 1 and 2

Outline of the proof: I prove Lemmas 3 and 4 and then use them to characterize all PBE of Γ in Propositions 13, 14, and 15 under the assumption that off the equilibrium path,

$$\Pr(\tau_I = \overline{\theta}|\text{deviation off path}) = \frac{pf(0)}{pf(0) + (1-p)g(0)} \equiv \mu.$$

I then show that D1 forces the voter to believe that a deviation by the incumbent comes from an incumbent whose alternative has $q_I = 0$ and as a result has high ability with probability μ in Proposition 16. Propositions 1 and 2 follow from applying equilibrium condition (4) to the equilibria identified in Propositions 13, 14, and 15 .

Lemma 3. *If the incumbent uses a threshold such that she changes the status quo if and only if $q_I \geq q_{sq} + y$, for $y \in (-q_{sq}, \infty)$,*

(a) $\Pr(\tau_I = \overline{\theta}|\pi = \pi_I) > p$ *and* $\Pr(\tau_I = \overline{\theta}|\pi = \pi_I, y)$ *is increasing in y,*

(b) and $\Pr(\tau_I = \overline{\theta}|\pi = \pi_{sq}) < p$ *and* $\Pr(\tau_I = \overline{\theta}|\pi = \pi_{sq}, y)$ *is increasing in y.*

Proof. Suppose the incumbent uses a threshold strategy such that she change the status quo if and only if $q_I \geq q_{sq} + y$, for $y \in (-q_{sq}, \infty)$.

(a) $\Pr(\tau_I = \overline{\theta}|\pi = \pi_{sq}) = \frac{F(q_{sq}+y)p}{F(q_{sq}+y)p+G(q_{sq}+y)(1-p)} < p$ is less than p if

$$F(q_{sq} + y) < F(q_{sq} + y)p + G(q_{sq} + y)(1-p).$$

This is immediate due to the well-known propety that MLRP implies first order stochastic dominance (FOSD).

Rearranging, $\Pr(\tau_I = \overline{\theta} | \pi = \pi_{sq}) = \frac{1}{1+\frac{1-p}{p}\frac{G(q_{sq}+y)}{F(q_{sq}+y)}}$. Differentiating the ratio of the CDFs in the denominator:

$$\frac{\partial}{\partial y}\frac{G(q_{sq}+y)}{F(q_{sq}+y)} = \frac{F(q_{sq}+y)g(q_{sq}+y) - G(q_{sq}+y)f(q_{sq}+y)}{F(q_{sq}+y)^2}.$$

This is negative since

$$\begin{aligned} F(q_{sq}+y)g(q_{sq}+y) &< G(q_{sq}+y)f(q_{sq}+y) \\ \Leftrightarrow \frac{f(q_{sq}+y)}{g(q_{sq}+y)} &> \frac{F(q_{sq}+y)}{G(q_{sq}+y)}. \end{aligned}$$

where the last line is due to a well-known property of strict MLRP that $\frac{f(x)}{g(x)} > \frac{F(x)}{G(x)}$.

(b) $\Pr(\tau_I = \overline{\theta} | \pi = \pi_{sq}) = \frac{(1-F(q_{sq}+y))p}{(1-F(q_{sq}+y))p+(1-G(q_{sq}+y))(1-p)} < p$ is less than p if

$$(1 - F(q_{sq}+y)) > p(1 - F(q_{sq}+y)) + (1-p)(1 - G(q_{sq}+y)),$$

which is immediate due to MLRP implying FOSD.

Rearranging, $\Pr(\tau_I = \overline{\theta} | \pi = \pi_I) = \frac{1}{1+\frac{1-p}{p}\frac{(1-G(q_{sq}+y))}{(1-F(q_{sq}+y))}}$. Differentiating the ratio of the CDFs in the denominator with respect to y,

$$\frac{\partial}{\partial y}\frac{G(q_{sq}+y)}{F(q_{sq}+y)} = \frac{-(1-F(q_{sq}+y))g(q_{sq}+y) - (-(1-G(q_{sq}+y)f(q_{sq}+y)))}{(1-F(q_{sq}+y))^2}.$$

This is negative since

$$\begin{aligned} (1 - G(q_{sq}+y)f(q_{sq}+y)) &< (1 - F(q_{sq}+y))g(q_{sq}+y) \\ \Leftrightarrow \frac{f(x)}{1-F(x)} &< \frac{g(x)}{1-G(x)}, \end{aligned}$$

and the second line is the monotone hazard rate property which is implied by MLRP.

■

Lemma 4. *(a) Fix $\eta < 0$. There exists a unique $\underline{y}(q_{sq}, \eta) \in (-q_{sq}, \infty)$ such that $\Pr(\tau_I = \overline{\theta} | \pi = \pi_{sq}, \underline{y}(q_{sq}, \eta)) = p + \eta$ and for all $y > \underline{y}(q_{sq}, \eta)$, $\Pr(\tau_I = \overline{\theta} | \pi = \pi_{sq}, y) > p + \eta$.*

(b) *Fix $\eta > 0$. There exists a unique $\overline{y}(q_{sq}, \eta) \in (-q_{sq}, \infty)$ such that for $\Pr(\tau_I = \overline{\theta} | \pi = \pi_I, \overline{y}(q_{sq}, \eta)) = p + \eta$ and for all $y > \overline{y}(q_{sq}, \eta)$, $\Pr(\tau_I = \overline{\theta} | \pi = \pi_I) > p + \eta$.*

Proof. (a) Suppose $\eta < 0$.

$$\lim_{y \to -q_{sq}} \Pr(\tau_I = \overline{\theta} | \pi = \pi_{sq}, y) = \frac{1}{1 + \frac{1-p}{p} \frac{g(0)}{f(0)}} \equiv \underline{L},$$

and by Lemma 3, $\Pr(\tau_I = \overline{\theta} | \pi = \pi_{sq}, y)$ is strictly increasing in y. Hence, if

$$\eta > \underline{L} - p \equiv \underline{\eta}, \tag{2}$$

there exists a unique $\underline{y} \in (-q_{sq}, \infty)$ such that $\Pr(\tau_I = \overline{\theta} | \pi = \pi_{sq}, \underline{\eta}) = p + \eta$, and for all $y > \underline{y}$, $\Pr(\tau_I = \overline{\theta} | \pi = \pi_{sq}, \underline{y}) > p + \eta$. Moreover, $\underline{y}$ is the y that solves

$$\frac{F(q_{sq} + y)p}{F(q_{sq} + y)p + G(q_{sq} + y)(1 - p)} = p + \eta,$$

and hence $\underline{y}$ is a function of η and q_{sq}.

(b) Suppose $\eta > 0$. By Lemma 3, $\Pr(\tau_I = \overline{\theta} | \pi = \pi_I)$ is strictly increasing in y. Moreover, $\Pr(\tau_I = \overline{\theta} | \pi = \pi_I, y)$ is a probability so it is bounded above by one. Hence, there is a least upper bound of $\Pr(\tau_I = \overline{\theta} | \pi = \pi_I, y)$, and this is the limit as $y \to \infty$. Call this least upper bound $\overline{L}$. Hence, if

$$\begin{aligned} & p + \eta < \overline{L} \\ \Leftrightarrow\ & \eta < \overline{L} - p \equiv \overline{\eta}, \end{aligned} \tag{3}$$

there exists $\overline{y}(q_{sq}, \eta)$ such that $\Pr(\tau_I = \overline{\theta} | \pi = \pi_I, y) \geq p + \eta$ for all $y \geq \overline{y}(q_{sq}, \eta)$. Moreover, $\overline{y}$ is the y that solves

$$\frac{(1 - F(q_{sq} + y))p}{(1 - F(q_{sq} + y))p + (1 - G(q_{sq} + y))(1 - p)} = p + \eta,$$

and hence is a function of η and q_{sq}.

■

Proposition 13. *Fix π_{sq} and $\eta < 0$.*

(a) *If $-(x_I - x_{sq})^2 \leq r - q_{sq}$, there is a unique PBE where the incumbent changes the status quo for all q_I and is always reelected on the equilibrium path.*

(b) If $-(x_I - x_{sq})^2 \in (r - q_{sq}, \underline{y}(q_{sq}, \eta) + r)$, there is a PBE where the incumbent changes the status quo if and only if (6) is satisfied, and is reelected if and only if she changes the status quo.

(c) If $-(x_I - x_{sq})^2 \in [\underline{y}(q_{sq}, \eta), \underline{y}(q_{sq}, \eta) + r]$, there is a PBE where the incumbent changes the status quo if and only if (8) is satisfied, and is reelected with probability one if she changes the status quo and with probability $\rho^* \in [0, 1]$ if she retains the status quo.

(d) If $-(x_I - x_{sq})^2 > \underline{y}(q_{sq}, \eta)$, there is a PBE where the incumbent changes the status quo if and only if (7) is satisfied, and is always reelected.

Proof. Fix π_{sq} and $\eta < 0$, and suppose that off the equilibrium path the voter believes the incumbent has high ability with probability μ. By Lemma 3, the incumbent is reelected when she changes the status quo in any PBE.

Suppose there is a PBE where the incumbent changes the status quo for all q_I. Then on the path the voter's posterior equals his prior. $p > p + \eta$ for $\eta < 0$, which implies that the incumbent is always reelected on the equilibrium path. If she deviates off the path and retains the status quo, she is not reelected since $\mu < p + \eta$ for all $\eta < 0$ and satisfying Assumption 2. Hence, for this PBE to exist, it must be that

$$0 \geq q_{sq} - (x_I - x_{sq})^2 - r, \tag{4}$$

which ensures the incumbent prefers changing the status quo to retaining even if $q_I = 0$. This shows (a) in the proposition.

It remains to consider PBE where the incumbent changes and retains the status quo on the equilibrium path. By Lemma 4, $\underline{y}(q_{sq}, \eta)$ exist. Hence, there are three possibilities: $\underline{y}(q_{sq}, \eta) > y^*$, $\underline{y}(q_{sq}, \eta) < y^*$, and $\underline{y}(q_{sq}, \eta) = y^*$. Note, that in any PBE where the incumbent changes and retains on the equilibrium path, it must be that

$$y^* > -q_{sq} \tag{5}$$

If $y^* < \underline{y}(q_{sq}, \eta)$ and (5) is satisfied, the incumbent is reelected if and only if she changes the status quo. Therefore, the incumbent changes the status quo if and only if

$$q_I \geq q_{sq} - (x_I - x_{sq})^2 - r. \tag{6}$$

For this PBE to exist, it must be that

$$-(x_I - x_{sq})^2 - r < \underline{y}(q_{sq}, \eta),$$

and (5) is satisfied. The first condition ensures $y^* < \underline{y}(q_{sq}, \eta)$. Combining it with (5) shows (b) in the proposition.

If $y^* > \underline{y}(q_{sq}, \eta)$ and (5) is satisfied, the incumbent is reelected whether she retains or changes the status quo. Therefore, she changes the status quo if and only if

$$q_I > q_{sq} - (x_I - x_{sq})^2. \tag{7}$$

For this PBE to exist, it must be that

$$-(x_I - x_{sq})^2 > \underline{y}(q_{sq}, \eta)$$

and (5) is satisfied. The first condition ensures $y^* > \underline{y}(q_{sq}, \eta)$. When it is satisfied, it implies (5) is satisfied. This proves (d) in the proposition.

