# Strategic Proposals, Endogenous Comments, and Bias in Rulemaking

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Agencies use notice-and-comment rulemaking to issue countless regulations with substantial economic stakes. The empirical literature on rulemaking has produced a complex set of descriptive findings yet has struggled with informal concerns about selection bias. This article characterizes notice and comment as a persuasion game played between regulators and outside interests. Analysis of this stakeholder-balancing model yields three key theoretical payoffs: an informational rationale for regulators to write rules with higher private and social costs, an explanation for strategic positioning by regulators even without oversight, and clarification that adverse priors are a more powerful mobilizing force than adverse policies. The model's two-sided selection dynamics reveal that well-established empirical regularities are inconsistent with extreme public-interest zealotry and strong capture but fit a range of intermediate outcomes. To obtain deeper insights about bias in rulemaking, the model suggests focusing on the cost of rule revision, rule movement following abstention, and variation in stakeholder preferences.

Ten days after assuming office, President Trump issued an executive order requiring agencies to remove two rules for every new one they issued (Exec. Order No. 13771). Prior executive orders seeking to control rulemaking were issued by Reagan, Clinton, and Obama (Lubbers 2012). Yet the notice-and-comment process seems surprisingly resistant to external control. In spite of Trump's executive order, rule output by federal agencies was not much different in 2017 from what it was in 2009, the first year of the Obama presidency (Coglianese 2018). It is also unclear whether the policies emerging through rulemaking today are less important or even less "regulatory" than in past administrations. In the last two years, agencies have used notice and comment to decide whether "bump stock" devices are machine guns (83 Fed. Reg. 13448), whether to regulate internet service providers as utilities (83 Fed. Reg. 7852), and how to protect consumers in the market for "payday" loans (82 Fed. Reg. 54472). Given the importance of rulemaking for contemporary policy making, which groups win and which groups lose through the process and why?

The empirical literature on rulemaking suggests a complex fact pattern that resists parsimonious description. While some rules receive hundreds of thousands of comments or more, mass mobilization is rare. Instead, rulemaking usually involves conflict between a more limited set of stakeholders (de Figueiredo 2006; Kerwin and Furlong 2011). Mobilization typically favors businesses directly subject to regulation over those indirectly effected, favors businesses over consumers or public interest groups, and rarely involves citizens. Organized interests invest heavily in influencing rulemaking, most visibly by submitting comments on rules that agencies have proposed but not yet finalized. A single comment letter can cost $100,000 or more (Dash 2011). The aggregate expenditure on commenting by interest groups is difficult to estimate because such activity is not subject to lobbying disclosure requirements. Nevertheless, the undisclosed costs associated with rulemaking advocacy could exceed all reported lobbying expenditures. Even looking at reported lobbying expenses, evidence suggests that most of this is also aimed at influencing agency decision making during rulemaking (Boehmke, Gailmard, and Patty 2013; You 2017).

Given the magnitude of these lobbying investments, one would imagine there are returns. A significant body of evidence now shows that commenting appears to lead to

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favorable policy changes between proposed and final rules (Balla 1998; Haeder and Yackee 2015; Yackee 2006; Yackee and Yackee 2006). Troublesomely, the gains from commenting do not appear to accrue equally to all commenters.

These and other findings are often regarded as descriptive evidence that rulemaking is biased (Krawiec 2013; Yackee and Yackee 2006). To be sure, the normative stakes of such empirical results are profound. Yet, there are doubts about how to interpret evidence of regulatory favoritism (Carpenter 2004). As Yackee (2019, 49) writes, "most of the quantitative research on rulemaking thus far uses observational data to study patterns and correlates." Regulators and their stakeholders are highly strategic actors (Carpenter 2010). They make decisions in anticipation of what their counterparty's incentives would be under various courses of action. Therefore, rulemaking data are likely susceptible to selection bias. How severe these issues are, in which direction they bias results, or how to control for them is rarely discussed in detail. Complicating matters further, there is uncertainty not only about the effect of strategy on data but also about which strategic actors are truly relevant. Congress, the president, and even courts may play little visible role in the typical or even most rulemakings. Even so, perhaps these powerful actors do exert a kind of gravitational force over rulemaking, which is nowhere seen yet everywhere felt. Without an understanding of how rulemaking would look in the absence of these actors, it is hard to know what would establish that they do play a significant role.

In light of such concerns, there is an acute need for new formal models of the rulemaking process, especially ones that focus on its distributive dynamics.[1] Here, I model notice and comment as a persuasive signaling game played between outside actors who can reveal their preferred policies and a social planner who manages interest group conflict in a possibly biased fashion. This interest-balancing framework differs from a model in which commenting primarily produces expressive benefits (Coglianese 2006), where the gains of commenting stem from access to judicial review (Chubb 1983), or where comments are cheap talk (Coleman 2016). While the latter viewpoints capture some dynamics of regulatory advocacy some of the time, the persuasion framework is an especially important baseline for theoretical and empirical researchers. The legislative history of the Administrative Procedure Act suggests that its authors made similar assumptions about how notice-and-comment rulemaking would work (Acheson 1941). Additionally, the persuasion framework clarifies how interest groups would obtain influence from agencies with high degrees of bureaucratic autonomy (Carpenter 2010). On a theoretical level, this model provides three main payoffs for understanding the rulemaking process. It provides an informational rationale for regulators to write rules with private and social costs. It explains why strategic positioning by regulators during rulemaking might occur even without effective oversight by the courts or Congress. Finally, it presents a microfounded account of what mobilizes outside actors during rulemaking. In particular, under this model, adverse regulatory priors are a more direct motivation for submitting comments than adverse regulatory policy. On an empirical level, the model also has important payoffs for the interpretation of empirical rulemaking data as it relates to regulatory bias. Bias in policy change and bias in mobilization are inconsistent with extreme forms of public-interest zealotry or regulatory capture, even given the two-sided selection issues the model assumes. Yet there is a vast observational equivalence between existing data and a range of intermediate forms of regulatory bias. To obtain deeper insights about bias in rulemaking, the model suggests focusing on the cost of rule revision, rule movement following abstention, and variation in stakeholder preferences.

## RULEMAKING AS LEARNING AND ADJUSTING TO PUBLIC PREFERENCES: THE MODEL

This game is played between a regulatory agency $G$ and one or more outside actors $i$. One might think of $i$ as an individual firm or interest group or even as a private citizen. The appendix (available online) provides proofs assuming $n$ outside actors, so I sometimes refer to $i$ as a member of the "public." To simplify presentation, however, I mostly focus on the case in which the "public" has a single actor. As figure 1 shows, the game begins with regulator $G$ proposing a policy $x_p \in \mathbb{R}$. The outside actor observes the proposal and chooses whether to send a comment by selecting $a_i \in \{0, 1\}$. If $i$ comments ($a_i = 1$), then $G$ can observe $i$'s "bliss" policy choice, $p_i \in \mathbb{R}$. If $i$ abstains ($a_i = 0$), $G$ does not observe $p_i$. After observing $i$'s signal, $G$ selects a final policy $x_f \in \mathbb{R}$, and payoffs are realized.

