Persuasion with Partisanship: The Informational Content of Policymaking with Application to US Governors

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Abstract

We study a model where a political executive's choice of policy agenda acts as an information structure allowing voters to learn about her ability. Because agenda passage is mediated by a legislature, its passage is a function of both ability and partisanship. Our model delivers a nonmonotonic relationship between an incumbent's ex-ante winning chances and the partisanship of her agenda: incumbents likely to lose reelection pursue ambitious partisan agendas to save their reelection chances, those with high winning chances pursue partisan agendas whose failure can be blamed on the legislature, and those in the middle pursue safe bipartisan policies whose success secures reelection. We apply the insights of our model to analyze how changes in electoral environments generate fluctuations in the partisanship of US gubernatorial speech. We compile governors' annual "State of the State" speeches from 1990-2020 to document that while partisanship increases after the 2000s, its level is lower than that of Congress. We use a fine-tuned large language model to isolate policy proposals in these speeches and show that, controlling for lame duck behavior, reelectable governors exhibit a nonmonotonic relationship between partisanship of agenda and approval ratings matching that of our model.

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1 Introduction

Trends in partisanship of political speech have been well-documented in the U.S. Congress, manifest in an increasing divergence of language between Democrats and Republicans that bleeds into voting behavior and policy implementation along party lines[1]. However, the outsized role of political executives in shaping the policy priorities — and hence partisanship — of their jurisdictions has received considerably less attention[2]. Executives' public image, and thereby their ability to win reelection, is closely tied to their ability to pass and successfully implement policies. In particular, because bipartisan policies are inherently easier to pass and implement than those that only appeal to one party, the choice of a more partisan policy agenda generates different information about an executive's skill than a less partisan agenda. Changes in an incumbent's electoral environment may thereby generate fluctuations in partisanship of speech and policy proposals that are left undetected by broader studies of trends in legislative environments.

This paper studies electoral incentives for political executives to pursue partisan policies and applies these insights to study fluctuations in partisanship of US gubernatorial policy agendas. We develop a theoretical model where a political incumbent's choice of policy agenda equates to an *information structure* mapping her underlying political ability to a likelihood of policy success. Because passing policies amenable to the opposition requires relatively less political skill, failure to secure less partisan legislation signals incompetence, while success is minimally informative of high ability. As agendas become more partisan, failure to pass policies can be increasingly blamed on antagonistic legislatures, while success becomes a stronger signal of skill in the face of adversity. To examine the role of reelection incentives in shaping partisan behavior, we assume an incumbent is office-motivated. Our model delivers a nonmonotonic relationship between an incumbent's ex-ante winning chances and the partisanship of her agenda: incumbents with high and low winning chances pursue partisan policies, while those with middling changes pursue bipartisan agendas.

We then study the partisanship of U.S. gubernatorial policy agendas by compiling a panel of governors' annual "State of the State" addresses to the legislature. The presence of 50 governors at any given time in the states provides a rich laboratory for uncovering

[1]See McCarty (2019) for an overview of the forces driving trends in partisanship.

[2]Andeweg, Elgie, Helms, Kaarbo, and Mller-Rommel (2020) discuss the reemergence of executive power since the mid-20th century, as well as the expanding role of the U.S. Presidency and its administrative apparatus in shaping legislative discourse. Goldgeier and Saunders (2018) note a rise in the executive branch's control over foreign policy, which has become increasingly left unchecked by Congress. Reynolds (2024) and E. Peterson (2024) provide stylized overviews of the eroding power of Congress over the executive branch. The burgeoning power of U.S. state governors, especially after the 1990s, is discussed by (Heidbreder, 2012)

the role of the executive branch in generating fluctuations around slower-moving trends in national partisanship. We utilize large-language modeling techniques to isolate text related to policy proposals from the broader corpus, allowing us to measure partisanship of both full speeches and portions of speech corresponding to policy agendas. We document a slow emergence in partisanship of political speech in these data beginning in the early 2000s, with substantial fluctuations in governor-level partisanship around this trend. We show that the level of aggregate partisanship — measured using either policy proposals or full speech — is consistently below that estimated from the Congressional Record, and that the timing of increases is also different[3]. Second, we turn to the panel data and compare the partisanship of reelectable governors' proposals to those of lame ducks. This comparison controls for common determinants of partisanship affecting both lame duck and reelectable governors — such as flow preferences for more or less partisan policies — thereby allowing us to focus on variations in partisanship emerging from the reelection concerns our model speaks to. We showcase a nonmonotonic relationship between gubernatorial approval and partisanship of policy proposals matching that of our model, driven by swing states where state legislatures are less aligned with the governor.

Theoretical Model Our baseline model considers an incumbent of unknown ability who chooses a policy agenda of varying partisanship. The probability of an agenda's success is weakly increasing in her ability and decreasing in its partisanship. A representative voter observes the incumbent's choice of agenda, whether it passes or fails, update beliefs over the incumbent's ability, and reelects her if and only if her expected ability is higher than that of a challenger. We refer to the incumbent's expected ability as her *reputation*. Because our incumbents are office motivated, the predictions of our model capture the behavior of reelectable incumbents relative to lame ducks.

Our key theoretical innovation is to utilize a persuasion approach, interpreting a choice of policy agenda as a choice of information structure that, given a prior over the incumbent's ability, generates a distribution of posteriors whose skewness is determined by its partisanship. The incumbent chooses this distribution — i.e. the partisanship of her policy agenda — to maximize her chances of reelection. We preclude an incumbent from pursuing totally uninformative information structures, a restriction motivated by the scrutiny political executives face in office and operationalized by her alignment with the legislature. Intuitively, an incumbent totally aligned with her legislature has de facto power over the government and, consequently, receives all credit for policy successes or failures. An incumbent totally

[3] I.e., the level of gubernatorial partisanship is below the Congressional level estimated by Gentzkow, Shapiro, and Taddy (2019).

unaligned with her legislature can, if she chooses, plausibly pursue agendas whose failure can be totally blamed on the legislature.

The baseline model highlights the central nonmonotonic prediction of our paper. Incumbents with low reputation, who are likely to lose reelection, pursue partisan policies as a means of salvaging their chances at office. Incumbents with middling reputation pursue low-risk bipartisan policies to secure reelection. Incumbents with high reputation pursue partisan policies whose failure can be credibly blamed on the legislature, allowing them to maintain their standing. Crucially, increasing legislative alignment causes this nonmonotonicity to flatten out, while increasing party entrenchment also makes the nonmonotonicity less salient — for example, in constituencies where an incumbent's party always wins reelection. Conversely, our model predicts that this nonmonotonicity should be strongest in settings with relatively competitive electoral environments and legislatures unaligned with the incumbent. We argue that voter welfare is also generally nonmonotonic in reputation, legislative alignment, and electoral competition — whether measured as the learning value policy agendas provide in helping the incumbent elect a higher ability politician or the contemporaneous flow utility provided to the incumbent's constituents.

We extend our model by allowing endogenous differentiation of policy passage by ability. This model is isomorphic to a Bayesian Persuasion problem where a receiver (voter) is uncertain whether she observes a signal because it was endogenously chosen by a sender (incumbent) or whether it was generated by an outside source (i.e. whether a policy outcome is a consequence of the incumbent's inherent skill or the legislature's involvement). This more general model retains the same qualitative features as our original model, but delivers informational flexibility that allows us to solve the baseline model with a valence shock. This allows us to represent the key comparative statics of our model in terms of winning probability, allowing us to utilize proxies for winning probability — such as approval ratings — in our empirical analysis. The extension also delivers an asymmetry in partisanship, whereby incumbents with very high reputation pursue *more partisan* agendas than those with very low reputations. We additionally show that the key features of our model are robust to allowing multiple periods of agenda passage; and that allowing incumbents to choose policies from the opposing party accentuates the model's nonmonotonicity.

Documenting Gubernatorial Partisanship We then apply the insights of our model to explain fluctuations in the state level partisanship of US governors' policy agendas. Because little work documents aggregate behavior of US gubernatorial partisanship, we first study trends in governor speech before turning to panel level data to investigate fluctuations around these trends and test our model's predictions.

Our data are a corpus of U.S. governors' "State of the State" speeches, annual addresses given by the governor of each state to the state legislature. These speeches are relatively high decorum events, are always given in the first quarter of each year, and are known vehicles for governors' policy agendas. Moreover, this corpus of text data provides an ideal setting to deploy techniques from the literature measuring partisanship of political speech. We collect over 800 speeches and merge them with existing data to assemble an annual panel of over $1,300$ speeches from 1990-2020. Because these speeches contain not only policy proposals but also reflections on past policies and rhetoric, we utilize a large language model called "bert" to isolate speech related to policy proposals. To measure partisanship, we utilize the leave-out estimator of Gentzkow, Shapiro, and Taddy (2019) on bigrams in our text corpus, allowing us to both correct for speech sampling bias and compare our estimates to their study of the US Congressional record. We calculate a measure of aggregate partisanship for each year in the sample; as well as a measure of partisanship for each governor-year speech. Our series shows that partisanship of the entirety of gubernatorial speeches closely tracks that of the portions of speech related to just policy proposals. The speeches exhibit a slight dip in partisanship at the beginning of the 1990s before beginning a slow but steady rise in the beginning of the 2000s and finishing with a spike in 2017. The timing of changes is vastly different from the Congressional record, which begins its rise in the early 1990s and experiences a spike in 2008-10 before settling around 2016. Moreover, the level of gubernatorial partisanship is consistently below that of Congress, despite beginning at a similar level. We additionally show that our measure of partisanship consistently identifies intuitively partisan phrases; the "most Democratic" bigrams relate to social services, health care, and policies like the minimum wage, while the "most Republican" bigrams consist of topics like tax policy, charter schools, and law enforcement.

Testing Model and Implications With these aggregate trends and panel data in hand, we test the predictions of our model on fluctuations in the US gubernatorial data by utilizing our governor-year measure of partisanship as a dependent variable. To capture the interaction of reputation with legislative alignment, we interact deciles of governor approval ratings with an indicator for whether the majority of legislators in the state are of the governor's party. Because our model's predictions speak to the behavior of reelectable incumbents as compared to lame ducks, our regression coefficients of interest are those that capture the *difference* between the partisanship of reelectable governors and lame duck governors in each category, adjusting for general effects of being a lame duck.

We show that for reelectable governors with unaligned legislatures, speech in the first two deciles of approval are about one standard deviation higher than the fourth decile. Speech in the top five deciles is approximately 1.5 standard deviations more partisan than the fourth decile Aligned legislatures exhibit a flatter relationship between partisanship and approval, consistent with the predictions of our model. We then disaggregate the behavior of states by the competition of electoral environment. We identify “Republican states,” as those that have a Republican governor for more than two-thirds of the sample, “Democratic states” as those with a Democratic governor for more than two-thirds of the sample, and “swing states” as the remaining states. We show that this nonmonotonicity in aggregate is driven by swing states with unaligned legislatures, with a weaker nonmononotonicity for swing states with aligned legislatures. Republican and Democratic states with unaligned legislatures exhibit a weaker, statistically insignificant relationship between approval and partisanship and no relationship for aligned legislatures, in line with our prediction that the relationship between partisanship and approval should be weaker or nonexistent under party entrenchment and legislative alignment.

Literature Our paper contributes to a theoretical literature on political reputation and career concerns by developing a model that exhibits a nonmonotonic relationship between policy extremity and reputation. By contrast, most other settings establish a negative monotonicity known as “gambling for resurrection” (Dur, 2001; Fu & Li, 2014; Izzo, 2024; Majumdar & Mukand, 2004), which would not explain the nonmonotonicities evident in our data. Additionally, we develop a model where partisanship endogenously emerges from an incumbent’s desire to win reelection in a Bayesian setting, distinguishing our paper from models where partisanship emerges as a byproduct of voters’ behavioral updating methods (Izzo, Martin, & Callander, 2021; Levy & Razin, 2021). Our welfare insight on the ambiguous effects of competition is also related to Dewan and Hortala-Vallve (2019).

Our paper provides insights into solving a constrained Bayesian Persuasion problem, following Kamenica and Gentzkow (2011), where a receiver is uncertain about the origin of a sender’s signal. The key constraint on the sender (incumbent) in our environment is that she is unable to implement totally uninformative information structures (policy agendas). A lemma in our appendix shows how to solve this problem when senders possess concave, strictly increasing value functions, which is the primary setting in which inability to shut down information binds. To this end, our paper is related to a literature on Bayesian Persuasion with mediation, multiple senders, and cheap talk (Alonso & Câmara, 2016; Arieli, Babichenko, & Sandomirskiy, 2022; Ichihashi, 2019; Lipnowski, Ravid, & Shishkin, 2022).

We contribute to a literature testing the theoretical predictions of political reputation models by providing a comprehensive picture linking the ideological partisanship of executives’ policy agendas to legislative alignment, popularity, and reelection eligibility. Prior papers study such topics as the positive effects of term limits on partisanship (Besley & Case, 1995), reelection concerns in motivating pursuit of less radical welfare reform (Bernecker, Boyer, & Gathmann, 2021) less stringent COVID-19 policies (Pulejo & Querubín, 2021), or the economic returns to holding a Congressional seat (Diermeier, Keane, & Merlo, 2005). The theoretical mechanisms underlying our paper are linked to a reputation literature studying voters' responsiveness to executives' policy outcomes, which we address at the beginning of our data section on US governors.

We add to research on partisanship of political speech by providing a novel, unidimensional series on partisanship of political executives' speech and partisanship at the state level. Series for partisanship of political speech have been produced and extensively studied in the US Congressional record (Gentzkow, Shapiro, & Taddy, 2019; Jensen et al., 2012), as well as the UK (A. Peterson & Spirling, 2018), but the few studies at the state level have been limited to frequencies of word counts in state policy agendas — such as Hopkins, Schickler, and Azizi (2022) — or nationalization of gubernatorial speech — such as Butler and Sutherland (2023). We also add to a political science literature analyzing governors' State of the State speeches, which we discuss more thoroughly in our data section.

Our utilization of advances in large language modeling techniques adds to a growing literature in Economics utilizing LLMs, including applications to labor contracts and the FOMC (Arold, Ash, MacLeod, & Naidu, 2024; Hansen, McMahon, & Prat, 2018). We utilize the same methods as Card et al. (2022), who fine-tune two models to isolate speeches related to immigration in the Congressional record and then categorize those speeches by sentiment. The literature on theory and applications of text as data in Economics is reviewed by Gentzkow, Kelly, and Taddy (2019) and Ash and Hansen (2023).

Finally, we document an increasing trend in partisanship of US governors' speech and study fluctuations around those trends, complementing a literature on the more mixed (and heterogeneous) behavior of partisanship in state and local politics utilizing roll-call data, close elections, and other non-text measures. Some studies argue that governor and mayoral party identity has little impact on partisanship of most political outcomes (Ferreira & Gyourko, 2009; Leigh, 2008), while others argue for larger effects of party control on partisanship after the 1990s, measured using liberalism scores; law passage by policy domain; taxation, debt, and public expenditures; or policy diffusion across states (Carlino, Drautzburg, Inman, & Zarra, 2023; Caughey, Xu, & Warshaw, 2017; DellaVigna & Kim, 2022; Grumbach, 2018). There has relatedly been a documented increase in partisanship of legislative voting behavior at the state level, as documented by Shor and McCarty (2011) and updated by DellaVigna and Kim (2022), although evidence is again heterogenous by states, and voting along party lines is much more salient under unified government (Morehouse, 1996). Because our model views fluctuations in partisanship as outcomes of incumbents' electoral incentives and environments, our paper provides potential structure to these more heterogeneous outcomes. To this end, our paper differs from attempts to measure partisanship of inherent gubernatorial ideology, such as the campaign finance DIME measure constructed by Bonica (2014) and evaluated for governors in Warner (2023).

Plan of the Paper We introduce our theoretical model in the next section. We solve our baseline model, investigate welfare implications of our equilibrium result, solve our general model with a valence shock, detail data predictions, and address extensions. We then introduce our data, address the relevance of our model to the gubernatorial setting, detail speech processing and estimation of partisanship, and then document aggregate trends in partisanship. We finally test the predictions of our model on the panel data and conclude.

2 Theoretical Model

We begin by introducing a benchmark model highlighting the key intuitions of the model. After showing our central result and assessing welfare, we move to an extended model that maintains the results of the benchmark while providing increased informational flexibility to solve the model with a valence shock and formalize our data predictions. We finish by addressing two extensions to the model.

2.1 Preliminaries

Setup There are two time periods. At $t = 1$, an incumbent politician R holds office. She chooses a policy agenda $\pi \in [0,1]$, which may pass or fail. Higher π represents a more partisan agenda that favors R's party. The probability of passage is increasing in R's ability $a_R \in \{0,1\}$, which is unknown to all agents. Higher ability politicians are more effectively able to pass and/or implement legislation.

A representative voter V observes R's choice of agenda, whether it passes or fails, and updates her beliefs about R's ability. Then, at $t = 2$, V chooses to retain R or replace her with a challenger L of unknown ability $a_L \in \{0,1\}$. q_i^t is the belief politician i is high ability ($a_i = 1$) at time t, which we refer to as i's "reputation." V's utility is the ability a_i of politician i in office. Politicians are office-motivated, receiving 1 upon reelection and 0 otherwise.

Policies The success of R's policy agenda is a function of its partisanship $\pi \in [0,1]$; R's ability a_R; and the legislature's alignment with R, $\lambda \in [0,1]$. We write this probability of passage as:

$$\lambda a_R + (1 - \lambda)(1 - \pi).$$

Legislative alignment λ dictates the relative control of the incumbent over the legislature and, relatedly, how much blame can be placed on the incumbent for a success or failure. When $\lambda = 1$, the legislature is totally aligned with the incumbent, meaning the incumbent is solely responsible for all policy success and failures. When $\lambda < 1$, the legislature involves itself in the passage of policies so that passage is a weighted combination of R's ability and her agenda's partisanship. Pursuing the most bipartisan agenda $\pi = 0$ always leads to success when $a_R = 1$ and may still succeed when $a_R = 0$. Pursuing the most partisan agenda $\pi = 1$ succeeds only if $a_R = 1$, and even then may still fail. For $\lambda = 0$, only partisanship affects whether an agenda passes.

The choice of $\pi \in [0, 1]$ then amounts to the choice of an *information structure*, where the signal space is a policy success/failure and the state space is an incumbent's ability.

Comments We interpret ability as a politician's managerial skill, which may include efficacy in crafting and implementing laws, managing bills and the budget, and maintaining a smooth-running bureaucracy. Ability can also represent a capacity to commit to following through on a policy agenda; or the incumbent's valence, which is higher if she is perceived to be better at passing legislation. Our data section provides examples of these skills from the National Governors Association, noting that the success or failure of a policy agenda is one of the most crucial inputs into voters' perceptions of governors.

