Strategic Avoidance and Rulemaking Procedures

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Abstract

Informal, "notice-and-comment," rulemaking is the prototypical mechanism employed by U.S. regulators. However, agencies frequently claim their actions exempt from the process, and courts typically agree. Agencies thus face an important strategic choice between informal rulemaking and avoidance. To study this choice, we analyze a model of rulemaking with exemption and empirically analyze agency avoidance. Our model implies that more biased agencies engage in less avoidance, as they face more skepticism from the courts and, thus, require support from group comments to have their rules upheld. Empirically, we find support for this prediction. As for policy implications, we show it is more beneficial to allow exemptions when the agency is more biased.

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1 Introduction

Despite their lack of direct public accountability, federal agencies have significant discretion to make policy through rulemaking. To address concerns over the extent of agency authority, Congress enacted the Administrative Procedure Act (APA). This "bill of rights for the hundreds of thousands of Americans whose affairs are controlled or regulated in one way or another by agencies of the Federal Government"[1] implemented a number of stipulations for agency establishment of regulations. The APA's provision for informal, *notice-and-comment*, rulemaking is especially noteworthy given its widespread implementation across classes of rules and agencies. Indeed, participation through this venue appears to play an important role in shaping agency decisions and benefits groups that comment (Balla, 1998; Yackee, 2006; Libgober, 2020*a*). In this sense, notice-and-comment appears to achieve the goal of making agencies more responsive to outside interests.[2]

The notice-and-comment process, however, does not always function as intended, as agencies are often able to avoid engaging the public for comments. A 2012 Government Accountability Office report found that 35% of major rules and 44% of nonmajor rules avoided notice-and-comment.[3] Figure 1 plots trends in avoidance versus notice-and-comment. While there are fluctuations over time, in particular a spike in avoidance following the September 11, 2001 terrorist attacks, throughout this period agencies regularly circumvent notice-and-comment on a significant proportion of rules. There are a number of situations in which agencies can choose to engage in such avoidance. For example, if the rule is interpretive or, perhaps most flexibly, if the agency claims a "good cause" exemption.[4,5] This potential for avoidance may undermine earlier arguments in favor of using administrative procedures to control the bureaucracy (e.g., McCubbins, Noll and Weingast, 1987).

Indeed, agencies do not only avoid when the issue is non-controversial or politicians and stakeholders are inattentive. In June 2019, the Environmental Protection Agency (EPA)

[1] Floor speech by Senator Pat McCarran, Chairman of the Senate Judiciary Committee, March 12, 1946. Many scholars agreed, e.g., administrative law pioneer Kenneth Culp Davis called informal rulemaking "one of the greatest inventions of modern government" (Davis, 1970). However, by the end of the "era of rulemaking" in the 1970s, both Scalia (1981) and McGarity (1992) concurred that the "bloom [was] off the rose."

[2] There are concerns that such responsiveness may create a bias towards business, see, e.g., Yackee and Yackee (2006). Groups also extensively lobby the bureaucracy (You, 2017), which creates another avenue through which agencies may be responsive to outside interests.

[3] "Federal Rulemaking: Agencies Could Take Additional Steps to Respond to Public Comments." December 2012. These figures come from a random sample of final rules published from 2003–2010.

[4] The good cause exemption allows agencies to avoid notice-and-comment if its use would be "impracticable, unnecessary, or contrary to the public interest." See 5 U.S.C. 533(b)(3)(B). The aforementioned GAO report found that 77% of exemptions to major rules claimed good cause.

[5] Other agencies are exempt from the process entirely due to national security concerns.

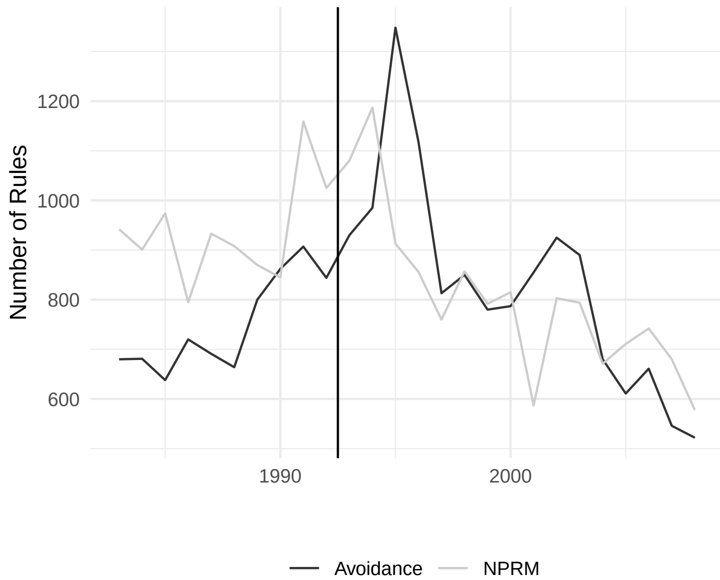

Figure 1: Notice-and-comment versus avoidance choices by regulation publication date. Data compiled by O'Connell (2008); the vertical line indicates the beginning of our empirical analysis.

claimed itself exempt from notice-and-comment and updated its procedures for responding to Freedom of Information Act requests.[6] The change gave political appointees at the EPA significant discretion to block the release of public records. Members of Congress from both parties and environmental groups criticized the change as reducing transparency and giving too much power to political appointees. The EPA, however, maintained that it was exempt from notice-and-comment and did not revise the change. Consequently, the possibility of avoidance creates a strategic opportunity for an agency to obtain its preferred policy. Furthermore, such avoidance is consistent with work that shows bureaucrats use their extensive knowledge of rulemaking procedures to obtain their goals (Potter, 2019). Figure 2 shows the use of avoidance by agency and demonstrates that (a) agencies avoid at different rates; and (b) most agencies employ a blend of notice-and-comment and avoidance strategies.

[6]EPA Freedom of Information Act Regulations Update, 40 CFR 2 (2019).

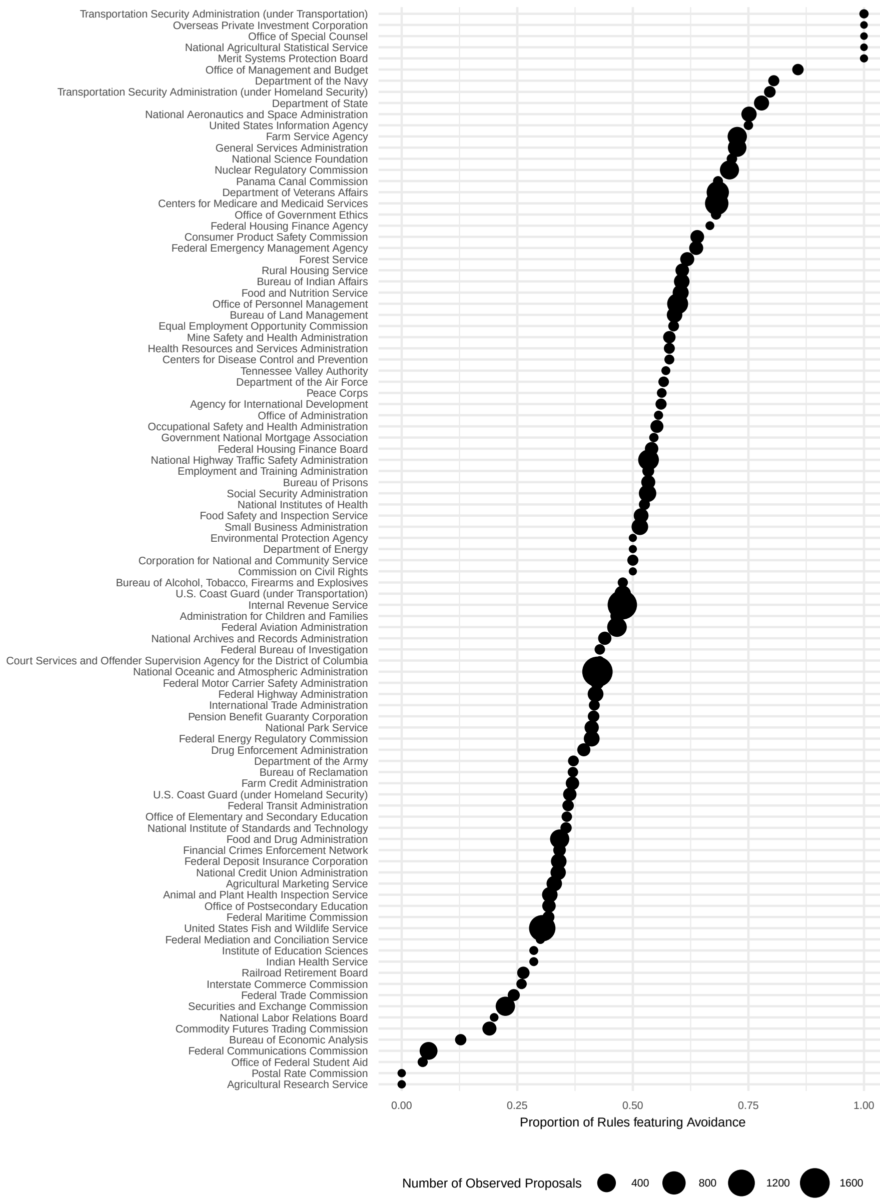

Figure 2: Avoidance by agency.

In this paper, we ask: under what conditions do agencies avoid notice-and-comment? In particular, we are interested in how the existence of the exemption option generates strategic rulemaking incentives for agencies. We analyze this question by developing a formal model of rulemaking and testing its predictions using data on agency rulemaking. Our model incorporates four players: an agency, two competing interest groups, and a court. The agency decides both which rule to propose and whether to attempt to avoid notice-and-comment. If it makes policy through avoidance, the court reviews the available evidence and may reject the agency's claimed exemption, in which case the agency must use notice-and-comment. Otherwise, if the court upholds the exemption then the game ends and the rule takes effect. Should the agency enter into notice-and-comment, the groups may expend effort to learn about and comment on the proposed rule. After the groups comment, the court reviews the evidence and, as in the previous case, upholds or overturns the agency's proposed rule.

Importantly, our model allows us to both make predictions about patterns of avoidance and to understand the mechanisms underlying these patterns. The theory highlights the salience of the costs of notice-and-comment—often talked about in the relevant literature with great frustration—to courts and agencies, conditioned by the expected participation of interested groups, in determining what we observe. When the court is mostly concerned with the costs for delay, it approves policies generated through agency avoidance even if it believes that the policy is poorer than the alternative; the agency, in turn, uses avoidance to realize its preferred policies. By contrast, when the court places greater importance on the actual policy outcome, e.g., if the potential rules that can be adopted differ significantly, then outcomes depend on the agency's notice-and-comment costs relative to its policy motivations.