Both $G$ and $i$ have utility functions that depend on (1) which policy is implemented and (2) actions undertaken during rulemaking. For $i$, indirect policy utility is a negative quadratic centered at $p_i$. Since $G$ has ultimate discretion over final policy $x_f$, this aspect of $i$'s utility function depends entirely on what the regulator chooses: $i$ has no way of forcing

1. The formal-theoretic literature on rulemaking specifically and administrative policy making more generally has also grown in recent years (e.g., Bueno de Mesquita and Stephenson 2007; Gailmard and Patty 2017; McCarty 2017; Stephenson 2007; Turner 2017). These papers have largely focused on questions about how oversight effects bureaucratic capacity, however, rather than questions about how notice and comment structures the resolution of interest group competition.

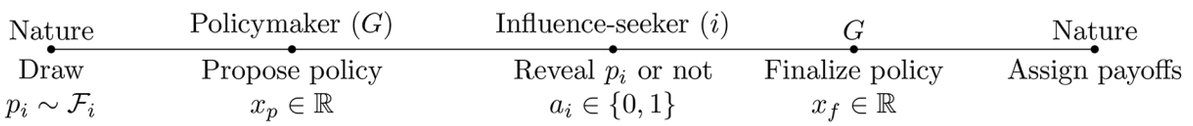


Figure 1. Order of play during the rulemaking game

the regulator to make a particular policy selection. Nevertheless, commenting indirectly influences policy selection by changing $G$'s information set. In order to comment, $i$ must incur cost $c$. Formally, $i$'s utility function is given as follows:

$$u_i(x_f, a_i) = -(x_f - p_i)^2 - ca_i.$$

I model $G$ as an imperfectly benevolent social planner, with an emphasis on "imperfectly." The indirect policy utility function of $G$ is given by

$$v_G(x_f) = -(1-\alpha)x_f^2 - \alpha(x_f - p_i)^2.$$

Here, $\alpha \in [0, 1]$ is the "allocative bias" parameter. It determines the weight of outside actor $i$'s preferences on $G$'s decision making. If $\alpha = 1$, then $G$ has no preferences over policy independent of what the public wants: $v_G(x_f) = -(x_f - p_i)^2$. One could conceive of policy utility in this case as welfarist, but in many contexts the social optimum is not $\alpha = 1$. Further, the bureaucratic politics literature shows that agencies often have competing concerns apart from the preferences of the public (Carpenter 2010; Chen and Johnson 2015; Clinton et al. 2012; Gailmard and Patty 2007; Richardson, Clinton, and Lewis 2017), for better and for worse. The model can describe such dynamics as well. At the extreme, if $\alpha = 0$ then the public's welfare plays no role in $G$'s policy selection: $v_G(x_f) = -x_f^2$. Following Gailmard and Patty (2007), I describe such a bureaucrat as a "zealot." Implicitly, this indirect utility function assumes that the bliss policy of the regulator is 0. This assumption is made without loss of generality and has no specific substantive content; it only means that $G$'s independent preference is the reference point for all other actors preferences. In the more complex case of $n$ outside actors, allocative bias is a vector $\overrightarrow{\alpha}$ rather than a scalar $\alpha$. It describes not just an overall "public welfare" orientation but also the relative weight of each outside actor on $G$'s decision making.[2] In this way, $\overrightarrow{\alpha}$ can describe a regulator whose public welfare orientation tends to prioritize certain outside actors over others.

Choices made during rulemaking also influence the regulator's utility. To modify its proposal, the regulator must pay a cost that increases with the size of the modification. The reputational, effort, and oversight costs associated with modifying policy are extremely high in the view of some legal scholars (Barron and Kagan 2001; Elliott 1992; McGarity 1992), although Yackee and Yackee (2010) provide empirical evidence that these costs are not so overwhelming as legal scholars had feared. In this model, moving policy from $x_p$ to $x_f$ imposes costs $k(x_f - x_p)^2$. Therefore, the regulator's overall utility is

$$u_G(x_f, x_p) = -(1-\alpha)x_f^2 - \alpha(x_f - p_i)^2 - k(x_f - x_p)^2.$$

The model's final ingredient concerns the private information potentially transmitted during notice and comment. Fully capturing the richness of information transmission during rulemaking would be difficult for any parsimonious model. Some sources suggest that comments must communicate technical or scientific information in order to persuade (Nelson and Yackee 2012). Others emphasize that comments serve as a signal of the strength of one's intentions to seek judicial review (Wagner 2012). Depending on the agency context, such factors might matter more or less. Regardless of domain, however, comments signal preferences. In this model, private information relates to $i$'s bliss policy $p_i$, which $i$ always learns at the start of the game but $G$ only observes if $i$ comments. In the appendix, I characterize equilibrium assuming $p_i$ comes from a bounded continuous distribution $\mathcal{F}_i$. This prior distribution is common knowledge, and so too are each actor's utility functions.[3]

It is easier to understand the perfect Bayesian equilibrium (PBE) of the rulemaking game, given a few reference policy outcomes. I introduce three such benchmarks, each selected by the regulator in a different simplification of the complete rulemaking game. For example, the first two reference polices arise from eliminating a stage from the rulemaking game.

**Proposition 1.** If the regulator did not receive comments, its final policy selection reflects its *prior expectations* of what the outside actor wants, given the weight it deems appropriate:

$$x_f^\star = \alpha \mathbb{E}(p_i).$$

2. Formally, indirect policy utility is given by $v_G(x_f) = -\left(1 - \sum_{i=1}^n \alpha_i\right)x_f^2 - \sum_{i=1}^n \alpha_i(x_f - p_i)^2$.

3. In the appendix, I describe how the strategic interaction changes if $\alpha$ is not common knowledge.

If the regulator could receive comments without issuing a proposal, its final policy selection reflects its *posterior expectations* of what the outside actor wants, given the weight it deems appropriate:

$$x_f^\star = \alpha\mathbb{E}(p_i|a_i).$$

The proposition highlights the rule maker's tendency to enact final policy as a compromise between competing values. The allocative bias $\alpha$ determines the balance. If $\alpha = 0$, the final policy outcome is the same in either simplified rulemaking game: $x_f^\star = 0$. Policy only reflects $G$'s independent concern. If $\alpha = 1$, the regulator only cares about $i$'s preferences, so it enacts the policy that it expects $i$ most prefers. Commenting can inform those expectations, but if commenting is not allowed then expectations are based on preconceptions. For levels of allocative bias between 0 and 1, the regulator strikes a balance between its independent policy preference and its expectations about $i$'s preferences.

Proposition 1 assumes there is only one outside interest. There are analogous expressions if we assume $n$ outside interests. In that case, $x_f^\star = \sum_{i=1}^{n}\alpha_i\mathbb{E}(p_i)$ is the policy selected without access to comments, while $x_f^\star = \sum_{i=1}^{n}\alpha_i\mathbb{E}(p_i|a_i)$ is the policy selected without proposals. Both final policies are weighted averages of the regulator's expectations regarding all these outside interests. Clearly, balancing stakeholder interests is a key goal for the regulator. Yet the regulator's own potentially biased view of how to balance these competing interests greatly influences the policy outcomes. Going forward, I refer to the expression for final policy without access to comments as the *uninformed compromise*. I refer to the expression that comes from the regulator receiving comments before making policy as the *informed compromise*.[4]

A last reference policy arises from the complete rulemaking game but under the alternative assumption that nature exogenously decides whether $i$ comments. Although the resulting decision problem is not really a "game," it is nevertheless instructive. It shows what would happen if the regulator could ignore $i$'s information provision incentives.

