

**Original citation:**

Ash, Elliott, Morelli, Massimo and Van Weelden, Richard. (2017) Elections and divisiveness : theory and evidence. *The Journal of Politics*, 79 (4). pp. 1268-1285.

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# Elections and Divisiveness: Theory and Evidence

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This article provides a theoretical and empirical analysis of how politicians allocate their time across issues. When voters are uncertain about an incumbent's preferences, there is a pervasive incentive to "posture" by spending too much time on divisive issues (which are more informative about a politician's preferences) at the expense of time spent on common-values issues (which provide greater benefit to voters). Higher transparency over the politicians' choices can exacerbate the distortions. These theoretical results motivate an empirical study of how Members of the US Congress allocate time across issues in their floor speeches. We find that US senators spend more time on divisive issues when they are up for election, consistent with electorally induced posturing. In addition, we find that US house members spend more time on divisive issues in response to higher news transparency.

Most citizens want a secure country, a healthy economy, safe neighborhoods, good schools, affordable health care, and good roads, parks, and other infrastructure. These issues do get discussed, of course, but a disproportionate amount of attention goes to issues like abortion, gun control, the Pledge of Allegiance, medical marijuana, and other narrow issues that simply do not motivate the great majority of Americans. —Fiorina, Adams, and Pope (2006, 202)

Can't we wait on the things that we're going to yell at each other about and start on the things that we agree on? —Austan Goolsbee, *Meet the Press*, August 7, 2011

As the above quotes illustrate, there is a widespread perception that the political process involves excessive amounts of time devoted to narrow and divisive issues. This raises the questions of why politicians spend so much time on these issues and if, as sometimes argued (e.g., Hillygus and Shields 2014), the focus on divisive issues is a response to electoral pressures. We provide a theoretical and empirical analysis of the role of electoral pressures in driving divisive politics.

The first contribution of this article is theoretical. We provide a positive theory of incumbent politicians' allocation of time and resources across two policy issues. While common-values issues are more important to the voters, voters are unsure of the politician's preferences on divisive issues. The politician has an incentive to overprovide effort on divisive issues,

at the expense of common-values issues, to signal that she holds preferences that make her more attractive to the majority of voters. Moreover, this incentive to "posture" is stronger with higher transparency—that is, when voters have more information on the politician's effort choices.

The second contribution is empirical. We construct a measure of divisive effort for members of the US Congress using the text of their floor speeches. We then report two new empirical findings. First, we exploit variation in the time to re-election for US senators to demonstrate that senators spend more time on divisive issues when elections are more imminent. Second, we exploit variation in news coverage based on the overlap between media markets and congressional districts to show that US house members spend more time on divisive issues when there is greater transparency.

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Massimo Morelli thanks the Carlo F. Dondena Center for Research in Social Dynamics and Public Policies and the European Research Council, grant 694583, for financial support. Data and supporting materials necessary to reproduce the numerical results in the article are available in the *JOP* Dataverse (<https://dataverse.harvard.edu/dataverse/jop>). An online appendix with supplementary material is available at <http://dx.doi.org/10.1086/692587>.

The Journal of Politics, volume 79, number 4. Published online July 18, 2017. <http://dx.doi.org/10.1086/692587>  
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1268

These results are consistent with the theory and provide empirical evidence of the importance of electorally induced posturing.

This article builds on a large theoretical literature on policy distortions due to electoral pressures. In *pandering models* (e.g., Canes-Wrone, Herron, and Shotts 2001; Maskin and Tirole 2004), politicians take actions that signal competence or congruence with the electorate even if they know those policies are not in the voters' interest. This can lead politicians to take relatively extreme actions (e.g., Acemoglu, Egorov, and Sonin 2013; Fox and Stephenson 2015) or result in valuable information of politicians being lost (e.g., Canes-Wrone and Shotts 2007; Fox 2007; Morelli and Van Weelden 2013). The present article breaks from the previous literature in its focus on the allocation of effort across different issues, rather than the choice on a single issue. This approach generates a novel prediction: electoral pressures will distort politician effort away from common-values issues toward divisive issues. That is, distortions in policy making may result not from choices on a given issue but rather from a misallocation of effort across issues toward those that are more divisive.<sup>1</sup> In turn, this prediction motivates a new empirical approach, as relative effort across issues cannot be measured with standard data sets on positions taken (e.g., roll call votes). Our political effort measure is a continuous metric of time allocated to divisive issues, constructed from congressional floor speech.

The logic of the model can be outlined as follows. An incumbent politician decides how to allocate effort across two issues, a common-values issue and a divisive one. Politicians and all voters share the same preference on the common-values issue. On the divisive issue, voter and politician preferences are heterogeneous. In the first stage of the game, voters observe the incumbent's effort allocation, draw inferences about her type, and then vote on whether to re-elect her or not. Politicians are more likely to be re-elected if they are

1. The theoretical literature on a politician's allocation of time across issues is relatively small. Aragoes, Castaneira, and Giani (2015), Colomer and Llavador (2011), and Dragu and Fan (2016) all assume fixed policies and analyze politicians' attempts to add salience to issues on which their party has a preexisting advantage. Dragu and Fan (2016) predict that in two-party elections only the minority party has an incentive to increase the salience of issues with high heterogeneity in opinions (sometimes even when the party does not have an expected advantage on that issue), something distinct from our results on incumbents' incentive to focus on divisive issues. More generally, there is a large literature in economics and political science stemming from Holmstrom and Milgrom (1991) on how agents allocate effort across tasks. This literature mainly focuses on competence-signaling rather than preferences-signaling, however. To our knowledge, none of these papers consider the allocation of effort between divisive and common-values issues.

seen to have preferences that are aligned with those of the majority of the relevant electorate.

Voter uncertainty about politician preferences on divisive issues, coupled with the potential for policy disagreements in the next period, motivates politicians to try to signal that their policy preferences are aligned with their electorate. They do this by focusing effort on divisive rather than common-values issues. We refer to the excessive exertion of effort on divisive issues at the expense of common-values issues as *posturing*. Politicians posture because more highly divided preferences on an issue mean greater uncertainty about their preferences, increasing the electoral value of signaling. We show that even when there exist very important common-values issues that everybody agrees should be solved first, incumbent politicians overprovide effort on divisive issues to signal their preferences. Hence, posturing may involve first-period effort allocations that are suboptimal for all voters, including those who agree with the actions taken on the divisive issue.<sup>2</sup> The incentive for the politician to signal her preferences is strongest when re-election concerns are paramount and the politician is most confident of where majority opinion will be when she comes up for re-election. As voter preferences may shift over time, this means that the strongest electoral pressures emerge when the next election is most imminent.

With a sufficiently strong re-election motive, there is a pooling equilibrium in which all politicians posture by focusing on the divisive issue. This equilibrium not only involves distortions in the politician's behavior; also, since all politicians take the same action, the voters do not learn anything from these distortions. This means that high levels of posturing also impede the ability of voters to learn about politicians and retain those with more aligned policy preferences. As such, high levels of posturing have unambiguously negative welfare consequences. These negative welfare consequences emerge not due to a misalignment of the positions taken on a given issue—when the re-election motive is strong politicians always pursue the majority-preferred position on any issue they address—but rather because important common-values issues are ignored at the expense of more divisive ones.

In the first part of this article, we assume that voters directly observe the effort allocation chosen by the incumbent politician. In the second part, we ask what happens when voters cannot observe politicians' effort allocation but only

2. As has been discussed in the previous literature, electoral pressures can have both positive and negative effects on politician behavior, and there is often a friction between incentivizing politicians to implement desirable policies today and selecting candidates who will implement desirable policies in the future (e.g., Fearon 1999).

the policy consequences that result. While there are several previous papers on transparency (e.g., Fox 2007; Fox and Van Weelden 2012; Prat 2005), we provide new results concerning the allocation of effort across issues.

In our model, increased transparency can have ambiguous effects on politician behavior. Since the actions are more likely to be observed, transparency can increase the electoral benefit from socially inefficient posturing.<sup>3</sup> And, by increasing posturing, higher transparency can actually decrease the amount voters learn about politicians from their effort choices. The intuition is that, as posturing is more advantageous when effort choices are more transparent, greater transparency increases the likelihood that the equilibrium involves pooling with all politicians engaging in maximal posturing. So, for appropriate parameters, transparency can be harmful both for policy making in the current period and for selecting congruent politicians in the future.

These theoretical findings motivate the empirical analysis of posturing. We proxy for effort exerted across issues with the amount of speech dedicated to different issues on the House/Senate floor. Our measure of divisive speech is constructed from the frequency that politicians of different parties use particular language (Gentzkow and Shapiro 2010; Jensen et al. 2012). This measure is needed to capture how politicians allocate time across different types of issues rather than just the positions taken in roll call votes. This is important because, although electoral pressures cause roll call votes to be more aligned with the electorate (e.g., Thomas 1985), looking only at the positions taken in roll call votes cannot capture the distortions in relative issue emphasis predicted by our model.

From the theory, we expect effort on divisive issues to increase when the next election is more imminent. To test this empirically, we use variation in the time to the next election that arises due to the staggered election cycle in the US Senate. We find that when senators are up for re-election, they allocate a greater fraction of their floor speech to divisive issues relative to earlier in their term. This result is consistent with electorally induced posturing.

