

# Working Smart *and* Hard?

## Agency Effort, Judicial Review, and Policy Precision

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### Abstract

The lion's share of policy in the United States is made by administrative agencies. Agencies not only make policy *choices*, they must also *implement* policy effectively. Oversight institutions play an integral role in the policymaking process by monitoring, through review of agency policy actions, both policymaking tasks. Through analysis of a formal model I develop a theory of policymaking between agencies and courts and show that review can impact agency effort choices even when bureaucratic subversion is not a concern. At times the court has no impact on this effort and the agency is unconstrained. However, when the agency's effort dictates whether or not the court defers to the agency's actions judicial review does affect effort decisions. In this setting, review can either strengthen or, counter-intuitively, weaken agency effort incentives. Implications for executive and congressional oversight are discussed in light of these results.

**Keywords:** Bureaucracy; Judicial review; Oversight; Intergovernmental relations; Policymaking; Formal theory

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The lion's share of policy in the United States is made by administrative agencies, rather than through legislative or executive actions. One pervasive concern with the rise of administration is a potential severing of democratic connections to policy outcomes. This concern arises from the possibility of agency subversion of directives provided by elected political principals (e.g., Gailmard 2002). One mechanism in the current system to monitor agency compliance with legislative or executive directives is subjection of agency actions to ex post oversight. Two common forms of bureaucratic oversight are judicial review and executive review conducted by the Office of Information and Regulatory Affairs (OIRA).<sup>1</sup>

For example, regulations must pass executive review by OIRA before being codified as binding law. For this reason OIRA has often been viewed as a regulatory "gatekeeper" that can stifle and effectively veto agency policies (Bolton, Potter and Thrower 2014; Copeland 2005). Additionally, agencies perpetually interact with individuals and firms that may challenge their actions in court. There are often interest groups or industries that disagree vehemently with agency actions and seek relief through judicial review of those actions. In these cases, courts are empowered to review and invalidate agency actions (Breyer 1986; McGarity 1992).<sup>2</sup> Moreover, agencies operate in the shadow of review whether they are promulgating new policies, updating existing policies to reflect new environments, or simply enforcing existing policy. In short, agencies develop and implement policy while continually facing the prospect of having their actions reviewed and potentially invalidated.

The substantive impact of judicial oversight on regulatory quality has long been of interest in law and policy literatures. For instance, Melnick (1983) argues against the view that judicial review led to improvements of environmental regulation. He concludes that, overall, court decisions dealing with various aspects of Clean Air Act regulation harmed the quality of environmental policy. In contrast, Sunstein (1989) argues that, on balance, judicial review of agency actions produces net benefits. He notes courts' role in invalidating many ill-conceived agency actions such as over-

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<sup>1</sup>The OIRA is housed in the Office of Management and Budget (OMB) in the Executive Office of the President.

<sup>2</sup>For example, the Administrative Procedures Act (APA) directs courts to reject regulations they find to be arbitrary and capricious.

aggressive regulations of transportation emissions in the 1970s.<sup>3</sup> Disagreement such as this over whether judicial oversight of administrative action is beneficial suggests that assessments of the impact of review on different aspects of the process are required to better understand when and how positive or negative effects of review are realized. As Sunstein succinctly notes, “judicial review should be evaluated in terms of its systemic consequences for the administrative process, which takes place in the shadow of judicial review.”

Scholars have highlighted the ability of judicial and executive review to ensure that agencies are choosing policies that are congruent with the wishes of some democratically accountable political principal, e.g., Congress or the President (e.g., Acs and Cameron 2013; Epstein and O’Halloran 1999; Shipan 1997). However, agencies do more than choose the content of policy, they must also put these policies into practice through effective implementation or enforcement of those choices.<sup>4</sup> The effect of oversight on the incentives for agencies to work hard at enforcing policy effectively is less discussed but of equal importance (but see Canes-Wrone 2003, 2006). Just as biasing the content of policy by agencies can lead to inefficient outcomes so too can poorly enforced policies *even when policy choices have been made perfectly faithfully*. This raises the following question: how and when does oversight impact agency effort investments made to improve implementation? That is, given that agencies are working smart, how does oversight impact whether they work hard?

In this paper I assess the effects of oversight, like OIRA or judicial review, on the administrative process through the lens of its effect on the incentives for agencies to invest high effort to improve policy enforcement. Specifically I analyze a game-theoretic model of policymaking between an administrative agency and a court.<sup>5</sup> The agency first chooses a high or low effort invest-

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<sup>3</sup>Sunstein includes the following particular court cases: *South Terminal Corp. v. EPA*, 504 F.2d 646 (1st Cir. 1974) and *Texas v. EPA*, 499 F.2d. 289 (5th Cir. 1974).

<sup>4</sup>I will refer to implementation, enforcement, and application of policy interchangeably throughout the article. Each term represents the concept I am focused on: the difference between an agency’s ability to effectively craft the content of policy and to effectively put the policy into practice given the content.