We assume that, regardless of partisan affinity, the representative voter V prefers a high ability incumbent to a challenger of unknown ability to a low ability incumbent. As a potentially median voter, V may be satisfied with more or less partisan policies as long as they are carried out efficaciously. In an environment like that of U.S. governors, this assumption relatedly may capture that voters value skill in maintaining many of the non-partisan, managerial duties of the executive listed above.

We assume that, all else equal, bipartisan policies are more likely to pass than partisan policies. In many polarized electoral environments, passing even bipartisan legislation may be seen as a success. What matters for our analysis is that, even if passing bipartisan policies are strong signals of political skill, passing even more partisan policies is an even stronger signal of political skill. To this end, our definition of bipartisan policies comprises *ideologically* bipartisan (or even nonpartisan) policies, as opposed to bills requiring bipartisan *support* to pass (which, in many settings, is simply all legislation). [4]

Our incumbent can never completely suppress information. In high stakes political settings, politicians oversee programs run by the executive branch, basic functioning of government, and passage of "business as usual" legislation. The model assumes that more or less partisan agendas add noise to inference about ability as a function of legislative alignment.

The model defines partisanship as *relative* to a legislature's composition. Suppose λ increases to λ'. The level of a bipartisan policy $\pi = 0$ will likely be higher under the λ' legislature. Our results identify partisanship relative to a base level for the legislature.

Because incumbents in our model are office-motivated, the model should be thought of as isolating partisanship due to reelection incentives; the predictions of the model should emerge when comparing reelection eligible incumbents to lame ducks.

Voters in our model can learn about an incumbent but not the challenger, meaning the expected ability of a challenger is effectively an outside option for voters. We take the expected ability of the challenger to generally describe the . Voters learn about the incumbent's ability precisely because she is in office, and her ability can be assessed through the performance of regular duties.

2.2 Analysis

Voters elect whichever politician has higher expected ability. R wins reelection if and only if $q_R^2 \geq q_L^2$. Hence, the equilibrium utility of R as a function of q_R^2 is $u_R(q_R^2) \equiv \mathbf{1}[q_R^2 \geq q_L^2]$.

Information Given a prior q_R^1, the partisanship of each policy agenda generates posteriors q_R^2 about R's ability, given by $F(q_R^2 | q_R^1, \pi)$. In our setting with success/failure, we end up with either a posterior higher than q_R^1 (denoted $\overline{q}_R^2$) or lower than q_R^1 (denoted $\underline{q}_R^2$). The incumbent's general problem is then given by:

$$V_R(q_R^1) = \max_{\pi \in [0,1]} \int_{q_R^2} u_R(q_R^2) dF(q_R^2 | q_R^1, \pi). \tag{1}$$

Let $\pi^*(q_R^1)$ represent the argmax of the program above. We obtain the following result.

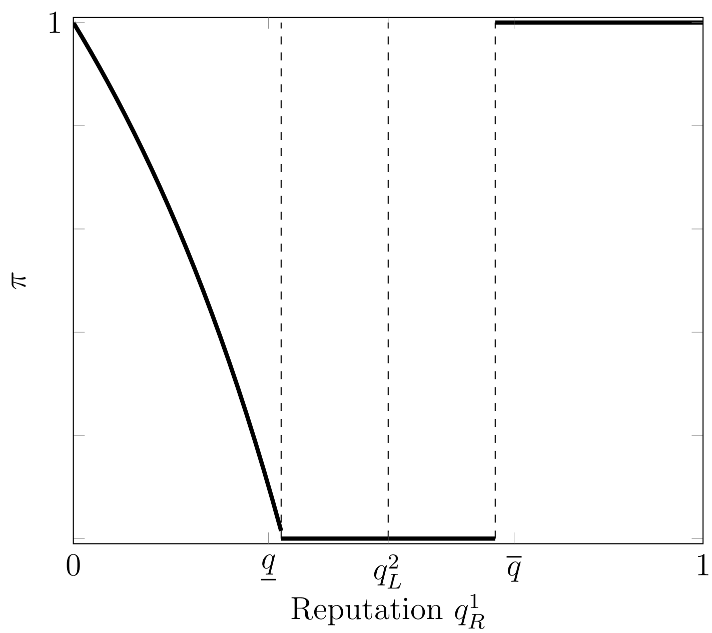
[4] Curry and Lee (2020) provide a comprehensive picture of the landscape of (bi)partisan bill passage in the U.S. Congress. One Congressional staffer notes that "[a] bill still has a lot greater chance to make it into law if it's bipartisan" (p. 44), while another states that "[g]etting anything done is hard, but it's even harder on a partisan basis" (p. 45). Another staffer points out that while some bipartisan legislation may be passed with easy support from both parties, more ambitious legislation is only able to pass with negotiation between party leaders and veto-holders, suggesting a certain level of skill — such as that at the level of a political executive — to secure passage of more partisan initiatives. The authors additionally point out that, despite increasing party polarization, the sorts of bipartisan support and tactics required to secure legislation is empirically no different than the 1970s and 1980s.

Proposition 1. *There exist thresholds* $\underline{q} < q_L^2 < \overline{q}$ *such that:*

- *for* $q_R^1 \in [0, \underline{q})$, $\pi^*(q_R^1)$ *is strictly decreasing, with* $\pi^*(0) = 1$ *and* $\pi^*(\underline{q}) = 0$*;*
- *for* $q_R^1 \in [\underline{q}, \overline{q})$, $\pi^*(q_R^1) = 0$*;*
- *for* $q_R^1 \in [\overline{q}, 1]$, $1 \in \pi^*(q_R^1)$ *with equality at* $\overline{q}$*.*

The solution is graphed below:

Figure 1: Partisanship of Optimal Policy π^*



All proofs are contained in the appendix. The intuition for this result is best viewed through comparing the payoffs from $\pi = 0$ and $\pi = 1$. When $\pi = 0$, observing a success generates the posterior over ability $\overline{q}_R^2 = \frac{q_R^1}{q_R^1 + (1-\lambda)(1-q_R^1)}$. Observing a failure generates the posterior $\underline{q}_R^2 = 0$, since failure to pass bipartisan policies is damning evidence that $a_R = 0$.

When $\pi = 1$, observing a success is confirmatory evidence that $a_R = 1$, so $\overline{q}_R^2 = 1$. Because high ability incumbents may fail to pass partisan policies, the posterior upon observing failure is $\underline{q}_R^2 = \frac{(1-\lambda)q_R^1}{1-\lambda q_R^1}$. The expected winning probabilities from pursuing each policy are :

$$\pi = 1: \qquad (q_R^1 + (1-\lambda)(1-q_R^1))\mathbf{1}\left[\frac{q_R^1}{q_R^1 + (1-\lambda)(1-q_R^1)} \geq q_L^2\right],$$
$$\pi = 0: \qquad \lambda q_R^1 + (1-\lambda q_R^1)\mathbf{1}\left[\frac{(1-\lambda)q_R^1}{1-\lambda q_R^1} \geq q_L^2\right].$$

. Consider the following cases:

- Suppose q_R^1 is so low that $\frac{q_R^1}{q_R^1+(1-\lambda)(1-q_R^1)} < q_L^2$. Then R never wins if she pursues $\pi = 0$. However, if she pursues $\pi = 1$, because successes are confirmatory news of high ability, she wins with positive probability. Hence, $\pi = 1$ dominates $\pi = 0$.

- Suppose q_R^1 is larger so that $\frac{q_R^1}{q_R^1+(1-\lambda)(1-q_R^1)} \geq q_L^2$ but such that $\frac{(1-\lambda)q_R^1}{1-\lambda q_R^2} < q_L^2$. The expected win probability from pursuing $\pi = 0$ is $q_R^1+(1-\lambda)(1-q_R^1)$. The expected win probability from pursuing $\pi = 1$ is λq_R^1, which is lower. Hence $\pi = 0$ dominates $\pi = 1$.

- Finally, suppose q_R^1 is high, so that $\frac{(1-\lambda)q_R^1}{1-\lambda q_R^1} \geq q_L^2$. Pursuing $\pi = 1$ then leads to a win with probability 1, which dominates $\pi = 0$.

Note that for $q_R^1 \geq \overline{q}$, π^* may contain other values besides $\pi = 1$ because win probability is flat above q_L^2. Any indifference can be broken in favor of $\pi = 1$ by assuming that, all else equal, R prefers more partisan policies in her direction. These insights are also borne out in an analysis of the problem with a valence shock.

The proof of the baseline result gives the following comparative statics.

Corollary 1. *$\overline{q}$ and $\underline{q}$ vary as follows with λ:*

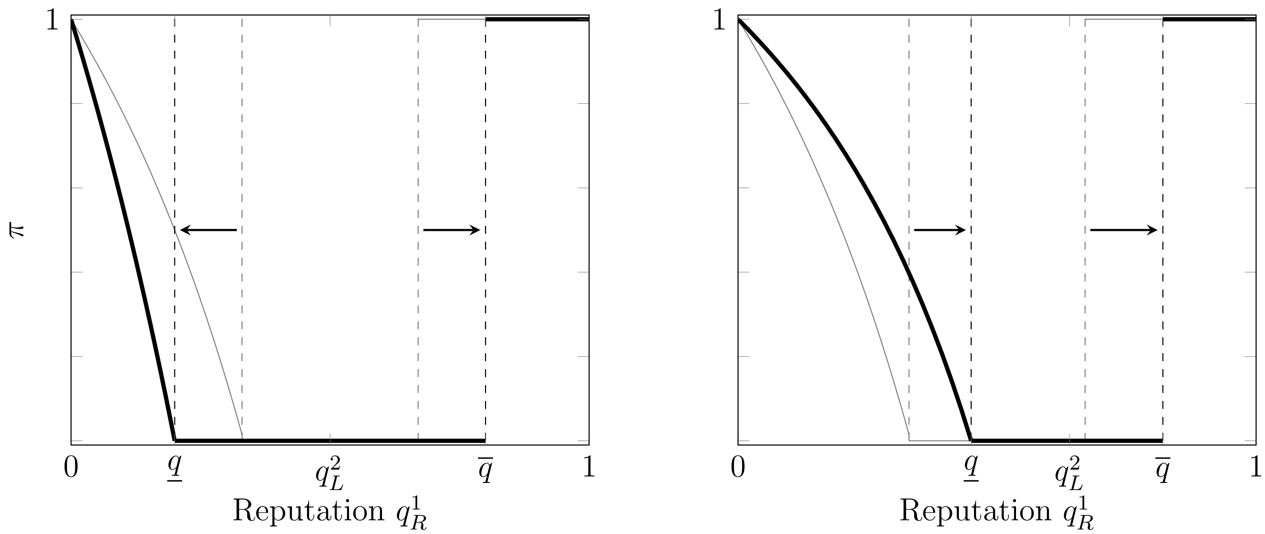
- *$\underline{q}$ is decreasing in λ; as $\lambda \to 0$, $\underline{q} \to 0$; as $\lambda \to 1$, $\underline{q} \to q_L^2$.*

- *$\overline{q}$ is increasing in λ; as $\lambda \to 1$, $\underline{q} \to 1$; as $\lambda \to 0$, $\overline{q} \to q_L^2$.*

$\overline{q}$ and $\underline{q}$ are both increasing in q_L^2. As $q_L^2 \to 0$, both terms $\to 0$. As $q_L^2 \to 1$, both terms $\to 1$.

Recall that $1 - \lambda$ also measures R's capacity to blame outcomes on the legislature. As λ increases, this obfuscatory power decreases. Bipartisan policies $\pi = 0$ are the "safest" in the sense that they have a high probability of success; and so, incumbents lean more on bipartisan policies for their relative safety. As q_L^2 increases, the electoral environment becomes more competitive, i.e. R needs to achieve a higher threshold to win reelection. This ultimately causes a "right shift" in the model, as we require more partisan policies at the low end of q_R^1 to signal sufficiently high ability. Flipping the result suggests that in *less* competitive environments — e.g. those where an incumbent's party always tends to win reelection — we should observe a "left shift" in the baseline predictions.

Figure 2: Variation of Optimal Policy π^* with λ, q_L^2



(a) Increase in Leg. Alignment λ

(b) Increase in Competitition q_L^2

2.3 Welfare

We show that voter welfare — measured as the additional value of learning or flow utility — may be nonmonotonic with respect to reputation; and that changes in legislative alignment and competition may generate further ambiguity.

2.3.1 Learning

Our first benchmark for welfare will be voter learning. The voter's value function at the beginning of $t = 2$, as a function of her beliefs, is $\max\{q_2^R, q_2^L\}$. We write, with some abuse of notation, the value of learning for the voter given $\pi^*(q_R^1)$ as:

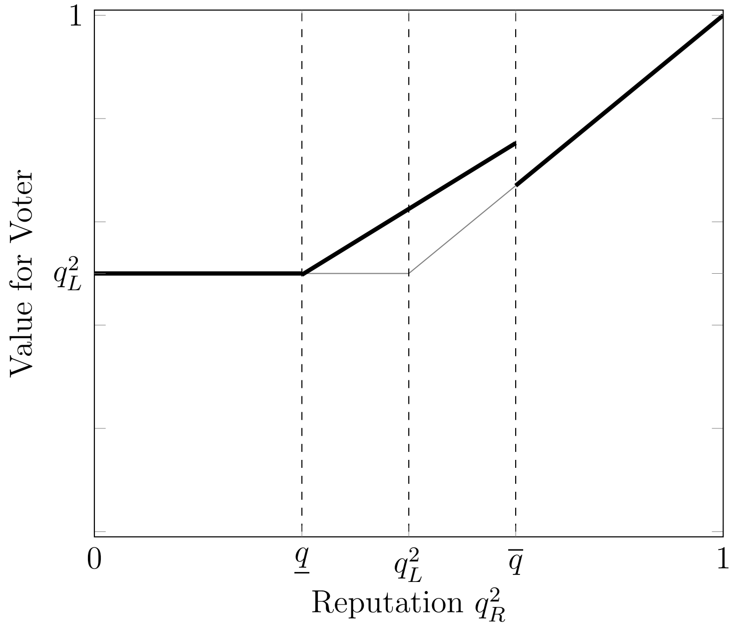
$$V_V(\pi^*) = \int_{q_R^2} \max\{q_2^R, q_2^L\} dF(q_R^2 | q_R^1, p_1^*, p_0^*),$$

which can be summarized as follows.

Proposition 2. *For* $q_R^1 \in [0, \underline{q}]$, $V_V(\pi^*) = q_L^2$; *for* $q_R^1 \in [\underline{q}, \overline{q})$, $V_V(\pi^*) = q_R^1 + \lambda(1 - q_R^1) q_L^2$; *for* $q_R^1 \in [\overline{q}, 1]$, $V_R(\pi^*) = q_R^1$.

The value of learning is graphed below. The thick lines indicate the value of the solution, while the light gray lines represent the baseline value of the problem for the voter.

Figure 3: Learning Value of π^* for Voter



The only region where R generates a strictly positive effect on learning is on $[\overline{q}, \underline{q})$. Increasing λ always widens this range; hence, increasing λ always improves agents' relative learning. However, changing q_L^2 results in shifts to this region; we show in the appendix that as there is an intermediate value of competition q_L^2 at which the size of the interval over which R adds any value to voter learning is maximal.

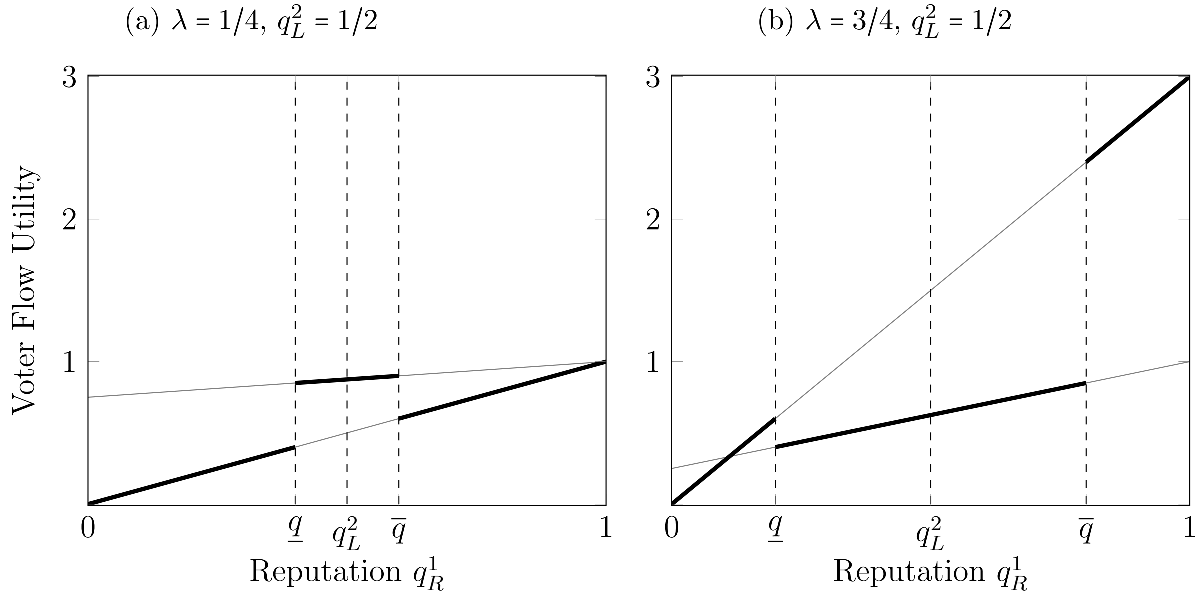
2.3.2 Flow Utility

So far, the model is silent about the concurrent effects of pursuing different policy agendas on the representative voter's welfare[5]. Partisan policies, when manifest as policy reforms, are often assumed to be valuable when implemented by a skilled incumbent but worse than a (bipartisan) status quo when pursued by an unskilled incumbent.

To illustrate the nonmonotonic variation of welfare with reputation and legislative alignment, we allow two policies, $\pi = 0, 1$, as in the proof intuition for Proposition 1. We assume voter utility from $\pi = 0$ is always equal to 1 upon passage. We assume utility from $\pi = 1$ is equal to 0 if passed by a low ability incumbent and 4 if passed by a high ability incumbent. Utility from non-passage is always 0. The two panels of the figure below illustrate the trade-offs of increasing or decreasing λ when $q_L^2 = 1/2$. The left panel shows the result under low legislative alignment ($\lambda = 1/4$) and the latter under high alignment ($\lambda = 3/4$).

[5] While more partisan policies may please members of R's party, they may displease members of L's party. We hence take our results to be an upper bound on the potential welfare gains of different policy agendas.

