Message Legislation

and the Politics of Virtue Signaling

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Abstract

Message bills are hopeless legislation constructed not to change public policy but instead to signal desirable attributes of incumbents to constituents – virtue signaling. Well-known examples are the repeated hopeless attempts to repeal the Affordable Care Act during the 113th and 114th Congresses. To explore the logic of message legislation, we create a formal principal-agent model of electoral accountability. The theory makes explicit predictions about who signals, on what kind of issues, and when. Then, using novel and extensive data on bill locations and status quo locations, we test the predictions. The data suggest that most introduced bills are not viable. Who messages and on what topics appear consistent with the theory; the evidence is less supportive on when members message. We further show that the patterns predicted for non-viable message bills do not hold in viable bills. We briefly discuss the normative implications. Message legislation helps voters select zealous representatives, but perhaps at the cost of lower quality policy-making.

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This is now the pattern of business in the House of Representatives: Spend most of the time passing bills designed not to become law but to satisfy the ideological desires of conservative voters. And block bills that actually need to get passed.

—Editorial, "The Bills to Nowhere," *New York Times*, June 7, 2012

Introduction: The Bills to Nowhere

In every Congress from the 112th to the 116th (2011 to 2020), Congressman Rob Woodall, a Georgia Republican representing a suburb of Atlanta, introduced H.R. 25, which he dubbed "The Fair Tax Act." The bill would have repealed the federal income tax, abolish the Internal Revenue Service, and create a national sales tax. If enacted, the Fair Tax Act would have been the boldest revision to the federal fisc since the 16th Amendment to the Constitution in 1913, creating the federal income tax. Not surprisingly, the congressman's bill never went anywhere. Indeed, Woodall was not even a member of the House Ways and Means Committee, which commands the tax code. Despite his very modest success as a legislator, Woodall faced no serious primary opponent after his initial election, until his announced retirement in 2019. In 2020, the district elected a Democrat.

In the 115th Congress (2017-2018), Representative Mark Pocan, a Democrat representing the famously liberal college town of Madison, Wisconsin, introduced H.R. 6361, the "Establishing a Humane Immigration Enforcement System Act." The bill would have abolished ICE, the Immigration and Customs Enforcement agency, without establishing any replacement. Doing so would arguably open America's borders to illegal immigrants. Pocan's effort at government reorganization went to the relevant committees of the House, where it promptly died. After his initial election in 2012, Rep. Pocan has won more than 99% of the primary vote in his district, considered a safe Democratic seat.

These bills exemplify clearly hopeless legislation, introduced in Congress despite a manifest inability to secure a majority or overcome the opposition of critical veto players. They were "bills to nowhere," in the apt words of the editorial quoted above. Perhaps the most spectacular of the bills to nowhere were the legislative vehicles offered by House Republicans during the 113th and 114th Congresses to "repeal and replace" the Affordable Care Act, Obamacare. In this period, Barack Obama controlled the presidential veto while congressional Democrats, who supported the ACA, had sufficient numbers in the Senate to deny Republicans filibuster-proof and veto-proof majorities. Hence, the actual enactment of any "repeal and replace" legislation was a mathematical impossibility. Republicans nonetheless essayed the attempt,

not once but over and over and over. Though less spectacular, Democratic attempts to de-fund the Iraq War during the Bush Administration were equally futile, yet the target of doggedly repeated efforts.

Why do members of Congress introduce and devote time and effort to clearly hopeless bills? One answer is that the bills are "message bills." As described by Frances Lee in a prominent study, such bills encompass "an attractive-sounding idea with the following characteristics: (1) its members support it; (2) the other party opposes it; and (3) it is not expected to become law" (Lee, 2016, 143). But, what is the message in message bills? One possibility involves blame game politics. In other words, the bills may try to force members of the opposition party to cast electorally damaging votes (Groseclose and McCarty, 2001; Gilmour, 1995). Another possibility, however, is *virtue signaling*: the bills convey a positive attribute of their authors and co-sponsors to constituents. If constituents find the signal credible, the incumbent becomes more attractive as a representative, thereby boosting his or her re-election prospects, perhaps especially in primaries. Such bills are pure position-taking, in Mayhew's (1974) famous phrase.

Virtue-signaling message bills raise important and intriguing questions. First, why would voters believe the message sent in bills doomed to failure, especially if voters understand that politicians are just using the bills to message? Second, how frequent are non-viable bills? Third, which members of Congress write and sponsor virtue-signaling message bills, in what topical areas, and when do they do it? Finally, what are the consequences for governance? What happens when legislators devote a great deal of their time and effort to fake rather than real legislating?

In this paper, we attempt to answer the first three of these questions. Our approach is both theoretical and empirical. First, to clarify the logic of message legislation, we create a formal game-theoretic model. The model adapts principal-agent models of electoral accountability to this specific legislative setting. Our approach complements Patty (2016) which employs a costly signaling model to develop a theory of why legislators obstruct bills that they know will inevitably become law. Our model studies legislators who introduce bills that they know will inevitably fail. While a similar costly signaling mechanism makes virtue signaling credible in both models, there is an important distinction between these two legislative settings. Virtue signaling through hopeless obstruction requires opposition legislators to wait for the majority to introduce a bill that the majority is willing to defend against obstruction. Virtue signaling through message bills is a tactic available to any legislator willing to take time to develop and introduce a piece of legislation. Our theory makes clear empirical predictions about what type of issues are attractive venues for message bills, which members of Congress find it more attractive to engage in messaging, and when they are more likely to do so.

Actually testing these predictions requires new and extensive data on bill locations and status quo locations, as well as more-standard data on ideal points and the attributes of congressional districts. To derive the critical bill and status quo locations, we employ data from Crosson, Furnas and Lorenz (2019). Their approach extends the analysis in Peress (2013) by jointly scaling roll call data, bill sponsorship data, and interest group position-taking data to recover plausible bill and status quo locations. (Thieme (2020) uses a similar approach at the state level.) The data provide locations for 1007 bills introduced between the 110th and 114th Congresses. These offer sufficient observations to detect whether or not the non-viable bills display the patterns predicted by the theory. In addition, the viable bills allow a robustness check, to determine whether only the non-viable bills display the predicted message-sending patterns.

Our main findings are as follows. First, the bulk of introduced bills appear to be non-viable – their spatial locations relative to the status quo indicate they could not command a majority and over-come the opposition of critical veto players. Second, as predicted, topical areas that are highly salient in specific congressional districts are much more likely to draw non-viable legislation drafted or sponsored by representatives from those districts. Third, as predicted, members whose ideal points lie far from the status quo are more likely to engage in messaging. However, in contrast to the theory's prediction, the likely opening of policy windows in the near future did not stimulate statistically significantly more message bills beforehand. Fourth, only non-viable bills display the patterns predicted for message legislation. Viable and non-viable bills are quite different from one another.

The prevalence of message legislation raises possibly disturbing implications about Congress's policy making capacity in the current age. Space does not allow us to pursue these implications fully, but we touch on relevant points in the Discussion.

Theory

We develop a principal-agent model of electoral accountability to construct a theory of message legislation and derive empirical implications. The players are a *voter* and an incumbent *legislator*.[1] The voter dislikes a status quo policy and desires its repeal. The voter suffers a loss of $\lambda > 0$ if the status quo is not repealed. The disutility from the status quo, λ, represents the distance between the status quo and the voter's preferred policy. There are two types of legislators, *slackers* and *zealots* (Gailmard and Patty, 2007), who differ in the intensity of their desire to repeal the status quo. Like the voter, a zealot receives a payoff of $-\lambda$ if the

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[1]Consistent with convention in the principal-agent literature, we use the pronouns "she/her/hers" for the voter (principal) and "he/him/his" for the legislator (agent).

status quo is not repealed. The slacker cares less about the status quo than the zealot and voter. The slacker receives a policy payoff of 0 whether or not the status quo is replaced.

Both slackers and zealots earn a payoff of $b > 0$ from holding office. The office benefit absorbs all office benefits not pertaining to legislator preferences over the particular status quo that the voter and zealot intensely dislike. This includes both material benefits of holding office as well as policy influence that a legislator can assert in other policy areas he values. With this interpretation of b, the slacker is not necessarily a single-minded seeker of material office rents. We only require that the slacker cares less about repealing the particular status quo in question than the zealot and voter. The legislator's type is private information. It is common knowledge that the legislator is a zealot with probability $1/2$.

The game is played with the following sequence of moves. First, Nature selects the legislator's type. The game then enters a legislative phase. We assume that a veto player blocks any effort by the legislator to change the status quo. Both the voter and incumbent know that any attempt to change the status quo is futile. The legislator can, however, exert doomed effort to repeal and replace the status quo. The legislator can attempt to replace the status quo any number of times. We denote the number of times the legislator chooses to attempt repeal with $n \in \mathbb{N}$.[2] Attempting to repeal the status quo requires scarce time and resources. Each attempt costs the incumbent $k > 0$.[3]

After the legislative phase, the voter observes the incumbent legislator's attempts to repeal and replace the status quo, n, with probability ζ. With probability $1 - \zeta$ the voter is inattentive and does not observe n. The ζ parameter represents the *salience* of an issue to the voter. A voter is quite likely to know whether or not her representative attempts to change a status quo that directly affects her such as one regulating the industry in which she works. She is less likely to pay attention to the legislator's activities in policies areas that do not affect her personally.[4]

The voter then chooses between the incumbent and a challenger in an election. Because legislators vary in terms of the intensity of their preferences, it is natural to conceive of the challenger as a primary rather than general election challenger. Like the incumbent, the challenger is a zealot with probability $1/2$. In addition to the policy consequences of reelecting the incumbent versus the challenger, we assume

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[2]In a previous version of the model, the incumbent also selects a spatial location for each bill where the status quo is λ and voter and zealot's ideal points are 0. In this earlier version of the model, the veto player blocks any change to the status quo less than λ. We therefore lose little generality with respect to this alternative model by restricting the incumbent's strategy here to complete repeal. Details are available upon request.

[3]We model legislation as a discrete choice rather than as continuous effort in order to capture the empirical phenomenon we are studying: observable instances of non-viable legislation.

[4]Additionally, ζ may capture features of the media landscape. The presence of cable news, the internet, and social media intuitively make a legislator's actions more visible to the voter.

that voter takes into account additional factors unrelated to the policy issue in question when making her decision. Prior to the election, the voter observes a private independent taste payoff from voting for the incumbent, ω, drawn from a continuous and strictly increasing distribution, F. We assume that the mean of F is zero and that its density, f, is symmetric.[5]

The winner of the election is appointed to the legislature. Following the election, the policy window opens with probability ρ. If the policy window opens, the veto player accepts repeal of the status quo. For simplicity, we model a second period of legislative action in reduced form. We assume that the status quo is successfully repealed at no cost to the legislator if and only if the policy window opens and the second-period legislator is a zealot.[6]

The game then ends and payoffs for the legislator and voter are realized as follows.

$$u_L = b\mathbb{1}(\text{legislator is reelected}) - \lambda\mathbb{1}(\text{legislator is a zealot and status quo not repealed}) - nk$$

$$u_V = \omega\mathbb{1}(\text{voter reelects incumbent}) - \lambda\mathbb{1}(\text{status quo not repealed})$$

Both types of incumbent legislators receive $-nk$ from their failed legislative effort prior to the election and earn the office payoff b if and only if they are reelected. A zealot who loses the election continues to care about policy and receives a payoff of $-\lambda$ if the status quo is not repealed after the election.[7] The voter receives $-\lambda$ if the status quo is not repealed and receives ω if and only if she reelects the incumbent.

Equilibrium

Our solution concept is a pure-strategy undefeated sequential equilibrium (Mailath, Okuno-Fujiwara and Postlewaite, 1993).[8] We are interested in identifying the conditions under which we should expect to observe non-viable legislation and the conditions under which this constitutes message legislation. To this end, we consider a separating equilibrium in which the zealot legislates a positive number of times, $n^* > 0$,

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[5]This implies that $F(0) = 1/2$ and $F(-x) = 1 - F(x)$. An example of such a distribution is a normal distribution with mean zero.