In the second part of our empirical analysis, we measure the effect of greater transparency on divisiveness. The theory has more caveats about the effect of transparency, but it identifies conditions under which increased transparency can lead to increased divisiveness. To identify higher transparency empirically, we use the measure for news coverage

3. Dan Rostenkowski, the long-time chairman of the House Ways and Means Committee, shared this concern, arguing that “as much as people criticize the back room, the dark room, or the cigar or smoke-filled room, you get things done when you’re not acting” (Koeneman 2013).

of US house members developed by Snyder and Stromberg (2010), which is based on the geographic overlap between media markets and congressional districts. Although less conclusive than the Senate analysis, we find evidence that House members engage in more divisive speech in response to higher news transparency. This result complements previous work on the benefits of transparency: for example, Snyder and Stromberg (2010) find that increased transparency increases politician effort, consistent with the predictions of models of accountability. Here we identify a potential downside in terms of how effort is divided across issues.

In sum, we provide a rationale for how electoral pressures and transparency can incentivize politicians to focus excessive effort on divisive issues and then present empirical evidence in support of that rationale. However, our empirical results should be of broader interest than as a test of our model of divisive politics. To the extent that an increased focus on divisive issues is socially harmful (e.g., Fiorina et al. 2006), our results provide important empirical verification for the argument that electoral pressures can induce distortions in policy making. A large theoretical literature has explored the risks of socially harmful pandering and the ways in which increased transparency can exacerbate these distortions (see Ashworth [2012] for an overview), but the empirical literature is much less developed.<sup>4</sup> Our results provide an important step in understanding how electoral pressures can induce distortions from an empirical perspective.

The article is organized as follows. The next section presents the model, and the following section analyzes the equilibrium. The section after that extends the model to heterogeneous constituencies, while the following section reports the empirics. The final section concludes. An appendix, available online, includes the proofs of the theoretical results and additional details on the empirical specification.

## MODEL

We consider a two-period model in which a politician takes action to influence policy in each period, with an election between periods. See table 1 for a summary of the definition of the symbols used in our model. In each period, the incumbent politician has to decide how to allocate effort, or other scarce resources such as money or personnel, between two issues, *A* and *B*. Issue *A* is common-values, and all voters

4. Pandering is challenging to test empirically, given that its predictions concern the unobservable private information of policy makers. However, Canes-Wrone and Shotts (2004) and Rottinghaus (2006) provide some evidence of pandering by showing that, consistent with these models, politicians are more responsive to public opinion on issues on which voters are more informed.

Table 1. Table of Symbols

Symbol	Meaning
Model section:	
$A$	Common-values issue
$B$	Divisive issue
$W$	Politician's time budget
$x_i^B$	Preferred policy on divisive issue for voter $i$
$m_t$	Fraction of voters with $x_i^B = 1$ at period $t$
$m^P$	Fraction of type 1 politicians
$w_t^A, w_t^B$	Effort dedicated to issues $A$ and $B$ in period $t$
$p_t^A, p_t^B$	The resulting policy on issues $A$ and $B$ in period $t$
$q$	Probability that voter preference on common-values issue is constant in second period
$v_t^j$	Valence of elected politician $j$ in period $t$
$\gamma$	Voter preference weight for common-values issue
$\eta$	Probability that majority preference on divisive issue changes in second period
$\theta_t$	Voter preference on common-values issue in period $t$
$\sigma^2$	Variance of distribution of politician valence
$\phi$	Office-holding benefit for politician
$\mu$	Voter's updated belief that the incumbent is type 1.
Empirical section:	
$E_{jt}$	Election cohort of Senator $j$ in period $t$
$T_{jt}$	Transparency measure for Congressman $j$ in period $t$
$X_{jt}$	Control variables for district $j$ in period $t$
$Y_{jt}$	Divisiveness of congressman speech
$\alpha_{jt}$	District and year fixed effects
$\beta$	Estimated coefficients on control variables
$\mu_{jt}$	Error term in the estimating equations
$\rho_E, \rho_T$	Coefficients for election cohort ( $E$ ) and transparency ( $T$ ) on divisiveness

agree on the preferred policy. Issue  $B$  is divisive, and voters disagree about which policy they would like implemented.

On issue  $A$ , the politician allocates effort  $w^A \in [0, 1]$ ; on issue  $B$ , the politician chooses  $w^B \in [-1, 1]$ . The choice of  $w^B$  reflects both the amount of effort on issue  $B$  ( $|w^B| \in [0, 1]$ ) and whether to spend the time she devotes to  $B$  on increasing ( $w^B > 0$ ) or decreasing ( $w^B < 0$ ) the policy. We assume that the politician is constrained to choose  $w^A + |w^B| \leq W$ , where  $W \in (0, 2)$  is her budget of time. We normalize the status quo policy to be 0 in each dimension, and we assume that if effort  $w^A$  is exerted on issue  $A$ , the policy will be  $p^A = 1$  with probability  $w^A$  and 0 with probability  $1 - w^A$ . Similarly devoting effort  $w^B \geq 0$  ( $w^B < 0$ ) to issue  $B$  results in

policy  $p^B = 1$  ( $p^B = -1$ ) with probability  $|w^B|$  and  $p^B = 0$  with probability  $1 - |w^B|$ .<sup>5</sup>

The parameter  $W$  is a measure of the power of the office the politician holds. When  $W$  is small, the politician's effort is unlikely to influence policy; when  $W \approx 2$ , it is possible for her to change policy in both dimensions with high probability; for intermediate values of  $W$ , the politician faces a trade-off where she can influence policy but may not be able to do everything she wants. Parameter  $W$  is likely to vary across institutional structures (e.g., the prime minister in a unicameral parliamentary system may have a higher  $W$  than the US president) and across different offices in the same system (e.g. a member of Congress or Parliament would have a lower  $W$  than the president or the prime minister).

In addition to caring about policy, voters receive some additional payoff from having a politician who is high valence—someone who is an able administrator or whom they like personally. In each period,  $t \in \{1, 2\}$ , the stage game utility of voter  $i$  is

$$-\gamma|\theta_t - p_t^A| - (1 - \gamma)|x_i^B - p_t^B| + v_t^j,$$

where  $p_t^A$  and  $p_t^B$  are the policies implemented in period  $t$ ,  $v_t^j$  is the valence of politician  $j$  who is in office in period  $t$ ,  $\theta_t$  and  $x_i^B$  are the preferred policies in each dimension for voter  $i$ , and  $\gamma \in (0, 1)$  is the relative importance of the common-values issue. So  $\theta_t \in \{0, 1\}$  reflects whether all voters prefer policy  $p^A = 1$  or  $p^A = 0$  in period  $t$ . Conversely, the voters may be type  $x^B = -1$  or  $x^B = 1$ , reflecting their preferred policy in dimension  $B$ . To keep the analysis simple, we assume that preferences in dimension  $B$  are independent of the state.

In period 1, a strict majority of voters,  $m_1 \in (1/2, 1)$ , are type  $x_i^B = 1$  and so prefer higher policies in the  $B$  dimension. The assumption that  $m_1 \geq 1/2$  is without loss of generality, so the meaningful assumption is that the electorate is not perfectly divided on issue  $B$  ( $m_1 \neq 1/2$ ). The fraction of type  $x_i^B = 1$  voters in period 2 is  $m_2$ , which is uncertain when the first period effort choice is made. We assume  $\Pr(m_2 > 1/2) = 1 - \eta$  and  $\Pr(m_2 < 1/2) = \eta$ , where  $\eta \in [0, 1/2)$ .

When  $\eta > 0$ , this means that there is a possibility that majority opinion on the divisive issue may flip before the next election, but  $\eta < 1/2$  means the majority opinion is positively correlated across periods. The probability  $\eta$  of a reversal in

5. We could allow politicians the option to decrease the policy in the  $A$  dimension as well, but this would be uninteresting as all voters and politicians have a common interest in  $p^A$  not decreasing. Moreover, while we assume that the mapping between effort and policy change is the same for both issues, this is not necessary. We could allow this to be asymmetric—for example, assuming the probabilities of policy change are  $\alpha^A w^A$  and  $\alpha^B |w^B|$ , respectively—and results would still hold just with additional parameters and algebra.

majority opinion likely varies with the time to the next election: for example, if a senator has to make an effort allocation decision between a common-values issue and a divisive issue early in her term, then there are more opportunities for a shift of majority preferences on the divisive issue (e.g., during the second half of the six-year term) than if the allocation decision is made immediately before the next election. This means that  $\eta$  is decreasing in time to re-election. Thus, the model's prediction when  $\eta$  is high can be interpreted as the prediction when re-election is well in the future, whereas when  $\eta$  is low, it can be interpreted as the prediction when the re-election decision is imminent. This will be important for deriving comparative statics that we test in our empirical analysis.

We assume that  $\theta_1 = 1$  but that the probability that  $\theta_2 = 1$  is  $q \in (0, 1)$ . This means that, in the first period, voters prefer a new policy on  $A$ , but, with some probability, they will be content with the status quo policy in the second period. Our analysis will focus on the behavior of politicians in the first period when they are electorally accountable, and we assume that  $\theta_1 = 1$ , so voters would benefit from (appropriately directed) effort on two different tasks. This makes the politician's multi-task problem nontrivial. In the second period, because  $q < 1$ , different types choose different effort allocations with positive probability, and the politician's type matters for voter-payoffs. That  $q < 1$  captures the uncertainty about which issues will be important in the future and reflects the possibility the divisive issue could become a central dimension of conflict.

Finally, we assume that  $\gamma \in (1/2, 1)$ , and so all voters care more about issue  $A$  than issue  $B$ . This is not necessary for our results, but it corresponds to the case where all players prefer effort to be spent on  $A$ , and so there are biases against effort focused on  $B$ . We focus on the case in which  $\gamma > 1/2$  in order to provide a theory of why politicians may not address common-values issues even if they are more important.