Figure 4: Variation of Optimal Policy π^* with λ



The pursuit of partisan policies results in less than ideal flow utility at low values of reputation, since incumbents' abilities are low in expectation. At high values of partisanship, pursuing partisan policies is optimal in expectation when legislative alignment is high but suboptimal when legislative alignment is low. At middling values of reputation, pursuit of bipartisan policies is optimal at low values of legislative alignment but suboptimal at high values of alignment, since the incumbent has tighter control over the legislature and could use this control to pass more ambitious policies.

2.4 Persuasion Model and Data Predictions

We now describe an extended model utilizing a constrained persuasion structure, where the incumbent has some flexibility in directly choosing success probabilities for high and low ability incumbents. This extension delivers nearly identical results to the baseline model, but improves analytical tractability that allows us to solve the model with a valence shock without considering cumbersome edge cases.

Persuasion Model We now characterize R's choice of policy agenda as a signal structure (p_1, p_0) for $p_1 \geq p_0$. These respectively represent the conditional probabilities an $a_R = 1$ and 0 incumbent would be able to earnestly pass an agenda if they were totally unaligned with the legislature. Total passage probabilities are:

$$\begin{aligned} a_r = 1: &\qquad \lambda + (1-\lambda)p_1, \\ a_r = 0: &\qquad (1-\lambda)p_0. \end{aligned}$$

We define the partisanship π of an agenda (p_1, p_0) to be $\pi(p_1, p_0) = 1 - \frac{p_1+p_0}{2}$.

This model is a sub-case of a constrained persuasion problem. When $\lambda = 0$, the problem boils down to a standard Bayesian persuasion problem with two states (high/low ability) and two signals (success/failure). (p_1, p_0) represent the conditional probability of observing a success conditional on each state. For $\lambda > 0$, R chooses a signal structure (p_1, p_0), but the voter only receives a signal from this structure with probability $1-\lambda$. With probability λ, they receive a signal from a structure $T = (1,0)$ (success $\iff$ $a_R = 1$), and cannot differentiate whether the signal they received came from P or T. In this sense, the set of posteriors over ability the policy agenda can induce is constrained.

Proving an analogue of Proposition 1 for this case is nearly identical. We use the flexibility of this more general model to prove our baseline result with a valence shock. Let $\epsilon \sim N$ be a single-peaked preference shock favoring L, which has support on $\mathbb{R}$, has mean 0, is symmetric around 0, is twice continuously differentiable, and is strictly increasing (decreasing) above (below) 0. V retains L if and only if $q_R^2 \geq q_L^2 + \epsilon$, meaning she wins the election with ex-ante probability $N(q_R^2 - q_L^2)$. Her expected value from an agenda (p_1, p_0) is then

$$\max_{p_1 \geq p_0} \int_{q_R^2} N(q_R^2 - q_L^2) dF(q_R^2 | q_R^1, p_1, p_0).$$

where $F(q_R^2 | q_R^1, p_1, p_0)$ now represents the distribution of posteriors given (p_1, p_0). Let $p^*(q_R^1) = (p_1^*, p_0^*)$ represent the agenda that solves the equation above and π^* the partisanship of this agenda. This allows us to prove our result.

Theorem 1. *There exist thresholds $\underline{q} < \overline{q}$ such that:*

- *for $q_R^1 \leq \underline{q}$, $\pi^*(q_R^1)$ is strictly decreasing. $p^*(0) = (1,0)$ and $\pi^*(0) = 1/2$, while $\pi^*(\underline{q}) = 0$ and $\pi^*(\underline{q}) = 0.$;*
- *for $q_R^1 \in [\underline{q}, \overline{q})$, $p^* = (1,1)$ and $\pi^* = 0$;*
- *for $q_R^1 \geq \overline{q}$, $p^* = (0,0)$ and $\pi^* = 1$.*

The proof relies on two key insights. First, we show that for $q_R^1 < \underline{q}$, we can use (p_1, p_0) to achieve the concavification of $N(q_R^2 - q_L^2)$, which is a lottery between some posterior $\overline{q}_R^2 = \tilde{q} > q_L^2$ and $\underline{q}_R^2 = 0$. The concavification is no longer achievable precisely at $\underline{q}$. Then, we show that whenever the concavification is unachievable, the solution is either given by $(0,0)$ or some (p_1, p_0) with $p_1 = p_0$, utilizing the concavity of win probability above q_L^2. Finally, we show that within the concave portion, $(p_1, p_0) = (0,0)$ generates the optimal distribution of posteriors; and that, above some point $\overline{q}$, $(0,0)$ dominates $(1,1)$ as well, completing the result.

The persuasion extension suggests a potential *asymmetry* in nonmonotonicity relative to the baseline model. When $q_R^1 = 0$, $\pi = 1/2$, while when q_R^1 is high, $\pi = 1$. Our baseline comparative statics also emerge from this proof. Increasing λ causes $\underline{q}$ to decrease and $\overline{q}$ to increase. Increasing q_L^2 causes $\underline{q}$ and $\overline{q}$ to shift to the right.

Data Mapping We invert $N(q_R^2 - q_L^2)$ to write the predictions of Theorem 1, as well as the comparative statics, in terms of win probabilities. Let P represent a probability of reelection.

Corollary 2. *There exist thresholds* $\underline{P} < \overline{P}$ *such that:*

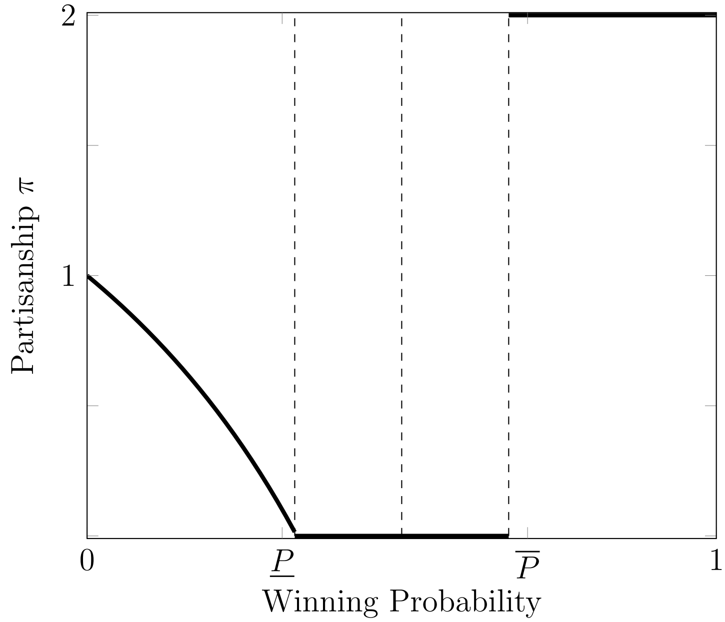
- *when* $P \leq \underline{P}$*, partisanship* π^* *is strictly decreasing in* P *until* $\pi^* = 0$ *at* $\underline{P}$*;*
- *when* $P \in (\underline{P}, \overline{P})$*, partisanship* $\pi^* = 0$*;*
- *when* $P \geq \overline{P}$*, partisanship* $\pi^* = 1$*.*

Moreover,

- *When legislative alignment* λ *increases ,* $\underline{P}$ *decreases and* $\overline{P}$ *increases.*
- *When competition* q_L^2 *increases,* $\underline{P}$ *and* $\overline{P}$ *both increase.*

This corollary summarizes the key predictions we will take to testing the partisanship of gubernatorial policy agendas in our model. The basic graph of this pattern is shown below.

Figure 5: Partisanship of Optimal Policy $\mathbf{P}^*$



We recall three additional points before turning to the data predictions.

- Decreasing competition q_L^2 can be thought of as increasing party entrenchment.
- The definition of a bipartisan policy is relative to λ. Increasing λ, while potentially flattening the nonmonotonicity, also increases the base *level* of partisanship.
- Our model is one of *winning reelection*, i.e. the predictions should emerge when comparing incumbents eligible for reelection to lame ducks.

Our data predictions are as follows:

- **P1**: Incumbents eligible for reelection, as compared to those ineligible, should pursue relatively partisan policy agendas when their probability of reelection is low or high; and relatively bipartisan policy agendas when their probability of reelection is moderate.
- **P2**: When increasing legislative alignment, the nonmonotonicity of **P1** should flatten out. However, the minimum level of partisanship of **P1** at moderate levels of win probability should also increase.
- **P3**: When increasing party entrenchment, the nonmonotonicity of **P1** may flatten out.

2.5 Extensions

We utilize the persuasion model without a valence shock to address two extensions to the model.

Politician Utility and L Policies While the goal of our model is to isolate *informational* features of partisanship that may motivate reelection, this raises issues for the interpretation of "more partisan policies" for highly aligned legislatures. In particular, a more partisan policy is defined by the informational feature that it is harder to pass through the legislature. A potential implication is that an R politician who wants to pass an extremely partisan policy to "prove herself" may end up pursuing a highly partisan L policy for its informational features.

We address this concern by allowing R to choose from a spectrum of partisan policies by choosing either an R-partisan agenda $p^R \in (p_1^R, p_0^R)$ or an L-partisan agenda $p^L = (p_1^L, p_0^L)$. We also endow R with a preference for R policies over L policies. We show that the model's central nonmonotonicity is left untouched. If flow utility concerns are weak, the region in $[\underline{q}, \overline{q}]$ may exhibit additional nonmonotonicities in the direction of L policies.

Suppose that R chooses a policy agenda p^R or p^L. Success probabilities are:

$$\text{Choose } \pi_R : \lambda a_R + (1-\lambda) p_{a_R}^R$$
$$\text{Choose } \pi_L : (1-\lambda) a_R + \lambda p_{a_R}^L$$

Intuitively, if R chooses π^L, she is adopting the policies an L politician would implement, meaning her de facto legislative alignment flips. We assume R receives a disutility $-c$ from pursuing π^L.

Let $F^i(q_R^2 | q_R^1, p_1^i, p_0^i)$ be the distribution of posteriors over R's ability for $i \in \{R, L\}$. Then, R implements an agenda from π^R if and only if

$$\max_{p_1^R \geq p_0^R} \int_{q_R^2} u_R(q_R^2) dF^R(q_R^2 | q_R^1, p_1^R, p_0^R) \geq -c + \max_{p_1^R \geq p_0^R} \int_{q_R^2} u_R(q_R^2) dF^L(q_R^2 | q_R^1, p_1^L, p_0^L).$$

The left expression is the value from the solution to the baseline problem. The right expression is the value from choosing an L policy agenda less the cost $-c$ from choosing policies preferred by the opposing party. We write the optimal solution of each program as p^{i*}, which is characterized by thresholds $\underline{q}^i, \overline{q}^i$. While c sufficiently large may mechanically shut down any preference for L policies, we show that as $c \to 0$, our model's nonmonotonicity still holds.

Proposition 3. *There exists $\overline{\lambda} > 1/2$ such that for $\lambda \leq \overline{\lambda}$, R implements p^{R*}. For $\lambda \geq \overline{\lambda}$ and c sufficiently low, there exist thresholds $\underline{q}^f, \overline{q}^f$, with $\underline{q}^R < \underline{q}^f < \overline{q}^f < \overline{q}^R$such that R implements*

- *p^{R*} for $q_R^1 \leq \underline{q}^f$;*
- *p^{L*} or p^{R*} for $q_R^1 \in (\underline{q}^f, \overline{q}^f)$;*
- *p^{L*} for $q_R^1 \geq \overline{q}^f$;*

The intuition is as follows. Below $\underline{q}^R$ and above $\overline{q}^R$, R is able to achieve the concavification of $u_R(\cdot)$ utilizing p^R. The integrand term on the left hand side is maximized, suggesting a strict preference for p^{R*}. Note that R's maximal utility from pursuing p^{R*} is strictly decreasing in λ — since lower λ allows greater informational flexibility — while the maximal utility from pursuing p^{L*} is strictly increasing in λ. The utility from pursuing either policies is always equal at $\lambda = 1/2$, modulo the $-c$ term. This means that p^{R*} is still strictly preferred at $\lambda = 1/2$. Preference for p^{L*} can override if and only if c is sufficiently small; and only then when the value from pursuing π^{L*} is sufficiently higher than that of p^{R*}. This can occur only within a strict subset of $[\underline{q}^R, \overline{q}^R]$.

Extending the space of partisanship downwards — so that L policies are even *less* partisan than $\pi = 0$ (for an R incumbent) — we have that partisanship weakly decreases from $\pi = 1$ to 0 at $\underline{q}^f$; potentially plummets further from $\underline{q}^f$ to $\overline{q}^f$, either with the implementation of a moderate or extremely partisan L policy; and then shoots back up to $\pi = 2$ above $\overline{q}^f$. That is, within $(\underline{q}^f, \overline{q}^f)$, R implements either $\pi^R = 0$ or $\pi^L \geq 0$, potentially adding additional nonmonotonicities to the pattern, but ensuring that partisanship (relative to R's party) is always lower in this middle region than when reputation is low or high.

Multi-Period Dynamics While the baseline model assumes that politicians' policy agendas represent the totality of their term in office, we can also consider a three period model where politicians pursue agendas in periods $t = 0$ and $t = 1$ before an election at $t = 2$. In between $t = 0$ and $t = 1$, agents update beliefs over a_R as before. We show that allowing for a pre-period as such preserves many of the qualitative features of our model.

Following notation from earlier, we write the belief that R is high ability at the beginning of $t = 0$ as q_R^0. The optimal solution is characterized as follows.

Proposition 4. *Given $\underline{q}, \overline{q}$, there exist thresholds $\underline{\underline{q}} < \underline{q} < \overline{q} < \overline{\overline{q}}$ such that*

- *For $q_R^0 \leq \underline{\underline{q}}$, partisanship π^* is decreasing from $1/2$ at q_R^0 to 0 at $\underline{\underline{q}}$.*
- *There exists $q_\dagger \in [\underline{\underline{q}}, \overline{q} < \overline{\overline{q}}]$ such that for all $q_R^0 \geq q_\dagger$, $\pi^* < 1$.*
- *For $q_R^0 \geq \overline{\overline{q}}$, $\pi^* = 1$.*

3 Data

This section begins with information about US gubernatorial State of the State addresses, including their relevance to our setting. We then discuss how the data is sourced and pre-processed before analysis. We finish by detailing how we use large-language modeling to isolate policy proposals.

3.1 US Governors and State of the State Addresses

Reputational Priorities of US Governors An ideal setting for testing the predictions of our model is the policy agendas of US governors. Governors are high profile political executives who, since the end of the 20th century, have played an outsized role in setting, pursuing, and implementing state policy agendas[6]. Compared to legislators, governors “enjoy organizational, institutional, and popular advantages similar to and arguably even greater than the president [over Congress]” (Heidbreder, 2012). In any given year there are 50 US governors in office, all of whom vary in their popularity, eligibility for reelection, party entrenchment, and alignment with state legislatures.

There is substantial evidence that voters evaluate governors based on their productivity in passing their policy agendas. The National Governors Association provides a series of guides to incoming US governors, which provide rich insight into how governors themselves view incentives to pass policies while in office. One excerpt from a guide remarks that “[t]he media and public will judge the governor’s leadership ability and success. . . [by] whether the administration’s legislative program succeeds. . . The governor’s ability to manage and secure legislation also affects his or her ability to serve as a strong leader of the party. . . If the legislation fails, it will be considered a political defeat. . . [T]he passage of priority legislation usually will signal a political success.” (National Governors Association, 2018). An executive director of the NGA has gone as far as to say that “the ultimate measure of success [is] the ability of. . . governors to get his or her initiatives enacted” Scheppach (2005).

The NGA guides also provide insights on the dimensions of skill by which a governor is evaluated, often using the language of a managerial “CEO” to describe these responsibilities. “As chief executive officers (CEOs), governors are responsible for the leadership and management of their states. As leaders, they set priorities for their administration and enact new policies and programs designed to achieve those priorities” (National Governors Association, 2019). Moreover, an “effective process to craft and implement a legislative program and strategy, as well as to cultivate and maintain working relationships with legislative

[6] The “devolution revolution” of the 1990s marks the period where the federal government heavily devolved authority over many public policies to state governments

leaders and members, is critical to ensuring the success of a governor's legislative program" (National Governors Association, 2018).

There is evidence that voters respond to governors' actions, and that this response may also be mediated by alignment with legislatures. Wolak and Parinandi (2022) find a positive response of gubernatorial approval to both ideological alignment and substantive measures of performance, such as economic performance and policy outputs. Across economic and policy outcomes, Brown (2010) show that voters are more likely to blame opposing parties for problems if the opposition holds an executive position and their own party has a hold on the legislature. Leyden and Borrelli (1995) finds that voters are much more responsive to changes in state economic outcomes when state government is unified (rather than divided, with different parties holding the executive and legislative branches). Jacobson (2006) shows that governors who are not aligned with their state legislatures enjoy slightly higher approval than those with aligned legislatures, arguably in part due to the fact that misalignment reduces blame.

Policy Agendas Our model's predictions apply to executives' policy agendas. We utilize the text of each each governor's annual "State of the State" address as our corpus of policy agendas; utilizing text data also allows us to use methods from the literature to analyze partisanship of policy proposals.

At the beginning of each legislative, the governor of each state in the United States is required to address a joint session of the legislature to deliver a "State of the State" (SotS) speech [7]. The speech is delivered annually (in some states biennially) in the first quarter of the year, and is the US States' analogue of the presidential "State of the Union." Since these data are given around the same time every year in (almost) every US state, these data allow us an annual panel of policy agendas for each governor, state, and year.

According to a National Governors Association guide, the "inaugural address, State of the State address and budget message are all excellent forums to communicate and build momentum for the executive branch's legislative agenda" (National Governors Association, 2018). A large literature in political science has documented the importance of these speeches as vehicles for the governor reflect on her administration's past accomplishments accomplishments of her administration of the past year and lay out her policy priorities for the coming year. Coffey (2005) and Heidbreder (2012) argue that these speeches accurately represent the incumbent's current policy priorities rather than pure policy preferences. Governors themselves also view these addresses as a highly salient, public platform for signaling policy

[7] In some states, the speech is called the "State of the Commonwealth"; in others, the governor's budget or inaugural address takes the same role.

agendas. Indeed, the NGA guides state that "the State of the State address can be used to call attention to the governor's priorities and ... afford the governor major forums to communicate the administration's legislative agenda" National Governors Association (2018).