Finally, suppose $y^* = \underline{y}(q_{sq}, \eta)$ and (5) is satisfied. Then, the voter reelects the incumbent if she changes the status quo and is indifferent between the incumbent and challenger when the incumbent retains the status quo. Given this indifference, suppose the voter reelects the incumbent with probability ρ when the incumbent retains. For a particular ρ, the incumbent changes the status quo if

$$q_I \geq q_{sq} - (x_I - x_{sq})^2 + (\rho - 1)r. \tag{8}$$

For the voter to be indifferent, it must be that

$$-(x_I - x_{sq})^2 + (\rho - 1)r = \underline{y}(q_{sq}, \eta),$$

which implies that in equilibrium $\rho^* \equiv \frac{\underline{y}(q_{sq},\eta)+(x_I - x_{sq}^2)}{r} + 1$. For this PBE to exist, it must be that

$$\underline{y}(q_{sq}, \eta) \in [-(x_I - x_{sq})^2 - r, -(x_I - x_{sq})^2]$$

and (5) is satisfied. The first condition ensures $\rho^* \in [0, 1]$. Plugging ρ^* into the incumbent's quality threshold shows she changes the status quo if and only if

$$q_I \geq q_{sq} + \underline{y}(q_{sq}, \eta),$$

and by definition $\underline{y}(q_{sq}, \eta) > -q_{sq}$. Hence, (5) is satisfied. This shows (c) in the proposition. ■

Proposition 14. *Fix π_{sq} and $\eta > 0$.*

(a) If $-(x_I - x_{sq})^2 < -q_{sq}$, there is a unique PBE where the incumbent changes the status quo for all q_I and is never reelected on the equilibrium path.

(b) If $-(x_I - x_{sq})^2 \in (-q_{sq}, \overline{y}(q_{sq}, \eta)]$, there is a unique PBE where the incumbent changes the status quo if and only if (7) is satisfied, and is never reelected.

(c) If $-(x_I - x_{sq})^2 > \overline{y}(q_{sq}, \eta)$, there is a unique PBE where the incumbent changes the status quo if and only if (10) is satisfied, and is reelected with probability $\rho^* \in (0, 1]$ if she changes the status quo.

Proof. Fix π_{sq} and $\eta > 0$, and suppose that off the equilibrium path the voter believes the incumbent has high ability with probability μ. By Lemma 3, the incumbent is not reelected when she retains the the status quo in any PBE.

Suppose there is a PBE where the incumbent changes the status quo for all q_I. On the path, the voter's posterior equals his prior. Off the path, the voter's poster equals μ. Because the incumbent trails, she is neither reelected on the path nor off the path. Hence, this PBE exists if

$$0 \geq q_{sq} - (x_I - x_{sq})^2. \tag{9}$$

This shows (a) in the proposition.

It remains to consider PBE where the incumbent changes and retains the status quo on the equilibrium path. By Lemma 4, $\overline{y}(q_{sq}, \eta)$ exists. Hence, there are three possibilities: $\overline{y}(q_{sq}, \eta) > y^*$, $\overline{y}(q_{sq}, \eta) < y^*$, and $\overline{y}(q_{sq}, \eta) = y^*$. Note, in any such PBE, it must be that (5) is satisfied.

If $y^* < \overline{y}(q_{sq}, \eta)$ and (5) is satisfied, the incumbent is never reelected. Then the incumbent changes the status quo if and only if (7) is satisfied. For this PBE to exist, it must be that

$$-(x_I - x_{sq})^2 < \overline{y}(q_{sq}, \eta)$$

and (5) is satisfied. The first condition ensures $y^* < \overline{y}(q_{sq}, \eta)$ and (5) ensures the incumbent retains on the equilibrium path. Combining them proves (b) in the proposition.

If $y^* > \overline{y}(q_{sq}, \eta)$ and (5) is satisfied, the incumbent is reelected with probability one when she changes the status quo but is not reelected if she retains the status quo. Then the incumbent changes the status quo if and only if (6) is satisfied. For this PBE to exist, it must be that

$$-(x_I - x_{sq})^2 - r > \overline{y}(q_{sq}, \eta)$$

and (5) is satisfied. The first condition ensures $y^* > \overline{y}(q_{sq}, \eta)$. When it is satisfied, it implies (5) is satisfied.

Finally, suppose $y^* = \overline{y}(q_{sq}, \eta)$ and (5) is satisfied. In this case, the voter is indifferent between electing the challenger and the incumbent when the incumbent changes the status quo and, hence, can reelects the incumbent with probability $\rho \in [0, 1]$. Given a particular ρ, the incumbent changes the status quo if and only if

$$q_I \geq q_{sq} - (x_I - x_{sq})^2 - \rho r. \tag{10}$$

For the voter to be indifferent, it must be that

$$-(x_I - x_{sq})^2 - \rho r = \overline{y}.$$

which implies that in equilibrium $\rho^* \equiv \frac{-(x_I - x_{sq})^2 - \overline{y}(q_{sq}, \eta)}{r}$. For this PBE to exist it must be that

$$\overline{y}(q_{sq}, \eta) \in [-(x_I - x_{sq})^2 - r, -(x_I - x_{sq})^2]$$

and (5) is satisfied. The first condition ensures $\rho^* \in [0, 1]$. Substituting ρ^* into the incumbent's quality threshold and using the definition of $\overline{y}(q_{sq}, \eta)$ that the first condition implies (5) is satisfied. This, with the previous paragraph, shows (c). ■

Proposition 15. *Fix π_{sq} and $\eta = 0$.*

(a) If $-(x_I - x_{sq})^2 \leq r - q_{sq}$, a continuum of PBE exist where the incumbent changes the status quo for all q_I and is reelected with probability $\rho^* \in [0, 1]$.

(b) If $-(x_I - x_{sq})^2 > r - q_{sq}$, there is a unique PBE where the incumbent changes the status quo if and only if (6) is satisfied, and is reelected if and only if she changes the status quo.

Proof. Fix π_{sq} and $\eta = 0$, and suppose that off the equilibrium path the voter believes the incumbent has high ability with probability μ.

Suppose there is a PBE where the incumbent changes the status quo for all q_I. Then the voter's posterior on the equilibrium path equals his prior. Hence, the voter is indifferent between the challenger and incumbent and reelects the incumbent with probability $\rho \in [0, 1]$. Off the path, the voter believes the incumbent has high ability with probability μ, and hence does not reelect the incumbent because $p > \mu$. For a given ρ, a PBE exists where the incumbent changes the status quo for all q_I if

$$0 \geq q_{sq} - (x_I - x_{sq}) - \rho r$$

Therefore, a ρ^* exists such that the incumbent lacks a profitable deviation from changing the status quo for all q_I if (4) is satisfied. This shows (a) in the proposition.

Suppose there is a PBE where the incumbent changes and retains the status quo on the equilibrium path. By Lemma 3, the incumbent is reelected when she changes the status quo and is not reelected if she retains the status quo. Hence, the incumbent changes the status quo if and only if (6) is satisfied. This is a PBE as long as (4) is not satisfied. This shows (b) in the proposition.

■

Proposition 16. *In any PBE of* Γ *surviving D1,*

$$\Pr(\tau_I = \overline{\theta} | \textit{deviation off path}) = \frac{pf(0)}{pf(0) + (1-p)g(0)}.$$

Proof. By Lemma 1, in any PBE the incumbent uses a threshold rule and changes the status quo when q_I is sufficiently large. Hence, the only action that is potentially off the path is retaining the status quo.

Let σ be a PBE surviving D1 in which the incumbent changes the status quo for all q_I. Let $\chi \in \mathbb{R}_+$ be this arbitrary incumbent's type. Define $D(\chi)$ as the set of reelection probabilities for which type χ strictly prefers retaining the status quo over receiving her payoff under σ, and define $D_0(\chi)$ as the set of reelection probabilities for which type χ is indifferent between retaining the status quo and receiving her payoff under σ. D1 requires the voter putting probability zero on a type χ deviating if there exists another type χ' such that $D(\chi) \cup D_0(\chi) \subseteq D(\chi')$ (Cho and Kreps, 1987).

Let $\psi \in [0,1]$ be the probability the voter elects the incumbent under σ and let $\omega \in [0,1]$ be the probability the voter elects the incumbent when she deviates off the equilibrium path. Then, an incumbent of type χ will deviate off the path if

$$\frac{\chi - q_{sq} + \psi r + (x_I - x_{sq})^2}{r} < \omega.$$

Note, the lower bound on the set of ω such that the incumbent deviates is weakly decreasing in χ.

There are three cases to consider. First, suppose $0 \geq q_{sq} - (x_I - x_{sq})^2 + (1-\psi)r$. Then for any $\omega \in [0,1]$, an incumbent with type $\chi = 0$ will not deviate. The incumbent's utility on the path is increasing in q_I, hence no types deviate.

Next, suppose $0 \in [q_{sq} - (x_I - x_{sq})^2 + \psi r, q_{sq} - (x_I - x_{sq})^2 + (1-\psi)r]$. Therefore,

$$\frac{-q_{sq} + \psi r + (x_I - x_{sq})^2}{r} > 0.$$

Thus, an incumbent of type $\chi = 0$ deviates for some realizations of q_I. Since the incumbent's utility on the path is increasing in q_I, an incumbent of type $\chi = 0$ deviates for the largest interval of ω. By D1, the voter is required to put probability one on the deviation coming from an incumbent with type $\chi = 0$. This induces the following posterior

$$\Pr(\tau_I = \overline{\theta}|\text{deviation off path}) = \frac{pf(0)}{pf(0) + (1-p)g(0)}.$$

Finally, suppose $q_{sq} - (x_I - x_{sq})^2 + \psi r > 0$. Then there exist q_I such that

$$0 > \frac{q_I - q_{sq} + \lambda r + (x_I - x_{sq})^2}{r}.$$

That is, there are types of incumbent that deviate for any ω. But this cannot be an equilibrium. ■

When $\eta < 0$, if $\underline{y}(q_{sq}, \eta) \in (-(x_I - x_{sq})^2 - r, -(x_I - x_{sq})^2)$, three PBEs satisfy equilibrium conditions (1)-(3). The PBE that survives equilibrium condition (4) is the PBE where the incumbent changes the status quo if and only if (7) is satisfied.

When $\eta > 0$, a unique PBE satisies (1)-(3) of the equilibrium conditions. Hence introducing equilibrium condition (4) does not refine the set of equilibria further.

When $\eta = 0$, there is a unique PBE unless $0 > q_{sq} - (x_I - x_{sq})^2 - r$, in which case a continuum of equilibria exist satisfy equilibrium conditions (1)-(3). However, in all of these equilibria, the incumbent changes the status quo for all q_I. Hence, condition (4) does not refine the set of equilibria any further.

Existence of an equilibrium with consequential policy change follows from Propositions 13, 14, and 15. By Propositions 13, 14, and 15, the incumbent's quality threshold is always weakly smaller than $-(x_I - x_{sq})^2$, which proves (a) in Proposition 1. Result (b) in Proposition 1 is implied by (a) in Proposition 1 and Lemma 1.

A.3 Proposition 3

Proof. (a) I first prove the following lemma.