**Proposition 2.** If the commenting decision of the outside interest is exogenously fixed by nature, then the best proposal for the regulator is the uninformed compromise,

$$x_p^\star = \alpha\mathbb{E}(p_i),$$

while the best final policy is a convex combination of the informed and uninformed compromise, with the weight of each policy depending on the amendment costs:

$$x_f^\star = \left(\frac{k}{k+1}\right)\alpha\mathbb{E}(p_i) + \left(\frac{1}{k+1}\right)\alpha\mathbb{E}(p_i|a_i).$$

Without amendment costs, the regulator would always prefer to implement the informed compromise. Yet the regulator's desire to enact this policy is tempered by the fact that obtaining it is costly. The best way to decrease these costs, if commenting is exogenous, is for $G$ to propose policy where it expects to finalize it: the uninformed compromise. With information from commenting, it moves as far as it can toward the informed compromise given the amendment costs. For this reason, I refer to the outcome to the rulemaking game with exogenous commenting as the *affordable compromise*.

These benchmarks clarify the significance of the mathematical expressions that appear in the equilibrium conditions for the full rulemaking game. Detailed proofs that these conditions are necessary for equilibrium, and also that these conditions can always be satisfied, are left for the appendix

**Proposition 3.** A PBE of the rulemaking game consists of a proposed policy $x_p^\star$, a commenting decision rule $a^*$, a best guess $z_i^\star$, and a final policy $x_f^\star$ satisfying the following four conditions:

1. Regulator proposes policy that deviates from the uninformed compromise it would make without access to notice and comment. The greater the allocative bias in favor of outside interests, the more aggressively the regulator engages in such "strategic positioning." Conversely, the greater the modification costs, the smaller its strategic deviations:

$$x_p^\star = \alpha\mathbb{E}(p_i) + \left(\frac{\alpha^2}{2k}\right)\left(\frac{\partial}{\partial x_p}\mathrm{Cov}(p_i, \mathbb{E}(p_i|a))\right).$$

2. Regulator forms expectations about what preferences would lead an outside actor to abstain:

$$z_i^\star = \mathbb{E}[p_i|a = 0].$$

3. Outside actor comments if the error in the regulator's expectation about abstention is worth correcting:

4. Note that here an "informed" compromise does not necessarily mean a "fully informed" compromise.

$$a_i^\star(p_i) = \begin{cases} 1 & \left(\frac{k}{k+1}x_p + \frac{\alpha}{k+1}z_i^\star - p_i\right)^2 \\ & \quad - \left(\frac{k}{k+1}x_p + \frac{\alpha p_i}{k+1} - p_i\right)^2 > c \\ 0 & \text{otherwise.} \end{cases}$$

4. Regulator adjusts its proposal toward the informed compromise, with the amount of adjustment depending on the modification costs:

$$x_f^\star(x_p, p_i, a_i) = \frac{k}{k+1}x_p^\star + \frac{\alpha}{k+1}\mathbb{E}(p_i \mid a^\star).$$

I explore the conditions in reverse order, following the logic of backward induction. After commenting ends, the regulator chooses a policy using some new information about public preferences. Condition 4 requires the final proposal to lie between (*a*) the policy *G* initially proposed and (*b*) the informed compromise. As in proposition 2, the amendment cost parameter $k$ controls the balance. Yet the equilibrium final policy is not the affordable compromise. In particular, if commenting is endogenous, the regulator's proposal contains a strategic deviation. As I elaborate later, this adjustment makes commenting more likely and abstention more informative. Once the regulator has received the comments, it has no further use for this tactic but cannot walk it back entirely. Equilibrium final policy therefore represents a complex balancing act between the regulator's preconceptions about what outside interests want, its own view of how important their preferences are, what it learns about those preferences during commenting, and strategic policy sacrifices that help the regulator learn more through the commenting process.

Before exploring the trade-offs in commenting, it is worth considering what happens to equilibrium policy as modification costs are extreme. As amendment costs go to infinity, the equilibrium final (and proposed) policy converges on the uninformed compromise. The reemergence of this expression suggests that the policy outcomes from rulemaking with very high modification costs resemble the choices the policy maker would make without access to comments. Conversely, as amendment costs vanish, the equilibrium final policy choice converges on the informed compromise. The policy outcomes from the rulemaking game with low modification costs resemble those coming from a rulemaking process without proposals.

Interestingly, the exact same limiting behavior is observed if commenting is assumed to be exogenous rather than endogenous. What is the significance of this observation? One hasty interpretation might be that endogeneity does not matter for policy outcomes when amendment costs are extreme. This claim is subtly incorrect, however, because the posterior expectation $\mathbb{E}(p_i \mid a_i)$ stands for different calculations in the two propositions. Nature's assignment mechanism may give the regulator different information than would emerge endogenously. Rather, what this observation reveals is that as modification costs are pushed to their ends, strategic positioning ceases to play a role in policy selection. Each limit eliminates strategic positioning for different reasons. If modification costs are infinitely large, then *G* cannot afford to use information acquired from comments in making final policy. Therefore, it has no reason to induce more comments. If modification costs are vanishing, however, the regulator is not bound tight enough. Outside interests know that the regulator will enact the informed compromise after receiving comments. No proposal can credibly change outside interests incentives. Only if modification costs are between $k = 0$ and $k = \infty$ can different proposals change *i*'s information-provision incentives.

Having described final policy selection through the lens of various permutations of the model, I turn to the incentives facing outside interest *i*. In particular, *i* has very limited means of influencing its policy utility. The costliness of policy modification $k$, allocative bias $\alpha$, and the initial policy proposal $x_p$ are all important factors affecting *i*. Yet they are beyond *i*'s control. What *i* can influence is *G*'s posterior expectations. If *i* comments ($a_i = 1$), then the regulator learns *i*'s type immediately and with certainty: $\mathbb{E}(p_i \mid a_i = 1) = p_i$. If *i* does not comment, then the regulator will have to guess *i*'s type. Denote this guess by $z_i$. A crucial observation is that the marginal incentive for *i* to comment depends on the difference between $z_i$ and $p_i$, which I will sometimes call the "inferential error." If the inferential error is small, then similar policy outcomes would follow from commenting or abstaining. When *i* anticipates a small marginal difference in policy through commenting, it will decline to pay the costs.

If inferential error determines the commenter's marginal incentive, then abstention is potentially informative about *i*'s type. If the regulator wants to select the right policy in the final period, it must reverse engineer *i*'s decision problem and consider the probability that *i*'s preferences would lead to abstention. Yet, circularly, the regulator's own expectations about abstaining types determines what those probabilities are. The perfect Bayesian solution concept offers one view on how this "observer paradox" should resolve itself. The regulator and outside interest will converge on beliefs and actions that are strategically stable. Indeed, condition 2 of proposition 3 asserts that in a PBE the regulator guesses correctly on average the type of the outside interest that abstains, while condition 3 says that *i* only comments if the marginal benefit of commenting exceed the cost, given what the regulator assumes about *i* when it abstains.