There is also evidence that governors are indeed able to pass many of the agenda items laid out in their SotS addresses. Kousser and Phillips (2012) investigate over $1,000$ proposals laid out in a set of State of the States speeches in the mid-2000s, showing that 41% passed in some form similar to what the governor proposed and 18% with substantive compromises. They show that passage is more likely when a governor is aligned with the legislature or holds more political capital, with the notable exception of budgetary items — where these variables exhibit no apparent effect on passage probability. One implication of this finding is that, regardless of partisan affiliation, there are basic duties (such as a budget management) that a skilled executive should be able to address. Indeed, an ex-governor of Maryland noted that "the realities of running a state do not allow for ideological rigidity. Governors must ensure that the budget is balanced, that the state can adequately respond to its day-to-day challenges, and must be able to work with lawmakers from both parties and across the ideological spectrum" (Kousser & Phillips, 2012, p. 97).

In stark contrast to the congressional record (Gentzkow, Shapiro, & Taddy, 2019; Jensen et al., 2012), comprehensive analysis of partisanship in the State of the State speeches has been relatively scarce. Many articles — e.g. DiLeo (1997), Coffey (2005), Weinberg (2010), Heidbreder (2012), Warner (2023) — have been able to analyze a few years worth of SotS data to document cursory facts about gubernatorial ideology. For example, DiLeo (1997) shows governors in Democratic states are more likely to pursue redistribution. Ferguson (2003) shows that a governor's priorities are disciplined by the composition of her legislature and economic conditions in states. Coffey (2005), Weinberg (2010), and Kousser and Phillips (2012) attempt to measure ideology in these speeches by either manually coding sentences or relying on dictionaries of partisan words. Heidbreder (2012) shows that Democratic governors are more attentive to healthcare and social policies.

One of the key issues with analysis of SotS addresses is the lack of a systematic, centralized data source of speeches. We are aware of two attempts to create such databases that span more than one decade. Lushkov (2019) collects hundreds of SotS addresses back to the 1800s to look at the frequency with which governors discuss education. Butler and Sutherland (2023) have digitized almost all SotS addresses from 1960 onwards, documenting in increase in nationalization of speech. However, this result does not necessarily imply any distinct trend in gubernatorial partisanship. Relatedly, Hopkins et al. (2022) document a divergence in the speech of 1,783 state party platforms from 1918-2017 beginning in the 1990s, but restrict their analysis to the frequencies of certain topics and phrases as opposed to en-masse text analysis of their corpus that delivers a unidimensional measure for partisanship.

3.2 Sourcing and Pre-Processing

We compile a digitized text library of the State of the State speeches from 1990-2020, allowing us to employ methods from the literature on partisanship and large language modeling.

We began with the database of Lushkov (2019), which contained 330 speeches post-1995 due to data loss. Next, we scoured State news sites, educational resources, archived governor websites, and online State libraries to assemble SotS speeches for an initial dataset of $1,144$ usable speeches. We later gained access to data from Butler and Sutherland (2023), allowing us to assemble a final dataset of $1,345$ speeches for 1990-2020. Figure B.1 in the appendix graphs the set of usable speeches for analysis.

Finally, we broke these speeches into snippets of thematically contiguous thoughts using the NLTK (Natural Language Toolkit) Text-Tiling tokenizer. Each snippet was about 7 sentences and can be thought of either as a paragraph or sets of small paragraphs. We end up with $78,702$ snippets for the period $1990 - 2000$.

3.3 Speech Processing with bert

To separate portions of SotS addresses discussing the governor's policy agenda, we fine-tuned a Large-Language-Model called "bert" from the huggingface transformers library to identify relevant snippets of text. In particular, we asked it to classify whether a given snippet of text discussed a concrete policy (yes/no) and, if so, whether it was a discussion of a policy proposal or made mention of a past policy (yes/no).

bert is a pretrained model that learns the structure of provided text examples, allowing it to be "fine-tuned" to classify text (Devlin, Chang, Lee, & Toutanova, 2018). Our process utilizes the same methodology as Card et al. (2022), which identifies whether Congressional speeches were a) about immigration; b) if they were about immigration, whether the tone was positive, negative or neutral. We repurpose much of these authors' github code to our setting.

Hand Coding We randomly selected around 9500 snippets from the $70,368$ snippets of our initial $1,144$ speech 1995-2020 dataset to be hand-labelled and provided to bert as fine tuning data. Two research assistants were given the following instructions to code these snippets.

1. "Policy." Coded as "1" if the snippet discusses the enactment of a state-level policy (either passed by the governor, state government, or referendum) and "0" if it does

not. A policy discussion is a reference to a specific act of legislation or law, a concrete proposal to increase or decrease funding to a certain cause, other legal orders proposed by the government to take certain concrete actions, and discussions of details of any of the above.

2. "Proposal/Past." Only applies if "policy" coded as "1." Coded as "1" if the snippet refers to a policy that has just put into place or will be put into place in the future. Coded as "0" otherwise — in particular, if a governor is reflecting on the effects of a policy in the past.

The full coding guide is contained in Appendix C. Of these handcoded data, we identified $4,144$ snippets as discussing policy and, of those, $2,993$ as discussing proposals.

Detailing bert Model We utilized the "bert-Base-Uncased" model, which contains approximately 110 million parameters which are adjusted through the process of fine-tuning. We make use of a two-layered model approach. We first train a model to classify whether a snippet is a policy discussion, and takes in as inputs all the snippets in our hancdoded data. The second model is trained to classify whether a snippet is about a policy proposal, vs. some reflection on a past policy. The latter takes as inputs only the hand-coded data corresponding to policies.[8]

Once these models are fine-tuned, we run our full dataset of snippets through each model. We use the policy classification to identify policies, and then the proposal classification model to identify proposals, allowing us to classify each snippet as desired: snippets about policy proposals, snippets about policy but not proposals, and irrelevant snippets. The policy classification model ends with a low cross-entropy loss of 0.0111 nits and the proposal classification 0.0058 nits. Of our $7,8702$ snippets, we identify 35636 (45%) as corresponding to policy and 26720 (34%) as corresponding to policy proposals.

3.4 Additional Data Sources

We make use of the following additional data sources in our analysis.

- Governor names/dates in office: National Governors Association (2024)

[8]The input (hand-coded) data for each model is divided into seven stages called "epochs." Each epoch takes the training data and partitions it into three groups. The first set, the "train set," is the main dataset used to train the model. The "dev set," comprised of 400 snippets, is used to adjust the model after its initial training. Finally, the "test set," comprised of 300 snippets, is used to calculate the models' accuracy. Before feeding the data into the model, we also tokenize the data using spaCy, which takes each snippet and breaks it into its components words.

- Gubernatorial win margins and seat status: Algara and Amlani (2021)

- Quarterly governor approval ratings: Singer (2023)

- Legislative composition: Klarner (2013) and National Conference of State Legislatures (2024)

- Term limit rules and missing election dates: Ballotpedia (2024a) and Ballotpedia (2024b)

- Additional covariates: Grossmann, Jordan, and McCrain (2021)

4 Documenting Partisanship

The section begins by detailing how we measure partisanship, before turning to one of our main results documenting the increase in partisanship from 1990-2020.

4.1 Calculating Partisanship

With our corpus of governor speeches, we can measure the partisanship of gubernatorial speech — using both full speeches and just policy proposal portions — utilizing techniques from the literature on political speech. We calculate a measure of partisanship π_{it} for each governor i and year t. We then take a weighted sum of π_{it} to construct the measure of annual aggregate partisanship Π_t common in the literature.

Our metric for defining and calculating partisanship is that detailed in Gentzkow, Shapiro, and Taddy (2019). Aggregate partisanship for year t, Π_t, is measured as the expected *informativeness* of a randomly selected phrase in inferring a governor's party. Specifically, suppose we randomly select a governor — selecting from one of Democrats or Republicans with (prior) probability 1/2. Partisanship is measured as the expected posterior of guessing that governor's party correctly. If partisanship is less than or equal to 1/2, speech is — on average — uninformative of governor party. If Republican and Democratic governors use dissimilar phrases, partisanship is greater than 1/2 since, in expectation, language is informative of party.

Our notion of phrases are "bigrams," i.e. two-word phrases. We use the nltk PorterStemmer to reduce words to their base form. We use the Gentzkow, Shapiro, and Taddy (2019) "leave-out-estimator," for calculating aggregate partianship Π_t. To introduce this estimator, we first address notation. For a sample period of interest, let R be a set of Republican governors and D Democratic governors[9]. Let c_{ij} be the count of phrase j used by governor i. Let $C_{ij} = \frac{c_{ij}}{\sum_{j \in J} c_{ij}}$ be the normalized count of phrase j used by governor i, where J is the set of all phrases used in the time period of interest. Let C_j^P be the normalized count of phrase j used by party P: $C_j^P = \frac{\sum_{i \in P} c_{ij}}{\sum_{i \in P} \sum_{j \in J} c_{ij}}$. Finally, let $T(t)$ be a five year window around time t: $T(t) = \{t-2, t-1 \ldots, t+2\}$[10] A subscript t respresents the value of the variable at time t, while $t \in T(t)$ represents its value within the five-year-window. Define ρ_{-ijt} as the ratio of phrase use by R to D governors, modulo governor $i \in R_t \cup D_t$, with the five-year window acting as the reference group:

$$\rho_{-ijt} = \frac{C^{R-\{i\}}_{jt \in T(t)}}{C^{R-\{i\}}_{jt \in T(t)} + C^{D-\{i\}}_{jt \in T(t)}}$$

Concretely, ρ_{-ijt} is the posterior probability we assign to a speaker being an R governor upon observing phrase j.

We calculate *aggregate partisanship* in the US States at time t, Π_t, as:

$$\Pi_t = \frac{1}{2}\frac{1}{|R_t|}\sum_{i \in R_t}\sum_j C_{ijt} \cdot \rho_{-ijt} + \frac{1}{2}\frac{1}{|D_t|}\sum_{i \in D_t}\sum_j C_{ijt} \cdot (1 - \rho_{-ijt}). \tag{2}$$

The interpretation of Π_t is precisely as above. With probability 1/2, we randomly select a party (R or D), and from there randomly draw a governor. With probability C_{ijt}, the chosen governor i uses phrase j. Then, conditional on phrase j, our posterior over governor party moves to ρ_{ijt}. Π_t averages this posterior across governors and phrases.

We measure the partisanship of the speech of governor i in state s at time t as:

$$\begin{aligned} \pi_{it} &= \sum_j C_{ijt} \cdot \rho_{-ijt} && i \in R_t \\ \pi_{it} &= \sum_j C_{ijt} \cdot (1 - \rho_{-ijt}) && i \in D_t, \end{aligned} \tag{3}$$

which measures how partisan governor i's speech is relative to her party. Governors with $\pi_{it} \geq$ use language mostly in line with their party, while those with $\pi_{it} \leq 1/2$ use language in line with that of the other party.

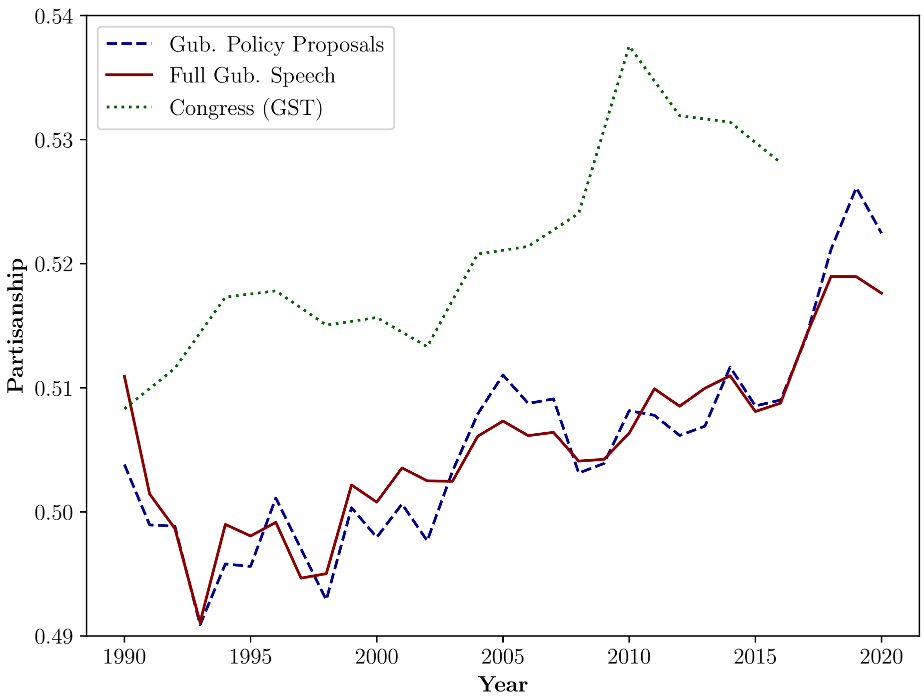
[9]The few independent governors in our sample lean Democrat, so for our purposes, we classify them as Democratic.

[10]We make use of a five year window since each year only has at most 50 speeches. Gentzkow, Shapiro, and Taddy (2019) use Congressional Record Data, where the number of speakers and quantity is much larger, and the length of a Congressional session is two years.

4.2 Aggregate Trends in Partisanship

The figure below shows the evolution of partisanship over our sample period for three series. Partisanship calculated using the entire corpus of speeches is shown in the solid red line, while partisanship calculated using only the policy proposal component of speeches is shown in the dashed blue line. Finally, the dotted green line plots the series of Congressional partisanship from Figure 2a of Gentzkow, Shapiro, and Taddy (2019), which also uses the leave-out estimator. In appendix Figure B.2, we also compare these measures of partisanship to those we estimate from past policy discussions and rhetoric.

Figure 6: Partisanship of US Gubernatorial Speeches, Full Speech vs. Policy Proposals vs. Congressional Record: 1990-2020



Partisanship of gubernatorial speech calculated using Gentzkow, Shapiro, and Taddy (2019) leave-out estimator. "Gub. Policy Proposals" computes estimator for gubernatorial speech snippets coded as discussing policy proposals on corpus of US governors' speech from 1990-2020. "Full Gub. Speech" computes estimator for all gubernatorial speech in given year. "Congress (GST)" series is partisanship of Congressional speech using leave-out estimator, extracted from Figure 2A of Gentzkow, Shapiro, and Taddy (2019).

We begin by discussing our own measures of partisanship using both full speeches and the policy proposal data. Partisanship for both series first descends in the early 1990s to a trough in 1993 before beginning a slow upwards creep in the late 1990s. The policy proposals data does not experience its first prominent increase until a hump lasting from 2001-2008, with the end of the hump coinciding with the Great Recession. Partisanship dips during the recessionary period before returning to its slow upwards creep, although by 2016, the level of partisanship is not much different from that measured in 1990. Partisanship then experiences a massive spike in 2017, coinciding with the arrival of governors elected in the 2016 electoral cycle. Both series track each other well, a facts borne out in the governor-level panel data[11]. However, the 2001 – 2008 "hump" as well as the post-2016 "spike" are much more prominent in the proposal data than the full speech data. The stages in which we see these increases is likely correlated with the electoral cycle; while Congressional terms are only two years, governors mostly serve four year terms, and many serve two consecutive terms.

Crucially, recall that partisanship measures the posterior probability that we can accurately guess a governor's party after randomly drawing a phrase, starting with a 50-50 prior. This means that when partisanship is less than or equal to 1/2, speech is on average so similar between parties that observing a randomly drawn phrase does not improve inference about the correct governor party. By this metric, partisanship is effectively negligible at the level of state governors until around 2000.

By contrast, consider the Gentzkow, Shapiro, and Taddy (2019) series for Congressional partisanship, whose level is consistently higher than that of our gubernatorial series. While both series start from nearly identical levels, the Congressional series exhibits a consistently upwards pattern through 2010, when it slightly decreases. Notably, our series experiences no such spike around 2008 – 2010; by contrast, we see a spike in partisanship only post-2016. In fact, it is not until 2015 that the *level* of gubernatorial partisanship even reaches that of Congressional Partisanship in 1990. This finding also contrasts starkly with that of Hopkins et al. (2022), which finds that divergence in speech of state party platforms began in the mid-1990s. It is not until the early 2000s that any increase in our measure of gubernatorial partisanship becomes substantive. Appendix Figure B.3. looks at average partisanship for the five main regions of states in the US, finding that while there is substantial heterogeneity by region — much of which may vary with the electoral cycle of governors in regions with fewer states — almost all regions exhibit the prominent increase in the late 2010s which is obvious in our main data.

[11]The correlation between the full speech and proposal measures is 0.92 at the level of state and year. partisanship at the speech-year level for full regression of the governor-level measure of partisanship from full speeches on the policy proposal speeches delivers an R^2 of 0.84 and a coefficient close to unity.

4.3 Dynamics of Phrase Use

We next document the most partisan phrases that Republicans and Democrats use. Henceforth, we utilize the policy proposal text data. We again utilize a method from Gentzkow, Shapiro, and Taddy (2019), where the partisanship of a phrase is determined as measuring the informational loss in inferring governor's party when removing phrase j from governors' vocabulary. This formula for phrase j is given by

$$1/2 - 1/2 \sum_{j \neq k} \left(\frac{C_k^R}{1 - C_j^R} + \frac{C_k^D}{1 - C_j^D} \right) \frac{C_k^R}{C_k^R + C_k^D}, \tag{4}$$

where more positive numbers correspond to more Republican phrases and more negative numbers to more Democratic phrases[12]. We calculate this metric for each bigram in the six epochs of 1990-1994, 1995-1999, 2000-2004, 2005-2010, 2010-2014, and 2015-2020. The tables below display the ten "most Republican" phrases (most positive numbers) and ten "most Democratic" (most negative), along with the frequency with which each party utters the bigram — replicating an analogue of Table I in Gentzkow, Shapiro, and Taddy (2019) and removing certain procedural phrases.

[12]Following the norm established by their paper, we code Republican governors' party as +1 and Democratic governors' as −1.

Table 1: Most Republican and Most Democratic Phrases, 1990-2020

(a) 1990-1994

Republican	Democratic
properti tax	state govern
gener assembl	long term
sale tax	commun colleg
incom tax	health insur
amend section	human resourc
public school	welfar recipi
act appropri	clean air
tax relief	child care
school district	econom develop
tax reduct	state employe

(b) 1995-1999

Republican	Democratic
properti tax	class size
school district	high school
tax relief	child care
million dollar	public safeti
cut tax	perman fund
charter school	tax credit
budget recommend	transport system
econom develop	privat sector
look forward	year thi
thi budget	econom growth

(c) 2000-2004

Republican	Democratic
charter school	health care
incom tax	prescript drug
high tech	state agenc
mental health	properti tax
center excel	minimum wage
tax cut	domest violenc
million state	school construct
long term	billion dollar
tax relief	health insur
low incom	educ lotteri

(d) 2005-2009

Republican	Democratic
incom tax	health care
tax relief	thi budget
charter school	health insur
million dollar	new job
math scienc	feder govern
tax rate	clean energi
gener fund	energi effici
qualiti life	pre k
properti tax	creat job
budget provid	afford health

(e) 2010-2014

Republican	Democratic
incom tax	health care
econom develop	sale tax
charter school	tax credit
state govern	creat job
budget recommend	minimum wage
school district	earli childhood
feder govern	mental health
job creator	21st centuri
high school	gener assembl
gener fund	thi budget

(f) 2015-2020

Republican	Democratic
incom tax	clean energi
tax relief	afford hous
budget recommend	health care
high school	minimum wage
law enforc	middl class
tax cut	renew energi
properti tax	climat chang
task forc	child care
pay rais	let pass
depart correct	work togeth

Republicans are overwhelmingly likely to mention taxes — including phrases like tax reduction, tax relief, and cutting taxes[13] Republicans are also more likely to mention the

[13]Two of the three times tax phrases are associated with Democratic involve "tax credits"—which may

budget, despite its importance in gubernatorial policy regardless of party. During 2015-2020 period, Republicans also utilize phrases like law enforcement and corrections departments.