Intuitively, if the agency has high notice-and-comment costs then it always claims exemption, even though this requires implementing its least preferred policy. At the spectrum's other end, with low costs the agency always proposes it attempts to obtain its preferred policy and engages in notice-and-comment, hoping for supporting evidence from favorable groups or a lack of comments from unfavorable groups. Most interesting is when the agency has moderate costs: in this case, the agency uses notice-and-comment when its information is favorable towards its preferred policy, but when it lacks favorable information it claims itself exempt and implements its least preferred policy. In this moderate cost case, the agency only turns to notice-and-comment when it expects group comments to confirm its proposed rule.[7]

[7]This usage is consistent with the characterization of notice-and-comment by critics of the process. For example, Elliott (1992, 1492) argues that agencies only allow notice-and-comment when administrators do *not* care about input: "Notice-and-comment rulemaking is to public participation as Japanese Kabuki theater is to human passions—a highly stylized process for displaying in a formal way the essence of something which

Our model generates two empirical implications about the the relationship between agency characteristics and the frequency of agency avoidance. First, agencies with strong ideological biases employ notice-and-comment *more* than moderate agencies. In equilibrium, highly ideologically biased agencies are more willing to the incur costs of delay to generate comments from supportive groups, which allows the agency to obtain its preferred policy. Second, our model provides a nuanced result relating an agency's political skill to notice-and-comment rulemaking: more skilled agencies use notice-and-comment more *if they view the process as highly costly.*

To test these claims, we analyze data on agency avoidance using measures of agency skill and ideology. We estimate a model of exemption use and find support for our theoretical predictions. Supporting our first claim, we find that agencies that are more ideologically extreme use notice-and-comment more often. Remarkably, the result obtains for both very liberal and very conservative agencies, indicating that it is indeed ideological bias, rather than any particular ideology, driving this result. As for the second claim, we find that more skilled agencies use notice-and-comment rulemaking more on significant policies and, what is more, that this effect is magnified during times where delay is likely to be costly, such as the year immediately following the terrorist attacks of September 11, 2001. These results provide support for our theoretical approach and suggest new directions for theoretical and empirical research in the field. Previous empirical research on avoidance finds that agencies claim exemptions more often when there is a lower risk of a lawsuit (Raso, 2015). By incorporating measures of agency ideology, our results further our understanding of what factors shape exemption decisions.

Modeling the avoidance process yields insights into the policy debates over agency exemptions as well. Certainly, many in the legal community have found exemptions troubling and have called for clarifying when they apply and reducing their employment (for a recent example, see Golinghorst (2018)). Emblematic, the Administrative Conference issued recommendations in 1969, 1973, 1983, and 1992 to such effect. However, no legislative act has been forthcoming and case law has not clearly identified exemption boundaries.[8] While occasionally talking tough,[9] judges have proven unwilling to step in and systematically stop agencies' frequent invocations of notice-and-comment exemption. Indeed, the Supreme Court recently expanded the power of agencies to avoid by ruling that agencies need not engage in

in real life takes place in other venues."

[8]In the words of William Hughes Mulligan, Second Circuit Appeals Court judge, exceptions are "enshrouded in considerable smog," see *Noel v. Chapman* (1975).

[9]A quarter century ago, the DC Circuit stated that good cause exceptions are to be "narrowly construed and reluctantly countenanced" *(New Jersey v. EPA*, 1980). Yet, per the aforementioned GAO report, agencies were citing good cause for approximately one-quarter of all rules.

notice-and-comment rulemaking when amending or reversing interpretive rules (see *Perez v. Mortgage Bankers Ass'n*, 2015).

While having important policy implications, our results provide no unambiguous policy recommendation about whether having an exemption available is generally good or not. The welfare effects of exemptions depend both on the costs for delay and, in instances where these costs are not too high, the agency's ideological bias in favor of one policy alternative over another. However, we show that the value to allowing exemptions is increasing in the agency's ideological bias.

Our theory complements existing work that models the rulemaking process.[10] In particular, our work relates to Gailmard and Patty (2017) and Libgober (2020*b*). Gailmard and Patty focus on the normative issue of optimal judicial review and show that biased courts improve welfare by incentivizing agency information acquisition. Libgober studies how agency bias affects which policies it proposes, anticipating comments from groups, and argues that empirical findings are consistent with agencies having preferences that are not overly biased in favor of either public or industry interests. Importantly, neither paper incorporates agency avoidance; as such, we focus on a different set of empirical implications and policy issues. Furthermore, our analysis suggests that what we observe coming out of notice-and-comment rulemaking should be interpreted as endogenous to the agency's choice to use the process in the first place.

Our analysis proceeds in four parts. We initially describe and analyze our model, with specific focus on its empirical implications. We then estimate our empirical model of notice-and-comment avoidance. Before concluding, we discuss our findings and analyze key social welfare implications.

2 A Theory Of Regulatory Avoidance

Our model features an agency (A), court (C), and two interest groups (G_0 and G_1). The agency sets policy and decides whether to claim an exemption or to engage in notice-and-comment rulemaking. However, its claimed exemption and policy choice are subject to judicial review. Under notice-and-comment rulemaking groups have the opportunity to provide new information. The agency and groups have preferences for one policy over the other, with the two groups on opposite sides of the divide, while the court wants policy to match an unknown state of the world (ω).

[10] Beyond theories of rulemaking, Stephenson (2006, 2008) and Turner (2017) provide similar models of interactions between a court and an agency, but exclude interest groups, much less informal rulemaking. Fox and Stephenson (2011) model executive posturing under judicial review, but do not include commenting by public interests.

2.1 Timing of the Game

The game proceeds as follows:

1. Nature draws the state of the world $\omega \in \{0, 1\}$, with $Pr(\omega = 1) = q \in (0, 1)$, and with probability $1 - q$ the state is 0. The state ω is *unobserved* by the players.

2. The agency receives a *private* signal $s_A \in \{0, 1\}$, which is informative about the state of the world. The signal is correct with probability p, i.e., $Pr(s_A = 1|\omega = 1) = Pr(s_A = 0|\omega = 0) = p$. As p increases, the agency is more competent at learning the true state from its signal. We assume $p \in (\max\{q, 1 - q\}, 1)$. Thus, the agency is reasonably but not perfectly competent, with a signal accurate enough to overcome its prior.

3. After observing signal s_A, the agency chooses a policy, $x \in \{0, 1\}$, which is observed by both the court and the groups.

4. The agency decides whether to avoid the notice-and-comment process or not.[11] Denote this choice $a \in \{0, 1\}$, where $a = 1$ indicates avoidance and $a = 0$ indicates notice-and-comment.

5. If the agency circumvents notice-and-comment, $a = 1$, then the court reviews the agency's decisions and decides whether to uphold the policy and the decision to avoid or overturn the agency.[12] If the court upholds the exemption, then the game ends with the proposed rule x enacted. Otherwise, if the agency is overturned then it must go through the notice and comment process. Let $\pi \in \{0, 1\}$ denote the final policy outcome.

6. If the agency does not declare an exemption or the court rejects its claimed exemption, then the game enters notice-and-comment. Each group simultaneously expends resources to try and learn the state of the world. That is, each group $i \in \{0, 1\}$ exerts unobservable effort $e_i \in [0, 1]$. After choosing e_i, group i observes a *private* signal $s_i \in \{\omega, \phi\}$, where $s_i = \omega$ indicates that group G_i learns the state of the world, while $s_i = \phi$ indicates that G_i obtains no new information. With probability e_i group i observes $s_i = \omega$ and with probability $1 - e_i$ the signal is uninformative. The group next chooses whether to comment on proposed policy x. Commenting reveals its signal to the agency. Thus, group comments are modeled as "hard" or "verifiable" information.

[11]In the U.S. context an agency could also enter into negotiated rulemaking, which was developed in the 1970s as a means of getting around informal rulemaking's lengthy, costly, processes. However, experience with this alternative has been disappointing and its use is extremely rare (Blake and Bull, 2017)

[12]Our results are robust to making judicial review of the agency's claimed exemption endogenous to a group's decision to contest in the courts, assuming the costs for suing are sufficiently low.

7. Finally, after observing the comments by the groups, the court decides to uphold or overturn the agency's policy choice.[13] If the court upholds the policy then the proposed policy x is implemented, $\pi = x$. If the court overturns the policy, then the alternative policy is adopted, $\pi \neq x$.

2.2 Payoffs

Having laid out the stages of our game, we now describe the components of each player's payoff. There are both policy and non-policy elements for each player.

As for policy, the agency has preferences over the final outcome. In particular, it is biased in favor of policy 1 and gets policy payoff $b > 0$ if policy 1 is implemented and payoff 0 for policy 0. Thus, b measures the extent of the agency's bias. If $b = 0$, then the agency is moderate, as it is indifferent between the two policies.

Increasing b heightens the extremity of the agency's preference in favor of policy 1 over policy 0. The court desires to match the state of the world; its policy payoff is 1 if $\pi = \omega$ and 0 otherwise. Groups want their preferred policy, and each gets a payoff of 1 if the final policy matches its preferred policy, and gets a payoff of 0 otherwise. We assume that group G_0 prefers policy 0 and group G_1 prefers policy 1.[14]

Turning to non-policy components of the final payoffs, the agency's payoff is impacted by whether it endures delay costs either because it goes through notice-and-comment or because it avoids notice-and-comment but the court rejects its policy on grounds of failing to qualify for exemption. Whatever the reason for delay, the agency incurs a cost $\delta_A > 0$.

Therefore, the agency's final payoff is

$$b\pi - (1 - a(1 - \rho))\delta_A,$$

where $\rho = 1$ if the agency's request for exemption is overturned, otherwise $\rho = 0$. As for the court, besides desiring the best policy for society, it considers the consequences of delaying a new policy's enactment on social welfare. Thus, if the agency goes through notice-and-comment or there is delay because the court overturns the agency following a claimed exemption, then the court pays an extra cost $\delta_C > 0$. We assume $\delta_C > q^2$, which implies the court is willing ex ante to uphold the $x = 0$ policy rather than incur the costs of notice-and-

[13] More generally, we could interpret the court here as the variety of institutions that may exert oversight over the agency, e.g., OIRA review. Future work studying avoidance of notice-and-comment rulemaking should consider how the existence of multiple oversight players impacts agency incentives.

[14] Including groups with competing preferences captures the reality of myriad rulemakings. Indeed, the presence of competing interest groups with heterogeneous preferences has been used as a primary criterion for classifying notice-and-comment cases (Reiss, 2009).

comment. This is the most strategically interesting case for the agency, because ex ante it could avoid notice-and-comment by adopting its least preferred policy, and it simplifies the statements of our results. However, the main implications of our analysis hold without this assumption. The court's payoff is therefore

$$(1 - |\pi - \omega|) - (1 - a(1 - \rho))\delta_C.$$

With respect to groups, effort costs come into play. Group G_0, which prefers policy 0, incurs effort costs such that its final payoff is

$$(1 - \pi) - \frac{1}{2}e_0^2,$$

while group G_1's utility is given by $\pi - \frac{1}{2}e_1^2$.