Lemma 5. *$\underline{y}(q_{sq}, \eta)$ and $\overline{y}(q_{sq}, \eta)$ are increasing in η.*

Proof. $y = \overline{y}(q_{sq}, \eta)$ solves

$$\frac{p(1 - F(q_{sq} + y))}{p(1 - F(q_{sq} + y)) + (1 - p)(1 - G(q_{sq} + y))} = p + \eta. \tag{11}$$

By Lemma 3, the LHS of (11) is increasing in y. Hence, if η increases, $\overline{y}(q_{sq}, \eta)$ increases to maintain equality.

Using an identical argument, the same can be shown for $\underline{y}(q_{sq}, \eta)$. ■

Fix q_{sq}. Propositions 13, 14, and 15 imply the following:

(1) If $\eta < 0$, $D(y^*_\Gamma)$ is weakly increasing in $\underline{y}(q_{sq}, \eta)$ and is always weakly smaller than $\min\{r, q_{sq} - (x_I - x^2_{sq})\}$

(2) If $\eta = 0$, $D(y^*_\Gamma) = \min\{r, q_{sq} - (x_I - x^2_{sq})\}$

(3) If $\eta > 0$, $D(y^*_\Gamma)$ is weakly decreasing in $\underline{y}(q_{sq}, \eta)$ and is always weakly smaller than $\min\{r, q_{sq} - (x_I - x^2_{sq})\}$.

These results, combined with Lemma 5 imply that $D(y^*_\Gamma)$ is weakly increasing as η approches zero.

(b) Fix π_{sq} and η. In any equilibrium the incumbent's strategy is of the form that she changes the status quo if and only if

$$q_I \geq \max\{q_{sq} - (x_I - x_{sq}) - \rho^* r, 0\},$$

where $\rho^* \in [0, 1]$. If, in equilibrium, ρ^* is not a function of r, as is the case when the voter uses a pure strategy, the quality threshold is weakly decreasing in r, and hence $D(y^*_\Gamma)$ is weakly increasing. If, in equilibrium, the incumbent uses a mixed strategy, $\rho^* = \frac{-(x_I - x_{sq})^2 - \overline{y}(q_{sq}, \eta)}{r}$, and hence the incumbent's strategy simplifies to her changing the status quo if and only if

$$q_I \geq q_{sq} + \overline{y}(q_{sq}, \eta),$$

which is constant in r. Hence $D(y^*_\Gamma)$ is constant in r.

It remains to consider what happens when there is a possibility of ability signaling (i.e. the incumbent does not change the status quo for all q_I in the benchmark) and when increasing r leads the incumbent to discontinuously switch her threshold. The first condition requires

$$q_I - (x_I - x_{sq})^2 > 0, \tag{12}$$

and Propositions 13, 14, and 15 imply the incumbent's quality threshold is only discontinuous in r when $\eta < 0$. In particular, there is a discontinuity in the incumbent's quality threshold at $\underline{y}(q_{sq],\eta}) = -(x_I - x_{sq})^2$. When $\underline{y}(q_{sq}, \eta) \leq -(x_I - x_{sq})^2$, $D(y^*_\Gamma) = 0$ and when $\underline{y}(q_{sq],\eta}) > -(x_I - x_{sq})^2$, $D(y^*_\Gamma) = \min\{r, q_{sq} - (x_I - x_{sq}^2)\}$. Hence $D(y^*_\Gamma)$ is weakly increasing for all r.

■

A.4 Proposition 4

Proof. The voter's welfare as a function of y^* is

$$\int_0^{q_{sq}+y^*} (q_{sq} - x_{sq}^2) h(q_I) dq_I + \int_{q_{sq}+y^*}^{\infty} (q_I - x_I^2) h(q_I) dq_I,$$

where $h(q_I) = pf(q_I) + (1-p)g(q_I)$. The first order condition is that

$$q_{sq} - x_{sq}^2 - q_{sq} - y^* + x_I^2 = 0.$$

Hence, the voter's welfare is maximized when

$$y^{wf} = \begin{cases} -q_{sq} & \text{if } q_{sq} - x_{sq}^2 + x_I^2 \leq 0 \\ -x_{sq}^2 + x_I^2 & \text{if } q_{sq} - x_{sq}^2 + x_I^2 > 0 \end{cases}$$

Moreover, the voter's welfare is increasing in y^* for $y^* < -x_{sq}^2 + x_I^2$, and is decreasing in y^* for $y^* > -x_{sq}^2 + x_I^2$.

In $\hat{\Gamma}$, $y^* = -(x_I - x_{sq})^2$. Hence, $(x_I - x_{sq})^2 \leq y^{wf}$ by Assumption 1. By Proposition 1, in any equilibrium of Γ, $y^* \leq -(x_I - x_{sq})^2$. Hence, the voter's welfare is weakly lower. ■

A.5 Proposition 5

Proof. Fix π_{sq} and η. In any equilibrium the incumbent's strategy is of the form that she changes the status quo if and only if

$$q_I \geq \max\{q_{sq} - (x_I - x_{sq}) - \rho^* r, 0\},$$

where $\rho^* \in [0,1]$. If, in equilibrium, ρ^* is not a function of x_I, as is the case when the voter uses a pure strategy, the quality threshold is weakly decreasing in x_I, and hence the probability of policy change is weakly increasing. If, in equilibrium, the incumbent uses a mixed strategy, $\rho^* = \frac{-(x_I - x_{sq})^2 - \overline{y}(q_{sq},\eta)}{r}$, and hence the incumbent's strategy simplifies to her changing the status quo if and only if

$$q_I \geq q_{sq} + \overline{y}(q_{sq},\eta),$$

which is constant in x_I.

It remains to consider what happens when there is a possibility of ability signaling and when increasing x_I leads the incumbent to discontinuously switch her threshold. The first condition requires (12). The second condition requires $\eta < 0$ as Proposition 13, 14, and 15 imply that the incumbent's quality threshold is continuous in x_I except when $\eta < 0$. In particular, there is a discontinuity in the incumbent's quality threshold at $\underline{y}(q_{sq],\eta}) = -(x_I - x_{sq})^2$. When $\underline{y}(q_{sq],\eta}) \leq -(x_I - x_{sq})^2$, the probability of policy change is

$$p(1 - F(q_{sq} - (x_I - x_{sq})^2)) + (1-p)(1 - G(q_{sq} - (x_I - x_{sq})^2)), \tag{13}$$

and when $\underline{y}(q_{sq},\eta) > -(x_I - x_{sq})^2$, the probability of policy change is

$$\min\{p(1 - F(q_{sq} - (x_I - x_{sq})^2 - r)) + (1-p)(1 - G(q_{sq} - (x_I - x_{sq})^2 - r)), 1\}. \tag{14}$$

(13) < (14) for any x_I, and hence the probability of policy change is weakly increasing in x_I for all x_I. ∎

A.6 Proposition 6

Outline of the proof: I begin by proving Lemma 6, which I use to provide a characterization of all PBE of the game described in Section 5 under the assumption that off the equilibrium path the voter believes the incumbent has high ability with probability μ. This is done in Propositions 18, 19, and 17. By the same argument used in Section A.2, μ is the belief the voter holds in any equilibrium surviving D1. I then prove Proposition 6.

If the incumbent changes the status quo and the voter observes q_I,

$$\Pr(\tau_I = \overline{\theta} | q_I) = \frac{1}{1 + \frac{1-p}{p}\frac{g(q_I)}{f(q_I)}}.$$

This is increasing in q_I by the definition of strict MLRP. Therefore, if

$$p + \eta \in [\underline{L}, \overline{L}), \tag{15}$$

there exists a $\hat{q}_I$ such that $\frac{1}{1+\frac{1-p}{p}\frac{g(\hat{q}_I)}{f(\hat{q}_I)}} = p + \eta$. (15) is satisfied if

$$\eta \in [\underline{\eta}, \overline{\eta}).$$

By Assumption 2, $\eta \in (\underline{\eta}, \overline{\eta})$. Hence $\hat{q}_I$ always exists. Define $\hat{y}(\eta) \equiv \hat{q}_I - q_{sq}$.

Lemma 6. *(a)* $\overline{y}(q_{sq}, \eta) < \hat{y}(\eta)$

(b) $\underline{y}(q_{sq}, \eta) > \hat{y}(\eta)$

Proof. (a) Suppose not. then $\overline{y}(q_{sq}, \eta) \geq \hat{y}(\eta)$. By the definitions of $\overline{y}(q_{sq}, \eta)$ and $\hat{y}(\eta)$,

$$\frac{p(1 - F(q_{sq} + \overline{y}(q_{sq}, \eta)))}{p(1 - F(q_{sq} + \overline{y}(q_{sq}, \eta))) + (1-p)(1 - G(q_{sq} + \overline{y}(q_{sq}, \eta)))} = \frac{pf(q_{sq} + \hat{y}(\eta))}{pf(q_{sq} + \hat{y}(\eta)) + (1-p)g(q_{sq} + \hat{y}(\eta))}.$$

Hence,

$$\frac{f(q_{sq} + \hat{y}(\eta))}{g(q_{sq} + \hat{y}(\eta))} = \frac{1 - F(q_{sq} + \overline{y}(q_{sq}, \eta))}{1 - G(q_{sq} + \overline{y}(q_{sq}, \eta))}$$

By strict MLRP and since $q_{sq} + \hat{y}(\eta) \leq q_{sq} + \overline{y}(q_{sq}, \eta)$

$$\begin{aligned} \frac{f(q_{sq} + \hat{y}(\eta))}{g(q_{sq} + \hat{y}(\eta))} &\leq \frac{f(q_{sq} + \overline{y}(q_{sq}, \eta))}{g(q_{sq} + \overline{y}(q_{sq}, \eta))} \\ \implies \frac{f(q_{sq} + \overline{y}(q_{sq}, \eta))}{g(q_{sq} + \overline{y}(q_{sq}, \eta))} &\geq \frac{1 - F(q_{sq} + \overline{y}(q_{sq}, \eta))}{1 - G(q_{sq} + \overline{y}(q_{sq}, \eta))} \\ \Leftrightarrow \frac{f(q_{sq} + \overline{y}(q_{sq}, \eta))}{1 - F(q_{sq} + \overline{y}(q_{sq}, \eta))} &\geq \frac{g(q_{sq} + \overline{y}(q_{sq}, \eta))}{1 - G(q_{sq} + \overline{y}(q_{sq}, \eta))}, \end{aligned}$$

where the last line is a contradiction due to the monotone hazard rate property of MLRP.