Politicians are drawn from a (possibly proper) subset of the electorate, and so, like the voters, the preferences of the politicians are homogeneous on the  $A$  dimension and heterogeneous on the  $B$  dimension. We assume that fraction  $m^p \in (1/2, 1)$  of the politicians are type  $x^B = 1$  and that  $1 - m^p$  are type  $x^B = -1$ . That is, we do not require the distribution of politician preferences to be the same as those of the voters, but we do assume that a politician is more likely than not aligned with the majority of voters. This is likely the most relevant case given that politicians are voters themselves.<sup>6</sup>

6. The assumption that a majority of politicians hold the same policy preferences as the majority of the period 1 voters plays no role in the mechanism we consider, but it simplifies the equilibrium selection. If  $m^p < 1/2$ , then, because type 1 politicians would have more to lose from not

The incumbent politician knows her own type, and voters update their beliefs based on observed incumbent behavior.

Politicians also differ in their valence, and we assume for simplicity that valence is normally distributed with mean 0 and variance  $\sigma^2 > 0$  across politicians. The politician's valence is unknown to both the politician and voters initially, but it is revealed to everyone when the politician is in office regardless of the effort choice. Valence is constant across periods, so at the time of the election, voters know whether the incumbent is higher or lower valence than they can expect from a challenger. As the incumbent does not know her own valence initially, it cannot affect her effort choice, but it introduces additional randomness that smooths the re-election probability. In addition to having preferences over policy, the politician receives a positive benefit  $\phi$  from being in office. So the stage game utility of politician  $j$  if  $(p_t^A, p_t^B)$  is implemented is

$$\phi - \gamma|\theta_t - p_t^A| - (1 - \gamma)|x_j^B - p_t^B|,$$

if they are in office, and, if politician  $k \neq j$  is in office,

$$-\gamma|\theta_t - p_t^A| - (1 - \gamma)|x_j^B - p_t^B| + v_t^k.$$

If out of office, a politician is then identical to a voter with the same policy preferences, but in office, she receives a benefit  $\phi$  from holding office regardless of her own valence. The parameter  $\phi$  could include monetary and nonmonetary rewards from being elected. For simplicity, we assume that effort is not costly for the elected politician—the incentives to exert costly effort by incumbent politicians have been studied in the previous literature.

The game is repeated with discount factor  $\delta \in (0, 1]$ . After the first period, voters update their beliefs about the type of the politician. As there are only two types, these beliefs can be characterized by

$$\mu \equiv \Pr(x_j^B = 1),$$

the voters' beliefs that the incumbent is type 1. The timing is as follows:

1. In period 1, a politician is randomly selected to be in office for that period. The politician knows her own type, but voters only know the type distribution.
2. The politician decides how to allocate effort ( $w^A$  and  $w^B$ ). There are two subcases:

securing re-election, it is possible, for some parameters, to support other equilibria in which there is additional costly signaling to convince the voters that the re-election motive is strong.

- a. The voters observe the effort decision—transparency case.
  - b. Voters do not observe the effort decision—no transparency case.
3. The incumbent's valence  $v^j$  is realized and publicly observed. The politician's valence is constant across periods.
  4. The policies are determined, with all players receiving their utilities for period 1. Voters observe  $p^A$  and  $p^B$  and update beliefs about the incumbent.
  5. Fraction  $m_2$  is realized, and an election takes place by majority rule over whether or not to re-elect the incumbent. If the incumbent is not re-elected, a random replacement is drawn.
  6.  $\theta_2$  is realized, and the politician decides how to allocate effort in period 2.
  7. The policy is realized, with all players receiving their payoff for period 2.

Notice that we specify the game so that the status quo in period 2 is not affected by the outcome in period 1. This simplifies the algebra. It is also the natural assumption if new policy issues arise each period and preferences are correlated across the issues faced in different periods. Moreover, we demonstrate in the next subsection that assumptions about the second period status quo do not drive the results.

Finally, before proceeding to the analysis, note that we have assumed that the election takes place by majority rule, and we have abstracted from parties or the selection of candidates. However, an alternative application of our model is to primary elections. Suppose that, instead of a fear of losing the general election, the greatest threshold the incumbent must cross to be re-elected is to secure renomination by her party. If the incumbent wins the primary, she will be re-elected in the general election with certainty, whereas if the incumbent is defeated in the primary, a random draw from the same party replaces her on the ticket and wins the general election. While stark, this is a reasonable approximation to heavily gerrymandered districts or in conservative states with possible Tea Party challenges. With this interpretation of our model, majority opinion reflects the majority within the primary electorate in the incumbent's party.

**ANALYSIS**

**Politician second-period behavior and the voters' re-election decision**

We now turn to analyzing the behavior in this game. We look for Perfect Bayesian Equilibria, restricting attention to equilibria in which all voters always hold the same beliefs about the politician's type. Our main focus will be on the

behavior in the first period when the politician is electorally accountable. In order to understand the politician's incentives in the first period, however, we must first understand which voter beliefs will make it more likely that the incumbent is re-elected. For this reason, we begin by solving for politician behavior in period 2. In period 2, the politician is unaccountable to voters and chooses the effort allocation that maximizes her policy payoff.

As  $\gamma > 1/2$ , all politicians and all voters care more about issue A than issue B. Hence, in the second period, the politician focuses first on addressing issue A if any change is desired on that issue ( $\theta_2 = 1$ ). The politician will then spend any left over effort on the B dimension, with the type 1 politician exerting effort to implement  $p^B = 1$  and the type -1 politician to implement  $p^B = -1$ . We then have the following lemma.

**Lemma 1: Politician Action in the Second Period.** In period  $t = 2$ :

1. A politician of type 1 chooses  $w^A = \min\{W, 1\}$  and  $w^B = W - w^A$  when  $\theta_2 = 1$  and  $w^B = \min\{W, 1\}$  and  $w^A = 0$  when  $\theta_2 = 0$ .
2. A politician of type -1 chooses  $w^A = \min\{W, 1\}$  and  $w^B = -(W - w^A)$  when  $\theta_2 = 1$  and  $w^B = -\min\{W, 1\}$  and  $w^A = 0$  when  $\theta_2 = 0$ .

Note that, as  $\theta_2 = 0$  occurs with positive probability, the second-period behavior of different types differs with positive probability for all  $W$ . The politician's type is then relevant to voters: a voter's payoff is higher from re-electing an incumbent who shares that voter's policy preferences.

We next consider the voters' decision of whether to re-elect the incumbent. The expected second-period payoff to voters of type  $x^B = 1$  ( $x^B = -1$ ) is increasing in the probability the politician is type 1 (type -1), and all voters benefit if the politician is of higher valence. We assume that all voters vote sincerely, and so will vote for the incumbent if, and only if, given her valence and the beliefs about her type, the expected payoff is higher than from a random challenger. To be re-elected, the incumbent must receive at least half the votes. So she will be re-elected if and only if the majority type at the time of the election (which is type 1 with probability  $1 - \eta > 1/2$ ) supports her re-election. As the type 1 voter's payoff is strictly increasing in  $\mu$ , the voters' belief the incumbent is type 1, so too is the incumbent's re-election probability.

**Lemma 2: Voter Behavior.** The incumbent's re-election probability is strictly increasing in  $\mu$  and is equal to 1/2 when  $\mu = m^p$ .

From lemma 2, we see that an incumbent politician benefits electorally from being perceived as type 1.<sup>7</sup> We now turn to analyzing the first-period effort choice, first with transparent effort and then in the case in which only the outcome is observable. We consider the actions the incumbent politician will take in the first period in order to signal that she is type 1.

### Equilibrium with observable effort choices

We first analyze the case with transparent effort—when voters observe  $(w^A, w^B)$  as well as  $(p^A, p^B)$ . As the incumbent benefits from convincing the voters that she is type 1, the first period is a signaling game. This means that there can be many equilibria, especially when re-election concerns are paramount ( $\phi$  is high), depending on voters' off-path beliefs. However, applying criterion D1 from Cho and Kreps (1987) generates a unique equilibrium prediction, up to the beliefs at certain off-path information sets. Criterion D1 simply says that, if the voters see an out of equilibrium effort allocation, they should believe it was taken by the type of politician who would have an incentive to choose that allocation for the least restrictive set of beliefs. A formal definition is included in appendix A. As is standard in this literature, we focus on equilibria satisfying D1 and refer to them simply as an equilibrium.

We now solve for equilibrium behavior in the first period, at which point the incumbent chooses effort to influence the first-period policy as well as her probability of being re-elected. From a policy perspective, the greatest return to effort is on policy A, but, as we established in lemma 2, her re-election probability increases in the voters' belief she is type 1. The incumbent can signal that she is type 1 by engaging in effort that is comparatively less costly for a type 1 politician than a type -1 politician: by diverting effort from issue A to issue B.

Type 1 politicians receive higher utility from increasing  $p^B$  than type -1 politicians, so it is relatively less costly for a type 1 politician to choose  $w^B > 0$ . There is one caveat, however. As politicians care about the policy implemented after leaving office, a politician has a greater incentive to secure re-election if her replacement is less likely to be the same type.

7. Lemma 2 would still hold if the status quo in the second period is endogenous to the first-period policy. When  $\theta_2 = 0$ , type 1 politicians are incentivized to exert effort to increase the policy in the B dimension, and type -1 to decrease it. Regardless of the status quo, at least one of those alternatives is feasible, and so majority-type voters receive a higher expected payoff from majority-type politicians. The subsequent results on first-period behavior would then go through fundamentally unchanged with different assumptions about the second-period status quo.