Democrats are more likely to measure topics related to the environment, welfare and childcare, the minimum wage, and affordable housing. Both parties are, at different points, also more likely to emphasize some of the same topics in different time periods — such as economic development and job creation, education (although Republicans are more likely to discuss "charter schools"), and mental health.

In general, despite some surprisingly partisan (or bipartisan) phrases, as well as dynamic fluctuations in the emphasis of certain topics, the sorts of phrases corresponding to highly "Republican" or highly "Democratic" policies intuitively correspond to the sorts of policies we believe correspond to each party.

5 Testing the Model

We begin by overviewing our estimation methods before presenting baseline results speaking to the nonmonotonicity of the model. Afterwards, we disaggregate by competition and state type. We finish by using the model's insights to explain the rise in partisanship over the sample period.

5.1 Estimation

Recall the central predictions of our model.

- **P1**: Incumbents eligible for reelection, as compared to those ineligible, should pursue relatively partisan policy agendas when their probability of reelection is low or high; and relatively bipartisan policy agendas when their probability of reelection is moderate.
- **P2**: When increasing legislative alignment, the nonmonotonicity of **P1** should flatten out. However, the minimum level of partisanship of **P1** at moderate levels of win probability should also increase.
- **P3**: When increasing party entrenchment, the nonmonotonicity of **P1** may flatten out.

To test these predictions, we use the following variables for governor i in state s at time t.

- Partisanship, π_{ist}. We obtain this measure using the partisanship formula in equation (3) and normalize it by the sample mean and standard deviation.

be in reference to the EITC.

- Win probability, q_{ist}. We utilize quarterly gubernatorial approval[14] data compiled by Singer (2023). Since State of the State addresses are given in Q1 of each year, we use approval data from Q4 of the previous year. For governors' inaugural years, we simply use the approval data from Q1[15].

- Legislative alignment, λ_{ist}. We combine the data on legislative composition from Klarner (2013) and National Conference of State Legislatures (2024). We choose a binary representation of λ_{ist}. The variable is equal to 1 if more than 50% are members of the governor's party and 0 otherwise.

- r_{ist}, reelection neligibility. This is equal to 1 if a governor is eligible to run another term and 0 otherwise[16].

To pinpoint our model's nonmonotonicity, we break our approval ratings measure q_{ist} into deciles by state.[17] We let q_{kist} correspond to the k^{th} decile of approval for a governor in state s. Finally, we let ξ_s be a state fixed effect and χ_t a year fixed effect. We estimate the following equation.

$$\begin{aligned} \pi_{ist} = & \alpha_0 + \sum_{k \neq 4}^{10} \alpha_k q_{kist} + \gamma_0 \cdot \lambda_{ist} + \sum_{k \neq 4}^{10} \gamma_k q_{kist} \cdot \lambda_{ist} \\ & + r_{ist} \cdot \Big(\beta_0 + \sum_{k \neq 4}^{10} \beta_k q_{kist} + \delta_0 \cdot \lambda_{ist} + \sum_{k \neq 4}^{10} \delta_k q_{kist} \cdot \lambda_{ist} \Big) + \xi_s + \chi_t + \epsilon_{ist} \end{aligned} \tag{5}$$

The baseline expression in the first line summarize describes how the level of partisanship varies with approval decile interacted with legislative alignment. Our estimands of interest are the β_k and δ_k coefficients, which isolate changes in partisanship for reelection eligible governors relative to those ineligible for reelection. β_k represents the level of partisanship for the k^{th} decile of approval, relative to the fourth decile of approval, for a reelection eligible governor with an unaligned legislature. $\beta_k + \delta_k$ represents the level of partisanship for the k^{th} decile of approval, relative to the fourth decile of approval, for a reelection eligible governor with an *aligned* legislature.[18].

[14]We assume win probability is a strictly increasing function of gubernatorial approval within each state.

[15]For our sample period, these data are missing approval data from Idaho. There are also substantial gaps for Hawaii, Louisiana, and North Dakota

[16]We count those governors who are eligible for reelection but *choose* not to run again as still being reelection eligible, as choosing not to run again is an endogenous choice

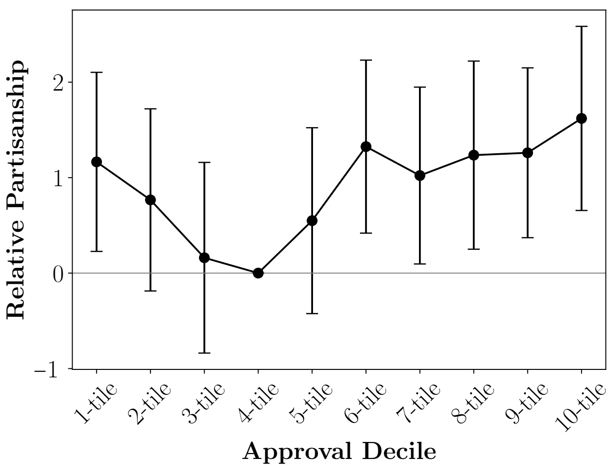
[17]This accounts for persistent differences in the means of state gubernatorial approval. This also ensures state-level balance in the approval data, allowing us to capture departures from average approval within each state.

[18]The α_k and γ_k coefficients have an analogous interpretation for reelection ineligible (lame duck) governors.

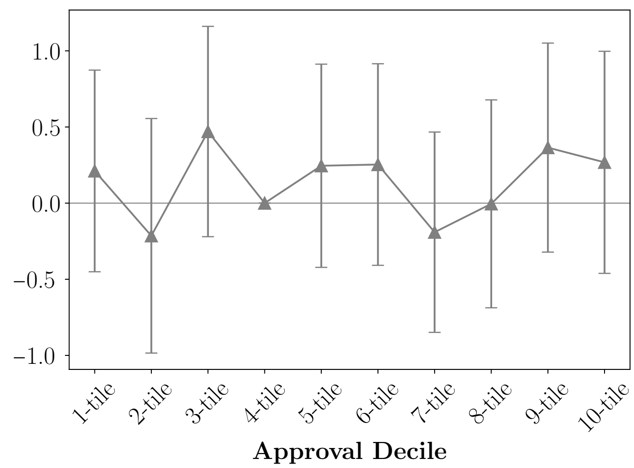
5.2 Estimating Model's Predictions

The figure below plots the estimates of the β_k coefficients using black circles in panel (a) on the left. The sums of the $\beta_k + \delta_k$ coefficients are plotted using gray triangles in panel (b) on the right.

Figure 7: Partisanship of Reelectable Governors by Approval Decile, Adjusting for Lame Duck Behavior, Unaligned vs. Aligned Legislatures, 1990-2020



(a) Unaligned Legislatures



(b) Aligned Legislatures

Dependent variable measures partisanship of US Governor State of the State speeches using Gentzkow, Shapiro, and Taddy (2019), as calculated in equation (3), normalized by sample mean and standard deviation. Horizontal axis plots approval decile of gubernatorial approval by state, calculated using previous year's fourth quarter approval from Singer (2023) after first year in office, with first quarter approval utilized for first year in office. Black circles plots β_k coefficients from equation (5), measuring level of partisanship for reelectable governors with unaligned legislatures in decile k, adjusting for behavior of lame ducks, relative to fourth decile. Gray triangles plot $\beta_k + \delta_k$, measuring level of partisanship for reelectable governors with aligned legislatures in decile k, adjusting for behavior of lame ducks, relative to fourth decile. Bands around coefficient estimates display 95% confidence intervals. Legislative alignment measured as whether more than half of legislators match governor's party.

The left panel showcases a nonmonotonic relationship approval decile and level of partisanship for unaligned legislatures. Being in the first decile of approval means governors' speeches are, on average, 1.1 standard deviations more partisan than in the fourth decile, falling to this level gradually in the second and third deciles. Partisanship relative to the fourth decile begins rising in the fifth decile before remaining at between 1 to 1.5 standard deviations higher in the sixth through tenth deciles. This nonmonotonicity is consistent with prediction **P1** of our model.[19]

P2 suggests that when legislative alignment increases, the nonmonotonicity of **P1** flattens out. The lack of any evident relationship between approval and partisanship for aligned legislatures in the right panel is consistent with prediction **P2**.

Table B.2. in the appendix lists the main regression coefficients for equation (5) from which we construct Figure 7. Additionally, Table B.3. lists the β_k and δ_k coefficients for an analog of equation (5) run on quintiles instead of deciles, which we detail in our next section. Table B.3. additionally shows that the baseline result is robust to excluding the year reelectable governors are up for reelection, including *only* the year reelectable governors are eligible for reelection, and dropping observations for lame duck governors in their last year in office[20]. The lack of any obvious dynamic effects is in line with our theoretical model's robustness to multiple periods of passage.

Disaggregation by Competition Our model also predicts, via **P3**, that competitive "swing states" should exhibit more prominent nonmonotonicities than states where a single party always wins the governorship. To test this prediction of the model, we break our states into three groups based on the frequency of governor party overthe sample period. This allows us to categorize states using a definition that is invariant over time.

1. Republican States: those states with a Republican governor more than 60% of the sample period (1990-2020).

2. Democratic States: those states with a Democratic governor more than 60% of the sample period.

3. Swing States: those remaining states, where the State governorship experiences fluctuations in party over the sample period.

A list of all states belonging to each category is displayed in appendix Table B.2.

To streamline our analysis, we estimate an analogue of equation (5) for quintiles, as

[19] We can also look at how approval deciles map onto winning gaps in gubernatorial elections. For governors eligible for reelection in the first approval decile, the average win gap is about six percentage points, i.e. a governor on average wins a race with about 53% of votes. This drops to less than four percentage points for swing states, which we define in the next section, with a large left tail. The average gap rises steadily util about 10 percentage points in the fifth decile and then all the way to 17 percentage points in the top decile.

[20] The nonmonotonicity is starkest when dropping lame ducks in their last year in office since, presumably, these governors have a substantively minimal policy agenda relative to prior years in office.

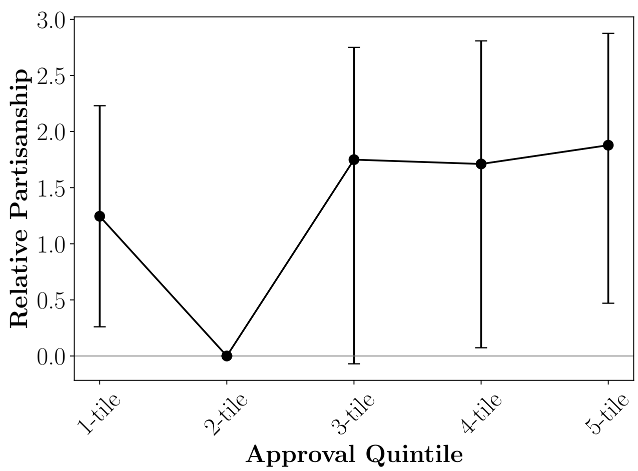
follows:

$$\begin{aligned}\pi_{ist} =& \alpha_0 + \sum_{k\neq 2}^{5} \alpha_k \tilde{q}_{kist} + \gamma_0 \cdot \lambda_{ist} + \sum_{k\neq 2}^{5} \gamma_k \tilde{q}_{kist} \cdot \lambda_{ist} \\ &+ r_{ist} \cdot \Big(\beta_0 + \sum_{k\neq 2}^{5} \beta_k \tilde{q}_{kist} + \delta_0 \cdot \lambda_{ist} + \sum_{k\neq 2}^{5} \delta_k \tilde{q}_{kist} \cdot \lambda_{ist} \Big) + \xi_s + \chi_t + \epsilon_{ist} \end{aligned} \tag{6}$$

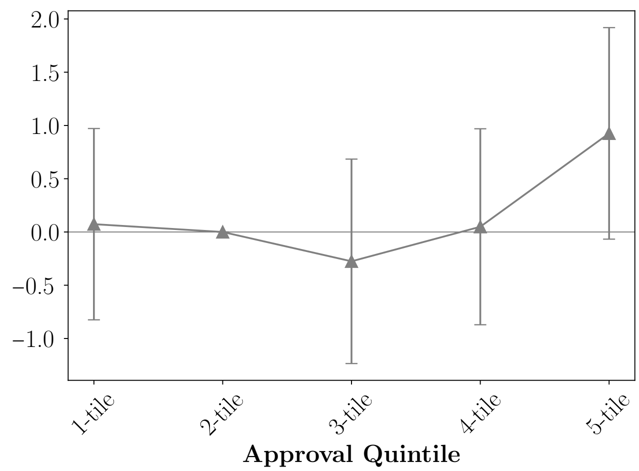
Here, $\tilde{q}_k$ now corresponds to quintile k. We take the omitted category to be the second quintile, since the trough we see in our estimation of equation (5) is in the fourth decile. The first column of Table B.3. in the appendix shows that this renormalization indeed picks up a trough in partisanship for unaligned legislatures in the second quintile of approval, relative to the first and third through fifth, when pooling all states together, as in Figure 7.

The three panels of the figure below showcase estimations of equation (5) for our three categories of state competition: Swing, Republican, and Democratic. The corresponding regression coefficients are in columns (5) through (7) of Table B.3.

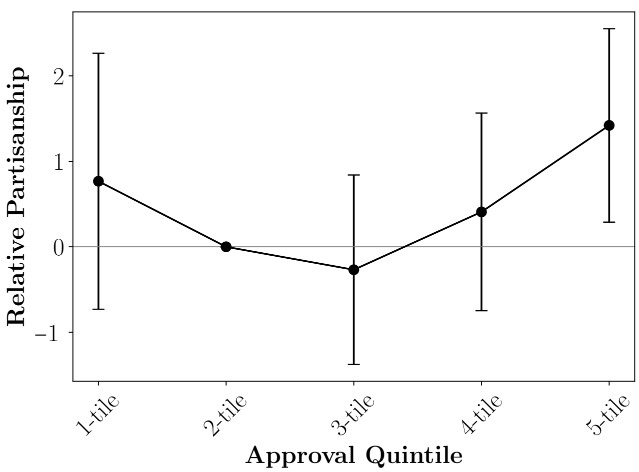
Figure 8: Partisanship of Reelectable Governors by Approval Quintile, Adjusting for Lame Duck Behavior, Unaligned vs. Aligned Legislatures, Disaggregated by Competition, 1990-2020



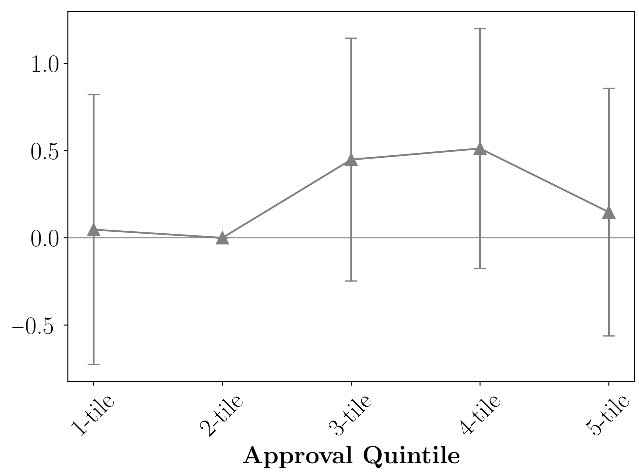
(a) Swing States, Unaligned Legislatures



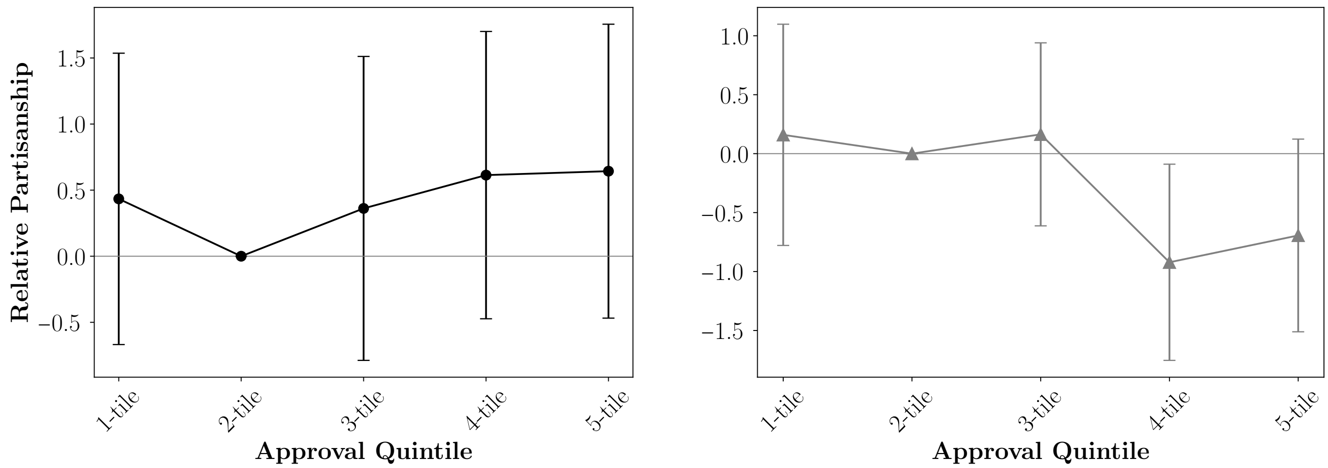
(b) Swing States, Aligned Legislatures



(c) Rep. States, Unaligned Legislatures



(d) Rep. States, Aligned Legislatures



(e) Dem. States, Unaligned Legislatures

(f) Dem. States, Aligned Legislatures

Dependent variable measures partisanship of US Governor State of the State speeches using Gentzkow, Shapiro, and Taddy (2019), as calculated in equation (3), normalized by sample mean and standard deviation. Horizontal axis plots approval quintile of gubernatorial approval by state, calculated using previous year's fourth quarter approval from Singer (2023) after first year in office, with first quarter approval utilized for first year in office. Black series plots β_k coefficients from equation (5), measuring level of partisanship for reelectable governors with unaligned legislatures in quintile k, adjusting for behavior of lame ducks, relative to second quintile. Gray circles plot $\beta_k+\delta_k$, measuring level of partisanship for reelectable governors with aligned legislatures in quintile k, adjusting for behavior of lame ducks, relative to second quintile. Bands around coefficient estimates display 95% confidence intervals. Legislative alignment measured as whether more than half of legislators match governor's party. Republican states defined as those states with Republican governor more than 60% of sample period. Democratic states defined as those states with Democratic governor more than 60% of sample period. Swing states defined as remaining states.