<sup>5</sup>The court in the model represents a generic ex post overseer. The results extend easily to another overseer, like the OIRA. While I focus largely on judicial review in the model section, implications for executive review are discussed

ment that dictates how precisely realized policy outcomes will approximate the substantive goal laid out in the content of the policy. This represents an agency's investment in what Carpenter (2001) refers to as 'programmatic capacity.'<sup>6</sup> An ex ante high effort investment means that the agency has higher capacity to effectively implement or enforce policies once they are crafted, which means outcomes produced by agencies that have made high effort investments are more precise. Following this effort investment the agency learns the circumstances of the policy environment and chooses a substantive policy target.<sup>7</sup> This choice represents the agency setting the content of substantive policy. Both choices can affect the overall desirability of outcomes from a principal's perspective. Bias introduced in the content of policy and lack of effort investment in enforcement capacity can both lead to adverse outcomes.<sup>8</sup> Following these agency choices, the court reviews the agency's effort investment and chooses to uphold or overturn its actions.

The key insight of the paper is that oversight can be either positive or negative depending on agency-specific and policy-environmental characteristics. Ex post oversight can produce desirable effects by inducing an agency to invest high effort to improve policy outcomes when it otherwise would not. However, oversight can also introduce perverse incentive effects that lead agencies to choose low effort when they would have invested high effort were they not making policy in the shadow of review. Which effect obtains is dependent on how costly effort investments are to the agency relative to how averse the agency is to having its actions overturned and how imperative it is for the agency to make policy relative to a reversion level of policy precision. Ultimately, the results have implications for how ex post oversight, as an institutional monitoring mechanism,

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following the analysis.

<sup>6</sup>Carpenter (2001) distinguishes an agency's analytic and programmatic capacities. Analytic capacity denotes the agency's overall technical expertise or ability to craft policy competently, while programmatic capacity refers to an agency's ability to effectively implement or enforce policy on the ground.

<sup>7</sup>This is referred to as a policy 'target' due to the fact that the likelihood outcomes are realized at this target is dependent on the agency's aforementioned effort investment in capacity. This will become clear in the model section.

<sup>8</sup>While I do not deal with the question of when bias may be preferable to slack in this article, see generally Bendor and Meirowitz (2004), Bubb and Warren (2014), and Van Weelden (2013) for different analyses of this trade-off.

affects agency policymaking incentives.

Both the way in which judicial review can affect the policymaking process and the way policy is conceptualized in this paper contribute to the applicability of the insights in many important policy areas. Distinguishing between substantive policy choices and implementation quality applies to many areas of public policy that directly affect public welfare—disaster relief policy, environmental permitting decisions, allocation of government assistance, among many others. All of these areas consist of both policy choices—the standards or technical details that dictate how services are provided—as well as case-by-case implementation decisions that depend on the agency’s capacity to enforce policy effectively—provision or denial of housing assistance following a natural disaster, the granting or denial of a permit, the provision or denial of government assistance. In all of these environments the agency designs policy by crafting technical or substantive standards to be met by applicants for the service, verifies that applicants have met the standards laid out in the policy choice itself, then dispenses the service if these standards are met and denies it otherwise. Clearly both dimensions matter in terms of the efficacy of realized policy outcomes. If the technical standards embodied in the policy are poorly crafted then the government will inefficiently under- or over-provide services, whereas if the agency has made insufficient investments toward its ability to effectively implement policy, even when the substantive content of policy is crafted perfectly, realized outcomes will be similarly inefficient.

Judicial review of agency actions plays an important role in terms of relief for those affected by poorly implemented policies. Take as an example the allocation of housing assistance by the Federal Emergency Management Agency (FEMA) following Hurricanes Katrina and Rita. Evacuees displaced by the natural disasters were required to submit an application for housing assistance to the FEMA. In order to reach application decisions the FEMA utilized an automated computer program that “read” the applications and produced a decision and, if denied, a code denoting the reason(s). Many applicants found the application to be very difficult to understand and the reasoning for denial as well as the process in place to appeal the decision virtually impenetrable. ACORN<sup>9</sup>

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<sup>9</sup>Formally known as the Association of Community Organizers for Reform Now.

brought suit in the Federal District Court in Washington D.C. on behalf of housing assistance applicants.<sup>10</sup> It was alleged that the way in which the FEMA was reaching application decisions violated applicants' due process rights. The case was explicitly *not* focused on whether the FEMA had the power to make these decisions or whether the standards that were to be met to receive assistance were crafted competently. Rather, the entire focus of the case was on the way in which the FEMA was *implementing* the policy (i.e., the way in which the FEMA was reaching application decisions).

Ultimately the court ruled that the FEMA had violated applicant rights through the unacceptably low level of effort the agency had invested toward the effective processing of applications. The District Court wrote, "in balancing the increased burden and cost to the government to more fully explain their denials against these first two factors, the increased burden and cost do not begin to outweigh the high private interest of those evacuees facing eviction and the considerable risk of erroneous determinations caused by vague and cryptic explanations" (*FEMA* 2006, 16). Thus, the court explicitly acknowledged that the FEMA's use of the computer program to generate application decisions—a system that was developed prior to the actual disaster—represented an insufficient level of effort investment aimed at implementing policy effectively, which led to low policy precision and served as the reason the FEMA was being reversed. That is, the computer program that generated application decisions and assigned codes to rejection letters did not represent a high enough investment in adequate policy implementation from the court's point of view. The applicability of judicial review to the implementation of policy *even when all parties agree that the policy itself is acceptably crafted* is clear in this example.