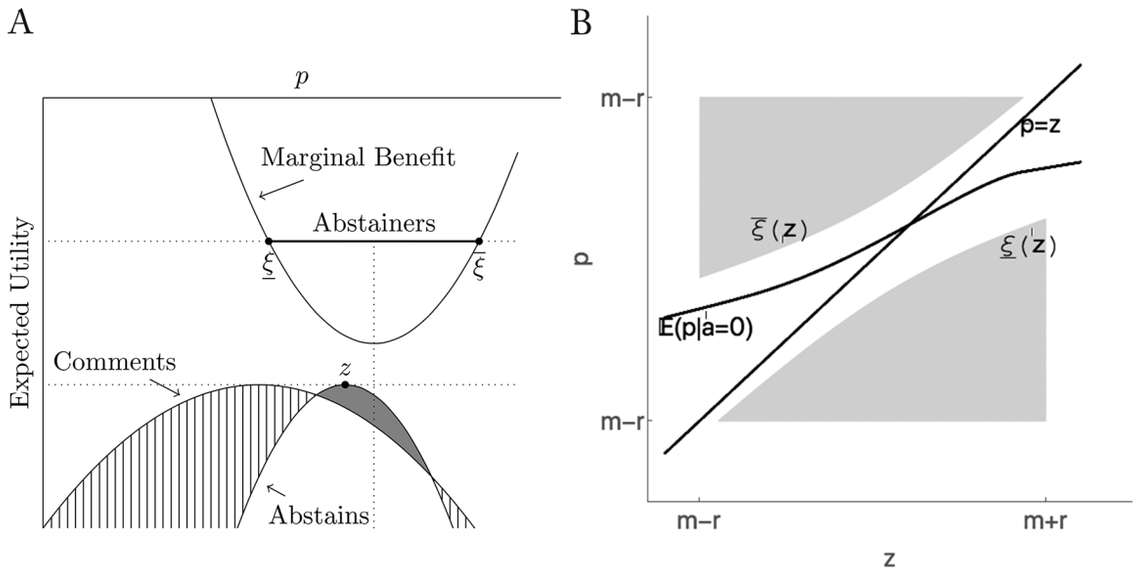


Figure 2. Two ways of looking at the consistency of $\mathbb{E}(p_i \mid a_i = 0)$ and the commenting decision function $\alpha_i(p_i)$. *A*, *i*'s decision problem portrayed for arbitrary $p_i$; *B*, *i*'s decision problem for arbitrary $p_i$ and arbitrary $z_i$ and fixed $z_i$.

To establish the existence of equilibrium, one must show that *G*'s beliefs and *i*'s commenting decision rule can coincide, as they do in figure 2*B*. Here, a key observation is that for any particular $z_i$, the marginal incentives are well behaved with respect to $p_i$. Indeed, they are quadratic, as an informal argument shows. Agency *G*'s utility function implies that it wants to make a compromise between its independently preferred alternative and the competing preferences in the public. The more *i*'s preferences diverge from *G*'s independent concern of 0, the further away from 0 is the best compromise in *G*'s view. For *i*, the "goldilocks" $z_i$ is the one that leads *G* to think the appropriate compromise is $p_i$. If $z_i$ were even more extreme than that, then *G* would overcompromise for *i*'s taste. Conversely, if $z_i$ is not sufficiently extreme, then *i* will believe that the compromise does not go far enough. If $p_i$ is sufficiently far away from $z_i$, the benefit of commenting will eventually be greater than any fixed cost *c*.[5] Figure 2*A* provides a graphical illustration.

A corollary of the previous discussion is that *i* views commenting as cost beneficial if and only if its type is outside an "abstention interval." I denote the lower and upper bounds of this interval by $\underline{\xi}$ and $\overline{\xi}$, respectively. The commenting decision rule $a_i$ is well behaved and varies continuously with $z_i$. Therefore, the conditional expectation $\mathbb{E}(p_i \mid a_i = 0)$ is also well behaved and continuous with respect to $z_i$. The assumption that $p_i$ is within some bounded interval allows for the application of powerful fixed point theorems, which establish that the intersection shown in figure 2*B* must always occur. At the same time, this assumption generates boundary constraints. The abstention interval may subsume the entire support of the distribution from which bliss points are drawn. In this case, one can hypothesize an outside interest with incentive to comment, but no such interest could occur in the game. Even so, there are only a few ways that the probability distribution's support $(m_i - r_i, m_i + r_i)$ can intersect with the abstention interval $(\underline{\xi}, \overline{\xi})$, as figure 3 shows. Either *i* abstains for all possible types (two active constraints), *i* comments if its type is one side of the distribution (one active constraint), the other side of the distribution comments (the other active constraint), or abstainers have preferences between the commenters (unconstrained). These possibilities give the model flexibility to explain different patterns of participation in rulemaking, although they also show why some segment of the public will fail to participate despite their interest in the policy-making outcome.

Having addressed the joint selection-inference problem, I turn to *G*'s initial policy choice. Before the public participates, the regulator proposes a policy $x_p$ to create favorable conditions for issuing final policy. The regulator has two competing considerations. On the one hand, it wants to avoid incurring future modification costs. Therefore, the regulator is inclined to propose the uninformed compromise. On the other hand, *G* knows that final policy will necessarily reflect its own posterior expectations. The best posterior for *G* arises if *i* comments with certainty. Yet if $p_i$ is close to $z_i$, *i* will have limited incentive to comment. Depending on how $z_i$ is set,

5. The logic is unchanged if we assume heterogeneous costs $c_i$, which might reflect homogenous costs *c* but varying expressive benefits $D_i$ to commenting, or heterogeneous costs and benefits.

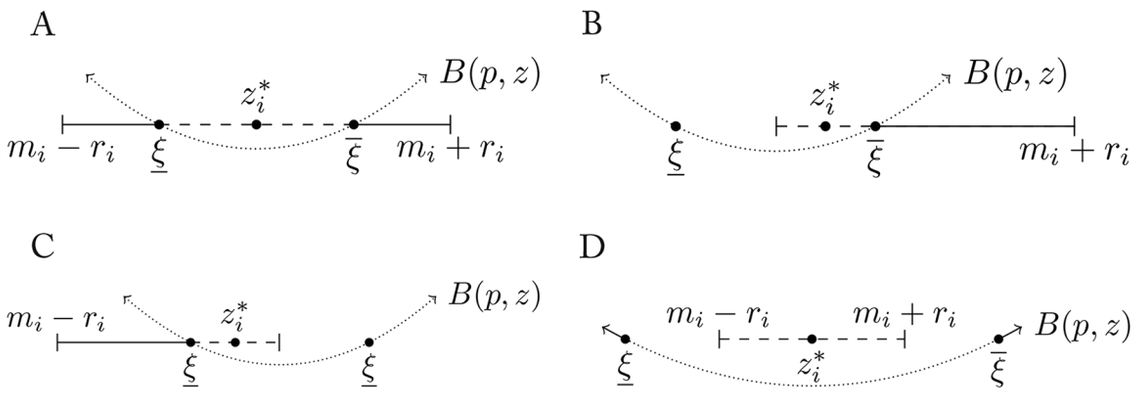


Figure 3. Typology of equilibrium participation. Solid lines indicate types that would participate according to $\alpha^*$, while dashed lines indicate types that would abstain. The midpoint of the abstention region is indicated by $z_i^*$. *A*, Unconstrained; *B*, active left boundary constraint; *C*, active right boundary constraint; *D*, both constraints active.