2.3 Comments on the Model

Before proceeding to the analysis, we comment on a number of aspects of the model.

First, we model delay as costly for the agency and court (i.e., society). The costliness and frustration of delay is part of the textbook discussion of informal rulemaking (Kerwin and Furlong, 1992, 2018). As the Administrative Conference of the United States put it in its 1992 round of APA recommendations, agency costs from notice-and-comment could include "the time and effort of agency personnel, the cost of Federal Register publication, and the additional delay in implementation that results from seeking public comments and responding to them."[15] Almost all would agree that, at least in some instances, these costs are substantial, e.g., the process sometimes drags on for years and even across presidential administrations. Furthermore, the existence of exceptions recognizes that delay may be costly for society in general, e.g., due to wasted resources on routine issues or matters that require immediate action.

Second, group comments are modeled as hard information rather than, for example, cheap talk. This captures that the APA directs agencies to focus on comments that provide "relevant matter". It is also consistent with evidence that sophisticated comments are more influential (Cuéllar, 2005), and that agencies are less responsive to mass commenting campaigns (Balla et al., 2022). Additionally, this form of information transmission follows previous models of notice-and-comment, such as Gailmard and Patty (2017) and Libgober (2020*b*).

Third, we assume the court decides whether to overturn immediately following comment-

[15]Recommendations of the Administrative Conference of the United States, 1 C.F.R. s305.92-1.

ing. Instead, we could assume that the agency can revise its policy choice after observing comments from the groups. In this case, instead of being overturned by the court, the agency would update its policy choice. We note that, under this alternative formulation, the model would predict we should rarely see agencies overturned. However, as equilibrium avoidance decisions and policy outcomes are not affected by this change, we maintain the simpler formulation.

Fourth, as noted in the introduction, we are primarily interested in how the exemption's existence, and the ambiguities surrounding when it can be claimed, impacts the agency's strategic rulemaking decisions. As such, the model is agnostic on whether claiming the exemption is legally justified. That is, we do not capture matters that are routine or non-political, i.e., issues where the agency's claimed exemption is clearly valid.

Finally, we assume that the court wants to match the state of the world, ω. One interpretation of ω is that is the policy that is best for society, however, more broadly it could instead be any information that is policy-relevant for the court. That is, the court does not have to be interpreted as welfare-maximizing for our equilibrium characterization and comparative statics to hold.

3 Equilibrium Rulemaking

Our equilibrium concept is pure strategy perfect Bayesian equilibrium (henceforth "equilibria"). Players maximize their expected utility at each stage of the game and update their beliefs according to Bayes rule whenever possible. See the Appendix for proofs and additional details of the equilibrium characterization.

Let μ_i represent an arbitrary belief that $\omega = 1$ for player $i \in \{A, C, G_1, G_0\}$. In equilibrium, this belief depends on the agency's strategy and, given notice-and-comment, the conjectured efforts of the groups and their comments.

To commence our analysis of equilibrium behavior, Lemma 1 details the equilibrium behavior of the groups and court when the agency enters notice-and-comment rulemaking. Group i's optimal effort depends its belief $\mu_G(x, a)$. The court's review decision depends on the strategies of the agency and groups. Throughout we suppress this dependence and denote optimal effort as e_i^*.

Lemma 1. *Notice-and-comment rulemaking.*

- *In every equilibrium, if $x = 1$, then the court upholds the policy if $\mu_C \geq 1/2$, and overturns it otherwise. If $x = 0$, then the court upholds the policy if and only if $\mu_C \leq 1/2$.*

- *There exists an equilibrium in which Group G_1 exerts effort $e_1^* = 0$ and G_0 exerts effort $e_0^* = 1 - \mu_G(x, a)$. Additionally, there exists an equilirbium in which Group G_1 exerts effort $e_1^* = \mu_G(x, a)$ and G_0 exerts effort $e_0^* = 0$. In both equilibria, a group reveals its information if and only if it obtains a favorable signal.*

If, absent new information, the court would uphold a group's preferred policy, then the group expends no effort and does not comment as there is no benefit to doing so. Conversely, if changing an outcome from unfavorable to favorable is possible, then the group expends positive effort and this depends on the group's belief that the state matches its preferred policy. This leads to two equilibria because the court's belief ω after seeing no comments depends on its conjectures about how much effort each group expended. In the first, only group 0 expends effort, while in the second only group 1 expends effort. We refer to the former as the G_0 active equilibrium and the latter as the G_1 active equilibrium.[16]

Lemma 2 analyzes the court's decision to overturn the agency if it claims exemption from notice-and-comment. This decision hinges on the court's belief that the agency's choice matches the state and whether the agency avoided notice-and-comment.

Lemma 2. *Assume the agency avoids notice-and-comment. When $x = 1$, in every equilibrium, the court upholds the agency's exemption if $\mu_C \geq 1 - \sqrt{\delta_C}$, and denies it otherwise. When $x = 0$, in every equilibrium, the court upholds the agency's exemption if $\mu_C \leq \sqrt{\delta_C}$, and denies it otherwise.*

When the agency employs notice-and-comment, the court upholds the policy when it believes that the agency's choice is more likely to be correct than the alternative, as the court wants to match the state. However, if the agency avoids notice-and-comment then the court upholds the agency's choice for some beliefs that are less than $1/2$, as the court is averse to creating further costs and delays by overturning the agency. As we will show, this aversion sometimes allows the agency to implement a policy that is unlikely to be optimal for the court.

Finally, we turn to the agency's decision. We start by analyzing the case where q is relatively large, that is, the prevailing context is favorable to the agency's preferred policy.

[16] Thus, the model predicts that most comments should come from one side of the issue. Although some rules receive many comments from competing interests, overall, McKay and Yackee (2007) supports this prediction. Furthermore, it will be the case that, in equilibrium, if a group comments then the final rule corresponds to the group's preference. As such, the model is consistent with findings that commenting by groups is influential (Yackee and Yackee, 2006; McKay and Yackee, 2007). Finally, the model also suggests a further empirical implication that could be tested, namely that most comments should come from the side opposed to the proposed rule.

Lemma 3. *If $\delta_C \geq (1-q)^2$ then there exists a perfect Bayesian equilibrium where the agency always avoids notice-and-comment, proposes its preferred policy, $x = 1$, and is upheld by the court.*

When the situation is ex ante favorable to the agency, it is able to always use avoidance to obtain its preferred outcome. Although x_1 is ex ante relatively likely to be socially optimal, such avoidance is still potentially detrimental as there is not an opportunity for groups to bring new information about the policy.

Our next proposition characterizes the agency's policy choice and decision to avoid notice-and-comment.

Proposition 1. *Assume $\delta_C < (1-q)^2$ and the G_i active equilibrium is always played at the notice-and-comment stage, for $i \in \{0, 1\}$. There exists $\underline{\delta}_i$ and $\overline{\delta}_i$, with $\underline{\delta}_i < \overline{\delta}_i$ such that:*

1. *If $\delta_A > \overline{\delta}_i$ then in every equilibrium the agency chooses $x = 0$ and avoids notice-and-comment following both signals.*
2. *If $\delta_A \in [\underline{\delta}_i, \overline{\delta}_i]$ then there exists an equilibrium in which the agency chooses $x = 1$ and enters notice-and-comment when $s_A = 1$. Otherwise, the agency chooses $x = 0$ and avoids notice-and-comment when $s_A = 0$.*
3. *If $\delta_A < \underline{\delta}_i$ then in every equilibrium the agency enters notice-and-comment following both signals.*

As shown in Figure 1, which depicts equilibrium rulemaking for combinations of agency and courts costs, the agency takes advantage of exemptions when the court faces high delay costs. In this case, exemptions have the downside, discussed by previous scholars, of allowing a biased agency to avoid comments and to always implement its preferred policy.

Rulemaking is more nuanced with more moderate court costs, as agency costs are now crucial. There are conditions where the agency always uses notice-and-comment, where it conditionally employs notice-and-comment, and where it always uses exemption. We now outline the intuition behind these different cases.

First, an agency facing high costs is incentivized to avoid notice-and-comment and not get overturned by the court. Consequently, after either signal it claims exemption and, by selecting its least preferred policy, is upheld by the court (by assumption that $\delta_C > q^2$). Put differently, the agency *panders* to the court by choosing the latter's ex ante preferred policy to avoid the costs of getting overturned.[17]

[17]Policy 0 is the court's ex ante preferred policy because we must have $q < 1/2$ for $\delta_C \in (q^2, (1-q)^2)$ to hold. Thus, ex ante policy 0 is more likely to match the state than policy 1.

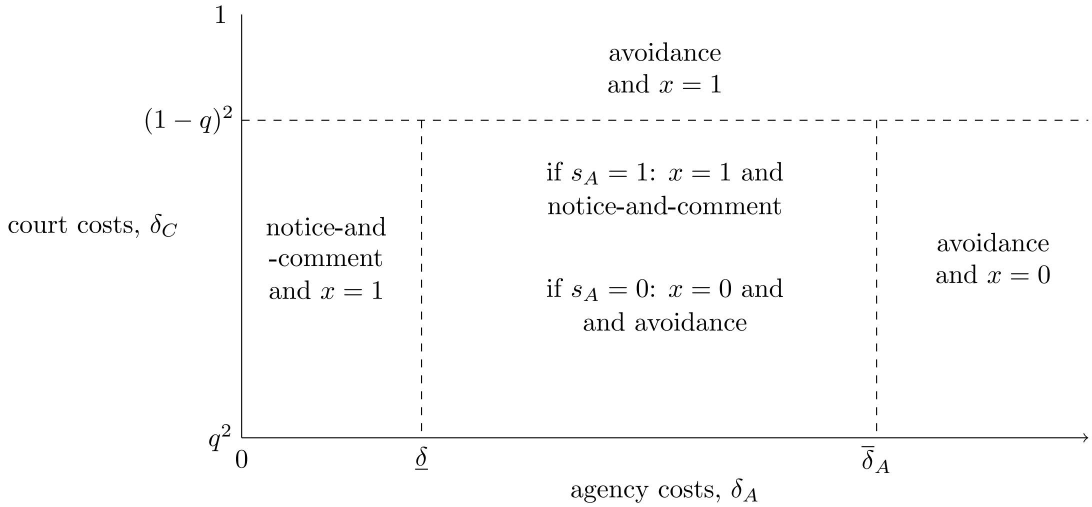

Figure 3: Agency's equilibrium use of notice-and-comment and avoidance options.