By explicitly modeling substantive policy choice and effort-based implementation quality in a common framework, the analysis in this paper contributes to growing literatures studying agency capacity (e.g., Carpenter 2001; Huber and McCarty 2004; Ting 2011) and policy development in political organizations (Hirsch and Shotts 2013*a,b*, 2015).<sup>11</sup> Studies of agency capacity focus on

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<sup>10</sup>Formally, this case is *Association of Community Organizations For Reform Now (ACORN), et al. v. Federal Emergency Management Agency (FEMA)*, 463 F. Supp. 2d 26 (D.D.C. 2006). I will simply refer to the case as *FEMA*.

<sup>11</sup>Hirsch and Shotts (2013*a*) and Hirsch and Shotts (2013*b*) present models of policy development in which there

organization-level investments that lead to the agency having a greater ability to produce high quality outcomes. In contrast, studies of policy development focus on individual-level investments in policy-specific quality or valence. The model in this paper, in terms of the composition of policy outcomes, could be naturally interpreted either way. Specifically, agency-made policy is composed of both a technical or ideological policy choice and an effort choice that increases the level of precision with which final policy is implemented.<sup>12</sup> The main focus here is on how oversight institutions like judicial review specifically affect agency incentives to make ex ante effort investments aimed at improving the effectiveness of policy implementation or enforcement, whatever the content of policy. The results provide insight into both oversight-induced capacity investment and incentives to invest in policy-specific quality.

This paper also contributes to a broad literature examining bureaucratic oversight and control. Due to the prevalence and importance of bureaucratic policymaking in American society, scholars have studied a wide array of issues related to bureaucratic oversight including how administrative procedures and ex post oversight can be used to control bureaucratic policy output (Bawn 1995; Calvert, McCubbins and Weingast 1989; McCubbins and Schwartz 1984; McCubbins, Noll and Weingast 1987, 1989; Shipan 1997, 2004).<sup>13</sup> Most of this work has focused on the ability of oversight to constrain substantive policy choices to be in line with the ideological predispositions of political principals. In contrast, the theory developed here explicitly holds constant the prospect of

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is both an ideological dimension and a quality or “valence” dimension. The distinction between policy choice and implementation of policy employed in this paper is similar in that higher ex ante effort investments produce more precise, or higher quality, outcomes.

<sup>12</sup>Another way of thinking of this particular distinction is the “street-level bureaucracy” point of view (Lipsky 1980).

<sup>13</sup>Previous work has also focused on legislatures’ decision to delegate and optimal levels of discretion (Epstein and O’Halloran 1999; Gailmard 2009), how principals may be able to extract (private) information from agencies or induce bureaucrats to invest in costly technical expertise (Gailmard and Patty 2007, 2013; Stephenson 2007), the optimal allocation of oversight activities when a single principal must monitor multiple agents with dynamic resource constraints (Strayhorn, Carrubba and Giles 2014), and how the use of different incentive structures can induce desirable behavior from the agency (Ting 2001; Weingast and Moran 1983).

ideological subversion through substantive policy choice to zero in on the effect of oversight institutions on ex ante incentives to invest effort toward more effective implementation of policy. The results suggest that oversight institutions, like judicial review, impact agency policymaking incentives even when ideological subversion is not a concern. Specifically, the threat of judicial reversal can have profound effects on the incentives for agencies to ex ante invest effort toward the effective implementation of policy, whatever the ideological or substantive content.

Similarly, this paper contributes to a body of theoretical work studying the impact of judicial review on policymaking. Previous work has identified effects of judicial review on incentives for policymakers to acquire expertise and transmit information (e.g., Dragu and Board N.d.), as well as policymaking incentives both in electoral environments (e.g., Fox and Stephenson 2011, N.d.) and the bureaucracy (e.g., Bueno de Mesquita and Stephenson 2007).<sup>14</sup> Fox and Stephenson (2011) investigate the way in which judicial review affects the incentives of politicians in an electoral environment. They show that judicial review can induce posturing—enacting bold but ill-advised policies—by politicians running for office through a “bail out effect.” The politician can enact the bold, but ill-advised, policy for electoral benefit while avoiding the adverse policy consequences since the court will subsequently overturn that action. The analysis in this paper also uncovers a bail out effect in which the agency shirks precisely because judicial review ensures that the worst case — low effort policy implementation — will not obtain. In contrast to Fox and Stephenson, I study an inter-institutional administrative policymaking environment rather than an electoral environment, and I focus on ex ante effort incentives rather than politicians’ substantive policy choices. Bueno de Mesquita and Stephenson (2007) investigate judicial review’s effect on agency incentives to allocate effort across observable and unobservable dimensions. Both increase the quality of policy output, but the court can only observe part of that allocation. They show that this leads to an inefficient