Indeed, we see that a nonmonotonicity resembling that in Figure 7 is most prominent in Figure 8(a). For governors in swing states with aligned legislatures, being in the first quintile leads to a 1.3 standard deviation increase in partisanship relative to the second quintile, while being in the fifth quintile leads to a 1.9 standard deviation increase. The pattern for aligned legislatures in panel (b) is effectively flat flatter; the drop in partisanship from the first to second quintile is statistically insignificant[21]. That the nonmonotonicity of the model is strongest for swing states with aligned legislatures is consistent with **P3**.

In panels (c) and (e), Republican and Democratic governors exhibit a stastically weak nonmonotone relationship between approval quintile and partisanship under unaligned legislatures. Republicans see a trough in partisanship around the third quintile, while Democrats see a trough in the second. For aligned legislatures, Republicans and Democrats both see a lightly monotone relationship, although none of the coefficient estimates are statistically dif-

[21]The asymmetry in partisanship, where the level of partisanship for the lowest approval governors is lower than that of the highest approval governors, is consistent with the general version of our model presented in Theorem 1.

ferent than 0. These predictions are in line with **P2** and **P3**: our nonmonotonocity should be weak for states with entrenched parties, and especially weak (or nonexistent) for entrenched states with aligned legislatures.

6 Conclusion

Our paper explores a theory of how partisanship may serve electoral incentives for political executives, such as governors. We interpret an incumbent executive's choice of policy agenda as an information structure over incumbent ability, where less partisan policies generate left skewness in the set of posteriors over incumbent ability and more partisan policies generate right skewness. Incumbents who face threshold retention rules as a function of their ability, as in much of the voting literature, then exhibit a nonmonotonic relationship between the partisanship of their policies and their reputation. As their reputation increases, thy first pursue partisan policy agendas, then bipartisan agendas, and then partisan agendas again. Utilizing a persuasion extension, we show that high reputation incumbents may even pursue more partisan policies than their low reputation counterparts. We show that these insights are robust to uncertainty in elections, allowing incumbents to choose opposing parties' platforms, and multi-period settings for agenda setting.

We then apply these insights to explain the partisanship of US governors' policy proposals. We document that gubernatorial partisanship —measured using governors' annual State of the State speeches — only becomes substantive after the early 2000s, creeps up slowly for the next decade, spikes after 2017, and consistently has a lower level than the comparable series for Congress despite starting from a similar position. We then move to panel data to study partisanship of governors' policy proposals in these speeches, using our model to explore differences in the partisanship of reelectable and lame duck governors. We show that a nonmonotonic variation of gubernatorial partisanship with approval quintile in unaligned legislatures matches that of our model, especially in swing states. We show that, in line with our model, increasing legislative alignment flattens this nonmonotonicity; and that states with entrenched parties are also less likely to showcase this nonmonotonicity.

The paper broadly advances two research agendas. First, we contribute to a growing literature on constrained persuasion problems and their applications. In particular, it is precisely our constrained persuasion setting — where incumbents cannot pursue agendas that totally shut down information — that generates the nonmonotonicity of our model, theoretically distinguishing its predictions from the monotonic baseline models of the political reputation literature; and thereby allowing us to explain partisanship of gubernatorial speech in our panel setting. The proof of Theorem 1 suggests how to solve this problem problems for concave value functions, which are the main sort of setting in which inability to shut down information may bind. Nevertheless, further exploration of this class of models may lend crucial insights into settings where there is uncertainty about a sender's signal, including in settings with richer strategic interactions.

Second, we generate, to the best of our knowledge, the first numerical series measuring partisanship of political speech at the state level using modern text analysis techniques, the first series measuring partisanship of executives' political speech, and the first series that is able to calculate partisanship on a series that isolates political speech using advances in large-language-modeling. A natural next step for this agenda is to calculate measures of partisanship for each state legislature, whose language and level can be compared to that which we see in both our executives' speech and Congress. Beyond just documenting trends in state and local politics, understanding partisanship at the level of state legislatures is also a crucial step in gaining a deeper understanding of the mechanisms driving the patterns we see nationally and at the level of executives. The partisanship of these executives' policies — especially at the state level — is deeply linked to questions of public finance, labor policy, educational attainment, investment, and other high stakes areas of interest to policymakers. Providing structure on when, how, and why politicians may pursue more or less partisan policies allows us to gain a deeper understanding of the timing, nature, and potential effects of such reforms.

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Appendix A Proofs

Proposition 1. *There exist thresholds* $\underline{q} < q_L^2 < \overline{q}$ *such that:*

- *for* $q_R^1 \in [0, \underline{q})$, $\pi^*(q_R^1)$ *is strictly decreasing, with* $\pi^*(0) = 1$ *and* $\pi^*(\underline{q}) = 0$*;*
- *for* $q_R^1 \in [\underline{q}, \overline{q})$, $\pi^*(q_R^1) = 0$*;*
- *for* $q_R^1 \in [\overline{q}, 1]$, $1 \in \pi^*(q_R^1)$ *with equality at* $\overline{q}$*.*

Proof. Note in general the following formulae for posteriors as a function of π, fixing q_R^1:

$$\overline{q}_R^2(\pi) = \frac{(\lambda + (1-\lambda)(1-\pi))q_R^1}{\lambda q_R^1 + (1-\lambda)(1-\pi)}$$
$$\underline{q}_R^2(\pi) = \frac{(1-\lambda)\pi q_R^1}{\lambda(1-q_R^1) + (1-\lambda)\pi}$$

Note that $\overline{q}_R^2$ is decreasing in π while $\underline{q}_R^2$ is increasing in π.

Next, fix $q_R^1 \in (0,1)$. Consider the following sets $\overline{P}$ and $\underline{P}$:

$$\underline{P}(q_R^1) := \{\pi : \overline{q}_R^2(\pi) \geq q_L^2, \underline{q}_R^2(\pi) < q_L^2\}$$
$$\overline{P}(q_R^1) := \{\pi : \underline{q}_R^2(\pi) \geq q_L^2\}$$

Note that $\underline{P}$ is always nonempty ($\ni \pi = 1$) but $\overline{P}$ is empty for q_R^1 low. We claim that $\pi^*(q_R^1) = \min\{\underline{P}(q_R^1)\}$ when $\overline{P} = \varnothing$ and $\overline{P}$ otherwise.

First, any $\pi \notin \overline{P}, \underline{P}$ always leads to an expected win probability of 0; these are dominated by any $\pi \in \underline{P}$. Next, for any $\pi \in \underline{P}$, the expected win probability is $\lambda q_R^1 + (1-\lambda)(1-\pi)$, which is the likelihood of seeing $\overline{q}_R^2$ This probability is maximized when π is minimized, i.e. at $\min\{\underline{P}(q_R^1)\}$. If $\overline{P}$ is empty, then $\pi^*(q_R^1) = \min\{\underline{P}(q_R^1)\}$. Finally, if $\overline{P}$ is nonempty, any $\pi \in \overline{P}$ leads to a win with probability 1, meaning $\pi^*(q_R^1) = \overline{P}(q_R^1)$.

Next, we show $\min\{\underline{P}(q_R^1)\}$ is strictly decreasing in π until a point $\underline{q}$, whereafter it is equal to 0. In general, $\min\{\underline{P}(q_R^1)\}$ is the solution to $\frac{(\lambda+(1-\lambda)(1-\pi))q_R^1}{\lambda q_R^1+(1-\lambda)(1-\pi)} = q_L^2$. As q_R^1 rises, the LHS increases for each π, meaning the π solving this equation decreases. The solution to this equation exists up until some $\underline{q} < q_L^2$, defined by $\frac{(\lambda+(1-\lambda))\underline{q}}{\lambda \underline{q}+(1-\lambda)} = q_L^2$, where $\pi = 0$ and can no longer decrease. For $q_R^{1'} > q_R^1$, if $\pi \in \underline{P}(q_R^1)$, then $\pi \in \underline{P}(q_R^{1'})$, meaning $\min\{\underline{P}(q_R^1)\} = 0$ for $q_R^1 \geq \overline{q}$. Finally, as $q_R^1 \to 0$, $\pi \to 1$.

Finally, we show that there exists $\overline{q} > q_L^2$ such that $\overline{P}(q_R^1) \neq \varnothing$ if and only if $q_R^1 \geq \overline{q}$. Note that, fixing q_R^1, the expression for $\underline{q}_R^2$ is maximized when $\pi = 1$. This means that $\overline{P}$ is nonempty if and only if $\frac{(1-\lambda)q_R^1}{1-\lambda q_R^1} \geq q_L^2$, which occurs if and only if $q_R^1 \geq \overline{q} > q_L^2$ defined as the implicit solution to $\frac{(1-\lambda)\overline{q}}{1-\lambda\overline{q}} = q_L^2$.

The comparative statics with respect to q_L^2 and λ emerge directly from the equations defining $\overline{q}$ and $\underline{q}$; □

Proposition 2. *For $q_R^1 \in [0, \underline{q}]$, $V_V(\pi^*) = q_L^2$; for $q_R^1 \in [\underline{q}, \overline{q})$, $V_V(\pi^*) = q_R^1 + \lambda(1 - q_R^1)q_L^2$; for $q_R^1 \in [\overline{q}, 1]$, $V_R(\pi^*) = q_R^1$.*

Proof. Below $\underline{q}$, we either have $q_R^1 \to \underline{q}_R^2 < q_L^2$ or $q_R^1 \to \overline{q}_R^2 = q_L^2$. In the former case, V elects L and receives q_L^2; in the latter, she is indifferent between R and L but receives q_L^2 either way. In the region $(\underline{q}, \overline{q})$, $q_R^1 \to 0$ or some $\overline{q}_R^2 > q_L^2$. In the former case, V replaces R but in the latter she is retained, and her expected ability is greater than q_L^2. Finally, for $q_R^1 \geq \overline{q}$, R is always retained. The expected value of the posterior q_2^R is, as a result, simply the prior q_R^1. □

Proposition 5. *As $q_L^2 \to 1$, $\underline{q} \to \overline{q}$. As $q_L^2 \to 0$, $\overline{q} \to \underline{q}$. There exists q_L^{2*} that maximizes the size of the interval $[\underline{q}, \overline{q})$.*

Proof. The closed forms for $\underline{q}, \overline{q}$ are respectively, based on the previous proposition:

$$\frac{(1-\lambda)q_L^2}{1-\lambda q_L^2}, \frac{q_L^2}{1-\lambda(1-q_L^2)}.$$

Both terms are increasing in q_L^2. The derivative of the difference of these two terms with respect to q_L^2 is given by:

$$\frac{1-\lambda}{(1-\lambda(1-q_L^2))^2} - \frac{1-\lambda}{(1-\lambda q_L^2)^2}$$

which is positive for $q_L^2 \leq 1/2$, negative when $q_L^2 \geq 1/2$, and $= 0$ at $q_L^{2*} = 1/2$. □

Lemma 1. *Suppose w is a differentiable, strictly concave, and strictly increasing function defined over q_R^2. Then, there exists $p \in [0, 1]$ such that the expected value of w over the lottery of posteriors $\overline{q}_R^2, \underline{q}R^2$ is maximized when $(p_1, p_0) = (p, p)$.*

Proof. We make a slight change of notation, $q_R^1 = q$. Our problem describing the maximum of w over the lotteries over q_R^2 is given by:

$$\max_{p_1 \geq p_0} \int_{q_R^2} w(q_R^2) dF(q_R^2 | p_1, p_0, q).$$

Let $g(p_1)$ be the probability of a success conditional on $a_R = 1$; and $h(p_0)$ the probability of success conditional on $a_R = 0$. Note that the distribution of posteriors $F(q_R^2 | p_1, p_0, q_R^2)$ is a two-point mean preserving spread of the prior q.

Suppose by contradiction that $p_1 > p_0$. This means that there would exist p_1, p_0 such that

$$\overline{q}_R^2(p_1, p_0) = \frac{g(p_1)q}{g(p_1)q + h(p_0)(1-q)}$$
$$\underline{q}_R^2(p_1, p_0) = \frac{q - qg(p_1)}{1 - qg(p_1) - (1-q)h(p_0)}$$

The partial derivatives of $\overline{q}_R^2$ are:

$$p_1 \qquad q(1-q)g'(p_1)\frac{h(p_0)}{[g(p_1)q + h(p_0)(1-q)]^2} > 0$$
$$p_0 \qquad -q(1-q)h'(p_0)\frac{g(p_1)}{[g(p_1)q + h(p_0)(1-q)]^2} < 0$$

The partial derivatives of $\underline{q}_R^2$ are:

$$p_1 \qquad -q(1-q)g'(p_1)\frac{(1-h(p_0))}{[1 - qg(p_1) - (1-q)h(p_0)]^2} < 0$$
$$p_0 \qquad q(1-q)h'(p_0)\frac{(1-g(p_0))}{[1 - qg(p_1) - (1-q)h(p_0)]^2} > 0$$

Suppose we marginally decrease p_1 by Δ_1 and increase p_0 by Δ_0 so that $\overline{q}_R^2$ remains the same, i.e.

$$q(1-q)g'(p_1)\frac{h(p_0)}{[g(p_1)q + h(p_0)(1-q)]^2}\Delta_1 = q(1-q)h'(p_0)\frac{g(p_1)}{[g(p_1)q + h(p_0)(1-q)]^2}\Delta_0$$
$$\implies g'(p_1)h(p_0)\Delta_1 - g(p_1)h'(p_0)\Delta_0 = 0$$

The sign of the change in $\underline{q}_R^2$ is then the sign of:

$$\begin{aligned} -g'(p_1)(1-h(p_0))\Delta_1 + h'(p_0)(1-g(p_1)\Delta_0 \\ = g'(p_1)h(p_0))\Delta_1 - g(p_1)h'(p_0)\Delta_0 - g'(p_1)\Delta_1 + h'(p_0)\Delta_0 \\ = -g'(p_1)\Delta_1 + h'(p_0)\Delta_0 \end{aligned}$$

$g(p_1)$ is given by $\lambda + (1-\lambda)p_1$, so its derivative is $(1-\lambda)$. $h(p_0)$ is given by $(1-\lambda)p_0$, so its derivative is also $(1-\lambda)$. Hence, the sign of the change in $\underline{q}_R^2$ is the sign of $\Delta_0 - \Delta_1$.

We claim that $\Delta_0 > \Delta_1$. The expressions for these are

$$\Delta_1 = q(1-q)g'(p_1)h(p_0)$$
$$\Delta_0 = q(1-q)g(p_1)h'(p_0)$$

The latter is larger than the former if and only if

$$g(p_1)h'(p_0) > g'(p_1)h(p_0)$$

Since $h'(p_0) = g'(p_1) = 1-\lambda$, this is true if and only if $g(p_1) > h(p_0)$, which is always true by the constraint that $p_1 \geq p_0$ (i.e. the conditional likelihood of a success is higher for $a_R = 1$ than $a_R = 0$. Hence, decreasing p_1 by Δ_1 and raising p_0 by Δ_0 keeps $\overline{q}_R^2$ fixed while raising $\underline{q}_R^2$, generating a mean preserving contraction of the original lottery over posteriors. Because w is strictly increasing and concave, this new lottery over posteriors is preferred to the original generated by (p_1, p_0), a contradiction. Hence, we always have in equilibrium that $p_1 = p_0 = p$. □

Lemma 2. *Suppose w is a differentiable, strictly concave, and strictly increasing function defined over q_R^2. Then, the lottery generated by $(p,p) = (0,0)$ over q_R^2 dominates all other (p_1, p_0).*

Proof. Note first that $\overline{q}_R^2$ is strictly decreasing as a function of p, meaning $\overline{q}_R^2$ is maximized at $p = 0$. Note that any lottery over posteriors can be represented with a line segment connecting $(\underline{q}_R^2, w(\underline{q}_R^2))$ and $(\overline{q}_R^2, w(\overline{q}_R^2))$, with the expected value of the lottery given by the point on the segment corresponding to the prior q.