*G* is more or less likely to need to guess in selecting final policy. If *G* could commit to inferring $z_i$ very far from the support of the distribution from which $p_i$ is drawn, then it could ensure full participation. Essentially, the best expectations for *G* would be those that credibly threaten *i* with extremely adverse policy were *i* to abstain. Yet under the model's assumptions, *G* has no way to commit to making these extreme assumptions. Instead, *G* will inevitably find itself selecting $z_i$ using a rational analysis of *i*'s incentives. The fact that *i*'s incentives depend on the proposal $x_p$ creates a backdoor. It allows *G* to commit to having different posterior expectations, indirectly shaping participation and abstention patterns for *G*'s own benefit. In particular, condition 1 says that *G* will deviate from its natural inclination to make an uninformed compromise when doing so increases the agreement between *G*'s posterior expectations about *i*'s type and the truth. How and why different choices of $x_p$ bring about this better match and what the implications are for rulemaking as a whole are better seen through examples presented in the next section.

## INTERPRETING THE MODEL

### Strategic positioning and costly rules

It is widely believed that regulator's proposals during rulemaking are strategic (Potter 2017, 2019). Some rulemaking scholars suggest that the primary audience for such "strategic" policy making are the courts or perhaps other actors with oversight responsibility such as the president or Congress (Bolton, Potter, and Thrower 2016; Schmidt 2002; Tiller and Spiller 1999). Yet the model shows that strategic positioning can occur without oversight for informational reasons. The role of strategic positioning with respect to final policy is also debated. One influential account (Elliott 1992) describes notice and comment as "kabuki theater," an exaggerated performance of policy change that inevitably returns final policy to a predetermined outcome. In this view, notice and comment only imposes transaction costs. It does not, in itself, meaningfully influence policy selection. The stakeholder-balancing framework disputes this conclusion. Strategic positioning effects who participates and which final policies are selected. It has costs for the regulator and, potentially, the collective public. At the same time, strategic positioning is not a pure loss. On average, it improves outcomes from the regulator's perspective and at least some segment of the public.

Figure 4 illustrates some dimensions of the strategic-positioning problem. In figure 4*A*, the regulator's expected utility is graphed for various policy proposals assuming *G* and *i* subsequently play their best responses. The *y*-axis reflects the "natural benchmark" of the uninformed compromise *G* would reach without access to notice and comment. The panel shows that there exists a set of policy proposals that are in expectation as good or better for *G* than the uninformed compromise. What makes these proposals better? Figure 4*B* delivers the key insight. I plot *G*'s posterior belief about *i*'s bliss point against its true value assuming the actors play their equilibrium strategies. For the moment, assume that the regulator gives no weight to its independent preference and modification costs are zero. Under these assumptions, the posterior is also the final policy $x_f$. Outside of the abstention interval, *G*'s posterior/final policy is perfectly correlated with the true bliss point. Within the interval, they are perfectly uncorrelated. Perhaps counterintuitively, this pattern of perfect correlation of final policy and *i*'s bliss policy outside the abstention interval, and no correlation within the abstention interval, holds under very weak assumptions about allocative bias and modification costs. Provided *G* is willing to give even a smidgen of responsiveness ($\alpha > 0$) to the preferences of the outside interest, policy always moves in the direction *G* expects *i*'s preferences to lie. Yet if *i* abstains, *G* can only respond to its best approximation. Inevitably, this

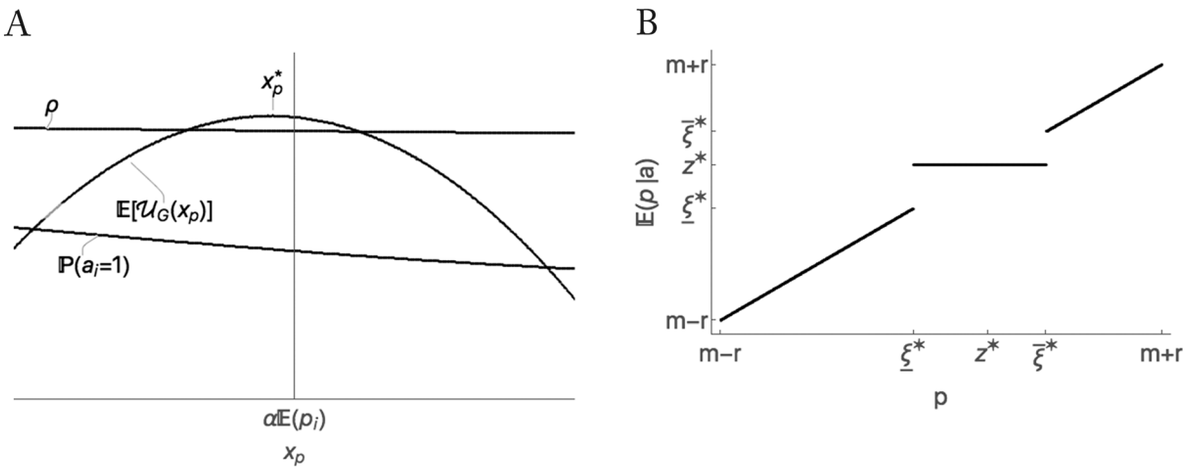


Figure 4. Optimal proposal deviates from the ex ante expected rule in order to increase the covariance between the posterior and truth. Covariance is improved when the abstention interval is narrower and less probable. *A*, Trade-offs in proposing $x_p$; *B*, regulator's posterior versus truth.

approximation results in no correlation between final policy and *i*'s bliss point.

The lack of agreement between final policy and *i*'s preferences lead to utility losses for the regulator. It also open up the possibility that alternative proposals may help the regulator to do better. Figure 4*A* shows not only the expected utility for *G* from various proposals but also how different proposed policies affect the correlation between the regulator's posterior expectations and reality. Although figure 4*A* does not show it, the expected bliss point is to the right of the *y*-axis, and the regulator's independent object of concern is to the left. The downward slope of the correlation line shows that the agreement between posterior and reality worsens as the proposal approaches *i*'s bliss policy. Conversely, the correlation improves as the proposal tilts toward *G*'s independent preferences. There are two reasons why this occurs. First, more adverse policies increase the probability that *i* will choose to reveal its preferences. Second, adversarial postures decrease the width of the abstention interval.[6] In most familiar probability distributions, shorter intervals have smaller probabilities, but with exotic distributions these factors can oppose. Given the choice of two abstention intervals that make commenting equally likely, the regulator always prefers the narrower one. If the abstention interval is narrower, the best guess $z_i$ will more closely approximate $p_i$, improving the correlation overall.

If more outside actors are introduced, the optimal policy proposal is

$$\sum_{i=1}^{n} \alpha_i \mathbb{E}(p_i) + \frac{1}{2k} \sum_{i=1}^{n} \alpha_i^2 \left\{ \frac{\partial}{\partial x_p} \mathrm{Cov}(p_i, \mathbb{E}(p_i \,|\, a)) \right\}. \qquad (1)$$

Analogous to the single-stakeholder case, the optimal proposal is now a deviation from the multiactor version of the uninformed compromise: $\sum_{i=1}^{n} \alpha_i \mathbb{E}(p_i)$. Here, however, *G* is cross-pressured in taking a strategic position. It cannot take an adversarial posture with respect to all outside interests at once. Which outside interests will have the most influence in driving the deviation from the uninformed compromise? Paradoxically, it is those with high $\alpha_i$, which is to say those that are most favored by *G*'s allocative bias. Perhaps surprisingly, notice and comment does bias outcomes, on average. All else equal, however, it biases policy against the interests the regulator weighs the most heavily. As we will see, however, notice and comment creates a surplus by decreasing the mismatch between the regulator's expectations and reality. Those with higher $\alpha$ tend to reap more of this surplus.