[6]If the second legislative period is explicitly modeled, this is the unique equilibrium outcome if the cost of viable legislation is sufficiently low.

[7]This distinguishes a zealous legislator from a policy-minded implementer who may avoid some or all of the distress and shame of carrying out a detested policy by quitting the job, a "clean hands" phenomenon (Cameron and de Figueiredo, 2020).

[8]Sequential equilibrium requires that for each n that at least one type of legislator selects in equilibrium, if the voter observes n, her posterior belief about the legislator, $\mu(n)$, satisfies Bayes' rule. The undefeated refinement places a requirement on $\mu(n)$ for each n that neither type selects in equilibrium. Consider an equilibrium σ with posterior beliefs $\mu(\cdot)$ in which neither type selects n. Now consider an alternative equilibrium σ' with posterior beliefs $\mu'(\cdot)$ that satisfies two properties: i) at least one type selects n and ii) the set of types who choose n is precisely the set of types who prefer σ' to σ. If σ' exists and $\mu(n) \neq \mu'(n)$, then σ' *defeats* σ. The equilibrium σ is *undefeated* if and only if either $\mu(n) = \mu'(n)$ or no σ' exists.

and the slacker does not legislate. In this equilibrium, costly non-viable legislation reveals the zealot's type to the voter and functions as an effective message. We therefore refer to this equilibrium as a *messaging equilibrium*.[9]

In a messaging equilibrium, voter reelects the incumbent if and only if she weakly prefers the incumbent to the challenger given her beliefs. Let $\mu(n)$ denote the voter's posterior belief that the incumbent is a zealot when she observes n. If the voter reelects the incumbent, she receives the taste payoff ω and suffers policy loss of λ unless both the policy window opens and the incumbent is a zealot. Her expected payoff from reelecting the incumbent when she observes n is therefore $-\lambda(1 - \mu(n)\rho) + \omega$. If she elects the challenger, she does not receive ω and suffers policy loss of λ unless both the policy window opens and the challenger is a zealot. Because the challenger is a zealot with probability $1/2$, her expected payoff from electing the challenger is $-\lambda(1 - \rho/2)$. Comparing these two payoffs, if the voter observes n, she reelects the incumbent if and only if

$$\frac{\lambda\rho}{2}[2\mu(n) - 1] + \omega \geq 0$$

By Bayes' rule, if the the voter observes n^*, she believes the incumbent a zealot: $\mu(n^*) = 1$. Thus if she observes n^*, she reelects the incumbent if and only if

$$\frac{\lambda\rho}{2} + \omega \geq 0$$

With $\omega \sim F$, the probability that the incumbent is reelected when the voter observes n^* is $F(\frac{\lambda\rho}{2}) > 1/2$. If the voter does not observe the legislative stage, she believes the incumbent is a zealot with probability $1/2$ by Bayes' rule. In this case she reelects the incumbent if and only if her private taste payoff from reelecting the incumbent is non-negative: $\omega \geq 0$. She therefore reelects the incumbent with probability $F(0) = 1/2$ if she does not observe n. Because the voter observes n with probability ζ, the equilibrium probability that an incumbent is reelected if he chooses n^* is

$$P^*(\zeta, \lambda, \rho) \equiv \zeta F(\frac{\lambda\rho}{2}) + \frac{(1-\zeta)}{2}$$

If the voter observes the legislative stage and sees that the incumbent does not legislate, she believes the incumbent is a slacker by Bayes' rule: $\mu(0) = 0$. We assume that in a messaging equilibrium, if the voter

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[9]We provide a complete formal definition of a messaging equilibrium in the Appendix.

observes an unexpected amount of legislation less than n^*, she believes the incumbent is a slacker. Thus if the voter observes $n < n^*$, she reelects the incumbent if and only if

$$-\frac{\lambda\rho}{2} + \omega \geq 0$$

It follows that an incumbent who chooses $n < n^*$, is reelected with probability $1 - P^*(\zeta, \lambda, \rho)$ in a messaging equilibrium.

If an incumbent selects n^*, we say that he "messages" or is "messaging." In equilibrium, messaging raises the incumbent's probability of reelection by

$$2P^*(\zeta, \lambda, \rho) - 1$$

relative to no messaging, $n = 0$.[10]

The gain in reelection probability that messaging affords an incumbent is increasing in ζ, λ, and ρ. If the voter is likely to be attentive to the incumbent's legislative actions, messaging becomes more likely to be observed and rewarded. Failure to message also becomes more likely to be observed and punished. If it is likely that the policy window opens and the voter strongly dislikes the status quo, the voter places greater weight on the intensity of her representative's preference for repealing the status quo (relative to taste payoff ω) when choosing between the incumbent and challenger.

For a messaging equilibrium to exist, the slacker must prefer not to message. The slacker only values reelection in order to earn the office benefit, b. Let

$$B^* \equiv b(2P^*(\zeta, \lambda, \rho) - 1)$$

denote the office value of messaging. The slacker is unwilling to pay more than $nk = B^*$ to receive this benefit of messaging. We now define n^* explicitly as the minimum amount of legislation such that the slacker prefers not to message, as equilibrium requires:

$$n^* \equiv \lceil \frac{B^*}{k} \rceil$$

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[10]Because legislation is costly and all $n < n^*$ yield the same probability of legislation, an incumbent who chooses not to message is best off choosing $n = 0$. Similarly, all $n > n^*$ are equilibrium dominated by n^* because $P^*(\lambda, \rho, \zeta)$ maximizes an incumbent's probability of reelection.

where $\lceil \cdot \rceil$ is the ceiling function which returns the smallest integer greater than or equal to its argument.

The zealot must prefer to message for the equilibrium to exist. If the zealot messages, he receives the office value of messaging, B^*. The cost of messaging, $kn^* = k\lceil \frac{B^*}{k} \rceil$, however, (weakly) exceeds B^*. We refer to the difference

$$k\lceil \frac{B^*}{k} \rceil - B^* \geq 0$$

as the "net cost of messaging" (with respect to the office benefit of messaging). In order for a messaging equilibrium to exist, the policy value of messaging to the zealot must must exceed the net cost of messaging.

From the zealot's perspective, reelection ensures that the status quo is successfully repealed if the policy window opens. His expected policy payoff conditional on reelection is therefore $-\lambda(1 - \rho)$. If he loses the election, the status quo is repealed only if the policy window opens *and* his replacement is a zealot. His expected policy payoff if he is not reelected is $-\lambda(1 - \rho/2)$. The policy value of reelection for the zealot is therefore $\frac{\lambda\rho}{2}$. Multiplying the policy value of reelection by the gain in probability of reelection that messaging affords yields the policy value of reelection to the zealot,

$$g(\zeta, \lambda, \rho) \equiv \frac{\lambda\rho}{2}[2P^*(\zeta, \lambda, \rho) - 1]$$

The policy value of reelection, $g(\zeta, \lambda, \rho)$, is increasing in each of its arguments. We establish above that the equilibrium probability of reelection when the incumbent messages, $P^*(\zeta, \lambda, \rho)$, is increasing in each argument. Additionally, the policy value of reelection to the zealot, $\frac{\lambda\rho}{2}$, is increasing in both λ and ρ. If the zealot strongly disfavors the status quo and the opportunity to repeal the status quo is likely to arise after the next election, the policy value of reaching the second period is high. We will use these properties of $g(\zeta, \lambda, \rho)$ below to derive empirical implications from the model.

Remark 1. *The policy value of messaging to the zealot, $g(\zeta, \lambda, \rho)$, is increasing in ζ, λ, and ρ.*

Comparing the zealot's policy value of legislation to the net cost of messaging reveals that the zealot prefers to message if and only if

$$g(\zeta, \lambda, \rho) \geq k\lceil \frac{B^*}{k} \rceil - B^* \tag{1}$$

Thus a messaging equilibrium exists if and only if (1) is satisfied. Note that $k\lceil \frac{B^*}{k} \rceil - B^* < k$ if and only if $\lceil \frac{B^*}{k} \rceil - \frac{B^*}{k} < 1$. It is a property of the ceiling function that for any $x \in \mathbb{R}$, $\lceil x \rceil - x \in [0, 1)$. Therefore the net cost of messaging to the zealot is bounded above by the cost of legislating once, k. The

cost of legislating once is a strict upper bound on the net cost of messaging to the zealot because n^* is defined as the *minimum* amount of legislation that makes the slacker (weakly) prefer not to message. Thus a sufficient condition for a messaging equilibrium to exist is

$$g(\zeta, \lambda, \rho) \geq k \tag{2}$$

In the Appendix we show that the messaging equilibrium is the only undefeated separating equilibrium. This rules out any separating equilibrium in which the zealot legislates more than the minimum amount required for legislation to send a credible message, n^*.

In addition to the messaging equilibrium, there may exist a pooling equilibrium in which neither type of incumbent legislates. We refer to this as a *no legislation (NL)* equilibrium.[11] In a NL equilibrium, the voter learns nothing new about the incumbent, regardless of whether she observes the legislative phase or not. The incumbent is therefore reelected with probability $1/2$. In addition to the NL equilibrium, other sequential pooling equilibria may exist in which both types of the incumbent legislate a positive number of times. Such equilibria require that the voter punishes the incumbent for not legislating even though legislation is uninformative to the voter. We show in the Appendix that these pooling equilibria do not survive our refinement; the NL equilibrium is the only undefeated pooling equilibrium.

Our refinement therefore leaves two possible pure strategy equilibria, the messaging equilibrium and the NL equilibrium. In the Appendix we establish that if the messaging equilibrium does not exist, the NL equilibrium exists. Thus if (1) fails, the unique equilibrium is NL. We now derive a sufficient condition for the messaging equilibrium to be unique.

In a NL equilibrium, the slacker receives a strictly positive expected payoff, $b/2$. By the definition of n^*, the slacker receives a non-positive payoff if he chooses n^* in the messaging equilibrium. The slacker therefore prefers no legislation in the pooling equilibrium to n^* in the messaging equilibrium. In the NL equilibrium, the zealot receives an expected payoff of $(b + \frac{\lambda\rho}{2})\frac{1}{2}$. In a messaging equilibrium, the zealot receives and expected payoff of $(b + \frac{\lambda\rho}{2})P^*(\zeta, \lambda, \rho)$. The zealot therefore prefers n^* in a messaging equilibrium to no legislation in the NL equilibrium if and only if

$$g(\zeta, \lambda, \rho) > 2k\lceil\frac{B^*}{k}\rceil - B^* \tag{3}$$

Note that (3) implies (1), the necessary and sufficient condition for a messaging equilibrium to exist.

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[11] We provide a complete formal definition of a NL equilibrium in the Appendix.

Therefore if (3) is satisfied, the undefeated refinement requires that in a NL equilibrium, the voter believes the incumbent is a zealot with probability one if she unexpectedly observes n^*. Given this off-path belief in a NL equilibrium, deviation to n^* yields the same expected payoff to the zealot as his equilibrium payoff in a messaging equilibrium. From (3), this deviation is profitable. Therefore if (3) is satisfied, the unique undefeated equilibrium is the messaging equilibrium. It is straightforward to check that the maximum value of $2k\lceil\frac{B^*}{k}\rceil - B^*$ is $2k$. Therefore the messaging equilibrium is unique if

$$g(\zeta, \lambda, \rho) \geq 2k \tag{4}$$

Proposition 1.

If $g(\lambda, \rho, \zeta) \geq k$, the messaging equilibrium exists.

If $g(\lambda, \rho, \zeta) \geq 2k$, the messaging equilibrium is unique.

If the messaging equilibrium does not exist, the no-legislation equilibrium exists and is unique.