Second, with moderate to high agency costs, the agency's action depends on its information, with the agency only using notice-and-comment when confident that the outcome will support its preferred policy. When the agency has favorable information it goes through notice-and-comment. When $s_A = 1$ the agency is reasonably certain that notice-and-comment will not produce contradictory information, so it will incur cost δ_A to have a probability of getting its preferred policy enacted. Conversely, when $s_A = 0$ the agency is dissuaded from notice-and-comment, as it knows there is a high probability that a group will bring forth contradictory information and the agency's policy will be overturned. Hence, it avoids notice-and-comment and chooses $x = 0$. As in the case when agency costs are highest, doing so circumvents incurring extra costs, although this is the agency's least preferred policy. Hence, exemptions provide the agency the opportunity to signal its information to the court and groups credibly.

Finally, if the agency's costs for notice-and-comment are low then the agency always attempts to push its preferred policy through using notice-and-comment. Again, if $s_A = 1$ then the agency is confident no contradictory information will be uncovered. When $s_A = 0$, the agency is willing to risk a high probability of getting overturned to have a chance of getting its preferred policy because its costs are low.

4 Empirical Implications

We now lay out our model's empirical implications. We first focus on agency ideology and skill, and then turn to when a group should inject itself into the rulemaking process. Predictions that can be, or have been, examined empirically are produced about ideology, skill, and group effort. Additionally, our findings about group commenting lead to inferences about organizational influence on rulemaking.

We now state the relationship between the agency's ideological bias and the equilibrium thresholds.

Proposition 2. *Assume the G_i active equilibrium is always played at the notice-and-comment stage, for $i \in \{0,1\}$. Increasing the agency's bias increases $\underline{\delta}_i$ and $\overline{\delta}_i$, i.e., $\frac{\partial \underline{\delta}_i}{\partial b} > 0$ and $\frac{\partial \overline{\delta}_i}{\partial b} > 0$.*

Proposition 2 demonstrates that an increase in b grows both the regions in which the agency always uses notice-and-comment and in which it uses notice-and-comment when $s_A = 1$, while shrinking the region in which an exemption is always claimed. A more biased agency has a greater willingness than its more moderate counterpart to incur notice-and-comment's costs to increase the probability of implementing its preferred policy. Consequently, for any distribution of the agency costs δ_A, Proposition 2 indicates that more ideologically biased agencies will use notice-and-comment more often. Implication 1 summarizes this relationship.

Implication 1. *Increasing the agency's ideological bias increases the probability it uses notice-and-comment.*

Besides an agency's bias, its skill — captured by the informativeness of its signal — affects notice-and-comment's probability. Unlike agency bias, increasing the agency's skill has more cross-cutting effects on the probability of notice-and-comment. To start, Proposition 3 characterizes how skill affects the equilibrium thresholds.

Proposition 3. *Assume the G_i active equilibrium is always played at the notice-and-comment stage, for $i \in \{0,1\}$. Increasing the agency's skill decreases $\underline{\delta}_i$ and increases $\overline{\delta}_i$, i.e., $\frac{\partial \underline{\delta}_i}{\partial p} < 0$ and $\frac{\partial \overline{\delta}_i}{\partial p} > 0$.*

Increasing p increases the range $[\underline{\delta}_i, \overline{\delta}_i]$ because the $s_A = 1$ type becomes more confident that, when going through notice-and-comment, the groups will not reveal information that results in the court forcing it to revise its policy. On the other hand, the $s_A = 0$ type becomes more certain that, if it tried to use notice-and-comment, then it would get overturned. Thus, it is easier to get a higher skill agency to separate and choose different policies based on its information.

Unlike increasing bias, increasing skill has countervailing effects on whether we should expect to see more or less notice-and-comment. Increasing p decreases $\underline{\delta}_i$, which shrinks the set of costs for which the agency always goes through notice-and-comment. However, it also increases $\overline{\delta}_i$, which shrinks the set of costs for which the agency never goes through notice-and-comment. Furthermore, increasing p decreases the probability the agency observes $s_A =$

1, by $\delta_C < (1-q)^2$, which decreases the probability of notice-and-comment in the $[\underline{\delta}_i, \overline{\delta}_i]$ region. Consequently, whether increasing the agency's skill leads to more or less avoidance depends on the other parameters and, in particular, on δ_A.

To make this discussion more concrete, assume δ_A is drawn from a distribution with support on the interval $[\underline{\Delta}, \overline{\Delta}]$. If $\underline{\Delta} < \underline{\delta}_i$ and $\overline{\Delta} \in (\underline{\delta}_i, \overline{\delta}_i)$ then the agency has low costs of delay. In this case, the countervailing effect of p through $\overline{\delta}_i$ is muted. Thus, increasing p decreases the probability the agency will uses notice-and-comment in equilibrium. On the other hand, if the support of δ_A is such that the agency has high costs for delay, so $\underline{\delta}_i < \underline{\Delta}$ and $\overline{\delta}_i < \overline{\Delta}$ now the effect of p through $\underline{\delta}_i$ is mitigated. Consequently, increasing p leads to fewer realizations of δ_A for which the agency never uses notice-and-comment. If this increase outweighs the decrease in how often A observes the $s_A = 1$ signal then we should observe more notice-and-comment, this occurs, for example, if the lower bound on costs $\underline{\Delta}$ is relatively large. We draw two implications from Proposition 3 and this discussion.

Implication 2.

1. *If the agency has low costs of delay, then increasing its skill decreases the probability of notice-and-comment.*

2. *If the agency has high costs of delay, then increasing the agency's skill increases the probability of notice-and-comment*

5 Empirical Evidence

We specified our avoidance theory with the explicit idea of taking it to data. In particular, we investigate how bias and skill affect the probability of avoidance and interpret the evidence through the lens of our model.

5.1 The Data

The core of our data on rulemaking and its avoidance is from O'Connell (2008), who created a comprehensive database from the *Unified Agenda of Federal Regulatory and Deregulatory Actions*. Executive Order 12866 tasks agencies with semi-annual submissions regarding pending and anticipated rulemaking. Importantly, this includes whether or not agencies employ notice of proposed rulemaking procedures (NPRM), allowing us to examine agency avoidance choices. Our dependent variable is dichotomous, scored 0 when the proposed rule does not go through NPRM procedures and scored 1 when it does go through NPRM procedures.[18]

[18] A rule going through notice-and-comment at any point in the process is coded as 1, e.g., even if courts make the agency do so.

While O'Connell's data spans 1983–2008 and includes 256 agencies, our analysis begins in 1993 and covers 82 agencies so that, as we detail, we can incorporate measures of agency bias and skill.[19] Specifically, we employ measures developed by Richardson, Clinton and Lewis (2018, henceforth RCL), who survey over 1,500 federal executives and use a measurement model to transform these skill/ideology perceptions into agency-specific measures.[20] While using the RCL measures limits our time frame and agencies (although virtually all major agencies are included), we nonetheless have 16,575 proposed rules to study. We focus our attention on the 3,602 proposed rules identified as either "economically significant" or "other significant," dropping those coded as "substantive but nonsignificant," "routine and frequent," or "other administrative." Among these, 59.7% feature NPRM procedures.

5.2 Testing the Bias Hypothesis

To test Implication 1 (more agency bias yields more NPRM), we reduce the data further by operating at the agency level. Doing so allows us to begin our analysis without having to worry about the lack of variance for agency-level variables. We consider the straightforward linear regression model

$$\text{NPRM}_i = \beta_0 + \beta_1 \text{Bias}_i + \beta_2 \text{Skill}_i + \beta_3 \text{Independent}_i + \varepsilon_i, \tag{1}$$

where:

- NPRM_i is the proportion of rules proposed by Agency i featuring NPRM procedures;[21]
- Bias_i is the absolute value of Agency i's RCL ideology score;
- Skill_i is Agency i's RCL skill score; and
- Independent_i is a dummy variable coded 1 if Agency i is an independent agency.[22]

We estimate the model via OLS and summarize the results in Table 1.[23] Though the model's

[19] We also focus only on agencies with at least 10 proposed rules in our timeframe of interest.

[20] Given these measures, agency skill and bias are assumed constant over time. RCL specifically phrased their questions to encourage respondents to emphasize "long term, stable leanings", where in particular respondents were asked to think "across Democratic and Republican administrations" (305).

[21] This dependent variable has no distributional pathologies—in particular, it is unimodal and reasonably symmetric. A Kolmogorov-Smirnov test failed to reject the null hypothesis that the variable comes from the same distribution as a Normal distribution with the same mean (0.62) and standard deviation (0.24).

[22] Though our formal model has nothing to say on the political independence of an agency, it stands to reason that independent agencies are more likely to utilize NPRM procedures. In particular, independent agencies may be perceived as more biased because they are not subject to OIRA review. Consequently, they would have similar incentives to use NPRM procedures as biased agencies in the model.

[23] Analyses of the model reported here demonstrate no signs of the either heteroskedasticity or (unduly) influential observations.

Variable	Estimate	S.E.	t-statistic	p-value
Bias	0.087	0.047	1.86	0.062
Skill	0.006	0.031	0.20	0.845
Independent	0.205	0.069	2.99	0.003
Constant	0.527	0.045	11.8	<0.001
N	82 (agencies)			
R^2	0.128			
AIC	-1.03			
S.E.E.	0.232			
F-statistic	3.83 ($p = 0.014$)			

Table 1: OLS estimates of the linear regression model described by Equation (1) predicting the proportion of rules with NPRM procedures. Estimate and standard error columns (along with all goodness-of-fit statistics) averaged across 25 imputations. All tests two-tailed.

fit is relatively weak, the picture is clear enough to assess Implication 1. We see that a one-unit increase in an agency's bias[24] is associated with an 8.7 percentage-point increase in the proportion of rules promulgated with NPRM procedures. The estimate is not statistically significant at the 0.05 cutoff but is significant at the 0.10 cutoff; it is worth noting that our strong theoretical hypothesis and modest sample make one-sided testing appealing, and we leave the task of further inferential judgment at the reader's doorstep. We see also that, in this model, an agency's skill level has a negligible effect on whether they use NPRM procedures. Finally, independent agencies indeed use NPRM procedures (much) more often than non-independent agencies.

As we have measured bias using the absolute value of the RCL ideology score, we have assumed away any possibility of asymmetric effects across the ideological spectrum. Put differently, our empirical model treats very liberal and very conservative agencies the same, which is in keeping with our theoretical model. To make sure this assumption is reasonable, we consider a second linear regression model:

$$\text{NPRM}_i = \beta_0 + \beta_1 \text{Ideology}_i + \beta_2 \text{Ideology}_i^2 + +\beta_3 \text{Skill}_i + \beta_4 \text{Independent}_i + \varepsilon_i, \qquad (2)$$

where all other variables are the same but Ideology_i is Agency i's RCL ideology score. The results of that model are summarized in Table 2. The fact that $\hat{\beta}_1$ (the "linear" part of the ideology effect) is quite modest relative to $\hat{\beta}_2$ (the "quadratic" part of the ideology effect) indicates that the effect is symmetric and that our bias-motivated, rather than ideology-

[24] For a frame of reference, a one-unit increase in bias is approximate to shifting attention from the National Institute for Standards and Technology (0.009) to the Federal Mediation and Conciliation Service (1.007) or from the Railroad Retirement Board (0.885) to the Department of the Navy (1.914).