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<sup>14</sup>Other work on judicial review includes analyses of how different types of judicial review may lead to different rulings on policy determinations (Staton and Vanberg 2008; Fox and Vanberg 2014), judicial review’s impact on the relationship between Congress and the courts (Clark 2009; Rogers 2001), and whether and how judicial rulings can be self enforcing (Dragu and Polborn 2013), among other topics.



allocation of effort and that, at times, judicial review discourages regulating at all. The analysis in this paper focuses on environments in which the agency is required to regulate and shows that judicial review can disincentivize high effort investments through the aforementioned bail out effect. More generally, preference divergence is held constant between the two actors to isolate the effect of review on the effort decision of the agency specifically. The analysis in this paper serves as a complement to these existing studies by providing further understanding of the impact of judicial review on the administrative process.

Overall, the theory in this paper contributes to literature on bureaucratic oversight and control by offering a framework that incorporates both substantive policy choices and the implementation of policy, the quality of which is affected through agency effort investment. Moreover, this paper contributes to literature examining the virtues (and vices) of judicial review and its impact on the administrative process. The results highlight how judicial oversight of bureaucratic policymaking impacts agency effort incentives even when bureaucratic drift or subversion is not a concern. The remainder of the paper is organized as follows. Section 2 presents a model of policymaking between an administrative agency and a reviewing court. Following presentation of the model, Section 3 presents the equilibrium analysis. Section 4 characterizes when judicial review strengthens or weakens agency effort incentives. Following the analysis, the substantive results are extended to provide insight into executive and Congressional oversight. The final section concludes.

## **A Model of Policymaking Between Agencies and Courts**

To examine the interactions between bureaucratic agencies and courts in the policymaking process, I model a non-cooperative game between two players: an agency,  $A$ , and a court,  $C$ . The game consists of a single period of policymaking. The agency is required by statute to make policy. That is, regulatory inaction is not permitted in this environment. This is realistic in many important policy areas. For instance, the Clean Air Act required the Environmental Protection Agency to reduce air pollutants through new agency actions. Choosing not to institute policies to regulate pollution was not an option (Gailmard and Patty 2014). Similarly, once a disaster-related emergency is formally

declared the FEMA must begin taking relief actions as directed by the Stafford Disaster Relief and Emergency Assistance Act.<sup>15</sup> Given this requirement, the policymaking process in the model proceeds as follows.

First, the agency makes an effort investment aimed at increasing how effective policy is implemented. Denote this effort investment as  $e \in \{0, 1\}$ , where  $e = 1$  means  $A$  has made a high effort investment and  $e = 0$  means  $A$  has invested low effort.<sup>16</sup> Substantively, the agency's effort investment most closely represents an ex ante investment in capacity that allows the agency to more adequately implement or enforce policies (e.g., programmatic capacity (Carpenter 2001)). For instance, the Occupational Safety and Health Administration (OSHA) regulates workplace safety by not only setting standards but also employing a relatively large workforce of on-site inspectors that will implement or enforce these standards. The efficacy of OSHA-enforced policies rests in part on its investment in the quality of its inspection programs (Huber 2007).<sup>17</sup> In terms of the model, larger investments lead to higher quality inspections, which, in turn, lead to more effectively enforced policies. In the example in the introduction, the FEMA's investment was the computer program designed to make decisions on housing assistance applications. The court, in that instance, judged that to be an insufficiently low effort investment in policy enforcement that led to the agency being overturned.

The agency's effort investment directly affects an implementation shock denoted by  $\varepsilon \in \mathbb{R}$ . This shock is conditional on whether  $A$  has invested high effort or not and is distributed according to a cumulative distribution function  $G_\varepsilon(e)$  with mean 0 and finite, strictly positive variance  $V_\varepsilon(e)$ . Moreover, the variance of  $\varepsilon$  when  $A$  has invested high effort ( $e = 1$ ) is strictly less than when  $A$  has

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<sup>15</sup>42 U.S.C. §5121.

<sup>16</sup>Modeling effort as binary greatly simplifies exposition of the analysis and results. Continuous effort adds more complicated calculations with little gain in substantive insight. If effort is continuous, say  $e \in [0, 1]$ , the court adopts an optimal cut-off rule, say  $e^*$ , such that if  $e < e^*$  the court overturns and if  $e > e^*$  the court upholds. This cut-off polarizes agency effort choice into either no effort,  $e = 0$ , or the minimal level of effort required to be upheld,  $e^*$ , when the agency is constrained by the court. Thus, the results when effort is binary are not qualitatively different.

<sup>17</sup>This could be related to staffing decisions, direction of resources to training inspectors, or simply investing time and effort in streamlining inspection procedures so that each inspector understands inspection expectations more clearly.

invested low effort ( $e = 0$ ) so that  $V_e(1) < V_e(0)$ .<sup>18</sup> Thus, high effort investments lead to strictly more precise outcomes than low effort investments.