So, if  $\phi$  is very low and  $m^P$  is close to one, a majority politician receives little benefit from re-election, and so she has less incentive to posture even though it is comparatively less costly. However, when  $\phi$  is not too small—greater than some nonnegative level  $\hat{\phi}$ —the benefits from re-election are large enough that type -1 politicians have a greater incentive to posture. How much effort will be diverted to issue B depends on the degree of office motivation.

When  $\phi$  is low (but greater than  $\hat{\phi}$ ) politicians are more concerned with the policy implemented in the current period than with securing re-election, so both types focus the bulk of their energies on issue A. However, the type 1 politician can separate herself by placing strictly positive effort on B. As the type 1 politician has a strictly greater incentive to increase  $w^B$  than the type -1 politician, criterion D1 requires that, if  $w^B$  is greater than the equilibrium level, the voters infer that the incumbent is type 1 with certainty. This generates a discrete jump in the re-election probability relative to when voters are unsure of her type, so in equilibrium, the politician's type must be fully revealed by her effort choice. In a *separating equilibrium*, type -1 chooses  $w^A = \min\{W, 1\}$  and  $w^B = -(W - w^A)$  and type 1 chooses  $w^B > 0$  and  $w^A = W - w^B$  with voters perfectly learning the incumbent's type.

Now consider the case in which  $\phi$  is high, and so the primary concern of politicians is to secure re-election. Then, although type 1 politicians have an incentive to try to separate by putting additional effort on issue B, a type -1 politician is no longer willing to reduce her re-election probability by focusing effort on her preferred policy and revealing herself to be type -1. As the type -1 politician always has an incentive to mimic type 1, and the type 1 politician always has an incentive to try to separate by increasing  $w^B$ , the only possible equilibrium is pooling with all politicians choosing  $w^B = \min\{W, 1\}$ , the maximal effort on issue B. We refer to this pooling equilibrium as a *posturing equilibrium*.

Finally note that, by lemma 2, emphasizing B in a separating equilibrium results in re-election with a higher probability than in a pooling equilibrium. For intermediate levels of office-motivation, then, it is not possible to have an equilibrium that is either separating, as the type -1 politician would have an incentive to mimic type 1, or pooling, as the type -1 politician would not be incentivized to posture. For this range of parameters, the equilibrium is *partially-pooling*. In a partial-pooling equilibrium, the type 1 politician's behavior is the same as in a posturing equilibrium, and the type -1 politician randomizes between her behavior in a separating and a posturing equilibrium.

The above discussion leads to the following equilibrium characterization.



**Proposition 1: Characterization of Equilibrium.**

There exists  $\hat{\phi}(W) \geq 0$  such that, when  $\phi > \hat{\phi}(W)$ , there is a unique equilibrium up to the beliefs at off-path information sets. Assume  $\phi > \hat{\phi}(W)$ . Then there exist  $\bar{\phi}(\sigma, \eta, W)$  and  $\phi^*(\sigma, \eta, W)$  such that the unique equilibrium is

1. *separating* if  $\phi \leq \bar{\phi}(\sigma, \eta, W)$ .
2. *partially-pooling* if  $\phi \in (\bar{\phi}(\sigma, \eta, W), \phi^*(\sigma, \eta, W))$ .
3. *posturing* if  $\phi \geq \phi^*(\sigma, \eta, W)$ .

Proposition 1 characterizes the equilibrium behavior and the resulting inefficiencies.<sup>8</sup> As  $\gamma > 1/2$ , all voters and politicians agree that issue *A* is more important and would receive a greater utility benefit from effort spent on *A* than *B*. So, in the first period, if  $w^A < \min\{W, 1\}$ , as happens for many parameter values, a pareto-dominated effort allocation is chosen. When, as in part 3, strong office motivation leads to a posturing equilibrium, the effect is particularly pronounced. Not only is there the largest possible distortion of effort away from issue *A*, but this distortion is driven by the incentives for politicians to signal to voters. However, since both types posture, voters do not learn anything about the incumbent politician from this socially wasteful signaling. A posturing equilibrium is then unambiguously worse than a separating equilibrium as it generates lower voter welfare in both periods.

Proposition 1 provides an explanation for why politicians would exert so much effort on divisive issues of marginal importance. Politicians can use these issues as a costly signal that they are aligned with the majority; a politician who fails to work on the divisive issue, even if she works instead on issues that benefit voters more, will be perceived as non-congruent on the divisive issue. There is greater posturing by politicians when office motivation is stronger. Note, however, that the only time any politician works toward a policy opposed to the majority's preferences is when office motivation is low. So stronger office motivation makes the positions taken on a given issue more aligned with majority opinion but, at the same time, creates a distortion in terms of excessive emphasis on more divisive issues.

We now consider how the cutoffs  $\bar{\phi}(\sigma, \eta, W)$  and  $\phi^*(\sigma, \eta, W)$  vary with the parameters. As it is only possible to support a separating equilibrium when  $\phi \leq \bar{\phi}(\sigma, \eta, W)$  and a posturing equilibrium when  $\phi \geq \phi^*(\sigma, \eta, W)$ ,  $\bar{\phi}(\sigma, \eta, W)$  and

$\phi^*(\sigma, \eta, W)$  are indices of how likely (in a world of random parameter values) it is to have an equilibrium without pervasive posturing. When  $\eta$  increases (i.e., the next election is further away), posturing is less likely because voter beliefs have less impact on the re-election probability. An analogous effect is caused by an increase in  $\sigma$ , the importance of valence. The effect of  $W$ , the institutional authority parameter, is instead nonmonotonic. To state this comparative static, we define  $\bar{\phi}_0(\eta, W) \equiv \lim_{\sigma \rightarrow 0} \bar{\phi}(\sigma, \eta, W)$  and  $\phi_0^*(\eta, W) \equiv \lim_{\sigma \rightarrow 0} \phi^*(\sigma, \eta, W)$  as the limit of the cutoffs as valence heterogeneity disappears.

**Proposition 2: Comparative Statics.**

1.  $\bar{\phi}(\sigma, \eta, W)$  and  $\phi^*(\sigma, \eta, W)$  are both increasing in  $\eta$  and  $\sigma$ .
2.  $\bar{\phi}_0(\eta, W)$  and  $\phi_0^*(\eta, W)$  are strictly increasing in  $W$  when  $W < 1$  and strictly decreasing when  $W > 1$ .

Part 2 of proposition 2 shows that, when valence shocks are small,  $\bar{\phi}(\sigma, \eta, W)$  and  $\phi^*(\sigma, \eta, W)$  are nonmonotonic in  $W$ . If  $W$  is small, it is difficult to support a separating equilibrium. Since politicians' effort choices are unlikely to influence policy, they have a greater incentive to choose the allocation most likely to get them re-elected—so all incumbents focus on *B*.<sup>9</sup> As  $W$  increases, effort choices are more likely to have policy consequences, so the incentive for the politician to allocate effort to her preferred policy increases. However, if  $W$  is greater than 1, further increases in  $W$  make it more difficult to support a separating equilibrium. This is because, when  $W$  is large, politicians are capable of getting both  $p^A = 1$  and  $p^B = 1$  with high probability. As the greatest cost of effort on *B* is if it comes at the expense of effort that could be spent on *A*, the costs of posturing are lower when  $W$  is large. When  $W = 1$ , the policy consequences are starkest, and so the equilibrium is separating for the widest range of parameters.

**First-period behavior with unobservable effort choices**

We now consider the incentives when effort is not transparent. That is, we assume the voters can observe only the outcomes ( $p^A$  and  $p^B$ ) but not the effort allocations ( $w^A$  and  $w^B$ ).<sup>10</sup> As this setting falls outside the scope of standard refine-

8. See proposition A1 in appendix B for additional details and the proof. It is possible that a separating or partially-pooling equilibrium requires lower office motivation than  $\hat{\phi}(W)$ . This can only occur when  $W \approx 2$  and  $\gamma \approx 1$  and for such parameters, cases 1 and 2 of proposition 1 are vacuous. Proposition A1 provides details.

9. Fox and Stephenson (2011) identify a similar effect. They present a model in which judicial review, by insulating politicians from their policy choices, can increase electoral induced distortions.

10. An alternative form of nontransparency, observing  $w^A$  and  $w^B$  but not  $p^A$  and  $p^B$ , would be uninteresting. Conditional on observing the effort

ments, such as criterion D1, we do not apply such refinements to select among equilibria here. Instead, we focus on the case in which  $\phi$  is large, so the dominant concern is to secure re-election. Then, if the politician's effort allocation were transparent, the result would be a posturing equilibrium in which both types focus effort on issue  $B$ . We focus on the class of Perfect Bayesian Equilibria in which the type 1 politician's action is the same as in the transparency model.

The effect of transparency depends critically on  $W$ . When the effort allocation is transparent, if the voters observe any effort allocation other than that chosen by type 1, they know with certainty that the politician deviated and so is type  $-1$ . With nontransparency, a deviation (may) not be observed with certainty. Consequently, parameter values that admit a posturing equilibrium with transparent effort will not necessarily generate the same behavior when effort choices are nontransparent. When  $W < 1$  we have the following result:

**Proposition 3: Transparency Can Increase Effort and First-Period Welfare.** There cannot exist a posturing equilibrium when  $W < 1$ . When  $\phi$  is sufficiently large, there exists a unique pure strategy equilibrium in which the type 1 politician chooses  $w^B = W$ . In this equilibrium, the type  $-1$  politician chooses  $w^A = 0$  and  $w^B \in (0, W)$ .