Variable	Estimate	S.E.	t-statistic	p-value
Ideology	-0.016	0.030	-0.56	0.579
Ideology^2	0.530	0.027	1.94	0.052
Skill	0.004	0.031	0.13	0.896
Independent	0.208	0.069	3.01	0.003
Constant	0.544	0.037	14.8	<0.001
N	82 (agencies)			
R^2	0.136			
AIC	0.234			
S.E.E.	0.232			
F-statistic	3.04 ($p = 0.0214$)			

Table 2: OLS estimates of the linear regression model described by Equation (2) predicting the proportion of rules with NPRM procedures. Estimate and standard error columns (along with all goodness-of-fit statistics) averaged across 25 imputations. All tests two-tailed.

motivated, approach is well-founded. (The same goes for model fit, where our primary model has a better AIC, along with other parsimony-respecting statistics like adjusted R^2.) Again, skill has a negligible effect on NPRM procedures in this model.[25] We delve deeper into the role of skill on NPRM protocols in the next section.

5.3 Skill, Costs, and NPRM

In the previous subsection, both of our reported models yielded null effects of agency skill in the proportion of proposed rules featuring NPRM procedures. This comes as no surprise, as our theoretical analysis anticipated cross-cutting effects for the skill variable depending on the associated costs of delay. However, it is difficult to know whether any given proposed rule—much less agency—has high or low costs of delay, so it is difficult to determine the effect of skill on NPRM utilization.

We now take advantage of our full rule-level, rather than agency-level, data structure. Our dependent variable is dichotomous and coded 1 when a proposed rule features NPRM procedures. Our independent variables include:

- Bias, the absolute value of proposing agency's RCL ideology score;
- Skill, the proposing agency's RCL skill score;

[25] In Appendix B, we provide the results of an analysis that weights agencies by rule volume. When more prolific agencies are heavily weighted we find that skill has a greater impact, however, overall, the results are very similar to those presented here.

Variable	Estimate	S.E.	z-statistic	p-value
Bias	0.178	0.221	0.81	0.421
Skill	0.202	0.124	1.63	0.102
Extreme Costs	−0.578	0.188	−3.08	0.002
Skill × Extreme Costs	0.379	0.241	1.58	0.115
Independent	1.090	0.329	3.32	<0.001
State	−0.027	0.158	−0.17	0.867
Federal	0.437	0.218	2.00	0.045
Constant	0.193	0.227	0.85	0.396
N		3602		

Table 3: ML estimates of the logistic regression model described in the text predicting the use of NPRM procedures at the rule level. Standard errors clustered at the agency level (82 agencies). Estimates and standard errors averaged across 25 imputations.

- Extreme Costs, a dummy variable coded 1 for rules proposed in the 365 days after 9/11/2001, where our motivating idea is that agencies faced much higher costs of delay in the aftermath of the World Trade Center attacks;
- Skill × Extreme Costs, the interaction of the previous two variables, which tells us how the effect of skill depends on extreme costs (and vice versa);
- Independent, a dummy variable coded 1 if the proposing agency is independent;
- State, a dummy variable coded 1 if the proposed rule affects state agencies; and
- Federal, a dummy variable coded 1 if the proposed rule affects federal agencies.[26]

We estimate a logistic regression using this battery of predictors and cluster our standard errors at the agency level.

The results of that analysis are summarized in Table 3. As a check of the premise motivating this exercise, it is heartening that there exists a strong, negative effect of our 9/11 dummy on NPRM procedures—this suggests that this is indeed a period of high costs of delay, at least among agencies with median skill. Independent agencies remain far more likely to employ NPRM protocols than non-independent agencies. It is also the case that rules influencing federal agencies are more likely to feature NPRM. The bias variable retains its positive sign, but inferences are weaker compared to the previous subsection.

Here we are mainly concerned with the skill variable. Recall, that the model predicts that the effect of skill on the probability of notice-and-comment is conditioned by whether

[26] It is worth noting that some agencies propose rules that influence both state and federal agencies, and that other levels of analysis exist—say, municipal or tribal. In other words, there is no fear of collinearity.

the agency expects costs of delay to be high or low. For observations outside our Extreme Costs timezone, we see a positive effect of skill on the probability of NPRM procedures for a given rule, though the effect is not statistically significant. This offers some suggestive evidence that day-to-day costs of delay are relatively high, so that it is the second part of Implication 2 (high costs of delay encourage skilled agencies to employ NPRM more often than unskilled agencies) that is relevant for our purposes rather than the first part of the implication (low costs of delay encourage skilled agencies to employ NPRM less often than unskilled agencies). This makes sense, as we have focused only on significant proposed rules. Given this result, it seems reasonable to expect the Extreme Costs timezone to feature a larger positive effect of skill, as the costs of delay in the immediate aftermath of the 9/11 attacks were only higher than normal.[27]

We therefore turn our attention to the estimated interaction term and expect to see a positive influence of enhanced costs of delay on the effect of skill on the probability of NPRM procedures. We plot the coefficients in Figure 4. We see that more (less) skilled agencies

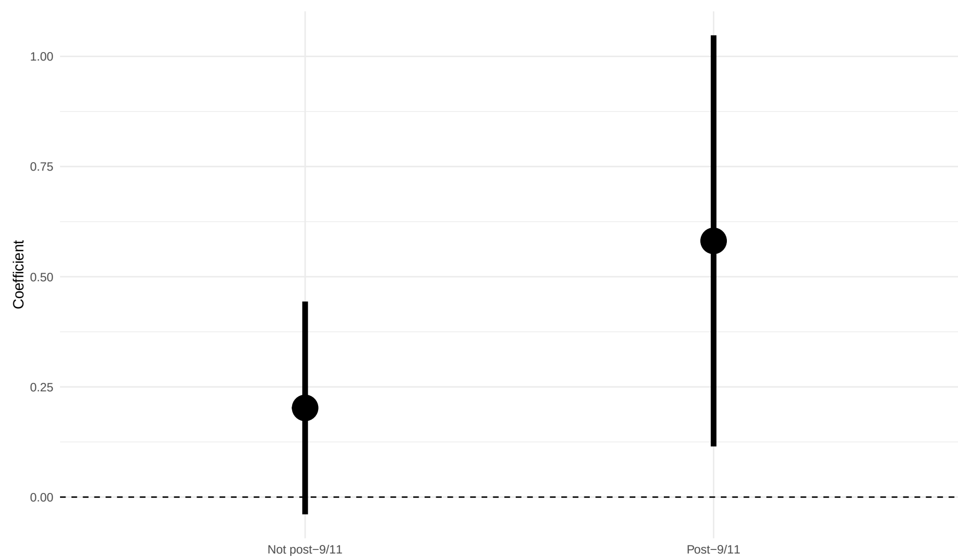

Figure 4: Estimated coefficients from the model summarized in Table 3. Results averaged across 25 imputations. All other predictors held at their respective means.

made more (less) use of NPRM procedures in the immediate aftermath of the 9/11 attacks, *even though far fewer rules at that time were proposed using NPRM procedures.*

To get a sense of how the Extreme Costs variable introduces large differences in degree,

[27]To see why this point is relevant, suppose—*contra* the results just discussed—that the effect of skill on NPRM during normal times was negative. The larger costs of delay after 9/11 may have nudged the cost of delay out of the first part of Implication 2 zone, or they might not have. Put differently, we have satisfied a necessary condition for our empirical strategy to be useful.

but not in kind, on the effect of skill on NPRM, consider the predicted probability plot in Figure 5. The darker ribbon is during normal times, and (to repeat) it features a positive

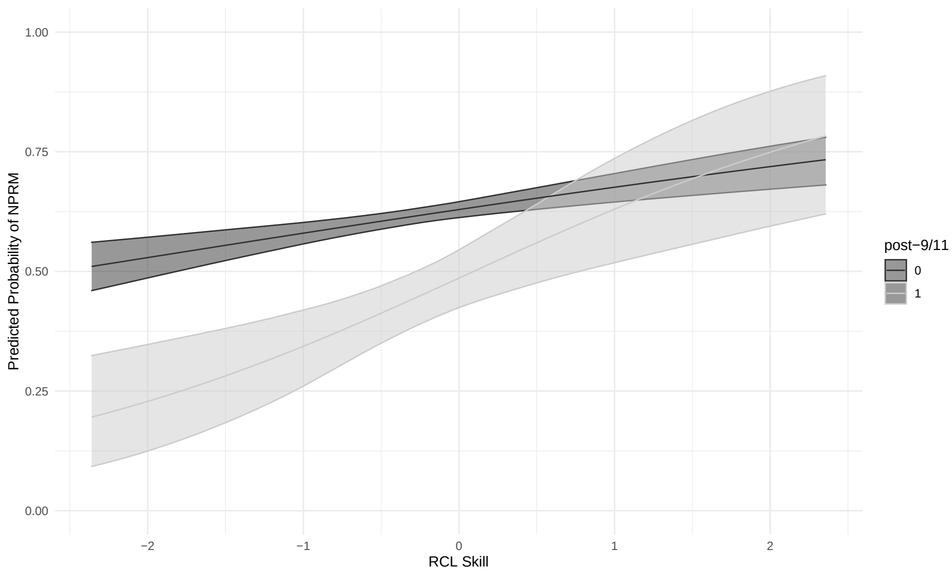

Figure 5: Predicted probability of NPRM as a function of agency skill and extreme costs. Results averaged across 25 imputations. All other predictors held at their respective means. Standard errors obtained via a bootstrap balanced by agency.

marginal effect of skill on NPRM utilization, suggesting that day-to-day rulemaking on significant policies is a high-cost affair. It would be very bad news for our theoretical model if the Extreme Cost time period featured a null or negative effect of skill on NPRM usage. However, this is not the case; indeed, during the Extreme Costs timezone, the effect of skill on NPRM utilization is positive and (by any reasonable standard) substantively meaningful.

All things considered, the empirical results provide promising suggestive evidence that we are on the right track with our theoretical model. In particular, it appears that those agencies with more political bias do indeed use NPRM procedures more often than those without bias, which is consistent with our Implication 1. Perhaps more interestingly, our analysis of significant rules, both in normal times and in the immediate aftermath of a catastrophe, suggest that skilled agencies use NPRM procedures more often, which is consistent with the second part of our Implication 2. Of course, our data are somewhat limited and the measures are themselves the output of a measurement model, so it is important to maintain humility in light of these results. That said, we are confident that these results are strong enough, not to mention consistent enough with our theoretical model, to warrant further attention from empirically-minded scholars in this area as the literature continues to unfold.