Following this effort investment, the agency chooses a substantive policy target, denoted by  $x$ , from a unidimensional policy space,  $X = \mathbb{R}$ . This choice,  $x$ , is understood as a target because final policy outcomes are also conditional on the true state of the world and the implementation shock. High effort investments lead to a higher likelihood that outcomes will be realized at the substantive target. The state of the world is denoted by  $\omega \in \mathbb{R}$ . I assume that  $\omega$  is drawn according to a cumulative distribution function  $F_\omega$  that is symmetric around mean 0 with finite, strictly positive variance  $V_\omega > 0$ . This variance,  $V_\omega$ , represents the latent policy uncertainty in terms of realized outcomes absent any new agency policy actions. That is,  $V_\omega$  represents what is likely to obtain if the interactions of private individuals and firms went unregulated (or occurred without new agency interference). It encapsulates both the uncertainty regarding where the true state is located along the policy dimension as well as the variance of outcomes if the agency were not permitted to take any new policy actions.

In most, if not all, policy areas bureaucratic policymaking agencies must face the specter of judicial review (and other forms of oversight more generally).<sup>19</sup> The model reflects this reality: the agency is always subject to judicial review of its actions. After the agency has made its choices, the court observes the agency's effort investment and chooses to either uphold or reverse the agency's action. This choice is denoted by  $r \in \{0, 1\}$ , where  $r = 0$  denotes  $C$ 's choice to uphold and  $r = 1$  denotes a choice to reverse.<sup>20</sup> Taken together, all of these choices imply that, following review, final

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<sup>18</sup>Formally,  $G_e(1)$  second-order stochastically dominates  $G_e(0)$ .

<sup>19</sup>This is true regardless of the assumption that the agency must make policy. Agency inaction can also be challenged in courts according to the Administrative Procedures Act. This is particularly true when an agency has failed to act when statutorily mandated to do so. The important substantive point related to the model is that agencies are almost always operating in the shadow of judicial review.

<sup>20</sup>In some cases, review of this sort leads a court to remand an agency action with instructions to "work harder," which may eventually lead the agency to invest high effort. While this is certainly an interesting possibility, I leave extensions like this to future work.

policy is dictated by the following expression,

$$y = \begin{cases} x - \omega + \varepsilon & \text{if } C \text{ upholds: } r = 0, \\ -\omega & \text{if } C \text{ reverses: } r = 1. \end{cases} \quad (1)$$

If  $C$  upholds the policy, then agency-made policy is realized ( $y = x - \omega + \varepsilon$ ). If the court overturns, then the final outcome is  $y = -\omega$ . The process is modeling a classic commitment problem from the court's point of view. It would like to limit agency shirking, but it only has a blunt institutional tool at its disposal: a judicial veto. The assumption implicit in equation 1 is that the agency cannot implement policy equivalent to the outcome if the court overturns. This is related to the fact that in many cases the agency cannot simply “shut down” and choose not to act. That is, regardless of where the agency chooses to target substantive policy with its choice of  $x$ , it must still implement or enforce that target. Thus, when the court overturns the true state is realized unencumbered by agency interference.

After this process—Nature's choice of  $\omega$ , agency effort and policy choices, and judicial review of the agency—the game ends and payoffs are realized. This implies the following game sequence.

1. Nature draws  $\omega \in \mathbb{R}$  according to  $F$ .
2. The Agency chooses to invest high effort,  $e = 1$ , or not,  $e = 0$ .
3. The Agency observes  $\omega$  and sets policy,  $x \in \mathbb{R}$ .
4. The Court reviews the Agency (observes  $e$ ) and chooses to uphold  $r = 0$  or reverse  $r = 1$ .
5. The game ends, final policy is set, and payoffs are realized.

**Payoffs.** The payoffs for  $A$  and  $C$  are given by,

$$\begin{aligned} u_A(e, y, r) &= -\beta(y - t_A)^2 - \kappa e - \pi r, \\ u_C(e, y, r) &= -(y - t_C)^2, \end{aligned}$$

where  $t_A \in \mathbb{R}$  and  $t_C \in \mathbb{R}$  reflect the agency and court's ideal points (or “types”), respectively.  $A$ 's payoff is conditional on its level of policy motivation  $\beta \geq 0$  and the distance of policy from its ideal point ( $t_A$ ), effort costs  $\kappa \geq 0$  and effort investment level  $e = \{0, 1\}$ , and the level of aversion to being overturned  $\pi \geq 0$ . The parameters of the problem,  $\beta$ ,  $\kappa$ , and  $\pi$  are exogenous and common knowledge. The court is solely concerned with final policy outcomes. Specifically, the court loses utility proportional to the distance between policy and its ideal point,  $t_C$ .