(b) Suppose not. Then $\underline{y}(q_{sq}, \eta) \leq \hat{y}(\eta)$. By the definitions of $\underline{y}(q_{sq}, \eta)$ and $\hat{y}(\eta)$, it must be that

$$\frac{F(q_{sq} + \underline{y}(q_{sq}, \eta))}{G(q_{sq} + \underline{y}(q_{sq}, \eta))} = \frac{f(q_{sq} + \hat{y}(\eta))}{g(q_{sq} + \hat{y}(\eta))}$$

By strict MLRP and since $q_{sq} + \hat{y}(\eta) \geq q_{sq} + \underline{y}(q_{sq}, \eta)$

$$\begin{aligned} & \frac{f(q_{sq} + \hat{y}(\eta))}{g(q_{sq} + \hat{y}(\eta))} \geq \frac{f(q_{sq} + \underline{y}(q_{sq}, \eta))}{g(q_{sq} + \underline{y}(q_{sq}, \eta))} \\ \implies & \frac{F(q_{sq} + \underline{y}(q_{sq}, \eta))}{G(q_{sq} + \underline{y}(q_{sq}, \eta))} \geq \frac{f(q_{sq} + \underline{y}(q_{sq}, \eta))}{g(q_{sq} + \underline{y}(q_{sq}, \eta))} \end{aligned}$$

where the last line is a contradiction due to the well known property of strict MLRP that

$$\frac{f(x)}{g(x)} > \frac{F(x)}{G(x)}.$$

■

Proposition 17. *Fix π_{sq} and $\eta < 0$.*

(a) If $-(x_I - x_{sq})^2 \leq (1-s)r - q_{sq}$, there is a unique PBE where the incumbent changes the status quo for all q_I, and is reelected if q_I is not revealed or if q_I is revealed and $q_I \geq \hat{q}_I$.

(b) If $-(x_I - x_{sq})^2 \in ((1-s)r - q_{sq}, \hat{y}(\eta) + (1-s)r)$, there is a PBE where the incumbent changes the status quo if and only if (19) is satisfied, and is reelected if she changes the status quo and q_I is not revealed or if $q_I \geq \hat{q}_I$.

(c) $-(x_I - x_{sq})^2 \in [\hat{y}(\eta) + (1-s)r, \hat{y}(\eta) + r]$, there is a PBE where the incumbent changes the status quo if and only if (18) is satisfied, and is reelected if she changes the status quo.

(d) If $-(x_I - x_{sq})^2 \in (\hat{y}(\eta) + r, \underline{y}(q_{sq}, \eta) + r)$, there is a PBE where the incumbent changes the status quo if and only if (6) is satisfied, and is reelected if she changes the status quo.

(e) If $-(x_I - x_{sq})^2 \in [\underline{y}(q_{sq}, \eta), \underline{y}(q_{sq}, \eta) + r]$, there is a PBE where the incumbent changes the status quo if and only if (17) is satisfied, and is reelected with probability $\rho^* \in [0, 1]$ if she retains the status quo and with probability one if she changes the status quo.

(f) If $-(x_I - x_{sq})^2 > \underline{y}(q_{sq}, \eta)$, there is a PBE where the incumbent changes the status quo if and only if (7) is satisfied, and is always reelected.

Proof. Fix π_{sq} and $\eta < 0$, and suppose that off the equilibrium path the voter believes the incumbent has high ability with probability μ. Since $\eta < 0$, Lemma 4 implies that in any PBE the incumbent is reelected if she changes the status quo and q_I is not revealed. Moreover, the probability that the incumbent is reelected if she changes the status quo and q_I is revealed is weakly increasing in q_I. Thus, in equilibrium, the incumbent's expected utility from changing the status quo is increasing in q_I. Hence, the incumbent uses a threshold strategy.

Consider first an equilibrium where the incumbent changes the status quo for all q_I. Since she leads, she is reelected on the equilibrium path if q_I is not revealed and if q_I is revealed and is sufficiently high. But,

$$\frac{1}{1+\frac{1-p}{p}\frac{g(0)}{f(0)}} < p + \eta$$

for all η satisfying Assumption 2. Hence, there are some realizations of q_I such that the incumbent is not reelected if she changes the status quo and q_I is revealed.

Since the incumbent changes the status quo for all q_I, retaining the status quo is off the path. If she deviates, she is not reelected since $\mu < p + \eta$ for all η satisfying Assumption 2. Hence, this PBE exists as long as

$$0 \geq q_{sq} - (x_I - x_{sq})^2 - (1-s)r. \tag{16}$$

This shows (a)

For the remainder of the proof assume the incumbent retains and changes the status quo on the equilibrium path. In any such PBE, (5) must be satisfied.

Suppose there is PBE $y^* > \underline{y}(q_{sq}, \eta) \implies y^* > \hat{y}(\eta)$. In this case, the incumbent is reelected whether she changes the status quo or not. Hence, in this PBE, the incumbent changes the status quo if and only if (7) is satisfied. This PBE exists if

$$\begin{aligned} \underline{y}(q_{sq}, \eta) &< -(x_I - x_{sq})^2 \\ \hat{y}(\eta) &< -(x_I - x_s)^2 \end{aligned}$$

and (5) is satisfied. The first condition ensures the $y^* > \underline{y}(q_{sq}, \eta)$, the second condition ensures the incumbent is always reelected when she changes the status quo and q_I is revealed, and the third condition ensures she retains on the equilibrium path. The first condition implies the second and third, which shows (f).

Now suppose there is a PBE where $y^* = \underline{y}(q_{sq}, \eta) \implies y^* > \hat{y}(\eta)$. In this PBE, the voter is indifferent between the incumbent and challenger when the incumbent retains the status quo, and hence reelects the incumbent with probability $\rho \in [0, 1]$. Given a $\rho^* \in [0, 1]$, the incumbent changes the status quo if and only if

$$q_I \geq q_{sq} - (x_I - x_{sq})^2 + (\rho^* - 1)r. \tag{17}$$

For the voter to be willing to randomize, it must be that

$$\rho^* = \frac{\underline{y}(q_{sq}, \eta) + (x_I - x_{sq})^2 + r}{r}.$$

For this PBE to exist, it must be that

$$\begin{aligned} \underline{y}(q_{sq}, \eta) &\in [-(x_I - x_{sq})^2 - r, -(x_I - x_{sq})^2] \\ \hat{y}(\eta) &< -(x_I - x_s)^2, \end{aligned}$$

and (5) is satisfied. The first condition ensures $\rho^* \in [0, 1]$, the second ensures the incumbent is reelected when she changes the status quo even if q_I is revealed, and the third ensures she retains on the equilibrium path. The first condition implies the second condition, as shown above, and implies the third, which can be shown by substituting ρ^* into the incumbent's quality threshold and using the definition of $\underline{y}(q_{sq}, \eta)$. This shows (e).

In any remaining equilibria, $y^* < \overline{y}(q_{sq}, \eta)$, which implies the incumbent is not reelected when she retains the status quo. Therefore, assume $y^* < \overline{y}(q_{sq}, \eta)$ for the remainder.

First suppose $y^* > \hat{y}(\eta)$, in which case the incumbent is reelected if she changes the status quo, regardless of whether q_I is revealed, but is not reelected if she retains. In this PBE, the incumbent will change the status quo if (6) is satisfied. For this to be a PBE it must be that

$$\begin{aligned} \underline{y}(q_{sq}, \eta) &> -(x_I - x_{sq})^2 - r \\ -(x_I - x_{sq})^2 - r &> \hat{y}(\eta), \end{aligned}$$

and (5) is satisfied. The first condition ensures the incumbent is not reelected if she retains, the second condition ensures she is reelected when she changes the status quo even if q_I is revealed, and the third ensures she retains on the equilibrium path. The second condition implies the third. This shows (d)

Now suppose $y^* = \hat{y}(\eta)$, in which case the incumbent is reelected if she changes the status quo, regardless of whether q_I is revealed, but is not reelected if she retains. Using the fact that $\hat{y}(\eta) = \hat{q}_I - q_{sq}$ implies that in this PBE, the incumbent changes the status quo if and only if

$$q_I \geq \hat{q}_I. \tag{18}$$

For this to be an equilibrium it must be that

$$\begin{aligned} \overline{y}(q_{sq}, \eta) &> -(x_I - x_{sq})^2 - r \\ \hat{q}_I + (1-s)r &\leq q_I - (x_I - x_{sq})^2 \\ \hat{q}_I + r &\geq q_I - (x_I - x_{sq})^2 \end{aligned}$$

and (5) is satisfied. The first condition ensures the incumbent is not reelected if she retains the status quo, the second ensures the incumbent does not have a profitable deviation to changing the status quo when $q_I < \hat{q}_I$, the third condition ensures the incumbent does not have a profitable deviation to retaining the status quo if $q_I \geq \hat{q}_I$, and the fourth condition ensures the incumbent retains on the equilibrium path. The fourth condition holds by Assumption 2. Combining the first and second conditions implies the first. This shows (c).

Finally, suppose there is a PBE where $y^* < \hat{y}(\eta)$. Then in this PBE, the incumbent reelected with probability one if she changes the status and q_I is not revealed, but there are values of q_I such that if q_I is revealed the incumbent is not reelected. Then the incumbent who is indifferent between retaining and changing observes q_I such that $q_I = q_{sq} - (x_I - x_{sq})^2 - (1-s)r$. Hence, the incumbent changes the status quo if and only

$$q_I \geq q_{sq} - (x_I - x_{sq})^2 - (1-s)r. \tag{19}$$

For this PBE to exist it must be that

$$\hat{y}(\eta) > -(x_I - x_{sq})^2 - (1-s)r$$

and (5) is satisfied. The first condition ensures $y^* < \hat{y}(\eta)$ and the second ensures the incumbent retains the on the equilibrium path. Combining them shows (b). ■

Proposition 18. *Fix π_{sq} and $\eta > 0$.*

(a) If $-(x_I - x_{sq})^2 \leq r - q_{sq}$, there is a unique PBE where the incumbent changes the status quo for all q_I, and is reelected if q_I is revealed and $q_I \geq \hat{q}_I$.

(b) If $-(x_I - x_{sq})^2 \in (r - q_{sq}, \overline{y}(q_{sq}, \eta))$, there is a unique PBE where the incumbent changes the status quo if and only if (7) is satisfied, and is reelected if q_I is revealed and $q_I \geq \hat{q}_I$.

(c) *If* $-(x_I - x_{sq})^2 \in [\overline{y}(q_{sq}, \eta), \overline{y}(q_{sq}, \eta) + (1-s)r]$*, there is a unique PBE where the incumbent changes the status quo if and only if (20) is satisfied, and is reelected with probability* $\rho^* \in [0,1]$ *if she changes the status quo and* q_I *is not revealed or if* q_I *is revealed and* $q_I \geq \hat{q}_I$*.*

(d) *If* $-(x_I - x_{sq})^2 \in (\overline{y}(q_{sq}, \eta) + (1-s)r, \hat{y}(\eta) + (1-s)r)$*, there is a unique PBE where the incumbent changes the status quo if and only if (19), and is reelected if she changes the status quo and* q_I *is not revealed or if* q_I *is revealed and* $q_I \geq \hat{q}_I$*.*

(e) *If* $-(x_I - x_{sq})^2 \in [\hat{y}(\eta) + (1-s)r, \hat{y}(\eta) + r]$*, there is a unique PBE where the incumbent changes the status quo if and only if (18) is satisfied, and is reelected if she changes the status quo.*

(f) *If* $-(x_I - x_{sq})^2 > \hat{y}(\eta) + r$*, there is a unique PBE where the incumbent changes the status quo if and only if (6) is satisfied, and is reelected if she changes the status quo.*

Proof. Fix q_{sq} and $\eta > 0$, and suppose that off the equilibrium path the voter believes the incumbent has high ability with probability μ. By the same argument in the proof of Proposition 17, the incumbent uses a threshold strategy. Hence, Lemma 4 implies the incumbent is never reelected if she retains the status quo.