Empirical Implications

We now use Proposition 1 and Remark 1 to derive empirical implications from the model. From Proposition 1, if the policy value of messaging to the zealot, $g(\lambda, \rho, \zeta)$, is sufficiently low, a messaging equilibrium may not exist. As $g(\lambda, \rho, \zeta)$ rises, a messaging equilibrium first becomes guaranteed to exist and then becomes the unique equilibrium as $g(\lambda, \rho, \zeta)$ rises further. We therefore expect to observe a higher prevalence of message legislation as $g(\lambda, \rho, \zeta)$ rises. From Remark 1, $g(\lambda, \rho, \zeta)$ is increasing in each argument. We therefore expect expect the prevalence of message legislation to be positively associated with λ, ρ, and ζ.

Hypothesis 1: Issue Salience

The probability of messaging is increasing in issue salience, ζ.

Hypothesis 2: Opening of Policy Window

The probability of messaging is increasing in the probability that the policy window opens, ρ.

Hypothesis 3: Distance from Status Quo

The probability of messaging is increasing in a legislator's ideological distance from the status quo, λ.

Data, Measurement, and Specification

Before detailing the data collected to test each of the above hypotheses, we first preface the basic empirical design we use to test our hypotheses. Thereafter, for each construct included in our empirical setup,

we detail the measurements necessary to capture the construct and the data we use to generate those measurements.

Design

In order to test our hypotheses, we estimate a series of models that incorporate each of ζ, ρ, and λ jointly. Our decision to do so reflects our desire to maintain congruence between our theoretical and empirical models: our belief is that each factor influences the observed outcomes simultaneously. However, before proceeding, it is worth noting that we do make one small empirical departure from our theoretical setup: namely, we measure the existence rather than the volume of messaging as our outcome variable. As we discuss below, we do so because of nature of our underlying data sources; however, given that our theoretical expectations in the messaging equilibrium hinge upon the zealot crossing a messaging *threshold,* we do not believe this decision alters the appropriateness of our empirical tests.

In general, then, our models take the following form:

$$Pr(\mathcal{M}_{ijt} = 1) = \mu \, + \, \alpha_j \, + \, \delta_t \, + \, \beta_1 \zeta_{ijt} \, + \, \beta_2 \rho_{jt} \, + \, \beta_3 \lambda_{ijt} \, + \, \mathbf{X}\beta \, + \, \epsilon_{it}$$

where $\mathcal{M}_{ijt}$ represents legislator i's decision about whether or not to message on issue j during congress t, ζ_{ijt} represents the salience of issue j to member i's district in congress t, ρ_{jt} represents the likelihood that the policy making window for issue j will open in congress $t + 1$,[12] and λ_{ijt} represents legislator i's distance from issue j's status quo location in congress t. The specification also includes issue- and session-level effects (α_j and δ_t, respectively), as well as a vector of control variables $\mathbf{X}$.

As the specification makes clear, we test each of our hypotheses at the member-issue-congress level, leveraging within-issue variation on virtue-signaling behavior. We operationalize our hypotheses at the issue-level for several reasons. Practical considerations, such as the measurement of particular independent variables like salience, render an issue-level analysis more tractable than other alternatives. These practical advantages notwithstanding, though, our primary reason for our level of analysis is rather straightforward: although members' policy making behaviors are typically observed at the bill-level, recovering a relevant alternative to messaging (i.e., the choice *against* messaging) in a manner interpretable across member-offices is impossible at the bill-level. That is, unless two legislators choose to sponsor legislation on precisely

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[12]That is, the probability, measured in Congress t that the *future* policy making window will open.

the same topic area, thereby addressing precisely the same status quo, one would be unable to assess why one legislator chose to message while another did not. By aggregating to the issue level, we circumvent this problem: all members face a choice about whether to message on a more general issue area such as education or defense policy, and they must allocate their attention accordingly. Thus, as we detail below, all of our variables are aggregated to one of twenty policy issue areas, drawn from the Comparative Agendas Project.

In what follows, we detail our means of capturing both the dependent variable and independent variables that lie at the center of our theory of virtue-signaling.

Data and Measurement

Decision to Message ($\mathcal{M}_{ijt}$).   Member i's decision to message on issue j constitutes the most central concept and measurement in the empirical tests of our theory. Conceptually, we define message bills as legislation written for the purpose of signaling, with no chance of actually passing into law. Empirically, we classify any bill as "messaging" if, by virtue of its spatial location, the location of its associated status quo, and the location of pivotal actors in Congress, the bill would fail to pass into law. Formally, we define a bill b as messaging if the following conditions obtain:

$$M_{bt} = \begin{cases} 1 & |q_{bt} - V_t| \leq |p_{bt} - V_t| \\ 0 & |q_{bt} - V_t| > |p_{bt} - V_t| \end{cases}$$

where p_{bt} and q_{bt} represent a bill b's proposal and associated status quo location, respectively, and V_t represents the pivotal actor in Congress t nearest to q_{bt}. In order to aggregate to the issue level, we define $\mathcal{M}_{ijt}$ = 1 if a member chose to sponsor *any* piece of messaging legislation within issue area j in Congress t. Formally,[13]

$$\mathcal{M}_{ijt} = \begin{cases} 1 & M_{ibt} = 1 \\ 0 & \text{otherwise} \end{cases}$$

In order to capture these messaging sponsorships, we require three sets of measurements. The first, of course, is the spatial location of the proposal itself; however, this information is not enough to isolate which bills are actually "hopeless." Instead, we also require a measurement of the bill's associated status

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[13]Technically, one could conceive of this as a count rather than a binary variable. However, due to data limitations and the general rarity of messaging within *particular* issue-congresses, we focus our analysis on the binary operationalization.

quo (q_{bt}) and the locations of relevant pivotal actors or veto players in the legislature (V_t)—all on the same scale. We draw these measurements from a new dataset, called cIGscores, developed by Crosson, Furnas and Lorenz (2019). Crosson et al. generate their estimates by jointly scaling cosponsorship, roll call, and interest group position-taking data throughout the legislative process.

As (Clinton, 2017) summarizes in his review of strategies for measuring the content and direction of policy changes, common methodologies for generating ideal point estimates (e.g. Poole and Rosenthal, 1997; Clinton, Jackman and Rivers, 2004) fall short of producing reliable estimates for prosposal and status quo locations. More specifically, while legislators' ideal points and bill's *cutpoints* (i.e., the spatial dividing line between yay and nay votes) are well identified using existing methods, identification of the proposal locations (and, relatedly, the status quo positions) is fragile and relies upon the curvature of the legislators' assumed utility functions. This fragile identification, per Poole and Rosenthal's (1991) initial warning, has traditionally prevented legislative scholars from using proposal and status quo estimates in analyses of policymaking. In response, Crosson et al. develop their measurements using an adaptation first developed by Peress (2013) and applied at the state level by Thieme (2020). Peress's general approach allows for the identification of proposal locations *alone* using cosponsorship data, by modeling the cosponsorship decision as *proximity*-based. Thus, by jointly scaling cosponosorship decisions with roll call decisions and identifying bill-specific cutpoints simultaneously, the methodology allows for the identification of proposal locations, status quo locations, and legislator ideal points on the same scale.

As both Thieme and Crosson et al. underscore, however, the methodology is limited by the timing of roll call votes, which overwhelming occur after a bill has changed substantially from the time of introduction to the voting stage. To address this problem, both studies jointly scale interest group position-taking at the time of introduction with roll call and cosponsorship data, in order to identify proposal and status quo locations for bills *as they are introduced*. Thus, not only does the method place interest group ideal points on the same scale as bill scores and legislator ideal points, but it vastly expands the number of scoreable bills. Given our focus on the U.S. Congress (Thieme's study focuses on state legislatures), we make use of the data provided by Crosson, Lorenz, and Furnas, which includes scores for 1,007 bills introduced between the 110th and 114th Congresses.[14] Their scores are generated using interest-group position-taking from the non-profit MapLight, which has compiled over 110,000 instances of interest-group position-taking in the specified Congresses (Lorenz, Furnas and Crosson, 2020).

These measurements enable us to measure messaging decisions at the legislator-issue-congress level for

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[14]Some summary statistics and visualizations of these data are presented in Supplemental Information A.

Figure 1: Messaging Legislation by Issue Area, 2009-2016
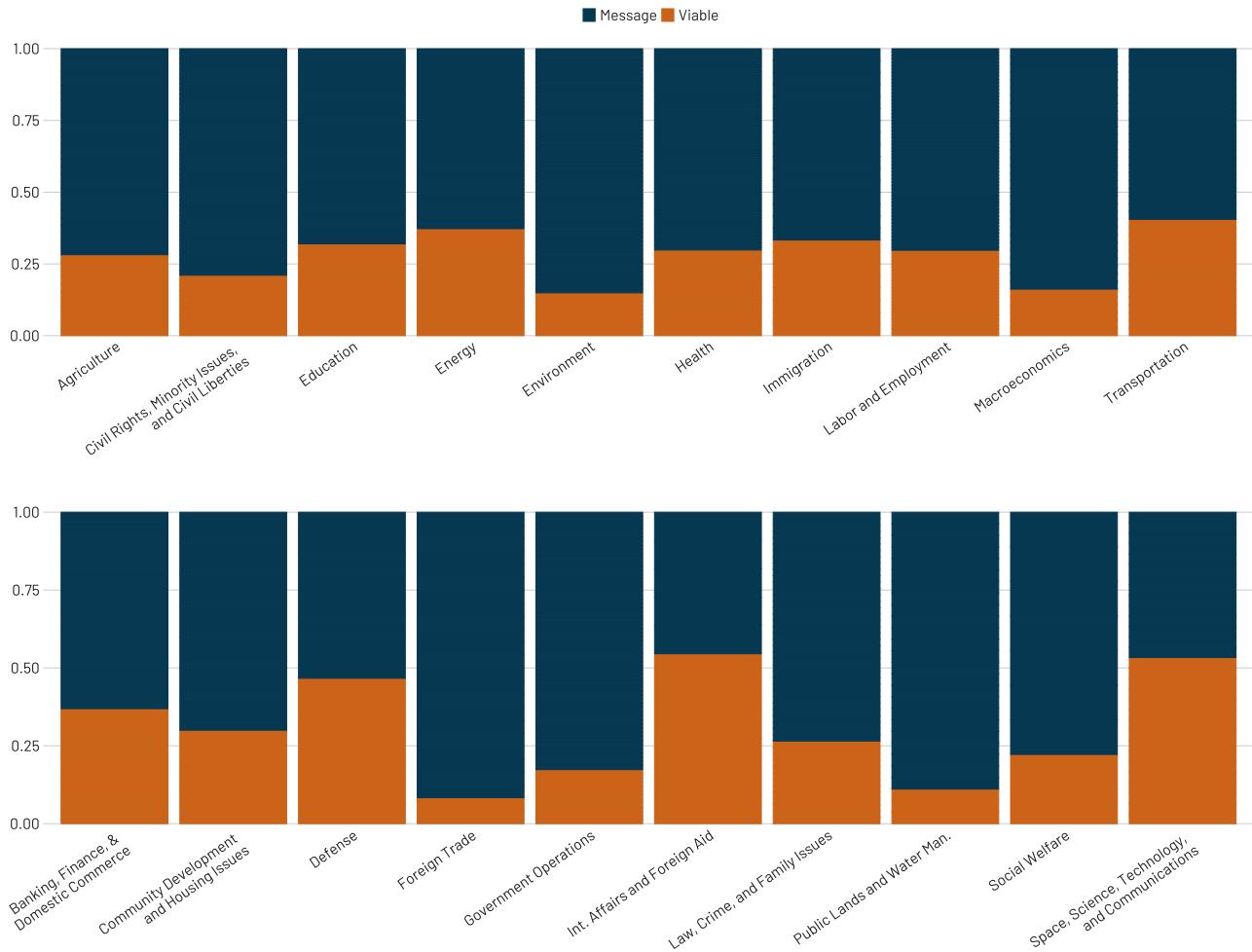
Message ■ Viable ■

the 110th through 114th Congress (2009 to 2016). Supplemental Information A provides additional on the distribution of the outcome variable, but Figure 1 underscores the prevalence of message legislation in recent Congresses. Indeed, across most issue areas, the majority of bill sponsorships constitute relatively hopeless pieces of legislation, providing some quantitative support for recent journalist accounts about "bill to nowhere" (*The Bills to Nowhere*, 2012). However, as the figure also depicts, there is considerable variation in messaging rates across issue areas. It is this variation that we ultimately exploit in our empirical tests.