In this paper I will assume throughout that  $t_A$  and  $t_C$  are both equal to 0. Thus, the agency is perfectly faithful (i.e., the agency and the court share the same ideal policy outcome). The game then reflects one of common value policymaking between the agency and the court. I make this assumption to focus on the role that judicial review plays in affecting agency incentives even when bureaucratic drift or subversion is not an issue. Existing work has identified why oversight of a policymaking agent is beneficial (and problematic) when preference divergence is present (e.g., Epstein and O'Halloran 1994; Gailmard and Patty 2014; Huber and Shipan 2002; Wiseman 2009). It is less clear, however, why review of agency actions is important when both actors agree on the correct policy choice. In short, this assumption allows for the presentation of results that isolate the effect of judicial review on the agency's incentives to work hard.<sup>21</sup>

Since  $t_A = t_C = 0$ ,  $C$  is concerned with  $A$ 's policy target  $x$  matching  $\omega$  as well as the limiting of errors in policy implementation captured by  $\varepsilon$ .  $C$  is always better off if  $A$  invested high effort (as is  $A$ , all else equal). Thus both actors agree on the “correct” policy choice as well as the desirability of more precise policy outcomes. However, only  $A$  internalizes the cost of effort investments that increase the precision of agency-made policy.

**Information and Policymaking.**  $A$  and  $C$  are forced to confront the uncertainty inherent in policymaking. This uncertainty is captured in the distributions of  $\omega$  and  $\varepsilon$ . Recall that  $\omega$  is distributed according to  $F_\omega$  with mean 0 and variance  $V_\omega$ .  $A$  observes the realization of  $\omega$  after the choice of  $e$ . Thus,  $A$ 's effort investment,  $e$ , is a sunk cost once this choice is made. After  $x$  is chosen by  $A$ ,  $\varepsilon$

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<sup>21</sup>Given the set-up of the payoff functions one could easily extend the analysis to any environment with divergent preferences between the two actors. I leave this possibility for future work.

is realized according to  $G_\varepsilon(e)$ . Both  $A$  and  $C$  know that a high effort investment ( $e = 1$ ) will reduce  $V_\varepsilon(e)$  and produce more precise policy. The only information  $C$  uses when choosing  $r \in \{0, 1\}$  are beliefs over  $A$ 's policy choice strategy and the levels of variance associated with upholding or reversing  $A$ 's actions, which is further conditional on  $A$ 's choice of  $e$ . So  $C$  does know the choice of  $e$ , but does *not* observe  $x$ ,  $\omega$ , or  $\varepsilon$ . However,  $C$  does have (in equilibrium, correct) beliefs regarding  $A$ 's choice of  $x$  and knows  $F_\omega$  and  $G_\varepsilon(e)$  and, thus, also knows  $V_\omega$  and  $V_\varepsilon(e)$ .

**Strategies and Equilibrium Concept.** The equilibrium concept is Perfect Bayesian Equilibrium (PBE) in weakly undominated strategies.  $A$ 's strategies consist of a probability of investing high effort,  $e = 1$ , which is denoted by  $s_A^e \equiv \Pr[e = 1]$ , and a policy mapping conditional on the realization of  $\omega$  denoted by  $s_A^x(\omega) : \mathbb{R} \rightarrow \mathbb{R}$ .  $C$ 's review strategy consists of a mapping from the set of agency effort levels and potential policy outcomes into a probability of reversing policy set by  $A$ , denoted by  $s_C(e) : \{0, 1\} \times \mathbb{R} \rightarrow [0, 1]$  and holds for any agency effort investment  $e \in \{0, 1\}$  and potential policy outcome  $y \in \mathbb{R}$ .  $C$  also has beliefs over  $\omega$  and  $\varepsilon$  that are represented by  $\mu_C$ , a cumulative distribution function that represents a probability distribution over  $\omega$  and  $\varepsilon$ . A PBE is a complete profile of strategies and beliefs  $\rho = (s_A^e, s_A^x, s_C, \mu_C)$  such that  $A$  and  $C$  are maximizing their expected payoffs given the other player's strategy and, when applicable,  $C$ 's beliefs are consistent with Bayes's rule.<sup>22</sup>

## Agency Policymaking, Effort, and Judicial Review

In this section, I analyze  $A$ 's effort investment strategy, policy choice strategy, and  $C$ 's optimal review strategy. The analysis proceeds by working backward from  $C$ 's review choice. After considering  $C$ 's decision to uphold or overturn  $A$ 's action ( $r$ ), we then turn to  $A$ 's effort ( $e$ ) and policy ( $x$ ) choices. In the analysis that follows I denote  $C$ 's equilibrium review strategy with  $s_C^*(e)$ ,  $A$ 's equilibrium effort strategy as  $s_A^{e*}$ , and  $A$ 's equilibrium policy choice strategy as  $s_A^{x*}(\omega)$ .

**Equilibrium Judicial Review.**  $C$  faces the decision of whether to uphold ( $r = 0$ ) or overturn ( $r = 1$ ) agency-made policy. Recall that  $C$  does not observe  $x$  (or  $\omega$  and  $\varepsilon$ ). In equilibrium, the court employs an optimal review strategy conditional on its beliefs about  $A$ 's policy choice and the relative

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<sup>22</sup>These beliefs will be completely pinned down by Bayes's rule given the set-up.