Suppose there is a PBE where the incumbent changes the status quo for all q_I. Then on the equilibrium path the incumbent is not reelected if q_I is not revealed because $p < p + \eta$ for $\eta > 0$. Moreover, off the path, the incumbent is not reelected since $\mu < p + \eta$ for all $\eta > 0$. Hence, this PBE exists if (4) is satisfied, and in this PBE the incumbent is only reelected if q_I is revealed and $q_I \geq \hat{q}_I$. This shows (a).

For the remainder of the proof suppose the incumbent retains the status quo on the equilibrium path.

Suppose first that in a PBE $y^* > \hat{y}(\eta) \implies y^* > \overline{y}(q_{sq}, \eta)$. Then the incumbent is reelected when she changes the status quo regardless of whether q_I is revealed. Then the incumbent changes the status quo if and only if (6) is satisfied. For this PBE to exist, it must be that

$$-(x_I - x_{sq})^2 - r > \hat{y}(\eta)$$
$$-(x_I - x_{sq})^2 - r > \overline{y}(q_{sq}, \eta),$$

and (5) is satisfied. The first two conditions ensures that $y^* > \hat{y}(\eta)$ and $y^* > \overline{y}(q_{sq}, \eta)$. The third ensures the incumbent retains on the equilibrium path. The first implies the second and third which shows (f).

Next suppose $y^* = \hat{y}(\eta) \implies y^* > \overline{y}(q_{sq}, \eta)$. By the definition of $\hat{y}$, in this PBE, the incumbent must changes the status quo if and only if (18) is satisfied. For this to be an equilibrium, it must be that

$$\begin{aligned} -(x_I - x_{sq})^2 - r &> \overline{y}(q_{sq}, \eta) \\ \hat{q}_I + r &\geq q_{sq} - (x_I - x_{sq})^2 \\ \hat{q}_I + (1-s)r &\leq q_{sq} - (x_I - x_{sq})^2 \end{aligned}$$

and (5) is satisfied. The first condition ensures that $y^* > \overline{y}(q_{sq}, \eta)$. The second and third ensure that the incumbent does not have a profitable deviation, and the fourth ensures the incumbent retains on the equilibrium path. That $y^* = \hat{y}(\eta)$ implies the first and fourth conditions. Combining the second and third shows (e).

Next suppose $y^* \in (\overline{y}(q_{sq}, \eta), \hat{y}(\eta))$. Then the incumbent is reelected if she changes the status quo and q_I is not revealed, but there are some realizations of q_I such that the incumbent changes the status quo and is not reelected if q_I is revealed. In this PBE, the incumbent changes the status quo if and only if (19) is satisfied. For this PBE to exist it must be that

$$\begin{aligned} \hat{y}(\eta) &> -(x_I - x_{sq})^2 - (1-s)r \\ \overline{y}(q_{sq}, \eta) &< -(x_I - x_{sq})^2 - (1-s)r \end{aligned}$$

and (5) is satisfied. The first two conditions ensure $y^* \in (\overline{y}(q_{sq}, \eta), \hat{y}(\eta))$. The third ensures the incumbent retains on the equilibrium path. The second implies the third. This shows (d).

Suppose $y^* = \overline{y}(q_{sq}, \eta) \implies y^* < \hat{y}(\eta)$. In this case the voter is indifferent between the challenger and the incumbent when the incumbent changes the status quo and q_I is not revealed, and hence reelects the incumbent with probability $\rho \in [0, 1]$ if q_I is not revealed. Given ρ^*, the incumbent changes the status quo if and only if

$$q_I \geq q_{sq} - (x_I - x_{sq})^2 - (1-s)\rho^* r. \tag{20}$$

For the voter to be indifferent, it must be that

$$\Leftrightarrow \rho^* = \frac{-(x_I - x_{sq})^2 - \overline{y}(q_{sq}, \eta)}{(1-s)r}.$$

This PBE exists if

$$\hat{y}(\eta) > -(x_I - x_{sq})^2 - (1-s)r$$
$$\overline{y}(q_{sq}, \eta) \in [-(x_I - x_{sq})^2 - (1-s)r, -(x_I - x_{sq})^2]$$

and (5) is satisfied. The first condition ensures $y^* < \hat{y}(\eta)$, the second ensures $\rho^* \in [0,1]$, and the third ensures the incumbent retains on the equilibrium path. The first and third conditions are implied by the condition that $y^* = \overline{y}(q_{sq}, \eta)$. This shows (c).

Finally, suppose $y^* < \overline{y}(q_{sq}, \eta) \implies y^* < \hat{y}(\eta))$. Then the incumbent is not reelected unless she changes the status quo, q_I is revealed, and $q_I \geq \hat{q}_I$. Then, the incumbent changes the status quo if and only if (7) is satisfied. For this PBE to exist, it must be that

$$\overline{y}(q_{sq}, \eta) > -(x_I - x_{sq})^2$$

and (5) is satisfied. The first condition ensures $y^* < \overline{y}(q_{sq}, \eta)$ and the second ensures the incumbent retains on the equilibrium path. This shows (b). ■

Proposition 19. *Fix π_{sq} and $\eta = 0$.*

(a) If $-(x_I - x_{sq})^2 \leq (1-s)r - q_{sq}$, there is a PBE where the incumbent changes the status quo for all q_I, and is reelected with probability $\rho^* \in [0,1]$ if q_I is not revealed and with probability one if q_I is revealed and $q_I \geq \hat{q}_I$.

(b) If $-(x_I - x_{sq})^2 \in ((1-s)r - q_{sq}+, \hat{y}(\eta) + (1-s)r)$, there is a unique PBE where the incumbent changes the status quo if and only if (19) is satisfied, and is reelected if q_I is not revealed or if q_I is revealed and $q_I \geq \hat{q}_I$.

(c) If $-(x_I - x_{sq})^2 \in [\hat{y}(\eta) + (1-s)r, \hat{y}(\eta) + r]$, there is a unique PBE where the incumbent changes the status quo if and only if (18) is satisfied, and is reelected if she changes the status quo.

(d) If $-(x_I - x_{sq})^2 > \hat{y}(\eta) + r$, there is a unique PBE where the incumbent changes the status quo if and only if (6) is satisfied, and is reelected if she changes the status quo.

Proof. Fix q_{sq} and $\eta = 0$, and suppose that off the equilibrium path the voter believes the incumbent has high ability with probability μ.

Suppose there is a PBE where the incumbent changes the status quo for all q_I. On the path, the incumbent is reelected with probability $\rho \in [0,1]$, and off the path she is not reelected because $\mu < p$. For a given ρ, this PBE exists if

$$0 \geq q_{sq} - (x_I - x_{sq})^2 - (1 - s)\rho r. \tag{21}$$

Hence, if

$$0 \geq q_{sq} - (x_I - x_{sq})^2 - (1 - s)r. \tag{22}$$

this PBE exists. This shows (a)

For the remainder of the proof suppose the incumbent retains the status quo on the equilibrium path. Hence, the incumbent is reelected when they change the status quo and q_I is not revealed.

Consider first a PBE where $y^* > \hat{y}(\eta)$. Then, the incumbent is reelected with probability one when she changes the status quo. In such an PBE, the incumbent will change the status quo if and only if (6) is satisfied. This PBE exists if

$$\hat{y}(\eta) < -(x_I - x_{sq})^2 - r$$

and (5) is satisfied. The first condition ensures the incumbent is reelected even if q_I is revealed and the second ensures she retains on the equilibrium path. The first condition implies the second. This shows (d)

Next, consider a PBE where $y^* = \hat{y}(\eta)$. Then, by the definition of $\hat{y}$, the incumbent changes the status quo if and only if (18) is satisfied. This PBE exists if

$$\hat{q}_I + r \geq q_{sq} - (x_I - x_{sq})^2$$
$$\hat{q}_I + (1 - s)r \leq q_{sq} - (x_I - x_{sq})^2$$

and (5) is satisfied. The first two conditions ensure the incumbent does not have a profitable deviation, and the third ensures she retains on the equilibrium path. That $y^* = \hat{y}$ implies the third condition. This shows (c).

Finally, consider a PBE where $y^* < \hat{y}(\eta)$. Then, the incumbent is reelected if she changes the status quo and q_I is not revealed but is not reelected for some q_I that she changes the status quo for if q_I is revealed. Then, the incumbent changes the status quo if and only if (19) is satisfied. This is a PBE if

$$(x_I - x_{sq})^2 - (1 - s)r < \hat{y}(\eta)$$

and (5) is satisfied. The first condition ensures $y^* < \hat{y}(\eta)$ and the second condition ensures the incumbent retains on the equilibrium path. This shows (b). ■

Let Γ^O denote the game described in Section 5. Propositions 17, 18, and 19 imply that in any PBE the incumbent uses a threshold strategy. Then, an identical argument to the one used in Proposition 16 shows that in any PBE surviving D1, the voter must believe the incumbent is high ability with probability μ if she deviates to retaining, which is the only action that is ever off the path.

When $\eta < 0$ and $-(x_I - x_{sq})^2 \in (\underline{y}(q_{sq}, \eta), \underline{y}(q_{sq}, \eta) + r)$, multiple PBE exist satisfying equilibrium conditions (1)-(3). The PBE that survives equilibrium condition (4) is the one where the incumbent changes the status quo if and only if (7) is satisfied. Otherwise, the equilibrium is unique.

Fix π_{sq} and $\eta < 0$. Proposition 17 implies the incumbents quality threshold is continuous in s. Moreover, Proposition 17 implies the incumbent's quality threshold is weakly decreasing in s. Hence, $D(y^*_{\Gamma^O})$ is weakly decreasing in s.

When $\eta > 0$, there is always a unique PBE satisfying (1)-(3) and hence, this equilibrium survives (4). Fix π_{sq} and $\eta < 0$. Proposition 18. Proposition 18 implies the incumbents quality threshold is continuous in s and that the incumbent's quality threshold is weakly decreasing in s. Hence, $D(y^*_{\Gamma^O})$ is weakly decreasing in s.

When $\eta = 0$, there is a unique PBE surviving (1)-(3) except when $0 > q_{sq} - (x_I - x_{sq})^2 - (1-s)\rho r$, in which case there are a continuum of equilibria where the incumbent changes the status quo for all q_I. However, in all of these PBEs the incumbent changes the status quo with probability one, and hence (4) does not refine the set of equilibria further.

Fix π_{sq} and $\eta = 0$. Proposition 19. Proposition 19 implies the incumbents quality threshold is continuous in s and that the incumbent's quality threshold is weakly decreasing in s. Hence, $D(y^*_{\Gamma^O})$ is weakly decreasing in s.

It is trivial to see that when $s = 1$, there are examples $D(y^*_{\Gamma^O}) > 0$. For example, suppose $-(x_I - x_{sq})^2 > \hat{\eta} + r$. When $s = 1$, the incumbent changes the status quo if and only if (6) is satisfied. Hence $D(y^*_{\Gamma^O}) = r > 0$

A.7 Proposition 7

Proof. Suppose $-(x_I - x_{sq})^2 > r - q_{sq} \implies -(x_I - x_{sq})^2 > (1-s)r - q_{sq}$.