When effort is nontransparent and  $W < 1$ , there cannot be a posturing equilibrium. If both types choose the same effort allocation, then, regardless of the realized outcome  $p^B \in \{0, 1\}$ , voters would not update about the politician. Because the type  $-1$  politician strictly prefers  $p^B = 0$  to  $p^B = 1$  from a policy perspective, but the re-election probability would be the same, as she would have an incentive to deviate and choose  $w^A = w^B = 0$  rather than  $w^B = W$ . So we can rule out a posturing equilibrium. Further, the type  $-1$  politician cannot choose  $w^A > 0$  or  $w^B < 0$  in equilibrium. This is because, if the type 1 politician chooses  $w^B = W$ ,  $p^A = 1$  and  $p^B = -1$  never occur if the politician is type 1, and so would reveal the politician as type  $-1$  with certainty. As the politician would not be willing to reveal this when re-election concerns are paramount, the equilibrium must involve the type  $-1$  politician choosing  $w^A = 0$  and  $w^B \in (0, W)$ ;  $w^B$  is uniquely determined so that the re-election probabilities after  $p^B = 0$  and  $p^B = 1$  make a type  $-1$  politician indifferent between those outcomes.

Proposition 3 characterizes the unique pure-strategy equilibrium in which type 1 politicians focus on  $B$  when  $W < 1$

allocation, the policy outcomes are purely random, and so voters would not update based on them.

and the re-election motive is strong. In essence, the type  $-1$  politician cannot work toward a different goal than the type 1 politician without revealing her type; however, because she is personally opposed to the policy change, she does not work as hard. The lack of transparency then creates further welfare losses in the first period. Not only will no politician exert effort on  $A$  but type  $-1$  politicians exert less than full effort pursuing  $p^B = 1$ , the majority-preferred policy on the divisive issue.

As such, transparency over the effort allocation is beneficial for first-period welfare when  $W < 1$ . However, this transparency impedes the selection of type 1 politicians since we have a pooling equilibrium when effort is transparent, but, when effort is nontransparent, the voters update based on the policy outcome,  $p^B$ . That transparency can involve trade-offs between the incentives in the current period and selection for the future is well known, but the typical trade-off is that transparency can be bad for incentives but good for sorting. Here we find the opposite.

While transparency has ambiguous effects on welfare when  $W$  is low, a sharper and unambiguous result holds when  $W > 1$ . To support a posturing equilibrium with transparency, we need only check that the politician does not have an incentive to deviate to her most preferred effort allocation and reveal herself to be type  $-1$  with certainty. Hence, we can support a posturing equilibrium if and only if the policy gain from this deviation is not enough to justify the corresponding decrease in her re-election probability. When the effort allocation is nontransparent, the type  $-1$  politician still has this deviation available, but she has other potential deviations as well. In particular, she could deviate to choose  $w^A = 1$  and  $w^B = W - 1$ , and voters will only realize she deviated if  $p^B \neq 1$ . Greater office motivation is necessary to prevent this deviation than a deviation to her most preferred effort allocation. As the type  $-1$  politician reduces her effort on  $B$  from  $w^B = 1$ , she will initially transfer this effort on her main policy goal: securing  $p^A = 1$ . Once she has ensured this with certainty, however, by setting  $w^A = 1$ , further decreases in  $w^B$  give less policy benefit but the same re-election cost. So it is more difficult to support a posturing equilibrium with nontransparency. We get the following proposition.

**Proposition 4: Transparency Can Increase Posturing.** When  $W > 1$  and effort is nontransparent:

1. The minimum office motivation necessary for a posturing equilibrium to exist is strictly higher than  $\phi^*(\sigma, \eta, W)$ .
2. There exists an open interval of  $\phi$  greater than  $\phi^*(\sigma, \eta, W)$  such that an equilibrium exists in

which the type 1 politician chooses  $w^B = 1$ ,  $w^A = W - 1$  and type  $-1$  randomizes between  $w^A = 1$ ,  $w^B = W - 1$  and  $w^B = 1$ ,  $w^A = W - 1$ .

When  $\phi$  is sufficiently large, the benefits from holding office are great enough that no politician would want to risk  $p^B = 0$  and likely electoral defeat. Hence, regardless of the transparency regime, politicians pool with maximal effort on issue  $B$ , and voters cannot update about them. In contrast, for intermediate office motivation, the welfare implications of nontransparency are unambiguous for the majority in both periods. Type  $-1$  politicians place more effort on  $A$ , which gives a higher payoff to everyone in the first period. Further, because  $p^A = 1$  is more likely and  $p^B = 1$  is less likely, when the politician is type  $-1$ , voters learn about the politician's type. Hence, nontransparency over actions is beneficial in this range, both in terms of the first-period action and in terms of selecting a politician aligned with the majority in the future.<sup>11</sup> As nontransparency decreases the reputational benefit from posturing, this breaks the posturing equilibrium, leading to more efficient politician effort choices and more voter learning.

So we have shown that, when  $W > 1$ , making effort allocations transparent can increase posturing by elected officials and decrease the amount voters can learn from this behavior. For example, it is likely that the advent of cable news caused politicians to focus more time on trivialities and polarizing debates; similarly, we may worry that if cabinet meetings were televised, or the minutes were publicly released, concern about signaling popular preferences would distract members from working to advance the most important goals.<sup>12</sup> While our model considers only one dimension of policy making, and only one of many ways transparency can affect the policy-making process, our results speak to this concern, while also demonstrating that voters may actually learn less when these debates are more transparent.

### EXTENSION: POSTURING AND POLARIZATION

So far we have considered only the decision of a single incumbent and have found that both types posture by focusing effort on the majority position on the divisive issue. Of course, different politicians are accountable to different con-

stituencies, with Republicans typically elected in conservative districts and Democrats elected in liberal ones. As the majority position on divisive issues varies across districts, politicians in different districts have an incentive to signal that they are on different sides of the divisive issue. We consider this possibility now. While elections across multiple districts can interact in subtle and interesting ways, analyzed elsewhere (e.g., Krasa and Polborn 2015; Mattozzi and Snowberg 2015), we abstract from these interactions to keep the analysis as simple as possible.

We interpret type  $x_j = -1$  as the Democrat position and  $x_j = 1$  as the Republican position. There are Republican districts and Democrat districts, and in Republican (Democratic) districts, the fraction of voters of type  $x_j = 1$  is  $m_1 \in (1/2, 1)$  ( $m_1 \in (0, 1/2)$ ). In Republican (Democratic) districts, the incumbent is drawn from the pool of Republican (Democratic) politicians, the fraction of whom are type 1 is  $m_p \in (1/2, 1)$  ( $m_p \in (0, 1/2)$ ). We assume that if the incumbent is replaced, it is by a member of the same party, so we interpret the election as a primary election, as described at the end of the second section of the article. The assumption that  $m^p$  is nondegenerate reflects that, although a Republican is more likely to hold the Republican policy position on a given issue than a Democrat, party labels are not perfectly informative.

All citizens in all districts agree on the common-values issue, and the majority position in a district is reversed before the next election with probability  $\eta \in [0, 1/2)$ . The following result is immediate from proposition 1 and proposition 2.<sup>13</sup>

**Proposition 5: Posturing with Heterogeneous Districts.** Under transparency, when  $\phi \geq \phi^*(\sigma, \eta, W)$ , an incumbent of either type in a Republican district chooses  $w^B = \min\{W, 1\}$  and  $w^A = W - w^B$ , and an incumbent of either type in a Democrat district chooses  $w^B = -\min\{W, 1\}$  and  $w^A = W + w^B$ , in the first period. Furthermore,  $\phi^*(\sigma, \eta, W)$  is decreasing in  $\eta$ .

Proposition 5 then predicts that when incumbents represent different constituencies, with different views on the divisive issue, Republicans and Democrats will focus on pushing the policies on contentious issues in opposite directions. While many concerns have been expressed about the polarization of American politics (e.g., Fiorina et al. 2006; McCarty, Poole, and Rosenthal 2006), our results suggest that one

11. Prat (2005) also finds that transparency can be harmful both in terms of the first-period action and selection but for a very different reason. Prat finds that increased transparency can increase the risk of "conformism" whereby the politician would be unwilling to take an action that goes against the voters' prior.

12. Kaiser's (2013) account of the passage of the Dodd-Frank Act bears this out. He argues that televising the debate made it very difficult to focus on the important parts of banking regulation.

13. For simplicity, we state proposition 5 with transparent effort. When effort is nontransparent, a similar result obtains, but the statement of incumbent behavior is more complicated when  $W < 1$ . A similar result would hold if incumbents face a challenger from the opposite party, but proposition 5 would not follow directly from earlier results.

concern may be that it distracts politicians from common-values issues. If different politicians are posturing to different constituencies, Republicans and Democrats will focus their attention on pursuing diametrically opposed goals on the issues on which voters disagree, ignoring important common-values issues in the process. It is the focus on diametrically opposed goals for Republicans and Democrats that we test empirically in the next section.

### EMPIRICAL EVIDENCE OF POLITICAL POSTURING

This section reports an empirical investigation of political posturing motivated by the theoretical results described in the previous sections. Our approach is to construct a measure of political posturing among US Congress members by analyzing the divisiveness of their floor speeches.