uncertainty associated with upholding policy by either a high- or low-effort agency and reversing policy. If  $C$  reverses ( $r = 1$ ) then the final policy outcome is  $-\omega$ . Thus,  $C$ 's subjective expected payoff when it overturns is given by,<sup>23</sup>

$$U_C(r = 1; \rho_{-C}) = -V_\omega.$$

$C$  can expect to receive a payoff (loss) equal to the variance of  $\omega$ . If the court chooses to reverse the agency then it can expect outcomes that would be generated through the interactions of private citizens or firms without agency policy intervention.  $C$ 's subjective expected payoff for upholding  $A$ 's action is conditional on the expectation of policy realization given  $A$ 's effort choice  $e$ , the expected distance between  $A$ 's policy target  $x$  and the state of the world  $\omega$ , and the expected variance associated with  $A$ 's choice of  $x$ . This expected payoff is given by,

$$\begin{aligned} U_C(r = 0; \rho_{-C}) &= -V_\varepsilon(e) - E_{\mu_C}[x - \omega]^2 - V_{\mu_C}[x - \omega], \\ &= -V_\varepsilon(e) - E_{\mu_C}[x - \omega]^2 - V_{s_A^x}[x - \omega]. \end{aligned}$$

Put simply,  $C$ 's expected payoff if it upholds  $A$  is dependent on its beliefs about the error that will occur in implementation.  $C$  ex ante expects to lose utility equal to the variances of implementation precision ( $V_\varepsilon(e)$ ) and the choice of  $x$  relative to  $\omega$  by  $A$ , and the expected distance between the target policy  $x$  and  $\omega$ . If  $C$  believes the variance associated with allowing  $A$ 's action to stand is weakly better than reversing the policy and allowing  $-\omega$  to obtain then it chooses  $r = 0$  and upholds the policy and chooses  $r = 1$  and overturns  $A$  otherwise. Moreover, the next section verifies that  $A$  will always set policy equal to the state of the world (i.e.,  $x = \omega$ ) and therefore  $C$ 's equilibrium review strategy is characterized by the following Lemma:<sup>24</sup>

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<sup>23</sup>Throughout I employ the notation,  $U_i$ , to denote the expected utility of the players,  $i \in \{A, C\}$ .

<sup>24</sup>Formally, this is because if  $s_A^{x*}(\omega) = \omega$  then  $E_{\mu_C}[x - \omega]^2 = 0$  &  $V_{s_A^x}[x - \omega] = 0$ .

**Lemma 1.** *C's equilibrium judicial review strategy is given by the following expression:*

$$s_C^*(e) = \begin{cases} \text{uphold: } r = 0 & \text{if } V_\varepsilon(e) \leq V_\omega, \\ \text{remand: } r = 1 & \text{if } V_\varepsilon(e) > V_\omega. \end{cases} \quad (2)$$

Similar to a standard of judicial review of agency actions suggested in extant literature (e.g., Stephenson and Vermeule 2009), *C*'s equilibrium strategy  $s_C^*(e)$  illustrates the court's desire to ensure that an agency is implementing policy as effectively as possible. This suggests that courts, in many applicable environments, are largely concerned with limiting the likelihood of errors in policy implementation or enforcement. If the variance associated with agency promulgated policy is higher than the latent uncertainty associated with allowing  $\omega$  to obtain then the court overturns. If the agency has taken advantage of its administrative experience and invested sufficient effort toward effective implementation ( $e = 1$ ) then the court is more likely to uphold the agency's policy. Put simply, *C* wants to limit the variance associated with realized policy outcomes, which increases policy precision and reduces the likelihood of errors in the actual implementation of policy.

This is directly related to the explicitly stated reason for reversing the FEMA by the District Court in the example discussed in the introduction. The court was not satisfied with the way in which the FEMA was implementing housing assistance policy. The court reversed the FEMA due to its judgment that the FEMA had invested low effort toward providing informative denial letters to evacuees, which led to an unacceptably low level of policy precision. This dynamic is captured by the equilibrium strategy of *C* presented above. In the terminology of the model, the court observed that the FEMA's choice of effort was equal to  $e = 0$  and  $V_\varepsilon(0)$  was greater than  $V_\omega$ . The court, in line with the strategy above, chose  $r = 1$  and ruled against the agency. In short, the court found that policy was not being implemented by the FEMA with sufficient precision and the likelihood of errors in administration that resulted was not acceptable. With the court's equilibrium behavior characterized we can move to equilibrium agency decision making.



**Equilibrium Agency Policymaking.**  $A$  has two distinct choices. First,  $A$  chooses whether or not to invest high effort toward implementing policy effectively. Then, after observing  $\omega$ ,  $A$  sets the substantive content of policy by choosing  $x$ . As alluded to in the previous section,  $A$  always chooses  $x = \omega$  in equilibrium, which is given by the following result.

**Lemma 2.**  *$A$  is always weakly better off choosing  $x = \omega$  (i.e.,  $s_A^{x*}(\omega) = \omega$  is weakly dominant).*

As a simple verification of this point, recall that  $A$ 's payoff function is  $u_A = -\beta y^2 - \kappa e - \pi r$ .<sup>25</sup> Thus, the policy component of  $A$ 's utility,  $-\beta y^2$ , is separable from the other components of the function. Expanding that out gives a policy component of  $-\beta(x - \omega + \varepsilon)^2$ , which makes clear that for any level of  $\beta \geq 0$   $A$  is weakly better off choosing  $x = \omega$  regardless of the rest of the payoff function or  $C$ 's review strategy (i.e., deviating from  $s_A^{x*}(\omega) = \omega$  is a weakly dominated strategy).