Fix π_{sq} and $\eta < 0$. If $-(x_I - x_{sq})^2 > \hat{y}(\eta) + r$, the incumbent's expected utility is constant in s. Suppose $-(x_I - x_{sq})^2 \leq \hat{y}(\eta) + r$. Then depending on the parameters, the equilibrium is described by (a), (b) or (c) in Proposition 17. Proposition 17 implies that when $-(x_I - x_{sq})^2 \leq \hat{y}(\eta) + r$, the incumbent's expected utility is continuous in s. Hence, it is sufficient to show that the incumbent's expected utility is weakly decreasing in s for (b) and (c) since (a) is ruled out by the assumption that $-(x_I - x_{sq})^2 > r - q_{sq}$. If (b) describes the equilibrium, the incumbent's expected utility is

$$\int_0^{q_{sq}-(x_I-x_{sq})^2-(1-s)r} (q_{sq} - (x_I - x_{sq})^2)h(q_I)dq_I \\ + \int_{q_{sq}-(x_I-x_{sq})^2-(1-s)r}^{\hat{q}_I} (q_I + (1-s)r)h(q_I)dq_I \\ + \int_{\hat{q}_I}^{\infty} (q_I + r)h(q_I)dq_I, \quad (23)$$

where $h(q_I) = pf(q_I) + (1-p)g(q_I)$. Differentiating,

$$\frac{\partial(23)}{\partial s} = -\int_{q_{sq}-(x_I-x_{sq})^2-(1-s)r}^{\hat{q}_I(\eta)} rh(q_I)dq_I < 0.$$

Hence, the incumbent's expected utility is decreasing in s. If (c) describes the equilibrium, the incumbent's expected utility is constant in s.

Fix π_{sq} and $\eta > 0$. An equilibrium described by (a) in Proposition 18 is ruled out by the assumption that $-(x_I - x_{sq})^2 > r - q_{sq}$.

If $-(x_I - x_{sq})^2 \in (r - q_{sq}, \overline{y}(q_{sq}, \eta))$, then it is for all s. The incumbent's expected utility is

$$\int_0^{q_{sq}-(x_I-x_{sq})^2} (q_{sq} - (x_I - x_{sq})^2)h(q_I) + \int_{q_{sq}-(x_I-x_{sq})^2}^{\hat{q}_I} (q_I)h(q_I)dq_I + \int_{\hat{q}_I}^{\infty} (q_I + sr)h(q_I)dq_I. \quad (24)$$

Differentiating,

$$\frac{\partial 24}{\partial s} = \int_{\hat{q}_I}^{\infty} rh(q_I)dq_I > 0.$$

Hence, the incumbent's expected utility is increasing in s.

If $-(x_I - x_{sq})^2 \in [\overline{y}(q_{sq}, \eta), \overline{y}(q_{sq}, \eta) + (1-s)r]$, the incumbent's expected utility is

$$\int_0^{q_{sq}+\overline{y}(q_{sq},\eta)} (q_{sq} - (x_I - x_{sq})^2)h(q_I) + \int_{q_{sq}+\overline{y}(q_{sq},\eta)}^{\hat{q}_I} (q_I - (x_I - x_{sq})^2 - \overline{y}(q_{sq}, \eta))h(q_I)dq_I \\ + \int_{\hat{q}_I}^{\infty} (q_I - (x_I - x_{sq})^2 - \overline{y}(q_{sq}, \eta) + sr)h(q_I)dq_I. \quad (25)$$

Differentiating,

$$\frac{\partial 25}{\partial s} = \int_{\hat{q}_I}^{\infty} rh(q_I)dq_I > 0.$$

Hence, the incumbent's expected utility is increasing in s. If $-(x_I - x_{sq})^2 = \overline{y}(q_{sq}, \eta)$, $-(x_I - x_{sq})^2 \in [\overline{y}(q_{sq}, \eta), \overline{y}(q_{sq}, \eta) + (1-s)r]$ for all s. Otherwise, there is an s sufficiently large that $-(x_I - x_{sq})^2 \in (\overline{y}(q_{sq}, \eta) + (1-s)r, \hat{y} + (1-s)r)$, in which case the incumbent's expected utility is equivalent to (23). Hence, the incumbent's expected utility is decreasing in s. Note, Proposition 18 implies that if $-(x_I - x_{sq})^2 \in (\overline{y}(q_{sq}, \eta), \overline{y}(q_{sq}, \eta) + (1-s)r)$, the incumbent's expected utility is continuous in s. Hence, her utility is not monotone.

Finally, if $-(x_I - x_{sq})^2 \geq \hat{y}(\eta) + (1-s)r$, the incumbent's expected utility is constant in s.

Suppose lastly that $\eta = 0$. An equilibrium described by (a) in 19 is ruled out by the assumption that $-(x_I - x_{sq})^2 > r - q_{sq}$. If $-(x_I - x_{sq})^2 > \hat{y}(\eta) + r$, the incumbent's expected utility is constant in s. It remains to consider when $-(x_I - x_{sq})^2 \in (\max\{r - q_{sq}, \hat{y}(\eta) + (1-s)r\}, \hat{y}(\eta) + r)$. Proposition 19 implies that the incumbent's expected utility is continuous in r for all s. If $-(x_I - x_{sq})^2 \in (r - q_{sq}, \hat{y}(\eta) + (1-s)r)$, the incumbent's expected utility is equivalent to (23). Hence, it is decreasing in s. And if $-(x_I - x_{sq})^2 \in [\hat{y}(\eta) + (1-s)r, \hat{y}(\eta) + r]$, her expected utility is constant in s. ■

A.8 Proposition 8

Proof. Fix q_{sq} and $\eta < 0$. Consider the case where $\underline{y}(q_{sq}, \eta) > -(x_I - x_{sq})^2 - r$. Hence, in any PBE surviving D1 the incumbent is not reelected if she chooses $x_I = \hat{x}$ and retains the status quo. If the incumbent chooses $\hat{x} \neq x_I$, her optimal choice is $\hat{x}$ such that the voter is indifferent between the incumbent and the challenger when the incumbent retains the status quo. Hence, $\hat{x}^*$ solves

$$\begin{aligned} q_{sq} + \underline{y}(q_{sq}, \eta) &= q_{sq} - (x_I - x_{sq})^2 + (x_I - \hat{x})^2, \\ \Leftrightarrow \hat{x}^* &= x_I \pm \sqrt{\underline{y}(q_{sq}, \eta) + (x_I - x_{sq})^2}. \end{aligned}$$

To show existence of an equilibrium where $\hat{x} \neq x_I$, consider the following example: $f(q_I) = e^{-q_I}$, $g(q_I) = 2e^{-2q_I}$, $p = 0.5$, $\eta = \frac{1}{1+\frac{1-e^{-2}}{1-e^{-1}}} - p \approx -0.078$, $x_{sq} = 0$, $q_{sq} = 1$, $r = 0.5$ and $x_I = 0.1$. These parameters imply $\underline{y}(q_{sq}, \eta) = 0$, $-(x_I - x_{sq})^2 - r = -0.51 < \underline{y}(q_{sq}, \eta)$, and $\hat{x}^* \in \{0, 0.2\}$.

If the incumbent chooses $\hat{x}^* = 0$, her expected utility is

$$\left(\frac{1}{2}\left(1-e^{-1}\right)+\frac{1}{2}\left(1-e^{-2}\right)(1-0.01+0.5)\right.$$
$$\left.+\int_{1}^{\infty}(q_I-0.01+0.5)\left(\frac{1}{2}e^{-q_I}+\frac{1}{2}2e^{-2q_I}\right)dq_I \approx 1.7077,\right.$$

and her expected utility from proposing $\hat{x} = x_I$ is

$$\left(\frac{1}{2}\left(1-e^{-0.49}\right)+\frac{1}{2}\left(1-e^{-0.98}\right)(1-0.01)\right.$$
$$\left.+\int_{0.49}^{\infty}(q_I+0.5)\left(\frac{1}{2}e^{-q_I}+\frac{1}{2}2e^{-2q_I}\right)dq_I \approx 1.3852.\right.$$

Hence, she chooses $\hat{x}^* \in \{0, 0.2\}$.

Now consider the case where $\eta > 0$. In particular, focus on the case where $-(x_I - x_{sq})^2 - r < \overline{y}(q_{sq}, \eta)$, as this is when the incumbent is not reelected with probability one if she proposes $\hat{x} = x_I$ and changes the status quo.

If the incumbent proposes a policy that differs from her ideal point, she will choose the policy such that when she changes the status quo the voter is indifferent between the the challenger and incumbent. That is, the incumbent chooses $\hat{x}^*$ such that

$$\begin{aligned} q_{sq}+\overline{y}(q_{sq},\eta) &= q_{sq}-(x_I-x_{sq})^2+(x_I-\hat{x})^2-r \\ \hat{x}^* &= x_I \pm \sqrt{r+(x_I-x_{sq})^2+\overline{y}}. \end{aligned}$$

Suppose $\overline{y}(q_{sq}, \eta) \in (-(x_I - x_{sq})^2 - r, -(x_I - x_{sq})^2)$. The incumbent's expected utility from proposing $\hat{x} = \hat{x}^*$ is

$$(q_{sq}-(x_I-x_{sq})^2)(pF(q_{sq}+\overline{y}(q_{sq},\eta))+(1-p)G(q_{sq}+\overline{y}(q_{sq},\eta)))$$
$$+\int_{q_{sq}+\overline{y}(q_{sq},\eta)}^{\infty}(q_I-(x_I-x_{sq})^2-\overline{y}(q_{sq},\eta))h(q_I)dq_I$$

and her expected utility from proposing $\hat{x} = x_I$, in which case there is a mixed strategy equilibrium, is

$$(q_{sq}-(x_I-x_{sq})^2)(pF(q_{sq}+\overline{y}(q_{sq},\eta))+(1-p)G(q_{sq}+\overline{y}(q_{sq},\eta)))$$
$$+\int_{q_{sq}+\overline{y}(q_{sq},\eta)}^{\infty}(q_I-(x_I-x_{sq})^2-\overline{y}(q_{sq},\eta))h(q_I)dq_I.$$

Hence, an equilibrium exists where the incumbent proposes $\hat{x} = \hat{x}^*$. ■

A.9 Lemma 2

Proof. Suppose in a PBE, the probability the minority wins reelection when he blocks a proposed change is $\omega^* \in [0, 1]$ and the probability he wins reelection if he accepts a proposed change is $\alpha^* \in [0, 1]$. Then, the minority accepts the proposed change if and only if $q_I \geq q_{sq} + z^*$, where

$$z^* = \begin{cases} -q_{sq} & \text{if } q_{sq} - (x_C - x_{sq})^2 + (x_C - x_I)^2 + (\omega^* - \alpha^*)r < 0 \\ -(x_C - x_{sq})^2 + (x_C - x_I)^2 + (\omega^* - \alpha^*)r & \text{if } q_{sq} - (x_C - x_{sq})^2 + (x_C - x_I)^2 + (\omega^* - \alpha^*)r \geq 0. \end{cases}$$

■

A.10 Propositions 9 and 10

I provide characterization of all PBE where the majority proposes a policy for all q_I and where off the path the voter believes the majority has high ability with probability μ if the minority deviates in Propositions 21, 20, and 22. I then show that D1 forces the voter to believe that a deviation by the minority occurs when $q_I = 0$ and as a result has high ability with probability μ. Propositions 9 and 10 follow from applying equilibrium condition (4) to Propositions 21, 20, and 22.