6 Policy Implications

By modeling the notice-and-comment process we can also study how allowing exemptions impacts welfare. In particular, we study when the court benefits from the existence of an exemption to notice-and-comment. In cases where δ_C and ω capture aspects of bureaucratic rulemaking important to the government or society broadly, we can interpret these results more generally as welfare implications.

Proposition 4.

1. *Assume $\delta_C > (1-q)^2$. Allowing exemptions is optimal.*
2. *Assume $\delta_C < (1-q)^2$.*
   (a) *If $\delta_A < \underline{\delta}_i$ then removing exemptions has no effect on C's welfare.*
   (b) *If $\delta \in (\underline{\delta}_i, \overline{\delta}_i)$ then it is optimal to allow exemptions.*
   (c) *If $\delta_A > \overline{\delta}_i$ then it is optimal to remove exemptions.*

Intuitively, with very high delay costs, $\delta_C \geq (1-q)^2$, the court is best off allowing exemptions. This is true even though, in this case, the agency uses exemptions to obtain its preferred policy whether appropriate or not. If the court's costs of delay are not as severe, then the benefits of exemptions depend on the agency's equilibrium behavior which, by Proposition 1, are characterized by the agency's costs for delay.

When δ_A is low the agency never uses exemptions in equilibrium, consequently allowing them does not impact the outcome. For intermediate δ_A the court benefits from allowing exemptions because their existence allows the agency to separate in equilibrium based on its signal. This leads to more informative policymaking and avoids the costs of notice-and-comment when $s_A = 0$. If δ_A is large then the agency is overzealous with its use of exemptions. This yields poorly informed policy outcomes and, thus, the court benefits from removing the option.

Proposition 4 implies it is optimal to allow exemptions whenever $\delta_A < \overline{\delta}_i$. From Proposition 2 increasing bias increases $\overline{\delta}_i$, thus decreasing the set of realizations for which the court may want to remove exemptions. This yields our final implication.

Implication 3. *The court's expected value for allowing exemptions instead of removing them is increasing in the agency's bias.*

7 Conclusion

Understanding the structure and impacts of the rulemaking process has been a subject of interest to social scientists, legal scholars, and policy analysts. Rulemaking has been a particularly relevant topic given a gridlocked world where moving policy statutorily has proven extraordinarily difficult and attention has increasingly focused on how agencies can adjust policies directly. To date, most consideration has been given to notice-and-comment per se even though past work has acknowledged that agencies have promulgated many rules, including very important ones, via an end run around the process. Our analysis provides insights into how rulemaking is impacted by the strategic use of avoidance by agencies.

There are a variety of ways on which we can build on the analysis here. Broadly, continued back-and-forth between theoretical and empirical work should prove fruitful for improving our understanding of rulemaking and our ability to make policy recommendations for how to organize the bureaucracy.

For example, our theoretical and empirical models consider notice-and-comment and avoidance conditional on rulemaking occurring. Moving forward it would be productive to integrate selection into rulemaking. Theoretically, this would entail adjusting our model so that the agency either engages in rulemaking, incurring a cost to observe a signal about the state before playing per our model, or does nothing and retains the status quo, getting a payoff between 0 and 1. With selection, we would no longer see the agency engage in any rulemaking when agency costs are very high and court costs are low. Additionally, the agency's bias will alter its incentive to propose a rule. Empirically, this would involve integrating a selection equation with the main specification.

Further exploring the ties between different theories should also prove informative about the rulemaking process. For example, Libgober (2020*b*) shows that patterns of notice-and-comment rulemaking can be rationalized without invoking judicial oversight. However, the shadow of judicial review plays an important role in our model. In particular, absent judicial oversight, more biased agencies would always avoid more. However, our empirical results find the opposite, i.e., the data are consistent with our model in which agencies anticipate judicial review. This holds despite the court never overturning the agency's claimed exemption in equilibrium. Hence, while oversight may not be necessary to explain notice-and-comment rulemaking, our paper suggests that it is an important determinant for explaining avoidance.

Finally, moving forward it would be beneficial to further distinguish between claimed exemptions that are legitimate, versus those that are not. Theoretically, it would be interesting to consider a model in which there is uncertainty about whether the exemption is valid. Empirically, it would be useful to develop a rule-level measure of whether an agency would be legally justified in claiming exemption. Doing so could generate new insights into how agencies use exemptions, and provide further evidence on the role of bias.

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A Proofs

Throughout, we define $\overline{\mu}$ as the belief $\omega = 1$ if the agency observes the $s_A = 1$ signal:

$$\overline{\mu} = \frac{pq}{pq + (1-p)(1-q)}.$$

Similarly, let $\underline{\mu}$ be the belief after the $s_A = 0$ signal:

$$\underline{\mu} = \frac{(1-p)q}{(1-p)q + p(1-q)}.$$

Lemma 1. *Notice-and-comment rulemaking.*

- *In every equilibrium, if $x = 1$, then the court upholds the policy if $\mu_C \geq 1/2$, and overturns it otherwise. If $x = 0$, then the court upholds the policy if and only if $\mu_C \leq 1/2$.*
- *There exists an equilibrium in which Group G_1 exerts effort $e_1^* = 0$ and G_0 exerts effort $e_0^* = 1 - \mu_G(x, a)$. Additionally, there exists an equilirbium in which Group G_1 exerts effort $e_1^* = \mu_G(x, a)$ and G_0 exerts effort $e_0^* = 0$. In both equilibria, a group reveals its information if and only if it obtains a favorable signal.*

Proof of Lemma 1. To start, if $x = 1$ then the court's expected utility for upholding the policy is μ_C, while its expected utility for overturning the policy is $1 - \mu_C$. Thus, it upholds if $\mu_C \geq 1 - \mu_C$, which holds if and only if $\mu_C \geq 1/2$. Similarly, it only upholds $x = 0$ if $\mu_C \leq 1/2$.

Next, note that group G_i has no incentive to deviate from revealing its information if it learns that the $\omega = i$, and cannot benefit from revealing ω if $\omega \neq i$. Thus, the commenting strategy described in Lemma 1 is an equilibrium.

Let $\hat{e}_i$ be the conjecture that players C and G_j, $j \neq i$, hold about the effort that G_i exerts. In equilibrium, conjectures must be correct so it is wlog to consider cases where G_j and C hold the same conjecture. The court's updated belief if a group reveals $m_i = 1$ is that $\mu_C = 1$, while its updated belief if a group reveals $m_i = 0$ is that $\mu_C = 0$. On the other hand, if neither group comments then, given the groups' commenting strategies, its belief is

$$\mu_C = \frac{(1 - \hat{e}_1)}{(1 - \hat{e}_1)\mu_G + (1 - \hat{e}_0)(1 - \mu_G)}.$$

We show that at most one group exerts positive effort. Assume that $\mu_C \geq 1/2$ given the C's conjectures. In this case, the policy outcome is $\pi = 1$ if neither group comments. G_1's expected utility for exerting effort e_1 is

$$\mu_G + (1 - \mu_G)(1 - \hat{e}_0) - \frac{1}{2}e_1^2,$$

which is maximized at $e_1 = 0$. A similar argument show that G_0 must exert effort $e_0 = 0$ if the conjectures $\hat{e}_0$ and $\hat{e}_1$ are such that $\mu_C < 1/2$.

We now show that at least one group must exert effort. Towards a contradiction, assume there is an equilibrium in which $e_0 = e_1 = 0$. In this case, C does not update its beliefs after observing no comments, thus it must be that $\mu_C \in (0, 1)$ following no comment because the agency's signal is not perfectly accurate. Say $\mu_G \geq 1/2$, thus, policy 1 is implemented absent a comment. In this case, G_0 chooses effort to maximize $e_2(1 - \mu_G) - \frac{1}{2}e_2^2$, which implies $e_2^* > 0$ by $\mu_G < 1$. Similarly, $\mu_G < 1/2$ leads to a contradiction because it is optimal for G_1 to expend positive effort.

To conclude, consider conjectures such that $\mu_C < 1/2$ after C observes no comments. Our previous argument implies we must have $e_0 = 0$ in this case. Thus, $\mu_C \leq 1/2$ requires

$$\frac{\mu_G(1 - \hat{e}_1)}{\mu_G(1 - \hat{e}_1) + 1 - \mu_G} \leq 1/2$$
$$\Leftrightarrow 2 - \frac{1}{\mu_G} \leq \hat{e}_1.$$

Given conjectures $\hat{e}_1$ and $\hat{e}_0 = 0$, Group G_1's expected utility for effort is

$$e_1\mu_G - \frac{1}{2}e_1^2,$$

which yields effort choice $e_1 = \mu_G$. For this to be an equilibrium we need that C's conjecture is correct, thus, G_1 needs to choose effort $e_1 \geq 2 - \frac{1}{\mu_G}$. This holds if and only if $\mu_G \geq 2 - \frac{1}{\mu_G}$, and this rearranges to $(1 - \mu_G)^2 \geq 0$, which always holds.

A similar argument shows there always exists an equilibrium in which $e_0 = 1 - \mu_G$ and $e_1 = 0$, where the conjectured efforts are such that $\mu_C \geq 1/2$ following no comments.

Moving forward, we refer to the equilibrium where $e_1^* = \mu_G$ and $e_0^* = 0$ as the G_1 active equilibrium and refer to the equilibrium where $e_1^* = 0$ and $e_0^* = 1 - \mu_G$ as the G_0 active equilibrium □

Lemma 2. *Assume the agency avoids notice-and-comment. When $x = 1$, in every equilibrium, the court upholds the agency's exemption if $\mu_C \geq 1 - \sqrt{\delta_C}$, and denies it otherwise. When $x = 0$, in every equilibrium, the court upholds the agency's exemption if $\mu_C \leq \sqrt{\delta_C}$, and denies it otherwise.*

Proof of Lemma 2. Assume the agency claims an exemption and chooses $x = 1$. In this case, the C's expected utility for upholding the policy and exemption is μ_C.

If C rejects then its expected depends on its expected payoff played in the equilibrium of the notice-and-comment game. Using Lemma 1, if the groups play the G_1 active equilibrium then C's expected utility is for denying the exemption is $\mu_c e_1^* + (1 - \mu_C) - \delta_C = \mu_C^2 + (1 - \mu_C)^2 - \delta_C$. Thus, comparing terms, we have that the court upholds the exemption if $\mu_C \geq 1 - \sqrt{\delta_C}$, and rejects otherwise.