Issue Salience (ζ_{ijt}).   According to Hypothesis 1, the probability of messaging should be increasing in issue salience. That is, as the likelihood that constituents learn about a member's messaging, ζ, increases, members should grow more likely to message. In order to capture the salience of legislating to a member's district, we argue that constituencies will be most attentive when the an issue area affects a significant

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portion of the local economy. More specifically, we argue that the larger the percentage of a district employed in an industry relevant to issue j, the greater the salience of policymaking in that issue area to legislator i's district.

In order to measure the percentage of each congressional district employed in industries relevant to particular issues, we begin with district-level NAICS employment statistics reported in the Census's American Community Survey and County Business Patterns dataset. Since 2013, the Census has reported these statistics directly at the district level, providing exactly the kind of information necessary to measure salience. However, prior to 2013, the closest available data captures the number of industry-relevant *establishments* in each Zip Code Tabulation Area (ZCTA). Fortunately, the establishments are classified by number of total employees, allowing for a translation from establishment numbers to employment numbers by industry in each ZCTA. Using a ZCTA-to-congressional district crosswalk generated by the Missouri Census Data Center's Geographic Correspondence Engine `http://mcdc.missouri.edu/applications/geocorr2014.html`, we then generated district-level estimates of employment for the years prior to 2013. To ensure this estimation procedure reasonably approximated the post-2013, we double-coded the year 2013, demonstrating a strong correlation in industry employment between the two measurements. The results of this validity check are found in Supplemental Information B.

After assembling district-level employment data, we converted the employment statistics into salience measures by creating a crosswalk between the NAICS industry classification system and the Comparative Agendas Project's major issue topic codes. The crosswalk, reported in Supplemental Information B, links each policy topic with all industries to which it is relevant. For example, a district with a large automobile manufacturing presence would, according to our coding scheme, register as attentive to labor issues and foreign trade, among other issues. By contrast, a poor, urban district with larger-than-average numbers of social service employees may register as attentive to social welfare issues. Table TK list the issue of highest salience to each district, after standardizing employment percentages by issue area.

Opening Policy Window (ρ_{ijt}). According to Hypothesis 2, the probability of messaging should be increasing in the probability that the policy window opens in the immediate future for issue j. That is, presuming that policy change is not possible for issue j in the present congress t, members should be more likely to message when they believe that the policymaking window *will* open in the upcoming congress. In order to capture these expectations, we require contemporaneous measurements of members' expectations about the probability that legislation can move in a given policy area in the near future. While many

factors influence members' beliefs about this probability, we argue that a precondition for major policy change in the contemporary U.S. Congress is majority control of one's own chamber. That is, without majority control, the likelihood of passing meaningful legislation is low. However, if a member expects that her party will gain majority status in after the upcoming election, she may believe that policy in her issue area will move (ρ is high) and message within the current congress accordingly.

We therefore operationalize ρ_{ijt} as the probability that i's party will gain majority control after the upcoming election. To measure this quantity, we make use of Crosson's (2019) interpolated Iowa Electronic Market (IEM) share prices. The IEM has, since the mid 1990s, solicited investments from private citizens on a wide variety of political outcomes, including whether particular parties will control the House, Senate, and presidency. Most crucially for measuring *contemporaneous* beliefs about electoral outcomes, IEM functions as a futures market, meaning that participants' relative willingness to invest money in specific outcomes reflects their beliefs regarding which electoral outcome is most likely. Because contracts are priced within [$0, $1], the price of a contract can be interpreted directly as a probability associated with the object of the contract.[15] As Crosson notes, while political scientists have used these data in the past, such studies typically assess the markets as prospective predictors of electoral outcomes—and not as a measure of how electoral expectations might influence the policymaking process. However, given that the IEM is typically active only during election years, Crosson interpolates between election years by fitting average monthly share prices using a variety information that may have informed politicians' beliefs regarding probabilities of partisan control. This information includes economic indicators such as unemployment rates and consumer sentiment, baseline political information such as the size of a party's majority and (in the Senate) the number of a party's members up for reelection, and granular political data such as presidential and congressional approval rates—in addition to generic congressional vote ballot polls.[16]

Figure 2 depicts monthly interpolated share prices for Republican and Democratic majority control in the House and Senate. Unsurprisingly, these probabilities vary considerably both within and across congresses, providing the variance necessary to test Hypothesis 2 with the data. However, it is important to note that given our operationalization of ρ as the probability that one's party *gains* majority control, our empirical tests of Hypothesis 2 only apply to current members of the *minority* party. Put differently, if member i is currently in the majority and the policy window is nevertheless *closed*, it is not clear that retaining majority control will have an appreciable influence on the likelihood that the policy window
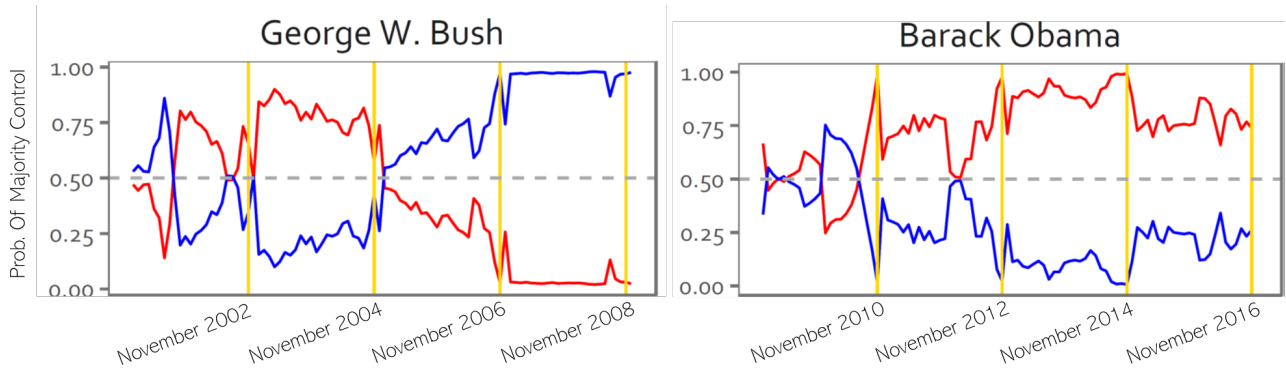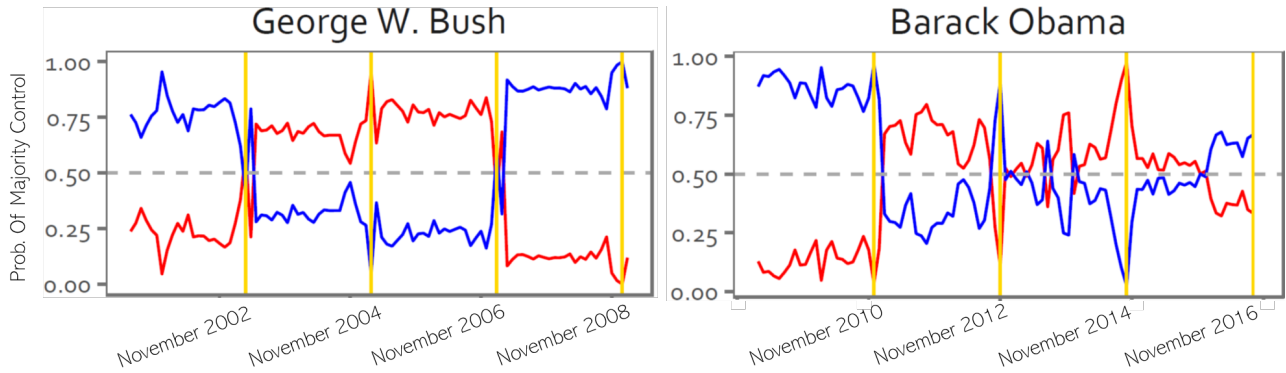
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[15]For more information, see https://iemweb.biz.uiowa.edu/about/

[16]For more detailed information, see Crosson (2019), Appendix D

Figure 2: Predicted Probabilities of Majority Control by Republicans (Red) and Democrats (Blue)

(a) House

(b) House

Interpolated IEM scores by presidency, indicating the expected probability that each party will hold the majority after the upcoming election. Vertical ticks indicate the date of each upcoming election (after which point the probabilities "reset" and refer to the next election thereafter).

opens. For these reasons, using these electoral data, we test Hypothesis 2 using only members of the minority party.

Member Proximity to the Status Quo (λ_{ijt}). Finally, according to Hypothesis 3, we should observe that members whose preferences differ most from the status quo will most frequently message. In order to test this hypothesis, the ideal measurement would compare each member i's ideal point with the status quo location associated with issue j. Unfortunately, while cIGscores do provide status quo estimates and legislator ideal points on the same scale, the method generates status quo estimates at the bill level—and not the issue level. Thus, in order to measure λ, we need to make some assumptions about the distribution of status quo policies facing members of Congress.

Generally speaking, according to veto players/pivotal politics theory (Krehbiel, 1998; Tsebelis, 2002), policy should, on average, move to toward the center of the political spectrum over time. That is, because out-of-equilibrium status quo policies lie near the fringes of the political distribution while gridlocked status quos near the center remain immovable, policy changes over time lead policy to amass in the center of the distribution over time. This is especially true for political systems with large numbers of veto players, such as the United States, as such systems have large gridlock intervals or cores—meaning that movable status quo policies are the those that lie at the farthest reaches of the political spectrum. Moreover, once moved, these policies are not likely to be moved again for a considerable amount of time (Tsebelis, 2002; Tsebelis, Money, Jeannette et al., 1997). The resulting distribution may then resemble the hypothetical distribution depicted in Figure 3a, wherein most status quo policies lie toward the center of the distribution, with only a out-of-equilibrium status quo policies lying to the far right and left.

If the distribution of status quo policies appears as in Figure 3a, then we should expect that members of Congress with ideal points farthest from the center of the political distribution will, on average, find themselves far away from most status quo policies. Consequently, we hypothesize that, consistent with Hypothesis 3, members of Congress lying farthest from their respective chamber medians should, overall, message more so than do members located closer to the center of the political spectrum.

Of course, as many past studies of Congress have underscored, agenda-setters do not target status quos randomly. Instead, particularly if one conceives of the majority party as Congress's agenda-setters (Cox and McCubbins, 1993, 2005; Lee, 2016), status quo policies are likely selected so as to maximize policy gains for the majority party (and minimize fracturing of the caucus). If this is the case, then the distribution of *targeted* status quos within congress t will differ considerably from the overall distribution of status quos.