Proposition 20. *Fix q_{sq} and $\eta < 0$. Suppose the majority proposes a policy for all q_I.*

(a) If $-(x_C - x_{sq})^2 \leq -q_{sq} - (x_C - x_I)^2 - r$, there is a unique PBE where the minority accepts all proposed changes, and the majority is always reelected.

(b) If $-(x_C - x_{sq})^2 \in (-q_{sq} - (x_C - x_I)^2 - r, \underline{y}(q_{sq}, \eta) - (x_C - x_I)^2 - r]$, there is a unique PBE where the minority accepts the proposed change if and only if (29) is satisfied, and the majority is only reelected if the minority accepts the proposed change.

(c) If $-(x_C - x_{sq})^2 \in (\underline{y}(q_{sq}, \eta) - (x_C - x_I)^2 - r, \underline{y}(q_{sq}, \eta) - (x_C - x_I)^2)$, there is a unique PBE where the minority accepts the proposed change if and only if (30) is satisfied, and the majority is reelected with probability one if the minority accepts the proposed change and with probability $\rho^* \in (0, 1)$ if the minority blocks the proposed change.

(d) If $-(x_C - x_{sq})^2 \geq \underline{y}(q_{sq}, \eta) - (x_C - x_I)^2$, there is a unique PBE where the minority accepts the proposed change if and only if (28) is satisfied, and the majority is always reelected.

Proof. Fix q_{sq} and $\eta < 0$, and suppose that off the equilibrium path the voter believes the minority is high ability with probability μ. Recall that by assumption the majority proposes a policy for all q_I. By Lemma 4, in any PBE, the majority is reelected if the minority accepts the proposed change.

Suppose there is a PBE where the minority accepts every proposed change. In this case, the voter's posterior equals his prior, and because the majority leads, she is reelected on the equilibrium path. If the minority deviates, the majority is not reelected because $\mu < p + \eta$ for all η satisfying Assumption 2. Hence, for this equilibrium to exist, it must be that

$$0 \geq q_{sq} - (x_C - x_{sq})^2 + (x_C - x_I)^2 + r. \tag{26}$$

This shows (a) in the proposition

It remains to consider cases where the minority accepts and rejects proposed changes on the equilibrium path. That is, when (26) is not satisfied. By Lemma 4, $\underline{y}(q_{sq}, \eta)$ exists. Hence, there are three cases: $z^* > \underline{y}(q_{sq}, \eta)$, $z^* < \underline{y}(q_{sq}, \eta)$, and $z^* = \underline{y}(q_{sq}, \eta)$. And, in any of these cases, it must be that

$$z^* > -q_{sq}. \tag{27}$$

First, suppose $\underline{y}(q_{sq}, \eta) < z^*$, in which case the majority is reelected whether her proposed change is accepted or blocked. Then the minority accepts a proposed change if and only if

$$q_I \geq q_{sq} - (x_C - x_{sq})^2 + (x_C - x_I)^2. \tag{28}$$

For this PBE to exist, it must be that

$$-(x_C - x_{sq})^2 + (x_C - x_I)^2 > \underline{y}(q_{sq}, \eta)$$

and (27) is satisfied. The first condition ensures $\underline{y}(q_{sq}, \eta) < z^*$ and the second ensures the minority accepts and rejects proposed changes on the equilibrium path. The first condition implies the second. This shows (d) in the proposition.

Next, suppose $\underline{y}(q_{sq}, \eta) > z^*$. In this case the majority is reelected if her proposed change is accepted but not if it is blocked. Then, the minority accepts the majority's proposed change if and only if

$$q_I \geq q_{sq} - (x_C - x_{sq})^2 + (x_C - x_I)^2 + r. \tag{29}$$

For this equilibrium to exist, it must be that

$$-(x_C - x_{sq})^2 + (x_C - x_I)^2 + r < \underline{y}(q_{sq}, \eta)$$

and (27) is satisfied. The first condition ensures $\underline{y}(q_{sq}, \eta) > z^*$ and the second ensures the minority accepts and rejects proposed changes on the equilibrium path. This shows (b).

Finally, suppose $\underline{y} = z^*$. The the voter is indifferent when the minority blocks a proposed change, and reelects the majority with probability ρ. Hence, given ρ, the minority accepts a proposed change if and only if

$$q_I \geq q_{sq} - (x_C - x_{sq})^2 + (x_C - x_I)^2 + (1 - \rho)r. \tag{30}$$

For the voter to be indifferent, it must be that

$$\rho^* = \frac{-(x_C - x_{sq})^2 + (x_C - x_I)^2 + r - \underline{y}(q_{sq}, \eta)}{r}.$$

Fir for this equilibrium to exist it must be that

$$\underline{y}(q_{sq}, \eta) \in [-(x_C - x_{sq})^2 + (x_C - x_I)^2, -(x_C - x_{sq})^2 + (x_C - x_I)^2 + r]$$

and (27) is satisfied. The first condition ensures $\rho^* \in [0, 1]$ and the second ensures the minority accepts and rejects proposed changes on the equilibrium path. Substituting ρ^* into the minority's quality threshold shows that the first condition implies the second. This shows with the previous paragraph shows (c). ■

Proposition 21. *Fix q_{sq} and $\eta > 0$. Suppose the majority proposes a policy for all q_I.*

(a) If $-(x_C - x_{sq})^2 \leq -q_{sq} - (x_C - x_I)^2$, there is a unique PBE where the minority accepts all proposed changes, and the majority is never reelected.

(b) If $-(x_C - x_{sq})^2 \in (-q_{sq} - (x_C - x_{sq})^2, \overline{y}(q_{sq}, \eta) - (x_C - x_{sq})^2)$, there is a PBE where the minority accepts the proposed change if and only if (28) is satisfied, and the majority is never reelected.

(c) If $-(x_C - x_{sq})^2 \in [\underline{y}(q_{sq}, \eta) - (x_C - x_I)^2 - r, \underline{y}(q_{sq}, \eta) - (x_C - x_I)^2]$, there is a PBE where the minority accepts the proposed change if and only if (28) is satisfied, and the majority is reelected with probability $\rho^* \in [0, 1]$ if the proposed change is accepted.

(d) If $-(x_C - x_{sq})^2 > \overline{y}(q_{sq}, \eta) - (x_C - x_{sq})^2 - r$, there is a PBE where the minority accepts the proposed change if and only if (29) is satisfied, and the majority is reelected if the

proposed change is accepted.

Proof. Fix q_{sq} and $\eta > 0$, and suppose the majority proposes a policy for all q_I. Furthermore, suppose that off the equilibrium path the voter believes the minority is high ability with probability μ. By Lemma 4, in any PBE, the majority is replaced if the minority blocks the proposed change.

First, suppose there is a PBE where the minority accepts every proposed change. On the path, the voter's posterior equals his prior so the majority is not reelected because she trails. And by the assumption about the off the path belief induced by deviation, the majority is also not reelected if the minority deviates. Hence, for this to be a PBE it must be that

$$0 \geq q_{sq} - (x_C - x_{sq})^2 + (x_C - x_I)^2. \tag{31}$$

This shows (a).

It remains to consider cases where the minority accepts and rejects proposed changes on the equilibrium path. That is, when (31) is not satisfied. By Lemma 4, $\overline{y}(q_{sq}, \eta)$ exists. Hence, there are three cases: $z^* > \overline{y}(q_{sq}, \eta)$, $z^* < \overline{y}(q_{sq}, \eta)$, and $z^* = \overline{y}(q_{sq}, \eta)$.

First suppose $z^* > \underline{y}(q_{sq}, \eta)$, in which case the majority is reelected if the minority accepts the proposed change but not otherwise. Then, the minority accepts a proposed change if (29) is satisfied. For this to be a PBE, it must be that

$$-(x_C - x_{sq})^2 + (x_C - x_I)^2 + r > \underline{y}(q_{sq}, \eta)$$

and (27). The first condition ensures $z^* > \underline{y}(q_{sq}, \eta)$ and the second ensures the minority accepts and rejects proposed changes on the equilibrium path. The first condition implies the second. This shows (d).

Next, suppose $z^* < \underline{y}$, in which case the minority is reelected whether or not he accepts the proposed change. Then, the minority accepts a proposed change if and only if (28) is satisfied. For this to be a PBE, it must be that

$$-(x_C - x_{sq})^2 + (x_C - x_I)^2 < \underline{y}(q_{sq}, \eta)$$

and (27). The first condition ensures $z^* < \underline{y}$ and the second condition ensures the minority accepts and rejects proposed changes on the equilibrium path. Combining the conditions shows (b) in the proposition.

Finally, suppose $z^* = \overline{y}$, in which case the voter is indifferent between the majority and minority when the minority accepts a proposed change. Hence, he reelects the majority with probability ρ. Given ρ, the minority accepts a proposed change if

$$q_I \geq q_{sq} - (x_C - x_{sq})^2 + (x_C - x_I)^2 + \rho r. \tag{32}$$

For the voter to be indifferent, it must be that

$$\rho^* = \frac{\overline{y}(q_{sq}, \eta) - +(x_C - x_{sq})^2 - (x_C - x_I)^2}{r}.$$

For this to be a PBE, it must be that

$$\overline{y}(q_{sq}, \eta) \in [-(x_C - x_{sq})^2 + (x_C - x_I)^2, -(x_C - x_{sq})^2 + (x_C - x_I)^2 + r]$$

and (27). The first condition ensures $\rho^* \in [0, 1]$ and the second ensures the minority accepts and rejects proposed changes on the equilibrium path. Substituting ρ^* into the minority's quality threshold shows that the first condition implies the second. This shows (c). ■

Proposition 22. *Fix q_{sq} and $\eta = 0$. Suppose the majority proposes a policy for all q_I.*

(a) If $-(x_I - x_C)^2 \leq -q_{sq} - (x_C - x_I)^2$, there is a PBE where the minority accepts all proposed changes, and the majority is reelected with probability $\rho^* \in [0, 1]$.

(b) If $-(x_I - x_C)^2 > -q_{sq} - (x_C - x_I)^2 - r$, there is a PBE where the minority accepts the proposed change if and only if (29) is satisfied, and the majority is reelected if the proposed change is accepted.

Proof. Fix q_{sq} and $\eta = 0$, and suppose the majority proposes a policy change for all q_I. Furthermore, suppose that off the equilibrium path the voter believes the minority is high ability with probability μ.

Additionally, suppose there is a PBE where the minority accepts any proposed change. Then on the path the voter is indifferent between the minority and majority and reelects the majority with probability $\rho \in [0, 1]$. If the minority deviates, he is reelected since $\mu < p$. For a given ρ, this PBE exists if

$$0 \geq q_{sq} - (x_C - x_{sq})^2 + (x_C - x_I)^2 + \rho r.$$

Hence, this PBE exists if $0 \geq q_{sq} - (x_C - x_{sq})^2 + (x_C - x_I)^2$. This shows (a).