Applying the model to Congress, we view each legislator as deciding to divide speaking time ( $W$ ) between common-values issues ( $w^A$ ) and divisive issues ( $w^B$ ). Congressional floor speech can be understood as effort to introduce legislation or influence the outcome of a vote, and such effort may or may not be successful. Our outcome variable for the empirical analysis is  $w^B/W$ , the fraction of divisive speech.<sup>14</sup>

We explore two questions derived from our theoretical framework. First, do stronger electoral concerns induce greater political posturing by incumbents? Second, do incumbents engage in more posturing when their actions are more transparent?

On the first question, our theory provides a clear testable hypothesis: we expect greater posturing when electoral concerns are stronger. Proposition 5 suggests that in response to a more imminent election (i.e.,  $\eta$  is lower), legislators in Republican states will focus on pushing the policy on the divisive issue in one direction, and legislators in Democratic states will focus on pushing it in the other direction. Our empirical approach is to use the staggered election cycle in the US Senate as exogenous variation and measure the within-senator change in divisiveness as the next election becomes more imminent.

On the second question, proposition 4 suggests that increased transparency will be associated with more divisive speech—although this prediction does depend on parameter values (moderately high office motivation and high  $W$ ). In the empirical analysis, we examine the effect of transparency in the House of Representatives, exploiting variation in the overlap between congressional districts and local media

markets to generate an index of transparency. We then test whether House members engage in more divisive speech when the media coverage is stronger. If transparency is associated with greater divisiveness, that would be consistent with our posturing model when office motivation and  $W$  are high.

### Measuring divisiveness

Our measure of political effort allocation is constructed from the material in the *Congressional Record* attributed to each legislator for the years 1973–2012. We designed the speech segmenting algorithm to include only floor speech (rather than other written materials read into the *Record*, for example, bill text and the material in the “Extensions of Remarks”). We do this because we want our measure to reflect effort exerted by the member. We also drop the speaker of the house, the presiding officer in the Senate, and nonvoting members.<sup>15</sup>

Given that the theoretical model concerns policy actions (rather than speech), the link between the theory and empirics depends on the assumption that floor speech matters for policy. This is a matter of debate, with some scholars (e.g., Cohen 1999; Jacobs and Shapiro 2000) arguing that rhetoric is often unrelated to policy, and others (e.g., Maltzman and Siegelman 1996; Quinn et al. 2010) arguing that it correlates well with policy making. Compared to other venues for political speech (e.g., press releases, campaign events), the congressional floor is likely where speech and policy are most closely related. To the extent that legislators are defending their own votes and persuading their colleagues to vote with them, floor speech measures the effort allocated across different votes and issues. Moreover, legislators use floor speeches to introduce legislation, as well as to explain and justify bills they introduced or co-sponsored. So, if speech tracks policy priorities (at least somewhat), then the divisiveness of speech proxies for the relative effort exerted across issues of different divisiveness.

The methods for constructing the speech data are described in detail in online appendix C. After selecting 3,000 high-information phrases, we score each phrase  $k$  by session  $t$  on a metric  $\text{Divisiveness}_{kt}$  based on Gentzkow and Shapiro (2010) and Jensen et al. (2012). This metric scores language as divisive if it is used more often by just one of the political parties, meaning that this language can serve as a signal of

14. While our theoretical analysis focuses on the incentives to focus on divisive issues that are relatively unimportant, all else equal, an increased focus on low-importance divisive issues would also increase total divisive speech.

15. The *Record* does not include the speech from committee hearings, so committee assignment should not be a significant source of omitted variable bias. Any effects on speech due to party influence should be uncorrelated with our treatment variables (the election schedule and the transparency measure).

partisan policy emphasis. This method can be contrasted with the more traditional approach in political science that uses manual content analysis by human coders to measure policy (e.g., Lowe et al. 2011). While there are trade-offs, our approach has the advantage of not requiring a number of subjective decisions about how different policies are coded.

To demonstrate the usefulness of the method, we report in table 2 the most and least divisive phrases, where scores are averaged across sessions using the pooled data set. The divisive phrases are divided between those associated with Republicans and those associated with Democrats. The selected phrases follow our intuitions about the conserva-

Table 2. Most and Least Divisive Phrases, 1973–2012

Divisive Phrases Associated with Republicans		
adult stem cell	health saving account	personal income tax
balanced budget constitution	income tax rate	right bear arm
billion barrel oil	Iraq study group	small business owner
capital gain tax	largest tax increase	special interest group
center medicare medicaid	marginal tax rate	stand adjournment previous
embryonic stem cell	marriage tax penalty	stood trillion hundred
federal debt stood	medical saving account	tax increase history
federation independent business	national drug control	trade promotion authority
free enterprise system	national federation independent	trillion cubic foot
global war terror	oil natural gas	wage price control
gross national product	partial birth abortion	windfall profit tax
Divisive Phrases Associated with Democrats		
allocation current level	cut social security	prescription drug cost
billion trade deficit	distinguished republican leader	prescription drug plan
Boehlert Boehner Bonilla	education health care	resolve committee union
child health insurance	give tax break	tax break wealthy
civil right movement	Johnson Sam Jones	tax cut wealthiest
civil service discharged	late term abortion	tax cut wealthy
committee interior insular	managed care plan	test ban treaty
comprehensive test ban	Martin Luther King	trade deficit billion
conduct hearing entitled	minimum wage worker	veteran health care
cost prescription drug	nuclear arm race	victim domestic violence
credit card company	oversight government reform	woman right choose
Least Divisive Phrases		
banking finance urban	forward continuing work	merchant marine fishery
chemical weapon convention	great deal money	passed signed law
civil service commission	hard work dedication	played important role
committee held hearing	homeland security appropriation	played key role
committee worked hard	important step forward	protect national security
dedicated public servant	improve health care	public private partnership
defense appropriation subcommittee	international financial institution	public private sector
democracy human right	law enforcement assistance	renewable energy source
federal highway administration	law enforcement community	research development administration
finance urban affair	made great stride	theater missile defense
fiscal budget request	major step forward	worked long hard

Note. List of 33 most divisive Republican trigrams, most divisive Democrat trigrams, and least divisive trigrams, as scored by Pearson’s chi-squared metric (Gentzkow and Shapiro 2010), using the average score pooled across the years in the sample. This ranking uses speech from both the Senate and the House.

tive and liberal policy focuses of each party. Take abortion-related phrases: for Republicans, we see “embryonic stem cell” and “partial birth abortion”; for Democrats, we see “late term abortion” and “woman’s right (to) choose.” We see a similar intuitive trend for taxes: the Republican list includes “capital gains tax,” “largest tax increase,” and “marriage tax penalty”; the Democrat list includes “give tax break,” “tax breaks (for the) wealthy,” and “tax cuts (for the) wealthiest.” In the list of least divisive language, meanwhile, we see innocuous phrases and references to common-values policies, such as “federal highway administration,” “homeland security appropriation,” and “law enforcement community.” These intuitive phrase rankings are encouraging for the use of this metric as a measure of divisiveness. The full list of phrases is available from the authors upon request.<sup>16</sup>

We then construct the speech divisiveness for legislator  $j$  during session  $t$  as the log of the frequency-weighted divisiveness of the phrases used by the legislator during session  $t$ . That measure is given by:

$$Y_{jt} = \log\left(\frac{1}{N_{jt}} \sum_k \text{Frequency}_{jkt} \cdot \text{Divisiveness}_{kt}\right). \quad (1)$$

Frequency $_{jkt}$  is the normalized frequency of phrase  $k$  for legislator  $j$  during session  $t$ , and  $N_{jt}$  is the total number of phrases used by  $j$  at  $t$  (from the set of 3,000 selected for the analysis).<sup>17</sup> We use the log of the measure, so results can be interpreted as proportional changes in divisiveness due to the treatments. Using levels rather than logs does not change the sign of the estimates, though the degree of statistical significance changes under some specifications.

Table 3 reports summary statistics on congressional speech. Because there are fewer of them, senators speak a lot more than house members. The small minimum frequency numbers are due to the relatively small included vocabulary of 3,000 phrases; this may be concerning, but our results are not affected by dropping the observations with the lowest frequencies. The speech divisiveness rows give the measures constructed for Senate speech and House speech, respectively.

16. Of course, some phrases classified as divisive will not be divisive but will be classified that way because, simply by chance, one party happened to say those phrases more often. See Gentzkow, Shapiro, and Taddy (2016) for a discussion of this issue. Note that the effect of this is to make the divisive speech measure more noisy, and so it will bias the estimates of the treatments on divisive speech toward 0 and against finding an effect.

17. The divisiveness index can be computed from the language of either the Senate or the House. In the empirical analysis, we use a legislator’s own chamber as the text source for computing divisiveness, even though a member’s own speech influences the divisiveness measure for her own chamber. The results are nearly identical, however, when using the divisiveness metric computed from speech in the other chamber, which cannot be affected by the member’s own speech.

The negative numbers reflect that the measures are in logs—a divisiveness measure smaller in absolute value means higher divisiveness. Perhaps expectedly, House members have a higher average divisiveness than Senators. The minimum and maximum columns show some outliers—dropping these outliers does not affect the results.

### Effect of electoral incentives on posturing

Our sample of politicians for the election analysis is the set of 331 senators working for the years 1973–2012 (Congressional Sessions 93–112). To identify the effect of stronger electoral incentives, we exploit the staggering of elections. Senators face re-election every six years, with one-third of the senators up for re-election in any given election cycle. This gives variation in the time to re-election, with stronger electoral pressures when the next election is more imminent. Previous papers demonstrating that the staggered election cycle can affect senator behavior include Conconi, Facchini, and Zanardi (2014), Elling (1982), Kuklinski (1978), Quinn et al. (2010), and Thomas (1985).