If the groups play the G_0 active equilibrium at the notice-and-comment stage then C's expected utility for denying the exemption is $\mu_C + (1 - \mu_C)e_0^* - \delta_C = \mu_C + (1 - \mu_C)^2 - \delta_C$. Thus, comparing to μ_C, the court upholds the exemption if $\mu_C \geq 1 - \sqrt{\delta_C}$ and denies it otherwise, as required.

If instead $x = 0$, then C's expected payoff from rejecting the exemption remains the same in each notice-and-comment equilibrium, however, its payoff from upholding the agency is $1 - \mu_C$. Comparing to the expected utilities calculated above yields that in either equilibrium C upholds the agency if $\mu_C \geq \sqrt{\delta_C}$ and rejects otherwise, as required. □

Lemma 3. *If $\delta_C \geq (1-q)^2$ then there exists a perfect Bayesian equilibrium where the agency always avoids notice-and-comment, proposes its preferred policy, $x = x_1$, and is upheld by the court.*

Proof of Lemma 3. If the agency chooses $x = 1$ and claims an exemption following both signals then $\mu_C = q$. That the court upholds the agency follows from Lemmas 1 and 2, and clearly the agency has no incentive to deviate because it gets is highest possible payoff. □

Lemma A1. *If $\delta_C < (1-q)^2$ there does not exist an equilibrium in which the agency avoids, chooses $x = 1$, and is upheld by the court.*

Proof of Lemma A1. There cannot be an equilibrium in which the agency chooses $x = 1$ and avoids after only one of the signals, because this yields the agency its unique highest possible utility if it is upheld. Thus, in equilibrium both types must be using the strategy. The result then follows from the proof of Lemma 3.

Lemma A2. *If the agency chooses $x = 0$ and avoids following $s_A = 1$, then it chooses $x = 0$ and avoids following $s_A = 0$.*

Proof of Lemma A2. The agency prefers to choose $x = 0$ and avoidance if

$$0 \geq \mu_A\Big(e_1 + (1 - e_1)(1 - \mathbb{I}_{G_1})\Big) + (1 - \mu_A)(1 - e_0)(1 - \mathbb{I}_{G_1}), \tag{3}$$

where $\mathbb{I}_{G_1} = 1$ indicates that the G_1 active equilibrium is played and $\mathbb{I}_{G_1} = 0$ indicates that the G_0 active equilibrium is played. Because $e_1 + (1 - e_1)(1 - \mathbb{I}_{G_1}) > e_1 + (1 - e_1)(1 - \mathbb{I}_{G_1})$, the RHS of 3 is increasing in μ_A. Thus, by $\mu_A(1) > \mu_A(0)$, if the agency wants to avoid after the $s_A = 1$ signal then it wants to avoid after the $s_A = 0$ signal.

Lemma A3. *If the agency enters notice-and-comment following $s_A = 0$, then it enters notice-and-comment following $s_A = 1$.*

Proof of Lemma A3. The agency prefers notice-and-comment over avoidance and $x = 0$ if

$$0 \leq \mu_A\Big(e_1 + (1 - e_1)(1 - \mathbb{I}_{G_1})\Big) + (1 - \mu_A)(1 - e_0)(1 - \mathbb{I}_{G_1}), \tag{4}$$

The RHS of 4 is increasing in μ_A. Thus, if the $s_A = 0$ type prefers to enter notice-and-comment then the $s_A = 1$ type prefers notice-and-comment because $\mu_A(1) > \mu_A(0)$.

Lemma A4. *Assume the G_i equilibrium is always played at the notice-and-comment stage. If the agency enters notice-and-comment following both signals then both types must choose the same policy in equilibrium.*

Proof of Lemma A4. Assume the agency uses notice-and-comment following both signals but for a contradiction assume it chooses policy x_1 following signal $s_A = 1$ and policy x_0 following $s_A = 0$, with $x_1 \neq x_0$. Thus, the belief of the groups and court following x_1 is $\overline{\mu}$ and following x_0 it is $\underline{\mu} < \overline{\mu}$. Thus, in the G_1 equilibrium group 1 exerts more effort following x_1 which implies that the $s_A = 0$ type can profitably deviate to x_1 to increase the probability the final policy is $x = 1$. Similarly, in the G_0 equilibrium group 0 exerts less effort after policy x_1. Thus, the $s_A = 0$ type can again profitably deviate to x_1 and increase the probability that the final policy is $x = 1$. Consequently, there is not an equilibrium in which both types enter notice-and-comment and choose different policies.

Proposition 1. *Assume $\delta_C < (1 - q)^2$ and the G_i active equilibrium is always played at the notice-and-comment stage, for $i \in \{0, 1\}$. There exists $\underline{\delta}_i$ and $\overline{\delta}_i$, with $\underline{\delta}_i < \overline{\delta}_i$ such that:*

1. *If $\delta_A > \overline{\delta}_i$ then in every equilibrium the agency chooses $x = 0$ and avoids notice-and-*

comment following both signals.

2. *If* $\delta_A \in [\underline{\delta}_i, \overline{\delta}_i]$ *then there exists an equilibrium in which the agency chooses* $x = 1$ *and enters notice-and-comment when* $s_A = 1$*. Otherwise, the agency chooses* $x = 0$ *and avoids notice-and-comment when* $s_A = 0$*.*

3. *If* $\delta_A < \underline{\delta}_i$ *then in every equilibrium the agency enters notice-and-comment following both signals.*

Proof of Proposition 1. To start, notice that whenever the agency enters notice-and-comment and chooses policy x there is a payoff equivalent equilibrium in which the agency chooses policy $y \neq x$. This is because the court has the final decision to overturn the agencies policy and, thus, the policy choice only affects payoffs through the players' beliefs. Together with Lemmas A1, A2, A3, and A4, this implies there are only three possible strategies the agency can use in any pure strategy equilibrium: both types avoid and choose $x = 0$; both types enter notice-and-comment and pool on the same policy; the $s_A = 0$ type avoids and chooses $x = 0$ and the $s_A = 1$ chooses a policy x and enters notice-and-comment. We now consider each of these possibilities.

First, assume that if $s_A = 1$ then the agency chooses policy x and enters notice-and-comment, otherwise, if $s_A = 0$ then the agency chooses $x = 0$ and avoidance. In this case, after observing notice-and-comment and policy x the other players update their beliefs to $\overline{\mu}_A$ and after avoidance and $x = 0$ they update their beliefs to $\underline{\mu}_A$. Thus, for the $s_A = 1$ type to not deviate requires

$$\overline{\mu}_A\Big(e_1^* + (1-e_1^*)(1-\mathbb{I}_{G_1})\Big)b + (1-\overline{\mu}_A)(1-e_0^*)(1-\mathbb{I}_{G_1})b - \delta_A \geq 0$$
$$\Leftrightarrow \overline{\mu}_A\Big(\overline{\mu}_A + (1-\overline{\mu}_A)(1-\mathbb{I}_{G_1})\Big)b + (1-\overline{\mu}_A)\overline{\mu}_A(1-\mathbb{I}_{G_1})b - \delta_A \geq 0$$

Thus, if the G_1 active equilibrium is played then the $s_A = 1$ type does not deviate if $\delta_A \leq \overline{\mu}_A^2 b$. If the G_0 active equilibrium is played then the $s_A = 1$ type does not deviate if $\delta_A \leq (\overline{\mu}_A + (1-\overline{\mu}_A)\overline{\mu}_A)b$. For this to be an equilibrium, off-the-path if the agency avoids and chooses $x = 1$ the court must reject and send the agency through notice-and-comment. Thus, that is also not a profitable deviation.

Next, consider the $s_A = 0$ type. It does not deviate from avoidance if

$$\underline{\mu}_A\Big(e_1^* + (1-e_1^*)(1-\mathbb{I}_{G_1})\Big)b + (1-\underline{\mu}_A)(1-e_0^*)(1-\mathbb{I}_{G_1})b - \delta_A \leq 0$$
$$\Leftrightarrow \underline{\mu}_A\Big(\overline{\mu}_A + (1-\overline{\mu}_A)(1-\mathbb{I}_{G_1})\Big)b + (1-\underline{\mu}_A)\overline{\mu}_A(1-\mathbb{I}_{G_1})b - \delta_A \leq 0$$

Thus, if the G_1 active equilibrium is played then the $s_A = 0$ type does not deviate if $\delta_A \geq \underline{\mu}_A \overline{\mu}_A b$. If the G_0 active equilibrium is played then the $s_A = 0$ type does not deviate if $\delta_A \geq (\underline{\mu}_A + (1-\underline{\mu}_A)\overline{\mu}_A)b$.

Therefore, if the G_1 active equilibrium is played then such an equilibrium exists if $\delta_A \in \left[\underline{\mu}_A \overline{\mu}_A b, \overline{\mu}_A^2 b\right]$. If the G_0 active equilibrium is played then such an equilibrium exists if $\delta_A \in \left[\underline{\mu}_A + (1-\underline{\mu}_A)\overline{\mu}_A)b, (\overline{\mu}_A + (1-\overline{\mu}_A)\overline{\mu}_A)b\right]$.

Second, assume the agency chooses $x = 0$ and avoidance following both signals. From the proof of Lemma A2, a sufficient condition for the $s_A = 0$ type not to deviate is that the $s_A = 1$ type does not want to deviate. Thus, it must be that

$$0 \geq \overline{\mu}_A \Big(e_1^* + (1-e_1^*)(1-\mathbb{I}_{G_1})\Big)b + (1-\overline{\mu}_A)(1-e_0^*)(1-\mathbb{I}_{G_1})b - \delta_A \tag{5}$$

If $\mathbb{I}_{G_1} = 1$ then this condition reduces to $\delta_A \geq \overline{\mu}_A e_1^* = \overline{\mu}_A \mu_{G_1}$. Since this is off the path, the groups' belief about s_A are not pinned down. Thus, G_1 can hold any belief that A received the $s_A = 1$ signal, which implies $\mu_{G_1} \in [\underline{\mu}_A, \overline{\mu}_A]$. Therefore, if $\delta_A \geq \overline{\mu}_A \underline{\mu}_A$ then such an equilibrium exists, otherwise, if $\delta_A < \overline{\mu}_A \underline{\mu}_A$ then 5 never holds.

If $\mathbb{I}_{G_1} = 0$ then this condition reduces to $\delta_A \geq \overline{\mu}_A + (1-\overline{\mu}_A)(1-e_0^*) = \overline{\mu}_A + (1-\overline{\mu}_A)\mu_{G_0}$. Again, because this is off the path of play, G_0's belief about A's type is not pinned down. Thus, $\mu_{G_0} \in [\underline{\mu}_A, \overline{\mu}_A]$. Therefore, if $\delta_A \geq \overline{\mu}_A + (1-\overline{\mu}_A)\underline{\mu}_A$ then such an equilibrium exists.