These remarks require two caveats. First, the prior distributions of bliss points $\{\mathcal{F}_i\}_{i=1}^{n}$ are an important confounder. Even if allocative bias completely favors one interest, strategic positioning only occurs if it actually increases the agreement between the regulator's posterior beliefs about public preferences and the reality. Conversely, if this agreement can be increased greatly enough with respect to a group the regulator cares little about, that nevertheless could be enough to drive position taking. Second, strategic position does not depend on oversight in this model, but it does require that *G* be risk averse. The regulator is willing to permanently give up some amount of utility through strategic positioning that will help it avoid bigger losses in final policy. A risk-neutral regulator would not be inclined to make this trade-off.

Despite these caveats, equation (1) suggests an important comparative static that clarifies intuitions about how strategic positioning relates to the costs of modifying rules. If amendment costs are decreased, then the policy proposal

6. Figure 2*B* shows, relatedly, that different choices of $z_i$ would result in different width intervals.

becomes a less effective commitment device. Yet *G* views proposed policies as a valuable instrument for committing to make different and more privately useful inferences when it comes time to make final policy. As a result, the regulator compensates for lowered modification costs by making increasingly extreme initial policy selections. Decreasing the unit costs of modifying rules does not bring a corresponding decrease in the modification costs that the regulator incurs. Conversely, if modification costs are increased, one should see less strategic positioning. The reason is that the policy choice $x_p$ is a strategic investment that is harder to walk back.

### Adverse policies and adverse priors

An important insight of the formal analysis is that the incentive to comment primarily derives from correcting some mistaken belief on the part of the regulator. The likelihood that the regulator will issue an adverse policy is not sufficient, on its own, to mobilize commenters. This is not to say that adverse policy does not matter. The larger the degree of conflict between *G* and *i*, the more attractive even marginal improvements will be to *i*. If what *i* wants is already pretty well known by the regulator, however, then the marginal benefit of commenting is necessarily small. Predictability of preferences is a key obstacle to mobilization in a two-sided model in which preferences are the only information of value that stakeholders can share.

Figure 5 illustrates the probability of observing a comment in equilibrium for various distributions of *i*'s bliss point. Going upward, the distributions are increasingly diffuse and unpredictable. Moving rightward, preferential conflict between the outside interest and the regulator increases. Each of the distributions is supported on an equally sized interval. As the figure shows, when preference conflict is negligible, then mobilization cannot occur for any of these distributions. If preference conflict is moderate, however, then the cases are distinguishable. Given this level of conflict, commenting does not occur when predictability is high, has a small chance of occurring when predictability is moderate, and has a fair chance of occurring when predictability is low. If preference conflict is great, then the odds of commenting go from fair to probable as unpredictability increases. Generally speaking, for any level of preference conflict between the outside interest and the policy maker, if what *i* wants is sufficiently predictable, participation will be infeasible. The converse is also true.

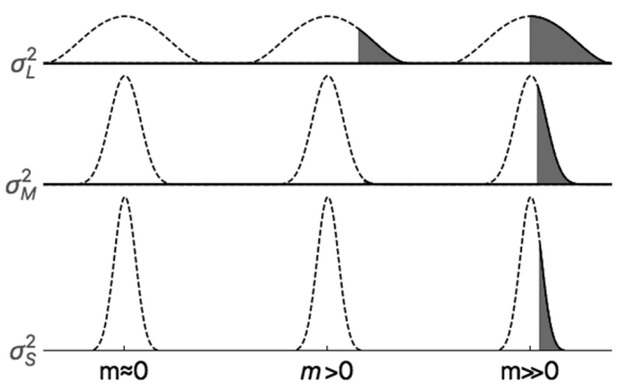


Figure 5. Prior preferences are increasingly unpredictable along the *y*-axis ($\sigma_L^2 > \sigma_M^2 > \sigma_S^2$), while preferential conflict between *i* and *G* is greater along the *x*-axis. Shading indicates types $p_i$ that, if drawn, would comment.

On a theoretical level, this observation about "concentrated" and "diffuse" priors recalls the classical public choice literature (Olson 1971). Olson argues that goods with diffuse benefits and concentrated costs will tend to be underprovided by governments, because concentrated groups will have less temptation to free ride. Similar, large-*n* free-riding dynamics are observable in variations on this model.[7] Even if $n = 1$, however, the model shows an additional concern. Potential influence seekers are not only tempted to free ride on one another's costly policy investments. They are also tempted to free ride on the policy maker's beliefs. "Epistemic" free riding is easier to justify for the influence seeker whose preferences are predictable than it is for the one whose preferences are hard to know ex ante. "Concentrated" in this sense is bad for mobilization, while "diffuse" is good. In the regulatory context, larger groups such as consumers are often affected more homogeneously and predictably than smaller groups such as regulated industries. As a result, the classical analysis and this model would tend to coincide about which groups have mobilization advantages in rulemaking and which do not.

At the same time, this model suggests alternative interpretations of the policy consequences of failures of public participation. For Olson, mobilization failures provide observable evidence that policy selection deviates significantly from the social optimum. As the next section shows, however, in this model lack of mobilization is observationally equivalent with a range of policy outcomes and directions of regulatory bias. While mobilization surely brings some policy benefits to those who manage it, these benefits are highly contingent on the regulator's allocative bias. Moreover, this allocative bias can lead to policy that favors certain outside

7. For example, let $\Gamma(i)$ assign each outside actor *i* to one of *j* "groups" and suppose nature imbues the regulator with a group-specific allocative bias $\alpha_j$. Suppose further that *G*'s concern for each group member is equal. Then this is equivalent to the baseline model where $\alpha_i = \alpha_j/n_j$ and $n_j = \sum_{\Gamma(i)=j} 1$. If $\alpha_j$ is fixed, then the larger $n_j$ is, the less mobilization will occur, effectively because it implies a smaller $\alpha_i$.

interests even if they do not make the same costly investments in influencing policy.

## INTERPRETING RULEMAKING DATA

One of the unique strengths of the stakeholder-balancing model is that it readily lends itself to interpreting descriptive facts about the rulemaking process. Yackee (2019) presents dozens of descriptive findings about the notice-and-comment process, a substantial proportion of them published in just the last several years. The subliterature appears especially poised to benefit from the increasing availability of sophisticated computational tools for analyzing rulemaking data (Kirilenko, Mankad, and Michailidis 2014; Libgober and Carpenter 2018). Yet theoretical progress has been slower, which also hinders empirical research. Selection issues are often acknowledged but seldom addressed. Similar questions are explored in different contexts without clear theoretical expectations of why the results should vary or what the significance of such differences would be. In this context, the stakeholder-balancing model provides resources for explaining and organizing research findings. As I argue here, empirical regularities documented by the literature are consistent with only some equilibriums of this model, which gives the model explanatory and interpretive power. At the same time, it also suggests reasons for caution. With regard to the key allocative bias quantity $\alpha$, the existing facts are observationally equivalent. New, theoretically informed data collection strategies are necessary to push the empirical literature forward.