Building on the approach in these papers, we use fixed effects for each Senator  $j$  and see how the behavior of a senator varies according to her electoral cohort. If cohort status is as good as randomly assigned (conditional on the fixed effects), we obtain consistent estimates of the effect of time to election on the outcome variables of interest. In our regression, we represent the election treatment by the variable  $E_{jt}$  for electoral cohort, which equals one for the first cohort, two for the second cohort, and three for the third cohort (i.e., currently up for election). This specification provides a simple linear model of the strength of electoral incentives and is motivated by the upward trend in divisiveness over the election cycle illustrated in figure 1.

In our Senate elections regressions, we model divisiveness  $Y_{jt}$  (defined in eq. [1]) for Senator  $j$  during session  $t$  as

$$Y_{jt} = \alpha_{jt} + \rho_E E_{jt} + X'_{jt} \beta + \varepsilon_{jt}, \quad (2)$$

where  $\alpha_{jt}$  includes a set of fixed effects and  $X_{jt}$  includes controls for years of experience. These terms are discussed in greater detail along with the reported estimates.

Since the outcome variable  $Y_{jt}$  is a log measure, the estimate  $\hat{\rho}_E$  can be interpreted as the average percent increase in senator speech divisiveness from moving into the next election cohort (closer to the next scheduled election). If  $\hat{\rho}_E = 0$ , then electoral incentives do not affect the tendency to use divisive phrases. If  $\hat{\rho}_E < 0$ , then electoral incentives mitigate divisive rhetoric. If  $\hat{\rho}_E > 0$ , then electoral incentives increase the tendency of senators to use divisive language.

The error term  $\varepsilon_{jt}$  includes omitted variables and randomness. Our identifying assumption is that, conditional

Table 3. Speech Statistics

	Summary Statistics			
	Mean	SD	Minimum	Maximum
Senators:				
Phrases used	985.922	440.47	1	2,306
Summed frequency	3,902.801	3,306.333	1	26,435
Speech divisiveness	-12.0835	.777	-17.527	-9.844
House members:				
Phrases used	336.73	225.99	1	1,475
Summed frequency	840.68	960.99	2	11,974
Speech divisiveness	-10.509	.657	-14.699	-8.536

Note. Observation is a congressman-session. Phrases used refers to the number of phrases (out of the 3,000-phrase vocabulary) used in a session. Summed frequency refers to the total number of times a phrase in the vocabulary is used in a session. Speech divisiveness refers to the (log) measure of divisiveness constructed from speech, as described in online appendix C.

on the inclusion of fixed effects,  $\varepsilon_{jt}$  is uncorrelated with the election schedule for the Senate. In our regressions we cluster the error term by state, allowing for arbitrary serial correlation across a state's senators and over time. The results for estimating equation (2), the effect of election cohort on divisiveness, are reported in table 4. We discuss each column in turn.

Column 1 includes party-year fixed effects. This specification allows for arbitrary variation over time in the outcome variable for both Democrats and Republicans, but it im-

plicitly compares divisiveness across senators within years. In this specification, the effect of elections on divisiveness is positive and statistically significant.

Column 2 includes state-year fixed effects. This specification allows for arbitrary variation in the outcome variable over time in each state. This estimate is identified only from differences in divisiveness between the two senators from the same state, based on which one is closer to re-election. Again, the estimate for  $\hat{\rho}_E$  is positive and significant.

Column 3 adds senator fixed effects rather than state-year fixed effects. This specification allows for variation over time in the whole Senate's divisiveness, as well as senator-level differences in divisiveness. Again, the estimated effect is significantly positive. The estimate coefficients do not change much across these fixed-effects specifications, supporting the assumption of exogenous assignment to election cohort.

Finally, column 4 adds  $X_{jt}$ , a cubic polynomial in years of experience. This covariate should control for life-cycle trends in divisiveness that may be mechanically correlated with the election cohort. The estimate for  $\hat{\rho}_E$  remains positive and statistically significant at the 1% level ( $p = .001$ ); we can reject the null hypothesis that  $\rho_E = 0$  in favor of the alternative that  $\rho_E > 0$ . A coefficient of 0.0556 implies that speech divisiveness increases by 5.56% on average (about one-sixteenth of a standard deviation) as a senator moves to a cohort nearer to the next election.<sup>18</sup>

Table 4. Election Effects on Senator Speech Divisiveness

	(1)	(2)	(3)	(4)
Election cohort	.0906** (.0148) [.001]	.0715** (.0228) [.003]	.0658** (.0156) [.001]	.0556** (.0158) [.001]
Adjusted R <sup>2</sup>	.182	.121	.459	.464
Party-year fixed effects	X	X	X	X
State-year fixed effects		X		
Senator fixed effects			X	X
Experience controls				X

Note. The sample includes 331 senators, 20 sessions, and 1,985 senator-sessions. Election cohort equals 1, 2, or 3 depending on senator cohort status. Party-year fixed effects include party-year interaction fixed effects. State-year fixed effects include state-year interaction fixed effects. Senator fixed effects include fixed effects for each senator. Experience controls include a cubic in years of experience. Standard errors (clustered by state) are in parentheses;  $p$ -values are in brackets.

+  $p < .10$ .

\*  $p < .05$ .

\*\*  $p < .01$ .

18. We ran a separate specifications using the closeness of the senator's previous election, and separately, the closeness of the presidential election in the state as a measure of electoral closeness. The closeness of a senator's own election did not have an impact on the estimates. In close presidential election years (less than 5% win), there is a stronger electoral effect on divisiveness, but the increase is not statistically significant ( $p = .164$ ).

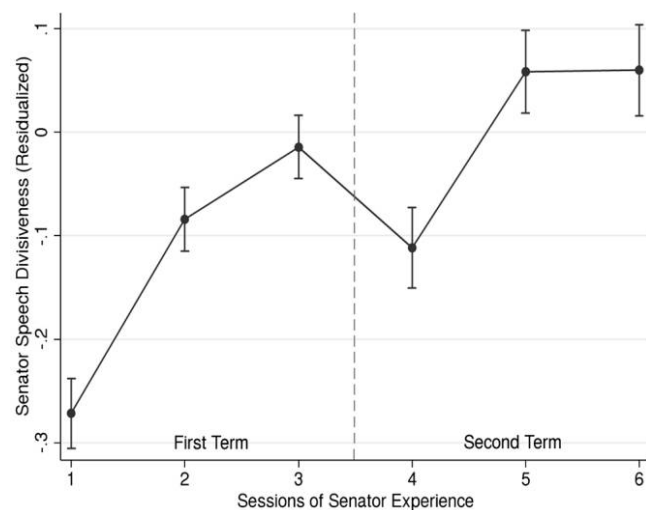


Figure 1. Senator speech divisiveness by election cohort. This figure plots average senator speech divisiveness over the course of the first two terms (six sessions, 12 years) of a senator's career. The values plotted are the mean residuals from a regression of senator speech divisiveness on a senator fixed effect, grouped by the first six sessions. This includes only senators who began their career in the first cohort (excluding senators appointed or elected to finish out an existing term). Error spikes indicate standard errors.

To demonstrate this graphically, figure 1 plots the average speech divisiveness for senators in the first 12 years (the first six sessions) of their career, residualized with senator fixed effects. For both the first and second terms of office, there is a clear increase in divisiveness as the next election becomes more imminent. Moreover, there is a drop in divisiveness from the third to the fourth session, reflecting that divisiveness decreases after securing re-election. The same trend holds for later years in the senators' careers as well. Along with the regression estimates, this graphical evidence supports the theory of electorally induced posturing: greater electoral pressures induce a greater focus on divisive issues.

This result adds to the previous literature finding that roll call votes tend to be more moderate for election-cohort senators (e.g., Thomas 1985). As previously discussed, our model shows that elections can induce both more moderate voting (i.e., politicians more likely to support the majority position) on each given issue but at the same time generate a greater emphasis on divisive issues. Our approach allows us to capture these additional nuances in how electoral pressures influence politician behavior.

### Effect of transparency on posturing

Our sample of politicians for the transparency analysis is the population of US House members working for the years 1991–2002 (Congressional Sessions 102–107). To identify

changes in transparency we use the measure of newspaper coverage constructed by Snyder and Stromberg (2010), which exploits the arbitrary overlap between congressional districts and newspaper distribution markets. In particular, our empirical definition of transparency is the natural log of Snyder and Stromberg's (2010) "congruence" measure, defined as the weighted average overlap between newspaper markets and congressional districts:

$$T_{jt} = \log\left(\sum_m \text{MarketShare}_{jtm} \cdot \text{ReaderShare}_{jtm}\right), \quad (3)$$

where  $\text{MarketShare}_{jtm}$  is the share of the local news market filled by newspaper  $m$  and  $\text{ReaderShare}_{jtm}$  is the share of newspaper  $m$ 's readers living in district  $j$ . Snyder and Stromberg demonstrate that higher newspaper coverage due to higher market-district overlap is associated with more articles and higher voter knowledge about their representative, as well as higher legislator effort on some measures. We use logs so that the coefficients may be interpreted as elasticities, but using the level of the measure generates similar results.