Finally, assume the agency chooses policy x and notice-and-comment following both signals. From the proof of Lemma A3 a sufficient condition for this to be an equilibrium is that the $s_A = 0$ type does not want to deviate. Thus, it must be that

$$0 \leq \underline{\mu}_A \Big(e_1^* + (1-e_1^*)(1-\mathbb{I}_{G_1})\Big)b + (1-\underline{\mu}_A)(1-e_0^*)(1-\mathbb{I}_{G_1})b - \delta_A$$

If $\mathbb{I}_{G_1} = 1$ then this condition reduces to $\delta_A \leq \underline{\mu}_A e_1^* = \underline{\mu}_A \mu_{G_1}$. Since this is off the path, the groups' belief about s_A are not pinned down. Thus, G_1 can hold any belief that A received the $s_A = 1$ signal, which implies $\mu_{G_1} \in [\underline{\mu}_A, \overline{\mu}_A]$. Therefore, if $\delta_A \leq \underline{\mu}_A \overline{\mu}_A$ then such an equilibrium exists, otherwise, if $\delta_A > \underline{\mu}_A \overline{\mu}_A$ then 5 never holds.

If $\mathbb{I}_{G_1} = 0$ then this condition reduces to $\delta_A \leq \underline{\mu}_A + (1-\underline{\mu}_A)(1-e_0^*) = \underline{\mu}_A + (1-\underline{\mu}_A)\mu_{G_0}$. Again, because this is off the path of play, G_0's belief about A's type is not pinned down. Thus, $\mu_{G_0} \in [\underline{\mu}_A, \overline{\mu}_A]$. Therefore, if $\delta_A \leq \underline{\mu}_A + (1-\underline{\mu}_A)\overline{\mu}_A$ then such an equilibrium exists.

Proposition 2. *Assume the G_i active equilibrium is always played at the notice-and-comment stage, for $i \in \{0,1\}$. Increasing the agency's bias increases $\underline{\delta}_i$ and $\overline{\delta}_i$, i.e., $\frac{\partial \underline{\delta}_i}{\partial b} > 0$ and $\frac{\partial \overline{\delta}_i}{\partial b} > 0$.*

Proof of Proposition 2. Follows from the definitions of $\underline{\delta}_i$ and $\overline{\delta}_i$ for $i \in \{0, 1\}$ and differentiating with respect to b.

Proposition 3. *Assume the G_i active equilibrium is always played at the notice-and-comment stage, for $i \in \{0, 1\}$. Increasing the agency's skill decreases $\underline{\delta}_i$ and increases $\overline{\delta}_i$, i.e., $\frac{\partial \underline{\delta}_i}{\partial p} < 0$ and $\frac{\partial \overline{\delta}_i}{\partial p} > 0$.*

Proof of Proposition 3. Follows from the definitions of $\underline{\delta}_i$ and $\overline{\delta}_i$ for $i \in \{0, 1\}$ and differentiating with respect to p.

Proposition 4.

1. *Assume $\delta_C > (1-q)^2$. Allowing exemptions is optimal.*
2. *Assume $\delta_C < (1-q)^2$.*
   (a) *If $\delta_A < \underline{\delta}_i$ then removing exemptions has no effect on C's welfare.*
   (b) *If $\delta \in (\underline{\delta}_i, \overline{\delta}_i)$ then it is optimal to allow exemptions.*
   (c) *If $\delta_A > \overline{\delta}_i$ then it is optimal to remove exemptions.*

Proof of Proposition 4. We start by characterizing C's payoff if it removes the avoidance option. We show that it receives the same payoff in the G_1 and G_0 equilibrium. If the agency is not allowed to avoid then, by Lemma A4, the $s_A = 0$ and $s_A = 1$ types pool on the same policy. Thus, in the G_1 equilibrium G_1 exerts effort $e_1^* = q$ which yields expected payoff to C of $q^2 + (1-q) - \delta_C$. In the G_0 equilibrium group G_0 exerts effort $e_0^* = 1-q$. This yields expected utility $q + (1-q)(1-q) - \delta_C = q^2 + 1 - q - \delta_C$.

Assume $\delta_C \geq (1-q)^2$. If exemptions are allowed then C's expected payoff if q, because the agency obtains its preferred policy following either signal. Thus, C prefers exemptions if $q \geq q^2 + 1 - q - \delta_C$, which always holds by $\delta_C \geq (1-q)^2$.

Moving forward, assume $\delta_C < (1-q)^2$. If $\delta_A < \underline{\delta}_i$ the agency never uses exemptions even if they are allowed. Consequently, C's payoff is the same with or without exemptions.

If $\delta_C \in [\underline{\delta}_i, \overline{\delta}_i]$ then the agency separates based on its signal and we consider two cases depending on which equilibrium is played at the notice-and-comment stage. First, if the G_1 equilibrium is played then C prefers to allow exemptions if $qp\overline{\mu} + 1 - q - \delta_C(qp + (1-q)(1-p)) \geq 1 - q + q^2 - \delta_C$, which always holds by assumption that $\delta_C \in (q^2, (1-q)^2)$ (which implies $q < 1/2$). Second, in the G_0 equilibrium C prefers if exemptions are allowed if $qp + (1-q)(p + (1-p)(1-\overline{\mu})) - \delta_C(qp + (1-q)(1-p)) \geq 1 - q + q^2 - \delta_C$, which again holds by $\delta_C \in (q^2, (1-q)^2)$.

Finally, if $\delta_C > \overline{\delta}_i$ and exemptions are allowed then the agency always claims exempt and proposes $x = 0$ which is upheld by C. Thus, C prefers to allow exemptions if $1 - q \geq q^2 + 1 - q - \delta_C$. This reduces to $\delta_C \geq q^2$, which always holds by assumption.

B Agencies Weighted by Rules

Here, we replicate the agency level analysis, but weight agencies by the number of rules promulgated. Specifically, we assign weights according to

$$\text{Weight}_i = \min\left\{\#_i, \chi\right\}^{\gamma},$$

where $\#_i$ is the number of rules promulgated by Agency i, χ is every number of promulgated rules up through 201[28] and $\gamma \in \left\{1, \frac{1}{2}, \frac{1}{8}\right\}$ concavifies the weight. These two parameters afford a nice amount of flexibility in how we weigh the agencies by their activity. The results from our analysis are summarized in Figure 6 below.

The most striking feature of the analysis is the increase in the skill coefficient: if we assign more weight to more prolific agencies, then higher skill yields more NPRM rulemaking. As one would expect, the change in the estimate is largest when the weight is allowed to increase linearly. The second most striking feature is the nonmonotonic effect of the weighting approach on the bias coefficient. With linear weights, we see a quick drop downward across χ, but then the coefficient again begins to increase. With any amount of concavification through γ, however, we see a simpler effect. At reasonably moderate (χ, γ) pairs, the two effects are positive, and neither is statistically significant at traditional levels of inference.[29]

[28]The Farm Service Agency promulgated 201 significant rules, which is second most to the Centers for Medicare and Medicaid Services, which promulgated 502. That is a massive outlier in the potential weight for a single agency, so we ignore numbers beyond 201.

[29]As there is no one way to set weights, it seems reasonable to have a moderate cutpoint (say, 50) with somewhat aggressive concavification up to that point.

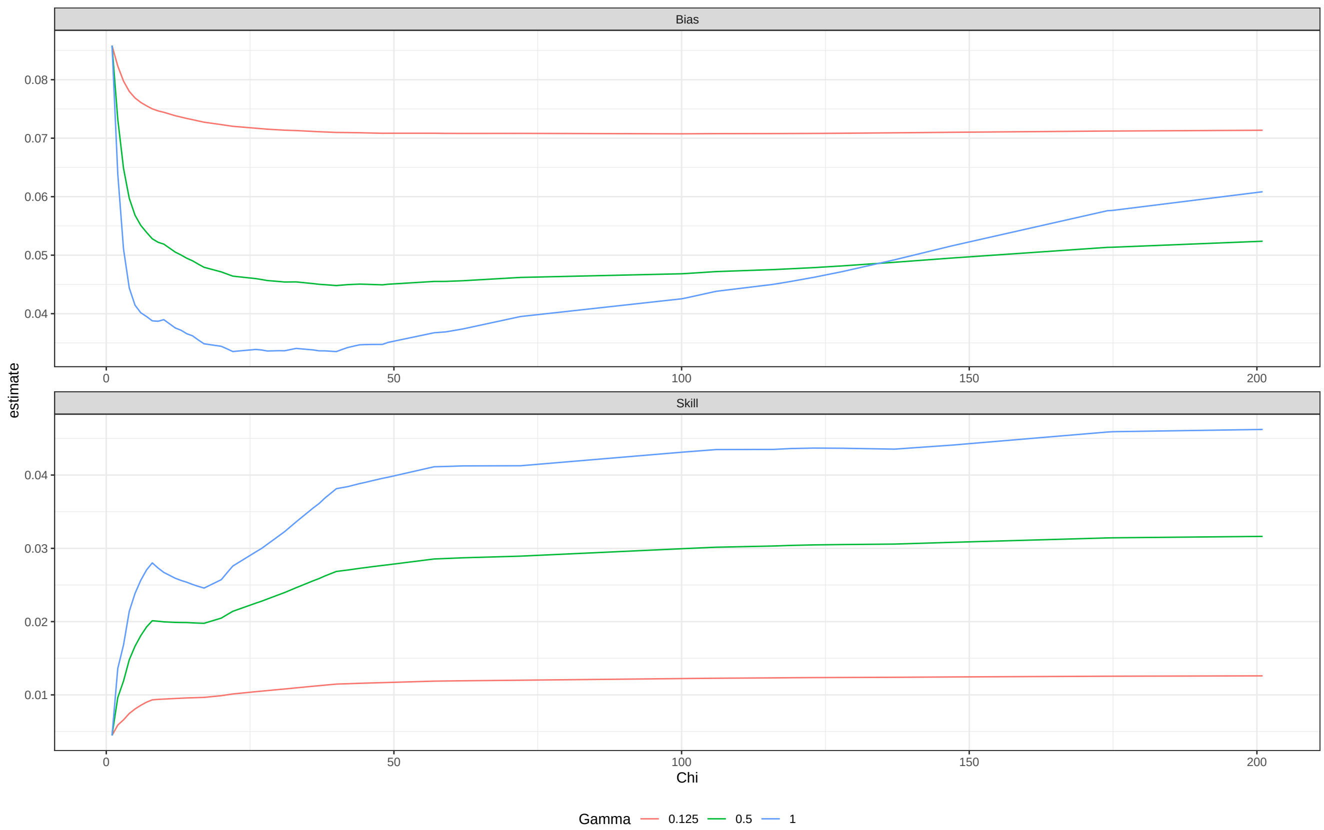

Figure 6: Plots of the effect of bias and the effect of skill on NPRM for varying values of γ.