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Figure 3: Overall and Targeted Distributions of Status Quo Policies

(a) Hypothetical Overall Distribution of Status Quos

(b) Actual Distribution of Targeted Status Quos
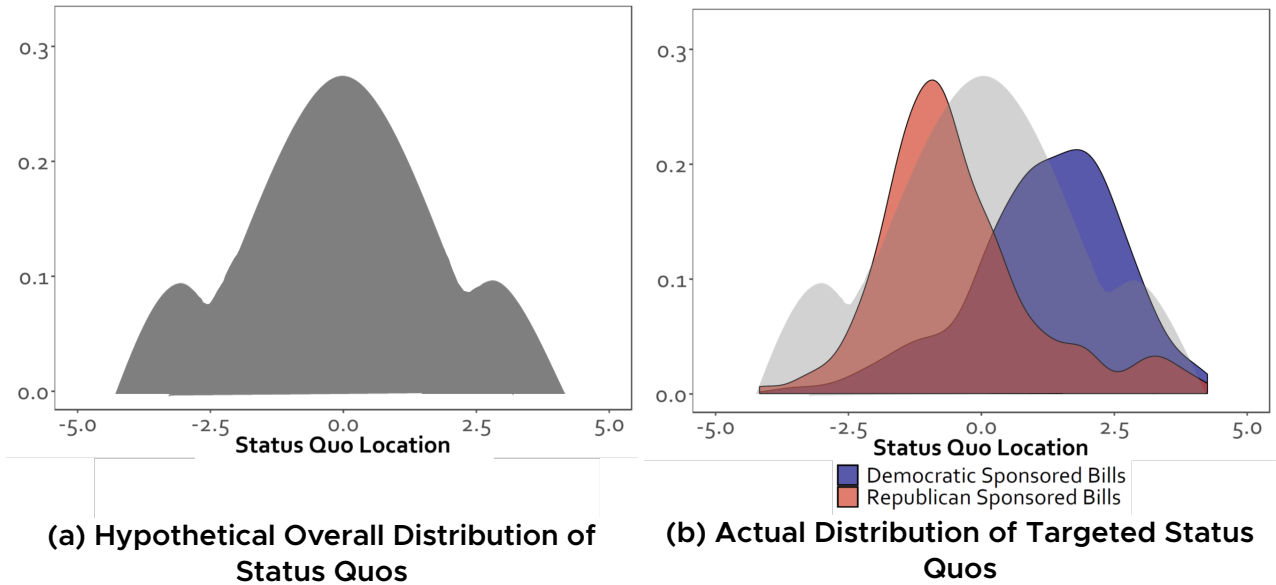
Left panel depicts hypothetical distribution of all status quo policies at any given point in time, based on general predictions provided by veto players and pivotal politics theory. The right panel compares that overall distribution with the actual distribution of status quos targeted by Republican- and Democratic-sponsored bills in our data.

More specifically, partisan agenda-setters face incentives to focus their policymaking on status quos that lie *farthest* from their party median. Indeed, not only are changes to these status quo policies least likely to fracture the caucus, but they also carry with them the largest spatial improvements to policy.

If agenda-setters do target status quo policies in this fashion, the distribution of targeted status quo policies is likely to lean leftward or rightward, based on majority control of the chamber. In fact, Crosson, Lorenz, and Furnas's data provides some direct evidence to this effect. In Figure 3b, two *actual* status quo policy densities are overlaid on the hypothetical distribution in Figure 3a. As the figure plainly depicts, Republican members overwhelmingly target left-leaning status quos in their bill sponsorship, while Democratic members clearly favor conservative ones. Assuming partisan agenda-setters behave similarly, then, our measure of λ should incorporate this information in some fashion. Thus, we include a term in our regressions that captures a member's distance from the *majority party* median.

Unlike the coefficient on overall extremity (distance from chamber median), we expect the coefficient on distance from the majority party median to be *negative*: members farthest from the majority median are actually *closest* to the center of distribution of targeted status quos. In other words, a left-leaning Democrat should expect that the status quo policies of interest to a Republican majority will lie quite proximate to her own ideal point, lowering her probability of messaging. To be clear, we do not believe that this

dynamic will overcome the general tendency for extremists to message more frequently overall. Instead, conditional on overall ideological extremity (which we believe will always encourage messaging behavior in our framework), there are conditions under which some extremists should be expected to message less frequently than others: namely, members who lie far from the majority median should message less often than those who lie closer to it.

Confounds. In order to remain as true as possible to the parameters of the model, we have generally refrained from introducing a large vector of control variables to our models. Instead, we include both issue- and congress-level fixed effects, to at least partially address unobserved confounds by time period and issue area. However, we do include one *member*-level covariate—*Seniority*—in each of our models. We do so because we believe seniority may map onto one of the parameters of our model for which we have not generated hypotheses, namely the cost of messaging (k). Indeed, it is entirely possible that more seniors members of Congress have not only amassed the legislative experience necessary to efficiently and effectively offer message legislation, but they may even have the ability to recycle language from previous messaging bills into their current bill introductions. Given the role that k plays in the dynamics of the model, and given the general importance of seniority to many facets of congressional politics, we therefore include it in all of our regressions. We draw these data from the Center for Effective Lawmaking (`www .thelawmakers.org`).[17]

Taken together, our measurements result in the following model specification, which will serve as the basis for our empirical tests:

$$Pr(\mathcal{M}_{ijt} = 1) = \mu + \alpha_j + \delta_t + \beta_1 \zeta_{ijt} + \beta_2 \rho_{ijt} +$$
$$\beta_3 |\ell_i - m_c|_{it} + \beta_4 |\ell_i - m_m|_{it} + \mathbf{X}\beta + \epsilon_{it}$$

In this specification, λ is simply decomposed into two parts, legislator i's (ℓ_i) distance from the chamber median (m_c) and her distance from the majority median (m_m). Based on our hypotheses, we expect β_1 and β_3 to be positive for all members, β_2 to be positive for members of the minority, and β_4 to be negative.

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[17]It is worth noting here that we did incorporate other member-level covariates from the Center for Effective Lawmaking dataset, to ensure the robustness of our results. These inclusions did not influence the substantive results of our hypothesis tests.

Inference and Results

As noted above, we report results from a series of regressions, which model member i's decision to message on issue j as a function of a variety of parameters of our theoretical model. Before executing those regressions, however, we must first confront one final methodological challenge—namely, a selection issue generated by our measurement of messaging legislation.

In order to capture cutpoints on bills as introduced, which provides the basis for identifying both proposal *and* status quo locations, Crosson, Lorenz and Furnas rely upon early-stage position-taking by interest groups. In spite of the methodological usefulness of this position-taking, however, the measurements' reliance on this phenomenon necessarily implies that not all instances of messaging are detected using this measurement strategy. Put differently, a failure to observe messaging in issue j could be due to either a member's decision against messaging—or simply the fact that the measurement strategy did not detect messaging that actually did occur. If these errors were randomly distributed, this issue would not be especially problematic. However, assuming these errors are not randomly distributed, our empirical specification requires a correction that addresses this selection issue. That is, we require an empirical approach that effectively distinguishes between actual decisions against messaging and simple missingness due to measurements strategy.

We believe that Heckman-style selection models provide a framework addressing for this issue. That is, because we understand that interest group bill attention generates our selection issue, it is possible to specify a series of models that capture and address biases arising from interest group issue attention. Thus, we adopt a two-stage estimation approach that first models members' decisions to *sponsor* legislation on issue j and in congress t—a necessary condition for messaging in our model—and then adjust the estimation of our messaging model accordingly.

More specifically, we estimate a first-stage model of bill sponsorship as:

$$Pr(\mathcal{S}_{ijt} = 1) = (\mathbf{Z}\gamma + \epsilon)$$

where $\mathcal{S}_{ijt}$ represents i's decision to sponsor in issue j during Congress t and $\mathbf{Z}$ captures variables influencing $\mathcal{S}_{ijt}$. In our models of bill sponsorship, we include variables for the number of bill sponsorships that member i offered in congress t, the number of interest groups active in issue j, issue-level fixed effects, and congress-level fixed effects. By estimating this model, we are then able to estimate the following modified

specification of our base model:

$$Pr(\mathcal{M}_{ijt} = 1 | \mathcal{S} = 1) = \mathbf{X}\beta + r\sigma_u \frac{1}{h(x)}(\mathbf{Z}\gamma)$$

where r equals the correlation between ϵ and unobserved determinants u of $\mathcal{M}$, σ_u represents the variance of u, $\frac{1}{h(x)}$ represents the inverse Mills ratio, and $\mathbf{X}\beta$ captures the base model specification of messaging decision detailed above. Below, we present the results of this portion of the estimation.[18] Results from the selection stage, as well as from the "naive" models (which exhibit substantively similar results), are available in Supplemental Information C.

Findings

Using this specification, we find consistent evidence in favor of two of our three hypotheses. Our results are reported in Table 1. As the table depicts, *Salience to Constituency* (ζ) is positively associated with messaging behavior, as predicted in Hypothesis 1. Of note, however, the table also underscores that this association is driven in large part by members of the minority party. Indeed, the second and third models of the table rerun our regressions using only majority and minority member data, respectively, allowing us to examine whether dynamics differ based on this important factor. Our results indicate that salience is especially important to members of the minority, as they decide whether or not to message on a particular issue.

With regard to our two measures of λ or a member's distance from the average status quo policy (both targeted and non-targeted), we find similar support consistent with the claims of our hypotheses. In this case, consistent with Hypothesis 2, a legislator's distance from the chamber median is strongly and positively associated with messaging. Also consistent with our expectations, controlling for distance from chamber median, distance from the majority median is *negatively* associated with messaging activity. In both cases, if status quo policies are distributed as we argue, we find evidence that distance from status quo policies is positively associated with virtue signaling.

For both ζ and λ, our results are not only statistically significant but also substantively notable. Figures 5a and 5b depict predicted probabilities of messaging for different values of salience, distance from chamber median, and distance from majority median, holding all other variables at their means or modal values. As the figures depict, a shift from low to high values of each variable corresponds with notable changes in

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[18]We opt for linear probabilities in our main analysis, for ease of interpretation. Results are substantively similar when modeling the binary nature of the data directly.

Figure 4: Salience (ζ) and Predicted Probability of Messaging
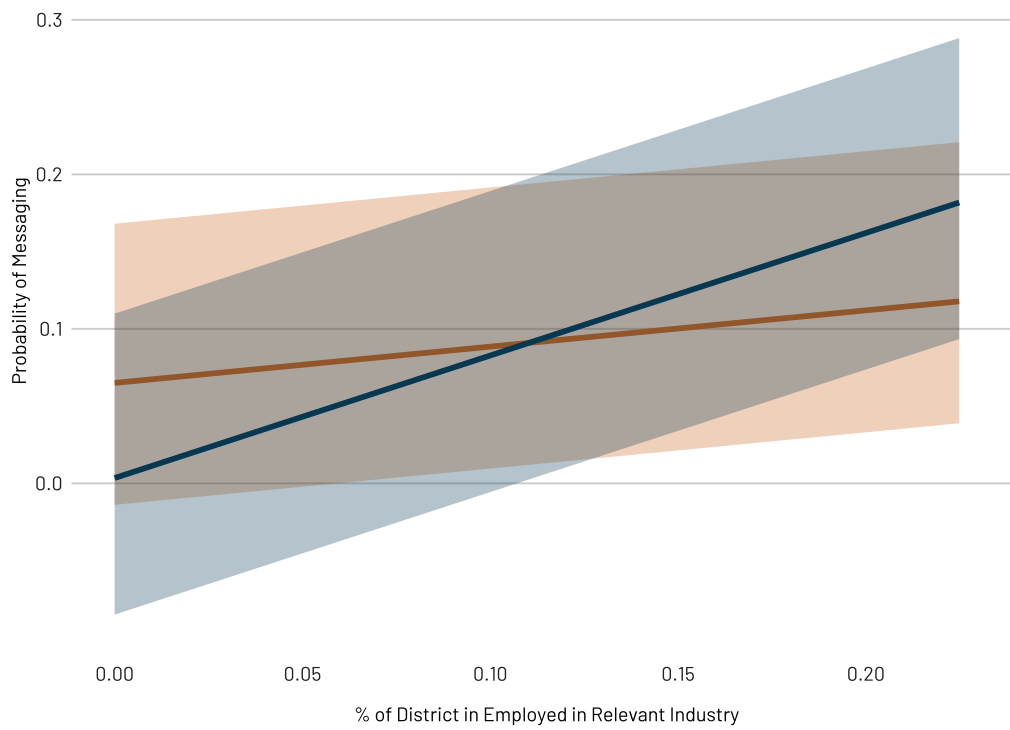
Figure depicts predicted probability of messaging, holding all other variables at their means or modal values. The shaded area does not depict confidence intervals. Rather, it represents the range of predicted values if one generates predictions for each of the congress- and issue-level fixed effect values. Predictions are from the full model in Table 1.