Table 1 presents some important stylized facts about rulemaking (see also Kerwin, Furlong, and West 2011; Yackee 2019). This scholarship has shown that rulemaking is a dynamic and highly variable site of interest group conflict, where important policy gains are won and lost. These patterns do not fit easily with earlier informal descriptions of notice and comment as beleaguered or only superficially a site of significant policy contestation (Elliott 1992; Harter 1982). Yet they do fit naturally with the persuasive signaling framework. The stakes of rulemaking arise from the presence of preferential conflict between the regulator and external influence seekers. Depending on the issue, preferential conflict could be small or large. Policy change from proposal to final rule occurs in the model because of learning about stakeholder preferences, which can occur with or without actual commenter participation. Indeed, why rules might change given no commenter participation is hard to square theoretically with other accounts. Moreover, heterogeneity in patterns of participation and policy change across rules arises, under the model, as a result of variation in the underlying stakeholder preferences regarding the issues. Potentially, this issue-specific variation is also increased by variation in the allocative bias $\alpha$. Allocative bias surely varies across agencies. It is also likely to vary within agencies across rules.

Table 1. Stylized Facts and Nonexclusive Model Consistent Explanations

| Fact | Source | Model-Consistent Explanations |
|---|---|---|
| Policy selection responds, at least marginally, to comments. | Balla (1998), Cuellar (2005), Furlong and Kerwin (2005), Golden (1998), Yackee (2006) | Agencies are not completely zealous. |
| No group completely dominates participation or gets everything it asks for. | Chubb (1983), Fritschler (1975), Kamieniecki (2006), Nixon, Howard, and DeWitt (2002) | Agencies are not completely captured. |
| Many rules receive no comments, some receive many comments. | Balla and Daniels (2007), Coglianese (2006), Golden (1998), West (2004) | The policy stakes for rules with more comments are higher. The preferences of stakeholders for rules with more comments are less predictable. Agencies have higher concern for stakeholder preferences in rules with more comments. |
| Firms and interest groups participate more than citizens. | Golden (1998), Kerwin and Furlong (2011), Yackee and Yackee (2006) | Allocative bias favors firms and interests. Citizens have preferences that are more predictable. |
| Major policy change is rare during rulemaking. | Golden (1998), West (2004), Yackee (2006) | Modification costs are high. Agencies are zealous. Allocative bias cancels out inequalities in mobilization. Agencies are reacting to abstention. |
| Policy change is biased in favor of business interests, especially when unopposed. | Haeder and Yackee (2015), Yackee and Yackee (2006) | Agencies are biased in favor of business. Agencies preferences are aligned with nonbusiness interests. Nonbusiness interests have predictable preferences. |

Table 2. Numerical Example

| Regulator Favors | $\overrightarrow{\alpha}$ | $r_s$ | $x_p$ | $\mathbb{E}(x_f \mid s \text{ Comment})^*$ | $\Pr(s \text{ Comment})^\dagger$ | $\mathbb{E}(x_f - x_p \mid s \text{ Comment})^\dagger$ |
|---|---|---|---|---|---|---|
| Suppliers | $\langle 0, .1, .9\rangle$ | 2 | .8 | 1.07 | .4 | .27 |
| Buyers | $\langle 0, .9, .1\rangle$ | 5.5 | −.8 | −.646 | .42 | .154 |

* Quantities that are unobservable using existing methods.

† Quantities that empirical scholars have reproducibly measured.

Under the model, these stylized facts eliminate the possibility of two significant edge cases: agencies are not total zealots ($\alpha \neq 0$), nor are they completely captured ($\alpha \neq 1$). Intuitively, if allocative bias were at either extreme, one could not observe the patterns of commenter participation or policy change that rulemaking scholars often do. If the agency is a total zealot, then it proposes and finalizes its most preferred policy. As a result, influence seekers should see no marginal incentive to invest in commenting, which is costly. Similarly, if the regulator is completely beholden to one outside interest $i$'s preferences, then there is no marginal incentive for any other influence seeker $j$ to submit a comment. From $j$'s perspective, the completely captured and totally zealous regulator look alike. In the case of complete capture, policy might move in a direction more or less favorable to $j$ through rulemaking, but $j$ should realize that its own actions have nothing to do with it. A second problem with the strong capture equilibrium is that it requires policy to always change in $i$'s favor whenever $i$ comments. The existing literature suggests that on average certain interests might win more than others, but policy change during rulemaking has never been found to favor one interest or firm exclusively.

Other well-known empirical regularities also arise under the model, but the observed evidence is potentially multicausal. Take, for example, studies demonstrating that mobilization is biased during rulemaking and that certain groups tend to win the lion's share of policy change. In their exemplary study, Yackee and Yackee (2006, 135) argue that their findings raise questions about whether "the interests of the broader public are furthered in agency rulemaking." The question is particularly distressing given the vastly important policies being decided in this venue. The model confirms the reason for concern but suggests the possibility that there are more benign explanations. If one influence seeker is more favored by an agency during rule making than another, then the favored actor is more likely to mobilize and receive better policy outcomes, assuming all else is equal between the two outside actors. Of course it is not actually clear that all else is equal. The prior distribution of preferences can make it so that the disfavored actor actually outperforms the favored one in terms of mobilization and policy change. Yet policy will, unsurprisingly, remain largely biased toward whichever actor the regulator favors more.

A numerical example helps illustrate the point.[8] Suppose there are two stakeholders, a supplier of a good $s$ and a buyer $b$. Each interest's bliss points come from their own prior distributions, in particular $p_s \sim \text{Uniform}(m_s - r_s, m_s + r_s)$ and $p_b \sim \text{Uniform}(m_b - r_b, m_b + r_b)$. To avoid clouding the example with issues relating to preference alignment, which also can lead to observational equivalency, suppose that $m_b = -1$ and $m_s = 1$, so that the position of the firms with respect to $G$ is symmetrical. Clearly, negative policies typically favor buyers, while positive policies typically favor suppliers. Key quantities of interest are collected in table 2. These include the expected participation rates for $s$ and $b$, as well as the positions where policy is proposed and finalized and how policy changes, for various choices of $\overrightarrow{\alpha} = \langle \alpha_0, \alpha_s, \alpha_b\rangle$. I focus on two cases, one where $G$ heavily favors suppliers ($\overrightarrow{\alpha}_s = \langle 0, 0.1, 0.9\rangle$) and one where $G$ heavily favors buyers ($\overrightarrow{\alpha}_b = \langle 0, 0.9, 0.1\rangle$). Viewing the derived formulas for the participation rate, it becomes clear that if the preferences of buyers are sufficiently predictable ex ante (e.g., in this case, $r_b < 1$), then the probability of participation by buyers is actually 0 for both very different levels of allocative bias. Depending on whether $G$ has $\overrightarrow{\alpha}_s$ or $\overrightarrow{\alpha}_b$, one can also find a level of predictability in supplier preferences so that the probability $s$ participates is ≈0.4. Let us assume that these levels of predictability are suitably chosen. Then consider what happens if $G$ is biased in favor of suppliers ($\overrightarrow{\alpha}_s$). Policy typically starts out positive and becomes more so, favoring $s$. If $G$ is biased in favor of buyers ($\overrightarrow{\alpha}_b$), then the proposed and final policies are in expectation both negative. Nevertheless, policy usually changes in the suppliers direction. For scholars who only observe the direction of policy change and mobilization rates, these two cases look identical, despite the radical difference in regulatory bias being represented.