Note that, fixing $\overline{q}_R^2$, flatter line segments correspond to higher expected values. It then suffices to show that the line segment connecting $(\underline{q}_R^2, w(\underline{q}_R^2))$ and $(\overline{q}_R^2, w(\overline{q}_R^2))$ is shallowest at $p = 0$ — where $w(\overline{q}_R^2)$ is maximal. I.e., its slope, given by

$$\frac{w(\overline{q}_R^2(p)) - w(\underline{q}_R^2(p))}{\overline{q_R^2} - \underline{q}_R^2},$$

achieves a minimum at $p = 0$. The numerator of the derivative of this expression is given by:

$$[\overline{q_R^2} - \underline{q}_R^2][w'(\overline{q}_R^2)\overline{q_R^2}' - w'(\underline{q}_R^2)\underline{q_R^2}'] - [w(\overline{q}_R^2) - w(\overline{q}_R^2)][\overline{q}_R^{2'} - \underline{q}_R^{2'}]$$

Note that $h'(p) = g'(p) = (1 - \lambda)$, and that $g(p) - h(p) = \lambda$, so that:

$$\begin{aligned}\overline{q}_R^{2'} - \underline{q}_R^{2'} = \frac{q(1-q)[g'(p)h(p) - h'(p)g(p)]}{[qg(p) + (1-q)h(p)]^2} - \frac{q(1-q)[g'(p)(1-h(p)) - h'(p)(1-g(p))}{[1 - qg(p) - (1-q)h(p)]^2} \\ = \frac{q(1-q)\lambda(1-\lambda)}{[1 - qg(p) - (1-q)h(p)]^2} - \frac{q(1-q)\lambda(1-\lambda)}{[qg(p) + (1-q)h(p)]^2}\end{aligned}$$

Hence the derivative above is ≥ 0 if and only if

$$\begin{aligned}[\overline{q_R^2} - \underline{q}_R^2][-w'(\overline{q}_R^2)\frac{q(1-q)\lambda(1-\lambda)}{[qg(p) + (1-q)h(p)]^2} + w'(\underline{q}_R^2)\frac{q(1-q)\lambda(1-\lambda)}{[1 - qg(p) - (1-q)h(p)]^2}] \\ -[w(\overline{q}_R^2) - w(\overline{q}_R^2)]\left[\frac{q(1-q)\lambda(1-\lambda)}{[1 - qg(p) - (1-q)h(p)]^2} - \frac{q(1-q)\lambda(1-\lambda)}{[qg(p) + (1-q)h(p)]^2}\right] \geq 0 \\ \frac{w'(\underline{q}_R^2)}{[1 - qg(p) - (1-q)h(p)]^2} - \frac{w'(\overline{q}_R^2)}{[qg(p) + (1-q)h(p)]^2} \\ \geq \frac{\frac{w(\overline{q}_R^2) - w(\overline{q}_R^2)}{\overline{q_R^2} - \underline{q}_R^2}}{[1 - qg(p) - (1-q)h(p)]^2} - \frac{\frac{w(\overline{q}_R^2) - w(\overline{q}_R^2)}{\overline{q_R^2} - \underline{q}_R^2}}{[qg(p) + (1-q)h(p)]^2}\end{aligned}$$

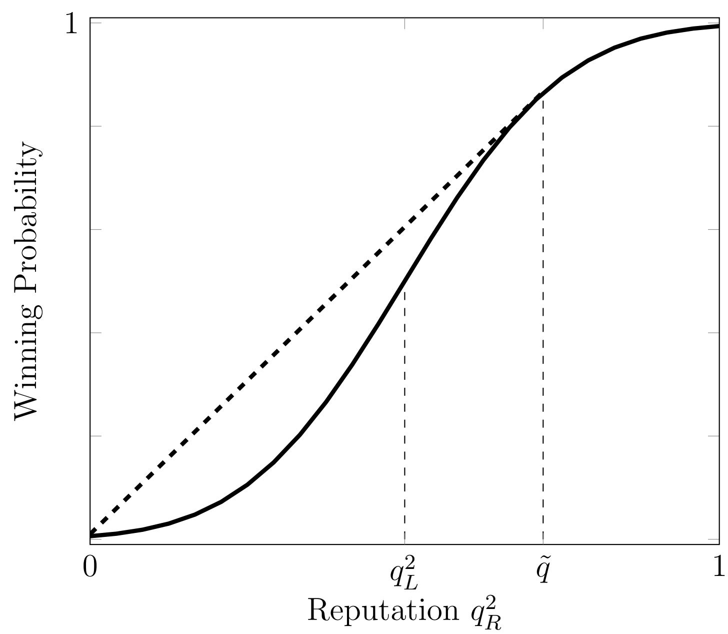
Note in particular that by concavity, $w'(\underline{q}_R^2) > \frac{w(\overline{q}_R^2) - w(\overline{q}_R^2)}{\overline{q_R^2} - \underline{q}_R^2} > w'(\underline{q}_R^2)$. This means that the first time on the LHS is always strictly larger than the first time on the RHS; and that the magnitude of the second term on the LHS is smaller than the magnitude of the second term on the RHS, so that this expression is always true, i.e. the derivative is positive for all p. Hence, the slope of the segment achieves a minimum at $p = 0$, showing the result. □

Theorem 1. *There exist thresholds $\underline{q} < \overline{q}$ such that:*

- *for $q_R^1 \leq \underline{q}$, $\pi^*(q_R^1)$ is strictly decreasing. $p^*(0) = (1, 0)$ and $\pi^*(0) = 1/2$, while $\pi^*(\underline{q}) = 0$ and $\pi^*(\underline{q}) = 0.$;*
- *for $q_R^1 \in [\underline{q}, \overline{q})$, $p^* = (1, 1)$ and $\pi^* = 0$;*
- *for $q_R^1 \geq \overline{q}$, $p^* = (0, 0)$ and $\pi^* = 1$.*

Proof. The proof of this result makes use of the previous two lemmata. First, note that the concavification of $N(q_R^2 - q_L^2)$ is characterized by a point $\tilde{q} > q_L^2$. Specifically, the concavification is given by a line segment connection the points $(0, N(-q_L^2))$ and $(\tilde{q}, N(\tilde{q} - q_L^2))$, where $\tilde{q}$ solves $N'(\tilde{q} - q_L^2)\tilde{q} = N(\tilde{q} - q_L^2) - N(-q_L^2)$, followed by the curve N itself for $q \geq \tilde{q}$. Note also that N is strictly concave for $q_R^1 > q_L^2$ and strictly convex for $q_R^1 < q_L^2$. These are shown in the figure below, where the solid line is $N(q_R^2 - q_L^2)$ and the dashed line the concavification.

Figure A.1: Concavification of $N(q_R^2 - q_L^2)$



Next, notice that there exists $0 < \underline{q} < \tilde{q}$ such that for all $q_R^1 \leq \underline{q}$, we can choose p_1 and p_0 to achieve the concavification. Since $\underline{q}_R^2$ must $= 0$ for any point $\leq \tilde{q}$ to achieve the concavification, we must have $p_1 = 1$ and vary p_0. p_0 must then solve, for each q_R^1,

$$\frac{q_R^1}{q_R^1 + (1 - \lambda)(1 - q_R^1)p_0} = \tilde{q}.$$

Notice that this expression is minimized when $p_0 = 1$, when it is equal to $\frac{q_R^1}{q_R^1 + (1-\lambda)(1-q_R^1)}$. Let $\underline{q}$ solve $\frac{\underline{q}}{\underline{q} + (1-\lambda)(1-\underline{q})} = \tilde{q}$. Note that for all $q_R^1 > \underline{q}$, there does not exist $p_0 \in [0, 1]$ such that the posteriors $(\overline{q}_R^2, \underline{q}_R^2) = (\tilde{q}, 0)$ are achievable. It is easy to see that for all $q \leq \underline{q}$, there exists $p_0(q_R^1)$ that achieves these posteriors, with p_0 given directly by

$$p_0 = \frac{q_R^1(1 - \tilde{q})}{(1 - \lambda)(1 - q_R^1)\tilde{q}},$$

which is strictly increasing from 0 at $q_R^1 = 0$ to 1 at $\underline{q}$.

Next, we show that for all $q_R^1 \geq \underline{q}$, $(p_1, p_0) = (1,1)$ dominates any (p_1, p_0) such that $\underline{q}_R^2 < q_L^2$. Suppose by contradiction that there exists $(p_1, p_0) \neq (1,1)$ such that $\underline{q}_R^2 < q_L^2$, which dominates $(1,1)$. Because $\overline{q}_R^2$ is minimized at $(p_1, p_0) = (1,1)$, we necessarily have that $\overline{q}_R^2 > q_L^2$, so that $\overline{q}_R^2$ is on the concave portion of N. Suppose first that $p_1 = 1$ so that $\underline{q}_R^2 = 0$. The expected value of this lottery is the line segment from $(0, N(-q_L^2))$ to $(\overline{q}_R^2, N(\overline{q}_R^2 - q_L^2))$. Since $p_0 < 1$, we can generate a strict improvement by increasing p_0, which slightly lowers $\overline{q}_R^2$. However, because $\overline{q}_R^2$ is on the concave portion of N, the line segment from $(0, N(-q_L^2))$ to $(\overline{q}_R^2, N(\overline{q}_R^2 - q_L^2))$ becomes steeper while originating from the same point $(0, N(-q_L^2))$. Because the expected value from (p_1, p_0) lies on the point on the segment corresponding to q_1^2, this steepening generates an improvement on the original (p_1, p_0), a contradiction.

Hence, suppose $p_1 < 1$ so that $\underline{q}_R^2 > 0$. If $p_0 > 0$, we can reverse the argument in Lemma 1, we can slightly raise p_1 and lower p_0 so that $\overline{q}_R^2$ remains the same but $\underline{q}_R^2$ decreases. The line segment connecting $(\underline{q}_R^2, N(\underline{q}_R^2 - q_L^2))$ to $(\overline{q}_R^2, N(\overline{q}_R^2 - q_L^2))$ becomes shallower, while its upper point $(\overline{q}_R^2, N(\overline{q}_R^2 - q_L^2))$, meaning it rotates upwards, again generating an improvement. If $p_0 = 0$, increasing p_0 causes both $\underline{q}_R^2$ and $\overline{q}_R^2$ to decrease. However, because $\overline{q}_R^2$ is on the concave portion of N and $\underline{q}_R^2$ on the convex portion, this generates a left/upward shift in the line segment connecting $(\underline{q}_R^2, N(\underline{q}_R^2 - q_L^2))$ to $(\overline{q}_R^2, N(\overline{q}_R^2 - q_L^2))$, again generating an improvement.

Next, we show that there exists $\overline{q}$ such that for all $q_R^1 \geq \overline{q}$, $(p_1, p_0) = (0,0)$ dominates $(1,1)$. $(0,0)$ generates posteriors $\overline{q}_R^2 = 1$ and $\underline{q}_R^2 = \frac{(1-\lambda)q_R^1}{1-\lambda q_R^1}$. Note that because $1 > \frac{q_R^1}{q_R^1 + (1-\lambda)(1-q_R^1)}$, a sufficient condition for this to hold is that the line segment connecting and $(\frac{(1-\lambda)q_R^1}{1-\lambda q_R^1}, N(\frac{(1-\lambda)q_R^1}{1-\lambda q_R^1} - q_L^2)$ and $(1, N(1-q_L^2))$ is shallower than that connecting $(0, N(-q_L^2))$ to $(\frac{q_R^1}{q_R^1 + (1-\lambda)(1-q_R^1)}, N(\frac{q_R^1}{q_R^1 + (1-\lambda)(1-q_R^1)} - q_L^2))$. As $q_R^1 \to 1$, the slope of the former line segment approaches 0; while the slope of the latter approaches $N(1-q_L^2) - N(-q_L^2)$. Because the change in these slopes is monotone as long as q_R^1 is sufficiently high (i.e. as long as $\frac{(1-\lambda)q_R^1}{1-\lambda q_R^1} \geq q_L^2)$, by continuity, there exists $\overline{q}$ such that for $q_R^1 \geq \overline{q}$, $(0,0)$ dominates $(1,1)$.

Finally, using Lemma 2, we know that $(0,0)$ dominates any other (p_1, p_0) such that $\overline{q}_R^2, \underline{q}_R^2 \geq q_L^2$. Because $(1,1)$ dominates any (p_1, p_0) with $\overline{q}_R^2 \geq q_L^2 \geq \underline{q}_R^2$, $(0,0)$ also dominates all these points, showing the result.

□

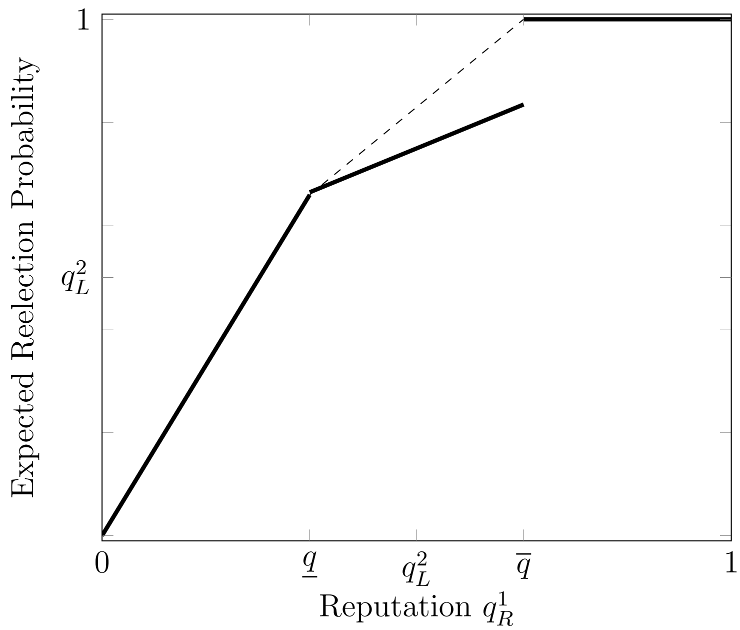
Proposition 6. *Given $\underline{q}, \overline{q}$, there exist thresholds $\underline{\underline{q}} < \underline{q} < \overline{q} < \overline{\overline{q}}$ such that*

- *For $q_R^0 \leq \underline{\underline{q}}$, partisanship π^* is decreasing from $1/2$ at q_R^0 to 0 at $\underline{\underline{q}}$.*
- *There exists $q_\dagger \in [\underline{\underline{q}}, \overline{q} < \overline{\overline{q}}]$ such that for all $q_R^0 \geq q_\dagger$, $\pi^* < 1$.*

- *For* $q_R^0 \geq \overline{\overline{q}}$*,* $\pi^* = 1$*.*

Proof. We graph the value function of R, $V_R(q_R^1)$, as a function of q_R^1 in the figure below.

Figure A.2: Value Function of R As Function of q_R^1



Note that for q_R^1 low, achieving the concavification for low q_R^1 is achievable as a lottery between the beliefs 0 and $\underline{q}$, achieved using $(p_1, p_0) = (1, p_0^*)$, where p_0^* solves $\frac{q_R^0}{q_R^0 + (1-q_R^0)(1-\lambda)p_0^*} = \underline{q}$. p_0^* is increasing in q_R^0 until some point $\underline{\underline{q}}$, when it is equal to 1. By a similar argument from before, partisanship $\pi^* = 1 - \frac{1+p_0^*}{2}$ is then decreasing from 1/2 at 0 to 0 at $\underline{\underline{q}}$. A similar argument as earlier shows that above some threshold $\overline{\overline{q}}$, the optimal policy agenda is given by $(p_1, p_0) = (0, 0)$.

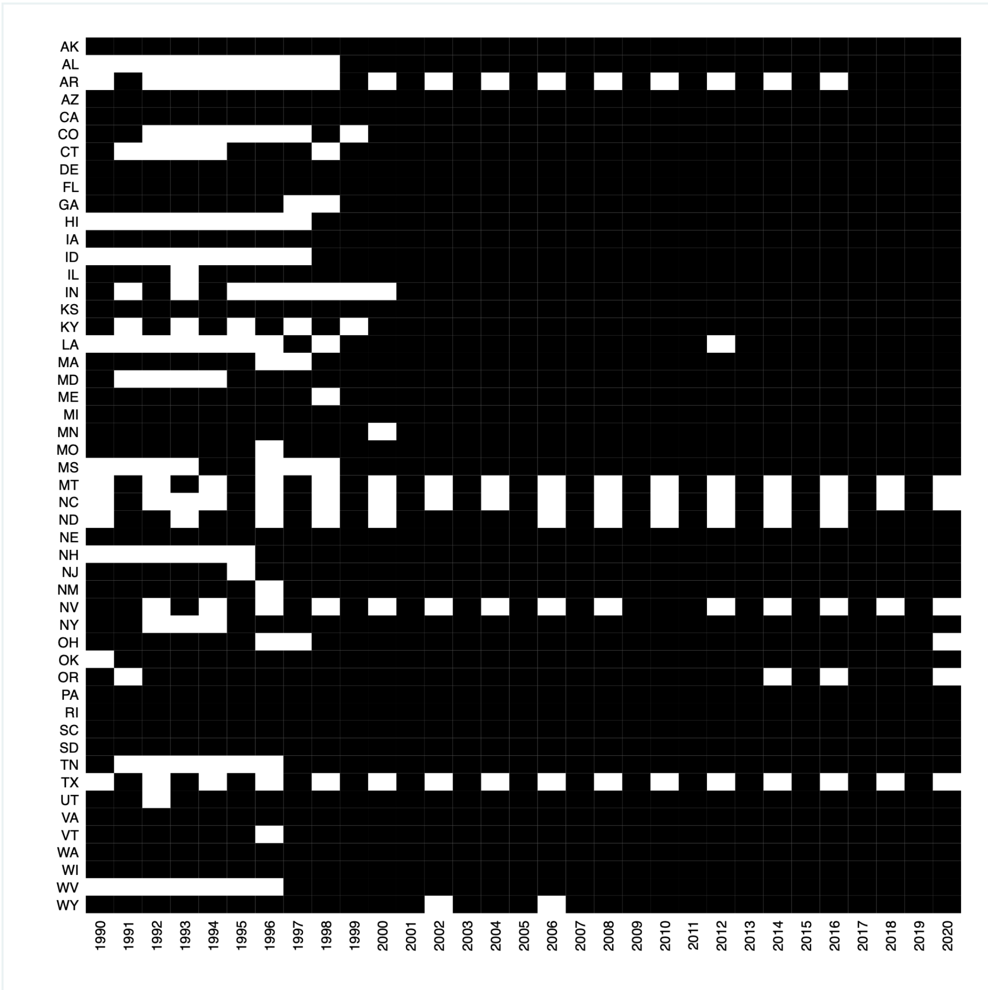
Let $q_\dagger$ solve $\underline{q} = \frac{(1-\lambda)q_R^0}{1-\lambda q_R^0}$. Note that for each (p_1, p_0), we have a line segment connecting $(\underline{q}_R^1, V_R(\underline{q}_R^1))$ to $(\overline{q}_R^1, V_R(\overline{q}_R^1))$. Moreover, for $q_R^0 \in [q_\dagger, \overline{\overline{q}}]$, the expected value of $(p_1, p_0) = (0, 0)$ is the segment connecting the value function at $\underline{q}$ to the value function at 1 (i.e. an extension of the value function on $[\underline{q}, \overline{q}]$).

We claim that for all $q_R^0 \in (q_\dagger, \overline{\overline{q}})$, $\pi^* < 1$, i.e. $(p_1, p_0) \neq (0, 0)$. To see this, note that by slightly increasing both p_1 and p_0, $(\underline{q}_R^1, V_R(\underline{q}_R^1))$ decreases linearly. However, $(\overline{q}_R^1, V_R(\overline{q}_R^1))$ slides to the left without decreasing, meaning the line segment steepens and, at the prior q_R^0, generates an improvement on $(p_1, p_0) = (0, 0)$. Finding an expression for π^* for middling points is difficult since the precise expressions are qualitatively dependent on λ, q_L^2. Can probably show that $p_1 = p_0$. The expressions for points in between are generally dependent on λ and q_L^2.