Table 1: Models of Messaging, 109th - 114th Congresses

	$Pr(\mathcal{M}_{ijt} = 1 \mid \mathcal{S} = 1)$		
	(All)	(Majority)	(Minority)
Salience to Constituency	0.514**	0.235	0.793***
	(0.231)	(0.339)	(0.277)
Pr(Opening Policy Window)	−0.005	−0.015	0.004
	(0.012)	(0.021)	(0.019)
$\lvert \ell_i - m_c \rvert$	0.071***	0.086***	−0.039
	(0.022)	(0.028)	(0.057)
$\lvert \ell_i - m_m \rvert$	−0.095***	−0.058	0.010
	(0.017)	(0.036)	(0.054)
Member Seniority	0.002***	0.003***	0.001
	(0.0005)	(0.001)	(0.001)
Constant	−0.044*	−0.031	−0.084**
	(0.026)	(0.040)	(0.034)
Observations	40,972	22,697	18,275
Heckman's rho	0.078	0.086**	0.115
Inverse Mills Ratio	0.019***		0.021***

Note: *p<0.1; **p<0.05; ***p<0.01

messaging probability. As the figures demonstrate, absent changes in the variables of interest, the baseline probability for messaging in any given issue area is close to zero. However, in the case of issue salience, for example, minority members (depicted in blue) at the highest levels of issue salience message with a probability of nearly twenty percent. Likewise (though to a smaller extent), a movement from the smallest to largest distance from the chamber median in our data is associated with an increase in messaging probability—in this case, approximately seven percent. Conversely, a shift from the nearest proximity to the majority median to the farthest is associated with a roughly nine percent decrease in messaging probability.

Unlike with ζ and λ, it is important to note that the results for ρ were much less strong. As noted above, our predictions about ρ, as measured, apply only to the third model in Table 1 (minority party cases). Here, although the coefficient on probability of gaining majority status lies in the expected (positive) direction, it fails to achieve standard levels of statistical significance. One possibility for this weakened result derives from the indirect nature of our measurement: that is, while our model parameterizes the probability of the policy window opening for a *particular* issue area, our measurement captures a *single* probability of gaining majority status. Moreover, even if one gains majority status, divided government, divided legislatures, or general bargaining failures always have the potential to stymie policy changes—a component of the "policy window" that our measure also does not capture. Nevertheless, we cannot reject

Figure 5: Distance to Status Quo (λ) and Predicted Probability of Messaging
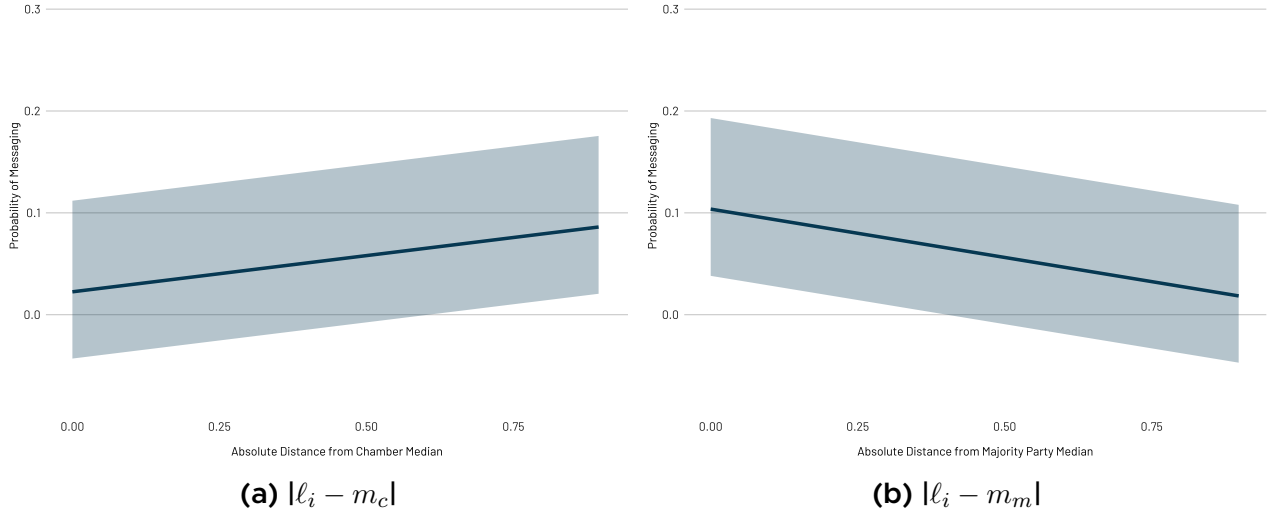
(a) $|\ell_i - m_c|$ **(b)** $|\ell_i - m_m|$

Figure depicts predicted probability of messaging, holding all other variables at their means or modal values. The shaded area does not depict confidence intervals. Rather, it represents the range of predicted values if one generates predictions for each of the congress- and issue-level fixed effect values. Predictions are from the full model in Table 1. The left panel depicts the first term associated with distance from the status quo, Distance from Chamber Median, while rightward panel depicts the second term, Distance from Majority Median.

the null that ρ, as measured, is statistically indistinguishable from zero.

Viable Proposals as a Robustness Check

Generally speaking, the results presented above provide support for our theory of message legislation and virtue signaling. This support notwithstanding, one may levy the reasonable objection that the patterns we uncover are emblematic of bill sponsorship patterns generally—and not messaging sponsorship specifically. To address this concern, we conclude by re-estimating the above models, this time using *viable* bill sponsorships, instead of non-viable, messaging ones. By viable legislation, we simply mean the inverse of messaging legislation: legislation that *would* be expected to pass into law, were it brought up for a vote. Thus, viable legislation is defined simply as:

$$
V_{bt} = \begin{cases} 1 & |q_{bt} - V_t| \geq |p_{bt} - V_t| \\ 0 & |q_{bt} - V_t| < |p_{bt} - V_t| \end{cases}
$$

with issue-level viable legislative defined as

$$\mathcal{V}_{ijt} = \begin{cases} 1 & V_{ibt} = 1 \\ 0 & \text{otherwise} \end{cases}$$

We believe that, should we observe similar empirical results modeling viable legislation as non-viable (using the above selection adjustments), such a result would cast doubt on the specificity of our messaging results. Instead, such a result might indicate that factors such as salience and extremity are more general predictors of prominent bill sponsorships. Inasmuch as viable proposals do not follow these patterns, however, such a result would lend greater credibility to our messaging-specific results.

Table 2: Models of Viable Legislating

| | Probability of Offering Viable Bill | | |
	(All)	(Majority)	(Minority)
Salience to Constituency	0.161	0.161	0.238
	(0.279)	(0.435)	(0.268)
Pr(Opening Policy Window)	0.022*	0.008	0.004
	(0.013)	(0.026)	(0.017)
$\mid \ell_i - m_c \mid$	−0.072***	−0.027	−0.020
	(0.011)	(0.034)	(0.016)
Member Seniority	0.002***	0.004***	−0.001
	(0.001)	(0.001)	(0.001)
Constant	−0.029	−0.059	−0.036
	(0.032)	(0.053)	(0.032)
Observations	36,250	19,742	16,508
Heckman's rho	0.077	0.077*	0.120
Inverse Mills Ratio	0.016**		0.016*

Note: *p<0.1; **p<0.05; ***p<0.01

Table 2 depicts the results of these regressions. As the table depicts, the results for models of viable legislation differ considerably from those in the messaging models. With regard to salience, for example, the results fall far short of reaching standard levels of statistical significance. Moreover, with regard to member extremity, the association with viable legislating is *negative*—opposite its association with messaging legislation. Given these relatively stark difference from messaging dynamics, we believe these results provide additional evidence regarding the validity of the tests of our theory.

Discussion

Seasoned observers of Congress have long appreciated how members use roll-call votes and bill introductions to engage in position-taking (Mayhew 1974). New theory and new data allows us to gauge the extent of and systematic variation in an important form of legislative position-taking, congressional message legislation—hopeless bills that signal to constituents a desirable trait, policy making zeal, in their representative.

The principal empirical findings of this research are:

1. Message legislation is extraordinarily pervasive. Our empirical measures indicate that the majority of introduced bills are not viable.

2. Message legislation tends to address highly salient topics in the member's district. This is particularly true for minority party members.

3. Messagers tend to be ideological extremists – a legislator's distance from the chamber median is strongly and positively associated with messaging.

4. Members whose preferences likely accord with status quo policies targeted by the majority party tend to message somewhat less in those policy domains.

5. The volume of minority-party message legislation does not measurably increase in anticipation of the minority party gaining control of Congress.

6. Viable legislation displays quite different empirical patterns than non-viable legislation.

With the exception of the fifth pattern, these empirical findings follow closely from or are compatible with our theory of message legislation.

The sheer volume of "bogus" rather than "bona fide" lawmaking raises serious normative questions about the institutional performance of Congress. An in-depth exploration of this theme lies outside our scope here, but the theoretical model identifies three factors that are important in a normative assessment of message legislation.

First, message legislation helps voters select zealous representatives. This zeal may prove advantageous to constituents should their representative ever be in a position to influence real policy-making, rather than to pantomime policy-making. Perhaps contrary to one's initial expectation, then, message legislating can actually *boost* voter welfare by improving the selection of representatives with valued traits.

Second, however, fake policy-making is not cost-free: it comes at the expense of other activities. If the alternative uses of time and effort have negligible value, then the cost of virtue signaling is small. But if those activities are precious, as previous research such as Hall (1996) suggests, then the cost can be very high indeed. More than that, the activities most likely to be sacrificed in favor of public signaling are those "work horse" style activities (Hall, 1996) that voters cannot immediately perceive (Holmstrom and Milgrom, 1991). Examples include painstaking investment in institutional knowledge and personal relationships, careful and extended investigation of genuine social problems, the construction of thoughtful and effective legislative remedies, and the dutiful oversight of bureaucratic performance. Here, the implications of a maelstrom of nonviable lawmaking are disturbing.

Third, if message legislation actually helps voters retain policy zealots, then the composition of the legislature may shift over time. To be sure, the implications are not entirely clear. However, selection for policy zealots *may* build cadres of hard-edged lawmakers who eschew compromise with the opposition, and who scorn or defy their own party leaders. Tea Party legislators and the left-leaning "squad" may provide recent examples. This institutional evolution may result not just in a decline in comity, but more troubling, in the degradation of legislative capacity.