8. The appendix presents more details on these calculations.

Mobilization and policy change are observationally equivalent for the key allocative bias parameter. Yet these quantities represent something important on their own. In the example, the suppliers did better through notice and comment than they would have without it, while the buyers did worse. Importantly, no matter *G*'s bias, the policy surplus notice and comment creates is reaped by the ones that can potentially mobilize. The word "potentially" in the last sentence is important. Indeed, commenting does not actually need to occur for *s* to reap some of the benefits of notice and comment, which *b* never is able to do. The reason is that if *G* does not believe commenting makes sense for any buyer ex ante, *G* regards a buyer's failure to comment as uninformative. Rationally, *G* cannot justify any changes from its prior view of the best compromise. By contrast, if *G* considers participation by *s* feasible ex ante, then *s*'s failure to comment is informative. Rationally, *G* will need to make an accommodation. The patterns of policy change described in the example can occur during rulemaking without parties needing to take any observable, costly actions.

Importantly, this analysis is descriptive rather than normative, although the normative implications are intuitive. If the regulator's allocative bias is socially optimal, then *G* only moves policy if it enhances overall welfare. In this case, the gains notice and comment makes possible for *s* but not *b* are welfare improving. Similarly, if the regulator's allocative bias is such that it places less weight on *s* than it normatively should, then inordinate opportunities for *s* to make gains through notice and comment can compensate for the regulator's inherent bias. Potentially, this is also to society's benefit. But, if the regulator is inappropriately biased toward the influence seekers that can potentially mobilize in the first place, then notice and comment will further exacerbate bias.

Other regularities described by the literature also have multiple explanations consistent with the model; however, the more robust description it provides helps make sense of certain puzzles. For example, some rules receive few comments, while others receive many comments. According to regulations.gov, the majority of rules receive no comments.[9] One interpretation of this fact is that some rules are significant and controversial, while others are more technical. While some rules surely raise few distributive issues, commenting volume and importance do not move in lockstep. Congress has seldom exercised its powers over rulemaking under the Congressional Review Act; however, one of the few rules controversial enough to achieve this distinction had only sixteen comments (Unemployment Insurance Drug Testing Rule, 81 Fed. Reg. 50298). The model informs us that "significance" or "controversy," understood as differences in preferences between influence seekers and the regulator *G*, is but one ingredient necessary for commenter mobilization. Predictability of preferences is also important, as is the degree of allocative bias possessed by the regulator. Rather than view rules without comments as settling policy matters without much consequence, one should believe that the level of controversy was insufficient given the regulator's bias, the potential information value of comments from stakeholders, and the costs of commenting.[10] Similarly, the finding that major policy change is rare during rulemaking does not necessarily imply that agencies are overzealous in their preferences. Rather, it could also mean that the costs of modification are relatively high or that the agency typically learns conflicting information about stakeholder preferences through the notice-and-comment period, which forces the agency to remain closely tethered to its initial proposal. Alternatively, it could mean that interest group preferences are usually quite predictable.

## CONCLUSION: DIRECTIONS FOR FUTURE RESEARCH ON RULEMAKING

Who wins and who loses in the making of regulation is a significant question for scholars in political science, law, and public administration. Learning about the mechanisms driving the process on the basis of observable evidence is hard, however, because regulators and influence seekers are strategic. In particular, regulators anticipate what information outside actors can provide. In turn, outside actors anticipate the costs and benefits of abstention versus participation. Correctly reading outputs of rulemaking as evidence of regulatory bias requires a comprehensive view of the "chessboard" that notice and comment represents. Nevertheless, the literature offers few formal characterizations of what that board looks like. This model of notice and comment as a persuasion game shows that mobilization rates and directions of policy change are directly informative about regulatory bias. Yet current data collection strategies have only produced evidence that can reject two edge cases: strong capture and strong public-interest zealotry. Additional progress for the empirical literature will require new researcher strategies to overcome or circumnavigate this observational equivalency.

Under the model presented here, the major confounding variable is uncertainty about the shape of prior preferences

9. The appendix shows the distribution of comments on rules, as well as a table of comments on rules vetoed via the Congressional Review Act.

10. If costs are heterogeneous across actors, for example, because of varying expressive benefits, the problems the model describes are only exacerbated.

of the influence seekers, especially the unpredictability or variance in these preferences. Measuring the preferences of potential influence seekers is not an impossible research task. For example, surveys of commenters have proved a useful source of data for empirical rulemaking scholars (Furlong 1997; Furlong and Kerwin 2005; Yackee 2012). These methods have not been used to define the scope of preferential conflict at stake in particular rulemakings. Survey-based strategies will generally require planning and foresight, because survey respondents may forget what their positions on an issue were. Another plausible research strategy is to use ideal-point measures (Chen and Johnson 2015; Richardson et al. 2017). Generic application of partisan measures is ill-advised, since interest group conflict during rulemaking is not always partisan (Lowande 2018, 2019). Nevertheless, in certain cases one would expect partisan alignment to coincide with the true dimension of interest group conflict. The regulation of "bump stocks" is an example in which preferential conflict during rulemaking might conform to partisan conflict. Conjointly positioning regulators and outside interests in the policy space would enable two key contributions. First, it would test the model's predictions regarding the tendency of extremists to comment and those with more central preferences to abstain. Second, one could use these measures to control for the two-sided selection bias problems with regard to mobilization and direction of policy change.

Analysis of the model suggested other empirical tasks that would have smaller identification issues. The model predicts that aggregate commenting levels will respond to changes in modification costs, in particular when costs of modification increase then commenting volume goes down. Modification costs are plausibly related to technical complexity or duration of rule development, and so observationally one could look for the model's expected relationship between modification costs and commenting or degree of policy change. In general, one would have a hard time justifying the necessary assumptions about prior preferences to discount confounding. Yet in some policy domains, one might plausibly assume that preference conflict is homogenous from year to year. Alternatively, one could collect pairs of rules when there is good reason to think that the conflict between stakeholders is balanced, for example, because the same statutory provisions are addressed. Regression discontinuity designs to test the model's implications might focus on shocks to modification costs that are plausibly exogenous to sampled rules, for example, the introduction of new procedural requirements on rulemaking throughout the entire regulatory state or changes in the staffing of oversight bodies because of unforeseen retirements. The existence of policy change following complete abstention by all stakeholders is hard to fathom from most informal models of the notice-and-comment process. Among all possible theories of the rulemaking process, this model uniquely rationalizes policy movement in the absence of commenting, so exploration of these rules could yield a falsification test of the model.

Apart from more empirical work, more theoretical models of the rulemaking process are also necessary. Position taking is an important aspect of what makes influence seekers persuasive; however, other factors are also important. The literature on bureaucratic politics informs us that many factors influence agency's choices, including regulatory networks, reputations, staffing, insulation, dynamics of subdelegation, and oversight by courts and Congress. How each of these factors influences the dynamics of policy selection during notice and comment is hard to know and has not received much formal treatment. Similarly, the role of ad hoc coalitions and organized trade associations appears significant during rulemaking. The theoretical terrain is open. There remains much to explore.

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