$\square$

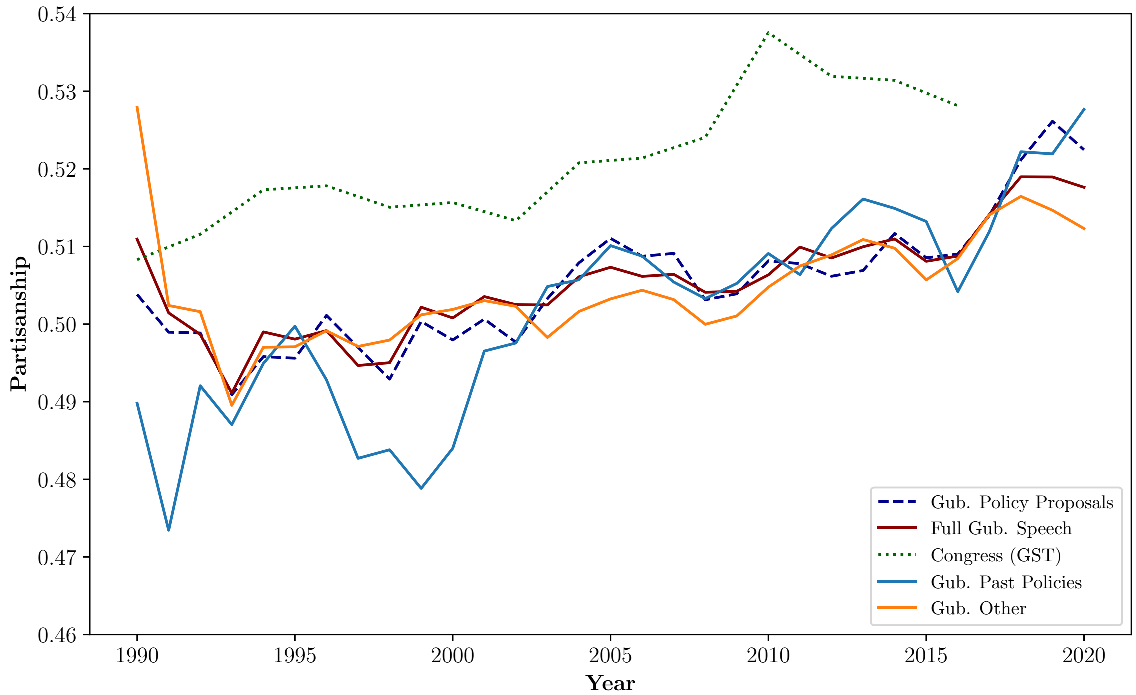
Appendix B Auxiliary Tables and Figures

Figure B.1: Usable Data Coverage by State and Year



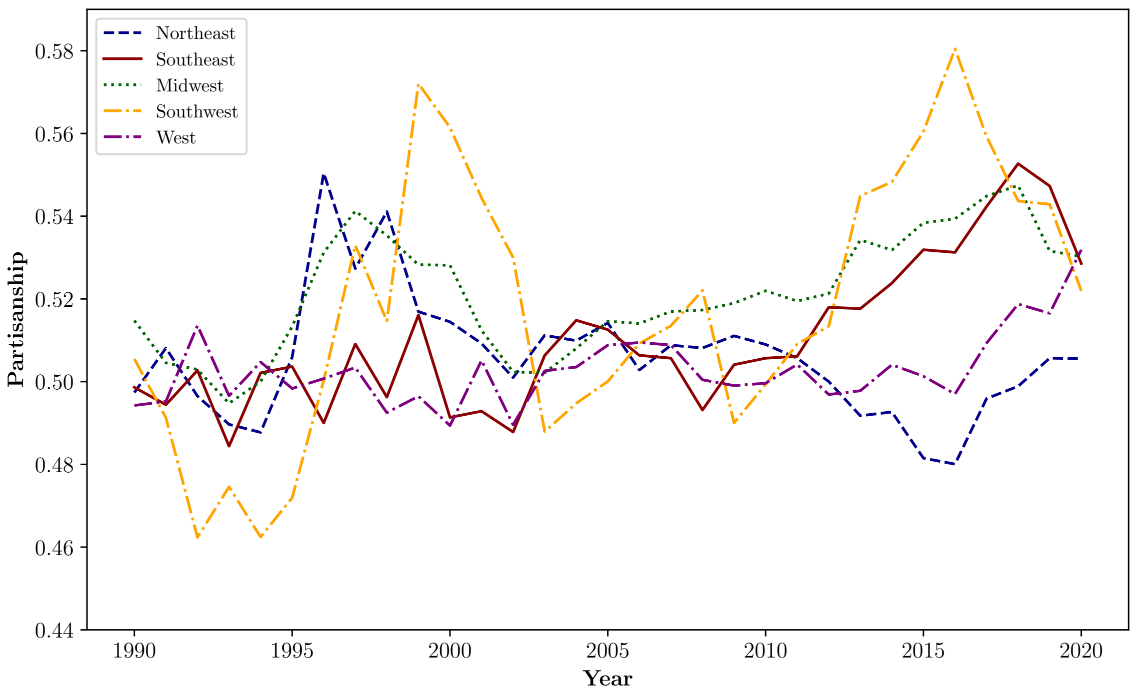
Solid black squares indicate availability of usable speech for given state and year. Empty squares indicate lack of speech data for that year. Some states experience periodicity in missing speeches due to biannual delivery of addresses, such as Texas.

Figure B.2: Partisanship of US Gubernatorial Speeches, Full Speech, Policy Proposals, Past Policies, and Other Speech, vs. Congressional Record: 1990-2020



Partisanship of gubernatorial speech calculated using Gentzkow, Shapiro, and Taddy (2019) leave-out estimator. "Gub. Policy Proposals" computes estimator for gubernatorial speech snippets coded as discussing policy proposals on corpus of US governors' speech from 1990-2020. "Full Gub. Speech" computes estimator for all gubernatorial speech in given year. "Gub. Past Policies" computes estimator for snippets coded as discussing policies but not policy proposals. "Gub. Other" computes estimator for snippets coded as not discussing policies. "Congress (GST)" series is partisanship of Congressional speech using leave-out estimator, extracted from Figure 2A of Gentzkow, Shapiro, and Taddy (2019).

Figure B.3: Average Partisanship of US Gubernatorial Speeches Policy Proposals by US Region: 1990-2020



Partisanship of gubernatorial speech calculated using Gentzkow, Shapiro, and Taddy (2019) leave-out estimator on US gubernatorial speech snippets coded as discussing policy proposals. Northeastern states are CT, ME, MA, NH, NJ, NY, PA, RI, VT. Southeastern states are AL, AR, DE, FL, GA, KY, LA, MD, MS, NC, SC, TN, VA, WV. Midwestern states are IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD, WI. Southwestern states are AZ, NM, OK, TX. Western states are AK, CA, CO, HI, ID, MT, NV, OR, UT, WA, WY.

Table B.1: Swing States, Republican States, and Democratic States

Swing States	**Republican States**	**Democratic States**
AK	AL	CO
AR	AZ	DE
CA	FL	HI
CT	IA	KY
GA	ID	MD
IL	MA	MO
IN	MI	NC
KS	MS	NY
LA	ND	OR
ME	NE	PA
MN	NM	VA
MT	NV	VT
NH	OH	WA
NJ	SC	WV
OK	SD	
RI	TX	
TN	UT	
WY	WI	

Table B.2: Partisanship by Approval Decile, Legislative Alignment, and Reelection Eligibility, 1990-2020

		Reelect ×	Leg. Align ×	Reelect × Leg. Align ×
Appr. 1-cile	-0.588	1.165**	0.506	-0.448
	(0.417)	(0.478)	(0.497)	(0.31)
Appr. 2-cile	-0.438	0.767	0.541	-0.44
	(0.425)	(0.486)	(0.546)	(0.309)
Appr. 3-cile	-0.088	0.161	-0.21	0.099
	(0.46)	(0.509)	(0.543)	(0.294)
Appr. 5-cile	-0.155	0.549	0.047	-0.256
	(0.439)	(0.496)	(0.517)	(0.31)
Appr. 6-cile	-0.955**	1.325***	0.971*	-0.101
	(0.408)	(0.462)	(0.496)	(0.291)
Appr. 7-cile	-0.459	1.022**	0.65	-0.563*
	(0.412)	(0.472)	(0.496)	(0.31)
Appr. 8-cile	-0.831*	1.236**	1.184**	-0.057
	(0.453)	(0.502)	(0.539)	(0.305)
Appr. 9-cile	-0.707*	1.261***	0.511	-0.385
	(0.395)	(0.453)	(0.49)	(0.309)
Appr. 10-cile	-0.991**	1.62***	0.863*	-0.49
	(0.418)	(0.491)	(0.513)	(0.345)
Constant	0.394	-0.852**	-0.213	0.367*
	(0.346)	(0.378)	(0.391)	(0.218)
N			1108	
Num. States			48	
Year F.E.			Yes	
State F.E.			Yes	
R^2 Within			0.1074	

Dependent variable measures partisanship of US Governor State of the State speeches using Gentzkow, Shapiro, and Taddy (2019), as calculated in equation (3), normalized by sample mean and standard deviation. Approval decile represents decile of approval rating by state, calculated using previous year's fourth quarter approval from Singer (2023) after first year in office, with first quarter approval utilized for first year in office. First column of coefficients measures baseline levels of partisanship by approval decile for lame duck governors, i.e. α_k terms in equation (5), with constant corresponding to omitted category of fourth decile. Names of second through fourth columns represent variables being interacted with approval decile. Second column of coefficients measures baseline partisanship of reelectable governors relative to lame ducks by approval decile, i.e. β_k coefficients. Third column measures level of partisanship for legislatively aligned lame duck governors relative to unaligned, i.e. γ_k coefficients. Fourth column measures level of partisanship for reelectable governors with aligned legislatures relative to unaligned legislatures, i.e. δ_k coefficients. Third column compares partisanship of reelectable governors in gubernatorial election years to all lame duck governors. Fourth column compares partisanship of reelectable governors to all lame duck governors except those in their last year in office. Data for Idaho (no approval data) and Nebraska (does not recognize political parties in legislature) omitted. Standard errors in parentheses. $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table B.3: Partisanship by Approval Quintile, Legislative Alignment, Reelection Eligibility, and Competition, 1990-2020

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Reelect × Appr. 1-tile	0.875***	0.961***	0.866**	1.161***	1.245**	0.767	0.434
	(0.332)	(0.358)	(0.424)	(0.375)	(0.501)	(0.761)	(0.560)
Reelect × Appr. 3-tile	0.944***	0.908***	1.184***	1.211***	1.750***	-0.269	0.362
	(0.328)	(0.349)	(0.437)	(0.361)	(0.509)	(0.563)	(0.584)
Reelect × Appr. 4-tile	0.983***	0.956***	1.249**	1.204***	1.711***	0.408	0.614
	(0.333)	(0.352)	(0.486)	(0.383)	(0.558)	(0.588)	(0.552)
Reelect × Appr. 5-tile	1.332***	1.267***	1.656***	1.570***	1.879***	1.420**	0.644
	(0.325)	(0.357)	(0.409)	(0.355)	(0.507)	(0.575)	(0.565)
Reelect × Align × Appr. 1-tile	-0.521**	-0.574**	-0.524	-0.541**	-0.775**	-0.933**	-0.0529
	(0.212)	(0.256)	(0.402)	(0.213)	(0.337)	(0.368)	(0.378)
Reelect × Align × Appr. 3-tile	-0.241	-0.161	-0.685	-0.218	-0.797**	0.192	-0.0465
	(0.203)	(0.240)	(0.420)	(0.204)	(0.330)	(0.314)	(0.377)
Reelect × Align × Appr. 4-tile	-0.360*	-0.346	-0.737	-0.363*	-0.743**	0.390	-0.969**
	(0.210)	(0.245)	(0.468)	(0.212)	(0.347)	(0.326)	(0.386)
Reelect × Align × Appr. 5-tile	-0.502**	-0.433	-0.718*	-0.503**	-0.0314	-0.445	-1.425***
	(0.222)	(0.272)	(0.413)	(0.224)	(0.380)	(0.331)	(0.411)
Reelect × Leg Align	0.436***	0.415**	0.691**	0.424***	0.618***	0.376*	0.254
	(0.145)	(0.174)	(0.277)	(0.146)	(0.233)	(0.216)	(0.273)
N	1108	910	518	1028	421	369	318
Num. States	48	48	47	48	18	16	14
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Type	All	All	All	All	Swing	Rep.	Dem.
Year Type	All	Non-reelect.	Reelect.	No Lame Duck Last	All	All	All
R^2 Within	0.0913	0.0914	0.188	0.0896	0.208	0.355	0.336

Dependent variable measures partisanship of US Governor State of the State speeches using Gentzkow, Shapiro, and Taddy (2019), as calculated in equation (3), normalized by sample mean and standard deviation. Regressors measure level of partisanship for reelectable governors as compared to lame duck governors by quintile of governor's approval rating in Q4 of previous year, normalized by state, interacted with whether governor is aligned with legislature. For governors in first year in office, approval calculated using first quarter's approval rating. Omitted category is reelectable governor in second quintile of approval with unaligned legislature. Legislative alignment measured as whether more than half of legislators match governor's party. First column displays results for entire sample. Second column compares partisanship of reelectable governors in non-election years to all lame duck governors. Third column compares partisanship of reelectable governors in gubernatorial election years to all lame duck governors. Fourth column compares partisanship of reelectable governors to all lame duck governors except those in their last year in office. Fifth column displays baseline results from first column but with swing states, sixth column for Republican states, seventh for Democratic states. Republican states defined as those with Republican governors more than 20 years in sample. Democratic states defined as those with Democratic governors more than 20 years in sample. Swing states defined as residual. Data for Idaho (no approval data) and Nebraska (does not recognize political parties in legislature) omitted. Standard errors in parentheses. $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$

Appendix C Handcoding Guide

Below is the guide provided to research assistants for the hand-coding task.

General remark. Remember that the goal of this task is to identify (past or current) policy proposals among gubernatorial speech snippets — as well as risky policy proposals —that will be used to train a large language model. As a guiding principle when coding, it may be useful to ask yourself: is the language in this snippet relevant to identifying policy proposals, past/current proposals, or risky policy proposals?

For example, if a governor spends a lot of time in a snippet on rhetoric, but then at the very end mentions a policy she passed, we wouldn't code that as "yes, this is about as policy" even though a policy may be mentioned by name at the end. This is because the language of that snippet, by and large, does not talk about past policy proposals.

If a governor is clearly reflecting on the content of a policy proposal —but the policy is not mentioned by name —this would also be coded as "referring to a policy proposal." The reason is that we are trying to figure out how much time governors spend in their speeches discussing policy proposals (as opposed to other things). So the relevancy of snippets to this category — or any of the other categories —should be assessed using these sorts of heuristics.

Coding Guidelines. The outline below details each of the main categories to be coded, as well as examples ("easy" and "hard") of each of the codings.

1. "Policy." Coded as "1" if the snippet discusses the enactment of a state-level policy (either passed by the governor, state government, or referendum) and "0" if it does not. A policy discussion is a reference to a specific act of legislation or law, a concrete proposal to increase or decrease funding to a certain cause, other legal orders proposed by the government to take certain concrete actions, and discussions of details of any of the above.

    - Example of 0 (easy): "I will continue to speak out against those who promote prejudice. I know you will too. And I will tell you this: a handful of people who may want to burn a cross are no match for 10,000 Idahoans who marched to support the Table Rock Cross." (ID, 2000).
    - Example of 0 (hard): "It is simply not pono for our families to be living in cars, people to be sleeping in the doorways of businesses downtown or on picnic tables in our parks. There is no one silver bullet to solve the problems of homelessness and affordable housing, but there are many good ideas that can and should be

enacted." (HI, 2006). Discusses an issue and hints at the concept of a solution, but does not concretely address a policy.

- Example of 0 (hard): "The budget is balanced but great risks and uncertainties lie ahead. The federal government, the courts or changes in the economy all could cost us billions and drive a hole in the budget. The ultimate costs of expanding our health care system under the Affordable Care Act are unknown. Ignoring such known unknowns would be folly, just as it would be to not pay down our wall of debt. That is how we plunged into a decade of deficits." (CA, 2013). Does not actually discuss a governor or state-led policy initiative, despite referring to the ACA (a federal initiative).
- Example of 1 (easy): "The Reform Albany Act will have as its centerpiece an independent ethics commission that will have jurisdiction over State government. This commission will have the power to enforce campaign finance and end pay-to-play and bring jurisdiction and oversight to so-called good government groups, who hide their donors behind walls of sanctimony." (NY, 2010)
- Example of 1 (hard): "We were asked to meet yet another list of requirements. The federal government objects not on a scientific basis, but upon a vaguely defined legal risk analysis. This is not just about semantics. It is about achieving wolf delisting on rational terms that work for Wyoming. I do not care what we call them as long as we can manage them. The new demands from the federal government go far beyond the word predator and include changing how a pack is defined and even questioning whether the national parks will assume responsibility for half of the 15 packs it plans for Wyoming." (WY, 2004). Refers to federal policy/definitions, which is confusing, but also details of how the state will implement such a policy out in the context of their own state.

2. "Proposal/Past." Only applies if "policy" coded as "1." Coded as "1" if the snippet refers to a policy that has just put into place or will be put into place in the future. Coded as "0" otherwise — in particular, if a governor is reflecting on the effects of a policy in the past. Coded as "0.5" if it contains substantive elements of both. Continuing a preexisting policy implemented from the past without any substantive changes also does not constitute a (future) policy proposal —this would be coded as a "0."

    - Example of 0 (easy): "Clearly we are doing things right. We are making progress. But the job numbers are only part of the story. In addition to making it easier for businesses to create jobs, we have also invested in public works projects. In doing so, we improved our public infrastructure, made it more attractive for businesses to relocate or stay here, and directly created even more jobs." (OR, 2006). Clearly refers to a past policy action but not a future action.

- Example of 0 (hard): "...We have budgeted more than 260 million for higher ed capital. That funds new science facilities at Jackson State Community College and the University of Tennessee. It also includes nearly 25 million for improvements to our colleges of applied technology all across the state, and it includes the funds to complete the long awaited fine arts building at East Tennessee State University. The reason we continue to make these investments in education is we want Tennesseans to have the education, training and skills necessary to have a good paying, high-quality job..." (TN, 2015). Suggests that we "have budgeted" (not will budget) money, and that this process will continue, but does not propose something inherently novel.
- Example of 1 (easy): "By reducing our dependence on foreign energy sources we can not only stop sending our energy dollars to unstable parts of the world, but we can become a world leader in clean energy technologies, from wind and solar power to geothermal and fuel cells...." (NY, 2004). References clear future policy action (reducing dependence on foreign energy source.)
- Example of 1 (hard): "We need a new, more dynamic, economic development strategy. One that can leverage the resources of our business sector, as well as higher education and not for profits. The Delaware Economic Development Office needs to be at the forefront of moving Delaware into the 21st century economy. So my first act as governor was to find a way to energize our economic development efforts. We are going to do that by bringing private sector involvement into DEDO." (DE, 2017). Reflects on a past action, but lays out a policy for the coming year (private sector involvement).
- Example of 0.5: "Some said that Louisiana could not change its stripes and make a new start... but we did.And now... after our recent successes in ethics reform and tax reform... we must take the next step forward... an overhaul of our workforce development system." (LA, 2008). Second sentence reflects on past risky policies, and then talks about workforce development.