Conclusion

Modern accountability theory identifies several perverse incentives created by representation. These include "pandering"—the knowing selection of popular but harmful policies whose ill consequences fall beyond the next election; "blame-game politics"—the deliberate construction of policies whose main intent is to cast opponents in an ill light; and biased representation—deliberate favoritism aimed at the organized and knowledgeable.[19] In this paper, we construct new theory and develop new data to study a phenomenon distinct from these perverse incentives: namely, virtue signaling via hopeless message bills. The theory puts new flesh on the bones of Mayhew's path-breaking analysis of legislative position-taking, while the data underscore the pervasiveness of message legislation in recent congresses and highlight previously unnoted empirical regularities. Our analysis complements recent studies of hopeless obstructionism in the form of doomed filibusters and vetoes.[20]

We only scratch the surface of a rich topic. Extensions to the theory, here kept simple in order to ground the empirical investigation, would allow a more detailed exploration of the normative implications

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[19] See, respectively, Canes-Wrone, Herron and Shotts (2001), Groseclose and McCarty (2001), and Achen and Bartels (2017).
[20] See Patty (2016) and Cameron and Gibson (2020).

of message legislation. Empirically, historical evidence on the incidence of message bills over time, and of bona fide legislating, would be valuable in assessing the dynamics of institutional change. Although we focus here on Congress, purely performative politics can be found in many other settings as well. An obvious venue is state legislatures, where newly developed estimates of bill locations make feasible empirical studies similar to ours (Thieme, 2020). Further afield, elected state attorneys general often sue the federal government, sometimes in hopeless or near frivolous lawsuits, perhaps endeavoring to display their zealousness to state voters (Dean, 2021). Interest group leaders sometimes "tilt at windmills," for example, submitting likely ineffectual amicus briefs to high courts or demonstrating over symbolic goals, perhaps in an effort to display policy zeal to donors and members. Nor are such examples restricted to the U.S. One may observe likely examples across representative democracies. New perspectives on the theory and empirics of performative politics and political virtue signaling may prove useful in understanding these phenomena too.

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Supplementary Materials

Message Legislation and the Politics of Virtue Signaling

Daniel Gibbs, Jesse M. Crosson, and Charles Cameron

Contents

A   Measurement and Visualization of Dependent Variable

A.1   Additional Information on cIGscores

Below, we include several visualizations of cIGscores, as provided by Crosson, Lorenz and Furnas. Figure A.1 compares the distribution of legislator ideal points in the data (ℓ_i in our model, dotted lines in the graphs) with the distribution of proposal locations (p_{bt}, shaded regions). For both ℓ_i and p_{bt}, red represents Republicans (either Republican ideal points or Republican-sponsored bill locations) and blue represents Democrats.

Figure A.1: cIGscores for Proposals and Ideal Points
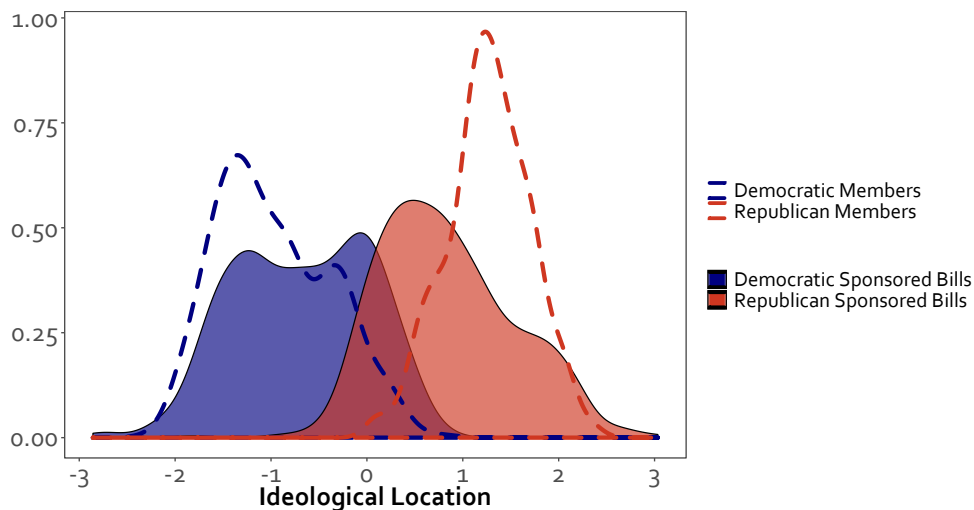
Figures A.2 and A.3 depict cIGscores for legislators and interest groups in relation to other measures of those actors' preferences. Figure A.2 demonstrates that the inclusion of cosponsorship data into the estimation matrix did not appreciably change the recovered IGscores (Crosson, Furnas and Lorenz, 2020) for interest groups and legislators. Likewise, the inclusion of both interest groups and cosponsorships resulted in similar ideal points as generated by NOMINATE, depicted in Figure A.3.
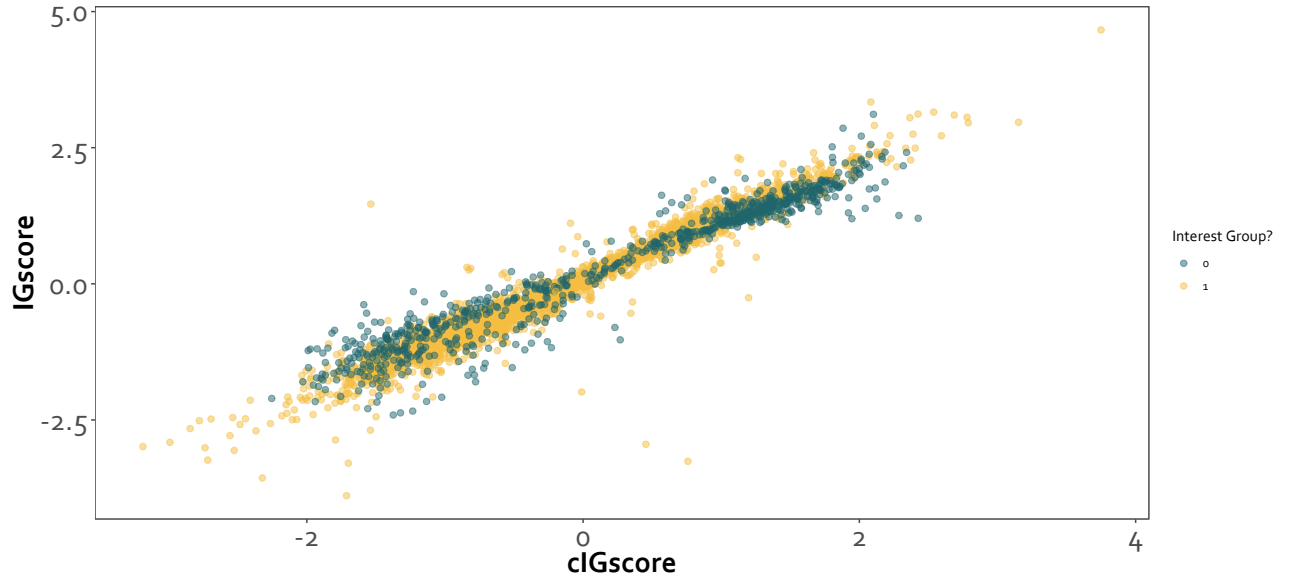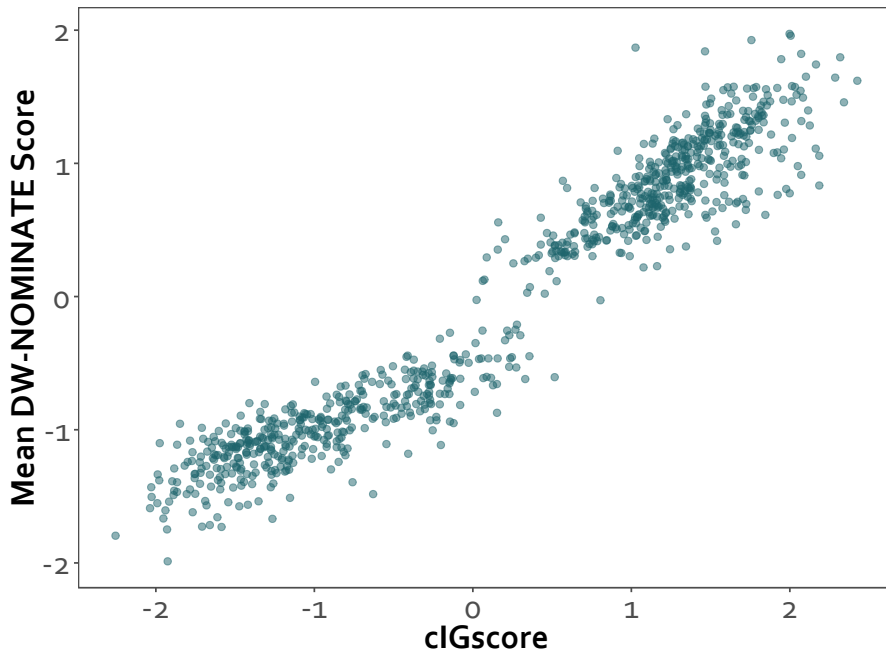
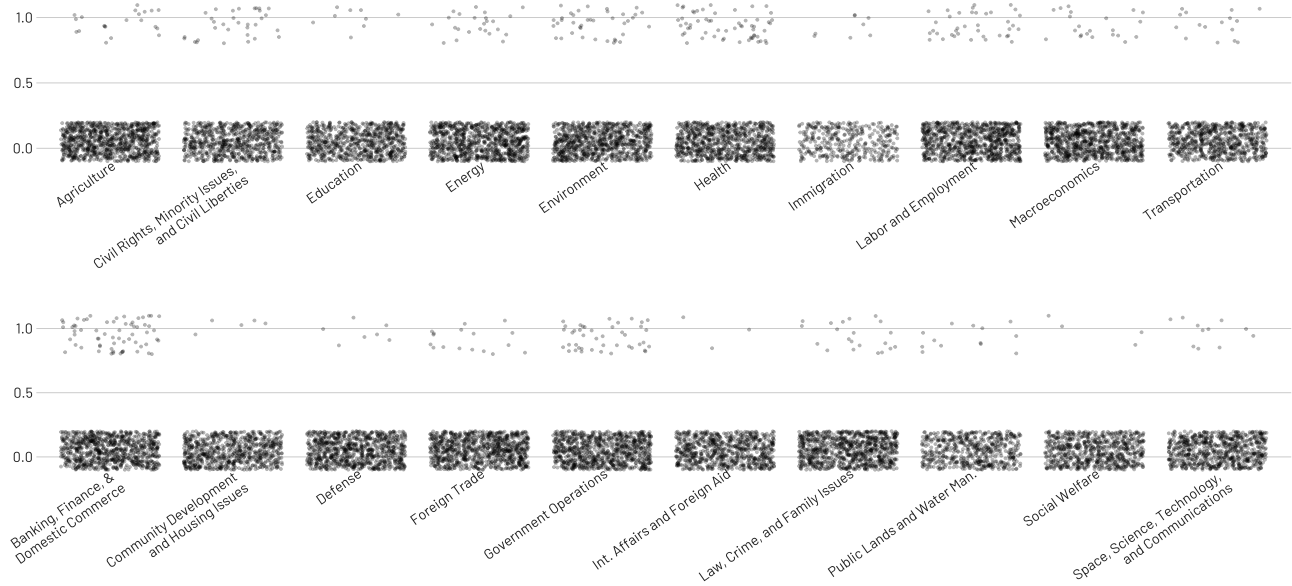**Figure A.2: cIGscores v. IGscores**

Figure A.3: cIGscores v. NOMINATE

A.2 Outcome Variable

Figure A.4: Distribution of Messaging by Issue Area

Decisions to message in each issue area by members of Congress who messaged in at least one issue area during a given Congress. Points are jittered around 1 and 0, which correspond to the decision for/against messaging in the given issue area.