Now suppose there is a PBE where the minority accepts and blocks proposed changes on the equilibrium path. Hence, the majority is reelected when the minority accepts a proposed change and is not reelected when the minority blocks a proposed change. Thus, the minority will accept a proposed change if and only if

$$q_I \geq q_{sq} - (x_C - x_{sq})^2 + (x_C - x_I)^2 + r.$$

For this to be an equilibrium it must be that (27) is satisfied ■

Proposition 23. *In any PBE of* Γ^{sb} *surviving D1,*

$$\Pr(\tau_I = \overline{\theta} | \textit{deviation off path}) = \frac{pf(0)}{pf(0) + (1-p)g(0)}.$$

Proof. Because I focus on equilibria where the majority proposes a policy for all q_I, the only action that is potentially off the equilibrium path is an action by the minority. Moreover, Lemma 2 implies that in any PBE the minority uses a threshold. Hence, the only action that is off the path is blocking a proposed change.

Let σ be a PBE surviving D1 in which the minority accepts every proposed change, and let $\varphi \in \mathbb{R}_+$ be an arbitrary type of minority. Then, having observed $q_I = \varphi$, the minority's utility from accepting the proposed change is

$$\varphi - (x_C - x_I)^2 + \omega^* r,$$

where $\omega^* \in [0, 1]$ is the probability the minority is elected if he accepts the proposed change under σ. This utility is increasing in q_I, hence his utility on the path is lowest when $q_I = 0$ If he deviates off the path, his utility is

$$q_{sq} - (x_C - x_{sq})^2 + \alpha r$$

where $\alpha \in [0, 1]$ is the probability the minority is elected if he accepts the proposed change. This utility does not depend on q_I. By a similar argument to the proof of Proposition 16, if, in a PBE, the minority is willing to deviate for some α, he will deviate for the largest set of α when $\varphi = 0$. Hence, D1 forces the voter to believe

$$\Pr(\tau_I = \overline{\theta} | \text{deviation off path}) = \frac{pf(0)}{pf(0) + (1-p)g(0)}.$$

■

When $\eta < 0$, there is always a unique PBE satisfying equilibrium conditions (1)-(3).

When $\eta = 0$, a multiple PBEs exist when $0 \geq q_{sq} - (x_C - x_I)^2 + (x_C - x_{sq})^2$. If $0 \geq q_{sq} - (x_C - x_I)^2 + (x_C - x_{sq})^2 + r$, then in all PBEs the minority blocks all policy change so introducing equilibrium condition (4) does not refine the set of PBEs. But if

$q_{sq} - (x_C - x_I)^2 + (x_C - x_{sq})^2 + r > 0$ and $0 \geq q_{sq} - (x_C - x_I)^2 + (x_C - x_{sq})^2$, the unique equilibrium surviving (4) is the equilibrium where the minority accepts and blocks on the equilibrium path.

When $\eta > 0$, there is a unique PBE surviving (1)-(3) unless $\overline{y}(q_{sq}, \eta) \in (-(x_C - x_{sq})^2 + (x_C - x_I)^2, -(x_C - x_{sq})^2 + (x_C - x_I)^2 + r)$, in which case there are three. The PBE surviving (4) is the one where the minority blocks policy change if and only if (29) is satisfied.

In Γ, the minimum Fix η and π_{sq}. The maximum quality threshold in Γ is $-(x_I - x_{sq})$ and the minimum quality threshold in Γ^{sm} is $-(x_C - x_{sq}) + (x_C - x_I)$. By Assumption 3

$$-(x_C - x_{sq}) + (x_C - x_I) \geq -(x_I - x_{sq}).$$

Hence, the probability of policy change in Γ^{sm} is weakly lower. This shows (a) in Proposition 9. Because the minority uses a threshold strategy, (a) implies (b).

In $\hat{\Gamma}^{sm}$, the minority's quality threshold is $-(x_C - x_{sq}) + (x_C - x_I)$. Comparing this to the quality thresholds in Propositions 20, 21, and 22 shows that the minority's quality threshold is weakly higher in any equilibrium of Γ^{sm} than in $\hat{\Gamma}^{sm}$. This proves Proposition 10.

A.11 Proposition 11

Proof. Recall from Lemma 5 that $\underline{y}(q_{sq}, \eta)$ and $\overline{y}(q_{sq}, \eta)$ are increasing in η.

Fix q_{sq}. Propositions 20, 21, and 22 imply the following:

(1) If $\eta < 0$, $D^*(y^*_{\gamma^{sm}})$ is weakly increasing in $\underline{y}(q_{sq}, \eta)$ and $D^*(y^*_{\gamma^{sm}})$ is weakly less than $\min\{r, q_{sq} - (x_I - x_{sq})^2 + (x_C - x_I)^2 + r\}$

(2) If $\eta = 0$, $D^*(y^*_{\gamma^{sm}}) = \min\{r, q_{sq} - (x_I - x_{sq})^2 + (x_C - x_I)^2 + r\}$.

(3) If $\eta > 0$, $D^*(y^*_{\gamma^{sm}})$ is weakly decreasing in $\overline{y}(q_{sq}, \eta)$ and $D^*(y^*_{\gamma^{sm}})$ is weakly less than $\min\{r, q_{sq} - (x_I - x_{sq})^2 + (x_C - x_I)^2 + r\}$.

These results combined with Lemma 5 imply that $D^*(y^*_{\gamma^{sm}})$ is weakly increasing as η approaches zero.

■

A.12 Proposition 12

Fix q_{sq} and $\eta < 0$.

In Γ, if $\underline{y}(q_{sq}, \eta) > -(x_I - x_{sq})^2 > -q_{sq}$, the incumbent is reelected if and only if she changes the status quo. And in Γ^{sm}, if $\underline{y}(q_{sq}, \eta) \leq -(x_C - x_{sq})^2 + (x_C - x_I)^2$, the majority is reelected regardless of whether the minority acceps this proposed change. Hence, if

$$-(x_C - x_{sq})^2 + (x_C - x_I)^2 > -(x_I - x_{sq})^2, \tag{33}$$

the probability of reelection in Γ is lower than the probability of reelection in Γ^v. Condition (33) is satisfied if the minority's ideological benefit of policy change is strictly smaller than the majority's.

B Robustness

B.1 Incumbent Knows Her Type

Suppose the incumbent knows her type. Furthermore, suppose that in equilibrium, the voter reelects the incumbent with probability $\lambda^* \in [0, 1]$ when the incumbent retains the status quo, and with probability $\kappa^* \in [0, 1]$ when the incumbent changes the status quo. Then an incumbent of type τ_j changes the status quo if and only if

$$q_I \geq q_{sq} - (x_I - x_{sq})^2 + (\lambda^* - \kappa^*)r.$$

Note, the incumbent's strategy does not depend on her type.

B.2 Election Outcome Affects Policy

Consider a game where the incumbent chooses $\tilde{\pi} \in \{\pi_{sq}, \pi_I\}$. If the incumbent is reelected, $\pi = \tilde{\pi}$. If the voter elects the challenger, $\pi = \pi_{sq}$.

Suppose a perfect Bayesian equilibrium (PBE) exists where the voter reelects the incumbent with probability $\gamma^* \in [0, 1]$ if $\tilde{\pi} = \pi_{sq}$ and with probability $\lambda^* \in (0, 1]$ if $\tilde{\pi} = \pi_I$. In this PBE, the incumbent must change the status quo if and only if $q_I \geq q_{sq} + y^*$, where

$$y^* = \begin{cases} -q_{sq} & \text{if } q_{sq} - (x_I - x_{sq})^2 + \frac{(\gamma^* - \lambda^*)r}{\lambda^*} < 0 \\ -(x_I - x_{sq})^2 + \frac{(\gamma^* - \lambda^*)r}{\lambda^*} & \text{if } q_{sq} - (x_I - x_{sq})^2 + \frac{(\gamma^* - \lambda^*)r}{\lambda^*} \geq 0. \end{cases}$$

If the voter elects the challenger, his expected utility is

$$p - x_{sq}^2 + q_{sq} + \eta. \tag{34}$$

If $\tilde{\pi} = \pi_I$, the voter's expected utility from electing the incumbent is

$$\Pr(\tau_I = \overline{\theta} | \tilde{\pi} = \pi_I, y^*) - x_I^2 + \int_{q_{sq}+y^*}^{\infty} q_I h(q_I) dq_I, \tag{35}$$

and if $\tilde{\pi} = \pi_{sq}$, his expected utility from electing the incumbent is

$$\Pr(\tau_I = \overline{\theta} | \tilde{\pi} = \pi_{sq}, y^*) - x_{sq}^2 + q_{sq}. \tag{36}$$

Suppose there is a PBE where the incumbent changes and retains the status quo on the equilibrium path, and is reelected in both cases. Moreover, suppose $\tilde{y}$ exists. In this PBE, the incumbent changes the status quo if and only if

$$q_I \geq q_{sq} - (x_I - x_{sq})^2.$$

This PBE exists if

$$\begin{aligned} -(x_I - x_{sq})^2 &> \tilde{y} \\ -(x_I - x_{sq})^2 &> \underline{y}(q_{sq}, \eta) \end{aligned}$$

and (5) is satisfied.

Suppose there is a PBE where the incumbent changes and retains on the equilibrium path, and is reelected only if she changes the status quo. Furthermore suppose $\tilde{y}$ exists. In this PBE she changes the status quo if and only if

$$q_I \geq q_{sq} - (x_I - x_{sq})^2 - r.$$

If $\eta > 0$, this PBE exists if

$$-(x_I - x_{sq})^2 - r > \tilde{y}$$

and (5) is satisfied.

To show existence of these types of PBE, suppose $p = \frac{1}{2}$, $f(q_I) = e^{-q_I}$, $g(q_I) = e^{-2q_I}$, and $q_{sq} = 1$.

If $\eta = -\frac{3}{2}$. The voter's expected utility from electing the challenger is $-x_{sq}^2$, which is negative for all $x_{sq} \neq 0$. For any y^* the voter prefers the incumbent when he retains the status quo since

$$\Pr(\tau_I = \overline{\theta}|\tilde{\pi} = \pi_{sq}, y^*) - x_{sq}^2 + 1 > -x_{sq}^2.$$

Since the incumbent uses a threshold strategy, 3 implies that $\Pr(\tau_I = \overline{\theta}|\tilde{\pi} = \pi_I, y^*) > \frac{1}{2}$ for all y^*. Hence a sufficient condition for the voter to reelect the incumbent is that

$$1 > -(x_I - x_{sq})^2$$
$$x_I^2 < \frac{1}{2},$$

which ensures the incumbent retains and changes on the equilibrium path and the voter's expected utility from reelecting the incumbent is positive.

If $\eta = \frac{1}{100}$ and $x_{sq} = -\frac{1}{2}$, the voter's expected utility from electing the challenger is 1.24. This is greater than his expected utility from reelecting the incumbent if she retains since

$$\frac{51}{100} > \Pr(\tau_I = \overline{\theta}|\tilde{\pi} = \pi_{sq}, y^*)$$

since 3 implies that $\Pr(\tau_I = \overline{\theta}|\tilde{\pi} = \pi_{sq}, y^*) < \frac{1}{2}$ for all y^*. Suppose additionally that $x_I = \frac{1}{100}$ and $r = \frac{1}{100}$. Then the incumbent changes the status quo if and only if

$$q_I \geq \frac{12}{25}.$$

Hence, the incumbent's expected utility from reelecting the incumbent if she changes the status quo is approximately 1.26317 which is greater than the voter's expected utility from electing the challenger.