For the House of Representatives, we model speech divisiveness  $Y_{jt}$  (defined in eq. [1]) as

$$Y_{jt} = \alpha_{jt} + \rho_T T_{jt} + X_{jt}'\beta + \varepsilon_{jt}, \quad (4)$$

where  $\alpha_{jt}$ ,  $X_{jt}$ , and  $\varepsilon_{jt}$ , respectively, represent fixed effects, controls, and the error term (as in the previous subsection). The identifying assumption is that, conditional on inclusion of fixed effects and controls,  $\varepsilon_{jt}$  is uncorrelated with the transparency measure. Standard errors are clustered by congressional district, allowing for arbitrary serial correlation within district over time.

Since both  $T_{jt}$  and  $Y_{jt}$  are in logs, the estimate  $\hat{\rho}_T$  can be interpreted as the average percent change in divisiveness due to a 1% increase in transparency. If  $\hat{\rho}_T = 0$ , then transparency is unrelated to divisiveness. If  $\hat{\rho}_T < 0$ , then transparency reduces divisive rhetoric. If  $\hat{\rho}_T > 0$ , then transparency increases the tendency of House members to use divisive language. The results from regressing the use of divisive phrases on the House transparency measure are reported in table 5. We discuss each column in turn.

Column 1 includes just party-year fixed effects. As with the Senate analysis, this specification allows for variation in divisive speech over time for both parties. On this specification, the effect of transparency on divisiveness is positive but not statistically significant ( $p = .12$ ).

Column 2 adds controls for district ideology. We include this control because other papers, such as Grimmer (2013), find evidence that representatives emphasize appropriations rather than political positions when they are in competitive districts. Specifically, we use a cubic in the lagged presidential



Table 5. Effect of Transparency on House Speech Divisiveness

	Effect on Speech Divisiveness					
	(1)	(2)	(3)	(4)	(5)	(6)
Transparency effect	.0269 (.0171) [.122]	.0243 (.0174) [.170]	.0309 <sup>+</sup> (.0171) [.076]	.0645* (.0278) [.025]	.0724* (.0359) [.049]	.0878* (.0437) [.050]
Adjusted $R^2$	.096	.104	.108	.419	.439	.457
Party-year fixed effects	X	X	X	X	X	X
District vote controls		X	X	X	X	X
State-year fixed effects			X		X	
Member fixed effects				X	X	X
Experience controls					X	
Only 1993–2000						X

Note. The sample includes 649 House members, 6 sessions, and 2,009 member-sessions. Transparency refers to the transparency measure constructed by Snyder and Stromberg (2010), as described in the text. Party-year fixed effects include party-year interaction fixed effects. District vote controls include lagged cubic in presidential vote shares. State-year fixed effects include state-year interaction fixed effects. Member fixed effects include fixed effects for each congress member. Experience controls include a full range of party-specific years-of-experience dummies. Standard errors (clustered by state) are in parentheses;  $p$ -values are in brackets.

<sup>+</sup>  $p < .10$ .

\*  $p < .05$ .

\*\*  $p < .01$ .

vote margin for  $j$ 's party in  $j$ 's congressional district. This does not change the transparency effect.<sup>19</sup>

Column 3 adds state-year fixed effects. This specification is not comparable to the Senate regressions, where the effect is identified off differences between the two senators working in the same state. Here, the state-year fixed effect controls for any time-varying state-level factors that may be correlated with transparency and divisiveness, for example regional media trends and the actions of state-wide politicians. The estimates are similar to those of columns 1 and 2, but stronger, making them statistically significant at the 10% level ( $p = .076$ ).

Next, column 4 includes member fixed effects. This specification identifies the within-member changes in the transparency measure due to changes in newspaper market share. The coefficient is positive, more than double the magnitude of the across-legislator coefficients, and statistically significant at the 5% level. Column 5 adds controls for experience, as done in the Senate analysis. These controls do not change the effect very much, with similar estimates to column 4.

Finally, column 6 runs the same specification as column 4 but limiting to the years 1993–2000. Since no redistricting occurs in this period, changes in the transparency measure are due to changes in local newspaper market.<sup>20</sup> We do this to make sure that the effects are not driven only by redistricting, which could cause many changes beyond the level of transparency. The estimated effect is similar, and barely statistically significant at the 5% level ( $p = .050$ ).

Some graphical evidence of this relationship can be seen in figure 2. The vertical axis in this figure is the average speech divisiveness, residualized on the fixed effects, and grouped in bins by residualized transparency. The binned means and the fitted line illustrate that increases in transparency across years are associated with increases in the within-member speech divisiveness.

Together, these estimates lend support for the hypothesis that  $\rho_T > 0$ . A column 4 coefficient of 0.06 implies that for a 1% increase in transparency, speech divisiveness increases by .06% on average (about one-tenth of a standard deviation). Overall, these results are consistent with the model

19. We also ran a specification controlling for the closeness of the representative's previous election (less than 5% win). The point estimate is that those elected in close races use more divisive speech, but the difference is not statistically significant. There is no difference in the effect of transparency in close elections.

20. One source of variation in local circulation over the time period we consider is due to the national expansion of home delivery of the *New York Times*. The *Times* greatly expanded its national home delivery between 1996 and 2000, and George and Waldfogel (2006) use variation in when home delivery became available to show that increased availability of the *Times* decreases circulation of the local newspaper.

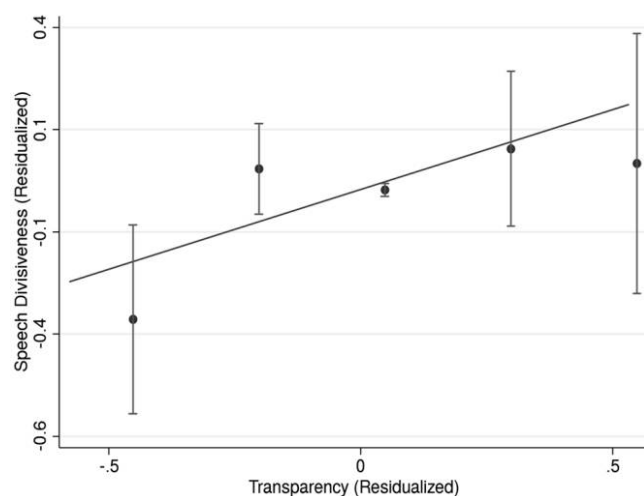


Figure 2. House member speech divisiveness by transparency level. This figure plots House member speech divisiveness against the transparency metric, after residualizing both on a party-year fixed effect, member fixed effect, and vote margin controls. Observations are grouped in bins of width .25. The trend line gives the linear fit. Error spikes indicate 95% confidence intervals.

with  $W > 1$ , the case in which greater transparency results in more divisiveness.

It is interesting to contrast these transparency results with Snyder and Stromberg's (2010) finding that higher transparency is associated with greater discretionary federal funds to the district and more moderate voting records. Our results suggest that, while improved transparency can have many benefits, including increased legislator effort, these benefits must be balanced against the potential downside of increased political posturing.

## CONCLUSIONS

We have considered the incentives of politicians to "posture" by focusing their efforts on issues that present the greatest opportunity to signal their preferences to voters, even if they are not the most important issues facing the country. We have shown that this incentive can lead politicians to spend their time pursuing policies that are not only harmful to the minority but also an inefficient use of time from the majority's perspective. In addition, we have shown that greater transparency about how politicians allocate their time may increase socially inefficient posturing, while at the same time impeding the selection of congruent politicians. Finally, we have produced empirical evidence from the US Congress that incumbent politicians engage in more divisive speech when electoral pressures are stronger or when their actions are more likely to be observed.

While we have focused on only one component of the policy-making process, our analysis raises important issues for the design of political institutions. Given that our results

emphasize the difficulty of incentivizing electorally accountable politicians to focus attention on common-values issues, our findings highlight the potential advantage of delegating common-values tasks to individuals who are politically insulated or whose authority is task-specific. This can be accomplished, perhaps, by delegating to city managers who are, at least somewhat, politically insulated and who have clearly defined tasks (e.g., Vlaicu and Whalley 2016) or by leaving such issues in the hands of a competent bureaucracy. The design of such institutions, as well as a full analysis of the trade-offs, is an important avenue for future research.

From an empirical perspective, our work raises a number of interesting questions. Motivated by our theory, it would be interesting to see which issues incumbents talk about closer to elections and whether the increased focus on divisive issues is concentrated on issues that are relatively less important. Such an analysis could be completed by classifying the speech according to different issue topics and using public opinion data to rank the issues by importance. Additionally, it would be interesting to understand the extent to which changes in speech patterns reflect that different policies are being pursued. In future research, we hope to explore the implications of our empirical findings for policy and economic outcomes.

## ACKNOWLEDGMENTS

We would like to thank Yisehak Abraham, Tim Chan, Lorenzo Lagos, Matthew Salant, and Mariela Sirkis for helpful research assistance. We would like to thank Ricardo Alonso, Pierre Boyer, Odilon Camara, Micael Castanheira, Paola Conconi, Olle Folke, Anothony Fowler, Justin Fox, Shigeo Hirano, Sean Gailmard, Francesco Giovannoni, Navin Kartik, Ethan Kaplan, Brian Knight, Patrick Legros, Patrick Li-Bihan, John Matsusaka, Nolan McCarty, Pablo Montagnes, Suresh Naidu, Andrea Prat, Wolfgang Pesendorfer, Jean-Laurent Rosenthal, Ken Shotts, Matthew Stephenson, Francesco Squintani, Balazs Szentes, Erik Snowberg, Mike Ting, Stephane Wolton, two anonymous referees, and various seminar audiences for helpful comments.

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