B Measurement of Salience

B.1 Validity check for Bridging pre- and post-2013 employment data

Below, Figure B.1 depicts the correlation between district employment in 2013, using the Census-provided estimates (y axis) and our zip-based estimates (x-axis). Here, the unit of analysis is the NAICS industry-district. As the figure depicts, although differences are not uncommon, the correlation between the two measures remains strong. This correlation, not depicted here, notably increases when NAICS industry are crosswalked to issue codes, as used in the main analysis. Particularly when combined with the congress-level fixed effects we employ in our models, these measurements provide a viable means of extending the Census's estimates backward in time

Figure B.1: District-Level versus Adjusted Zip-Code Level Estimates of Employment

B.2 Industry to Issue-Area Crosswalk

NAICS Sector Name	Policy Agendas Topic
Agriculture, forestry, fishing and hunting	Environment,Public Lands and Water Management; Agriculture; Immigration, Labor and Employment
Mining, quarrying and oil and gas extraction	Energy; Environment; Public Lands and Water Management
Utilities	Energy; Environment
Construction	Labor and Employment; Transportation; Community Development and Housing Issues; Environment; Government Operations; Public Lands and Water Management
Manufacturing	Labor and Employment; Environment; Energy; Foreign Trade; Banking, Finance, and Domestic Commerce; Macroeconomics
Wholesale trade	Banking, Finance, and Domestic Commerce; Foreign Trade; Macroeconomics; Transportation
Retail trade	Banking, Finance, and Domestic Commerce, Foreign Trade; Macroeconomics; Labor and Employment
Transportation and warehousing	Energy; Transportation; Labor and Employment
Information	Space, Science, Technology, and Communications
Educational services	Civil Rights, Minority Issues, and Civil Liberties; Education
Finance and insurance	Macroeconomics; Community Development and Housing Issues; Foreign Trade; Banking, Finance, and Domestic Commerce; International Affairs and Foreign Aid
Real estate and rental and leasing	Civil Rights, Minority Issues, and Civil Liberties; Community Development and Housing Issues; Public Lands and Water Management; Banking, Finance, and Domestic Commerce
Professional, scientific, and technical services	Space, Science, Technology, and Communications; Foreign Trade; Defense; Health; Education; Immigration; Law, Crime, and Family Issues; Civil Rights, Minority Issues, and Civil Liberties
Management of companies	Macroeconomics; Education; Banking, Finance, and Domestic Commerce; Foreign Trade
Administrative support, waste management, and remediation service	Public Lands and Water Management; Government Operations; Environment; Health
Health care and social assistance	Health; Social Welfare
Arts, entertainment, and recreation	Education
Accommodation and food services	Agriculture; Health; Immigration; Labor and Employment
Other services (except public admin.)	Civil Rights, Minority Issues, and Civil Liberties; Law, Crime, and Family Issues; Social Welfare
Public Administration	Government Operations

C Alternative Specifications and Details from Model Estimation

Below, we present the results of the model of sponsorship that precedes our adjusted models of messaging decisions. According to the results of this model, many issue areas themselves appear to attract disproportionately high or low sponsorship activity. Issue areas with especially high numbers of interest groups appear to be more likely to experience sponsorship activity. Moreover, members who are legislatively active overall appear more likely in general to engage in bill sponsorship within particular issue-congresses.

C.1 Models of Sponsorship Selection

Table C.1: Results from Selection / Bill-Sponsorship State of Estimation

	Dependent variable:
	Sponsored Bill in Issue-Congress
Total Number of Bill Sponsorships in Congress t	0.053***
	(0.001)
Groups Active in Issue j	0.0003***
	(0.0001)
Fixed Effects[a]	Issue, Congress
Observations	51,082
Log Likelihood	−29,070.160
Akaike Inf. Crit.	58,192.320

[a] *Significant issue-area fixed effects include: Civil Rights (-), Health (+), Agriculture (-), Labor (-), Environment (-), Immigration (-), Transportation (-), Social Welfare (-), Community Development (-), Banking (+), Defense (+), Science and Technology (-), International Affairs (-), Foreign Trade (-), Government Operations (+), Public Lands (+). Significant session fixed effects include: 112th (-), 113th (-), and 114th (-) Congresses.*

C.2 "Naive" Models of Messaging

In Table C.2, we present results from our main models, estimated without any adjustments for selection. As the table depicts, the results are substantively similar to those presented in the main text, with both salience and distance from status quo policies correlating positively and significantly with messaging behavior.

Table C.2: Base Models of Messaging, Not Accounting for Selection

	Dependent variable:		
	(All)	(Majority)	(Minority)
Salience to Constituency	0.291***	0.173	0.399***
	(0.104)	(0.157)	(0.120)
Pr(Opening Policy Window)	−0.012**	−0.040***	0.011
	(0.005)	(0.010)	(0.009)
$\|\ell - m_c\|$	0.037***	0.041***	−0.014
	(0.010)	(0.013)	(0.029)
$\|\ell - m_m\|$	−0.050***	−0.021	0.003
	(0.008)	(0.016)	(0.028)
Member Seniority	0.001***	0.002***	0.0003
	(0.0002)	(0.0003)	(0.0003)
Constant	−0.006	0.027	−0.030**
	(0.012)	(0.019)	(0.015)
Observations	21,805	13,096	8,709
R^2	0.020	0.025	0.016
Adjusted R^2	0.018	0.023	0.013

Note: *p<0.1; **p<0.05; ***p<0.01

D Theory

D.1 Strategies and Beliefs

Let $\gamma \in \Gamma = \{s, z\}$ denote the incumbent legislator's type. A pure strategy for the legislator is a mapping from his type into the number of times he chooses to make a non-viable attempt to change the status quo

$$n : \Gamma \to \mathbb{N}$$

The voter's decision depends on her beliefs given the legislator's actions in the first period and the private utility shock, ω, she receives from voting for the incumbent. We assume that the distribution of taste shocks, F, is symmetric and absolutely continuous. Let f denote the density that F admits and Ω denote the support of f. Formally, symmetry assumes that $F(-y) = 1 - F(y)$ for all $y \in \Omega$.

With probability ζ, the voter observes n, the number of times the incumbent legislates. With probability $1 - \zeta$, the voter does not observe n. Let j denote the voter's information from the legislative stage. If the voter observes the legislative stage, $j = n$. If the voter does not observe the legislative stage, let $j = \emptyset$. An information set for the voter is a pair, (j, ω). Let ϕ denote an information set for the voter and let $\Phi = (\mathbb{N} \cup \emptyset) \times \Omega$ denote the set of all possible information sets. A pure strategy for the voter prescribes a choice between the incumbent and challenger at each information set. The voter's beliefs are a mapping

$$\mu : \Phi \to [0, 1]$$

where the voter believes the incumbent is a zealot with probability $\mu(\phi)$ at information set ϕ.

D.2 Messaging Equilibrium Definition

We formally define a messaging equilibrium below. In the main text we define $n^* \equiv \lceil \frac{b\zeta[2F(\frac{\lambda\rho}{2})-1]}{k} \rceil$ as lowest n such that the slacker weakly prefers no legislation and reelection probability $1 - P^*$ to n^* and reelection probability P^*.

Definition 1 (Messaging Equilibrium). *In a messaging equilibrium,*

- *slackers do not legislate:* $n^*(s) = 0$

- *zealots legislate n^* times:* $n^*(z) = n^*$

- *for all ϕ such that $j = n \geq n^*$*

  $\mu(\phi) = 1$

  the voter reelects the incumbent if and only if $\frac{\lambda\rho}{2} + \omega \geq 0$

- *for all ϕ such that $j = \emptyset$*

  the voter reelects the incumbent if and only if $\omega \geq 0$

  $\mu(\phi) = 1/2$

- *for all ϕ such that $j = n < n^*$*

  $\mu(\phi) = 0$

  the voter reelects the incumbent if and only if $-\frac{\lambda\rho}{2} + \omega \geq 0$

D.3   No-legislation Equilibrium Definition

Definition 2 (No-legislation equilibrium)**.** *In a no-legislation equilibrium,*

- *neither type legislates:* $n^*(s) = n^*(z) = 0$

- *for all ϕ,*

  $\mu(\phi) = 1/2$

  the voter reelects the incumbent if and only if $\omega \geq 0$

D.4   Proof of Proposition 1

We derive the necessary and sufficient condition for the messaging equilibrium to exist, (1), in the main text and show that (2), implies (1). We now prove that the messaging equilibrium is the unique undefeated equilibrium. In any separating equilibrium, the voter learns the incumbent's type if she observes n. Thus in any separating equilibrium, the slacker is reelected with probability $1 - P^*(\zeta, \lambda, \rho)$ and the zealot with probability $P^*(\zeta, \lambda, \rho)$. Because $1 - P^*(\zeta, \lambda, \rho)$ minimizes the incumbent's probability of reelection, the slacker must not legislate in any separating equilibrium. It follows that the slacker's equilibrium expected

payoff is the same in any separating equilibrium as it is in the messaging equilibrium. To prevent the slacker from profitably imitating the zealot, the zealot must legislate at least n^* times in any separating equilibrium. Because the zealot's probability of reelection is the same in any separating equilibrium, his equilibrium expected payoff varies across separating equilibria only through the cost he incurs from legislating. This cost is minimized in the messaging equilibrium. Therefore if any separating equilibrium exists, a messaging equilibrium exists. Moreover, the zealot receives a strictly higher payoff from n^* in the messaging equilibrium than from the greater amount of legislation prescribed by any other separating equilibrium. The undefeated refinement therefore requires that the voter believes that the incumbent is a zealot with probability one in any separating equilibrium when she observes n^*. But a separating equilibrium in which the zealot legislates more than n^* requires that the voter believes the incumbent is a zealot with less than probability $1/2$ if she observes n^* (otherwise the zealot can profitably deviate to n^*). The messaging equilibrium thus defeats all other separating equilibria.

In the main text we show that a NL equilibrium is defeated by a messaging equilibrium if and only if (3) is satisfied. We now show that (3) implies that no other pooling equilibrium is undefeated. Consider a pooling equilibrium in which incumbents choose $\tilde{n} > 0$. In any pooling equilibrium, the incumbent is reelected with probability $1/2$. In order for this equilibrium to exist, the slacker must weakly prefer $\tilde{n}$ to no legislation. The worst payoff the slacker can earn from deviating to no legislation is realized when the voter believes the incumbent is a slacker with probability one when she observes no legislation. The minimum deviation payoff is therefore equivalent to his payoff from no legislation in the messaging equilibrium. Therefore if a pooling equilibrium with $\tilde{n} > 0$ exists, the slacker earns a higher payoff from choosing $\tilde{n}$ in the pooling equilibrium than from n^* is the messaging equilibrium. The zealot earns a payoff in the pooling equilibrium of

$$(b + \frac{\lambda \rho}{2})\frac{1}{2} - \tilde{n}k$$

The zealot therefore strictly prefers n^* in the messaging equilibrium to $\tilde{n}$ in the pooling equilibrium if and only if

$$g(\zeta, \lambda, \rho) + 2k\tilde{n} > 2k\lceil \frac{B^*}{k} \rceil - B^*$$

which is implied by (3). Therefore the voter must believe $\mu(n^*) = 1$ off path in the pooling equilibrium.

But the pooling equilibrium requires $\mu(n^*) < 1$ to prevent deviation by the zealot. Therefore (2) implies that the unique undefeated equilibrium is the messaging equilibrium.

It is straightforward to check that neither type of incumbent can profitably deviate from an NL equilibrium given the voter's off-path beliefs specified in the definition of a NL equilibrium. At every information set, the voter believes the incumbent is a zealot with probability $1/2$. Deviations therefore do not raise the incumbent's probability of reelection but cost more. Thus if (3) fails, the NL equilibrium exists. Moreover, because (3) implies that all pooling equilibria are defeated by the messaging equilibrium, the NL equilibrium exists and is undefeated by the messaging equilibrium if any pooling equilibrium is undefeated by the messaging equilibrium.

We now prove that the NL equilibrium defeats all other pooling equilibria. In order for a pooling equilibrium with legislation to exist, the voter must reelect the incumbent with less than probability $1/2$ if she unexpectedly observes no legislation. This requires that she believes the incumbent is more likely to be a slacker when she observes no legislation. Both types of incumbent strictly prefer no legislation in the NL equilibrium to any equilibrium amount of legislation in some other pooling equilibrium. The undefeated refinement therefore requires that in any pooling equilibrium, the voter believes the incumbent is a zealot with probability $1/2$ when she observes no legislation. Thus the NL equilibrium is the only undefeated pooling equilibrium. It follows that if the messaging equilibrium does not exist, the NL equilibrium the unique undefeated equilibrium. $\square$