The other, and potentially very important, choice by  $A$  is whether to invest high effort. Note that in the equilibrium constructed above,  $A$ 's choice of  $x$  is not dependent on  $e$ .  $C$ 's decision of  $r$ , however, can be influenced by the choice of  $e$  by  $A$ . There are three cases to investigate whether  $A$  will invest high effort and pay cost  $\kappa$  or choose low effort, given  $C$ 's equilibrium review strategy. These situations are characterized by the relative size of the variances associated with agency policymaking by a high effort agency ( $V_\varepsilon(1)$ ), a low effort agency ( $V_\varepsilon(0)$ ), and the latent variance of unregulated or overturned policy outcomes ( $V_\omega$ ). The ordering of these variances dictates how  $C$  will behave given  $s_C^*(e)$ , which in turn affects  $A$ 's equilibrium effort choice,  $s_A^{e*}$ . These orderings can be intuitively thought of as representing three different court regimes that the agency can face in the policymaking process. If  $V_\omega < V_\varepsilon(1) < V_\varepsilon(0)$  the agency is facing a court that will always strike down its actions: a *Perfectly Skeptical Court*. If  $V_\varepsilon(1) < V_\varepsilon(0) < V_\omega$  the agency is facing a court that will always uphold its actions: a *Perfectly Deferential Court*. Finally, if  $V_\varepsilon(1) < V_\omega < V_\varepsilon(0)$  the agency is facing a court that will uphold  $A$ 's actions if and only if  $A$  makes a high effort investment: a *Conditional-Deference Court*. These three court regimes lead to the following proposition.

**Proposition 1.** *The following characterizes Agency effort choices conditional on Court regime:*

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<sup>25</sup>This includes the assumption that  $t_A = 0$ .

- (a) when facing a **Perfectly Skeptical Court** the Agency will never invest high effort;
- (b) when facing a **Perfectly Deferential Court** the Agency will invest high effort if and only if it would absent any prospect of judicial review (i.e.,  $e = 1$  if  $\beta(V_\epsilon(0) - V_\epsilon(1)) \geq \kappa$ );
- (c) when facing a **Conditional-Deference Court** the Agency will invest high effort if its policy motivations and aversion to being overturned are sufficiently high to outweigh effort investment costs (i.e.,  $e = 1$  if  $\beta(V_\omega - V_\epsilon(1)) + \pi \geq \kappa$ ).

First, consider the policy environment in which  $A$  is facing a *Perfectly Skeptical Court* (i.e.,  $V_\omega < V_\epsilon(1) < V_\epsilon(0)$ ). In this environment  $C$  will always choose  $r = 1$  and reverse  $A$ . This choice holds in equilibrium regardless of  $A$ 's choice of  $e$ . This result represents a situation in which  $A$  only lowers the level of policy precision by taking action. Final policy is better off if  $A$  does not take any action and allows outcomes generated by interactions between private interests to obtain (i.e., allows  $-\omega$  to obtain).  $C$  always strikes down  $A$ 's actions in this environment. Thus, the agency never makes high effort investments.

An illustrative empirical example of this situation is the strict scrutiny standard applied to many free expression cases. Fallon (2006) writes that “courts applying strict scrutiny must ask whether the benefits justify the costs in light of regulatory alternatives that would trench less deeply on constitutional rights but also be less effective in promoting their goals” when applying the standard to challenged regulations. The basic understanding of many is that strict scrutiny is “‘strict’ in theory and fatal in fact” (Gunther 1972). Previous work has suggested that the application of strict scrutiny is akin to the Court signaling that the particular governmental action under review is invalid (see e.g., Rubin 2000). Essentially the Court utilizes a standard like strict scrutiny to strike down actions regardless of the way that the particular action is being implemented or enforced. Part (a) of Proposition 1 provides a potential rationale for the creation and support of a standard of this sort.

Next, consider the policy environment where  $A$  faces a *Perfectly Deferential Court* (i.e.,  $V_\epsilon(1) < V_\epsilon(0) < V_\omega$ ). In contrast to part (a) of Proposition 1,  $A$  will invest high effort in the equilibrium characterized by part (b) of Proposition 1 if the relevant conditions are met. However, high

effort investment ( $e = 1$ ) is not at all conditional on  $C$ 's equilibrium review strategy. The only time  $A$  will pay the cost  $\kappa$  for high effort investment is when it would have paid this cost absent any system of judicial review. Put another way,  $A$  invests high effort in this environment solely based on its own policy motivations and the increase in policy precision that comes from high effort outweighing the cost of that investment. Formally, the condition states that  $A$  will choose  $e = 1$  if  $\beta(V_\varepsilon(0) - V_\varepsilon(1)) \geq \kappa$ . It is clear that the likelihood of  $A$  choosing  $e = 1$  is increasing in  $\beta$  as well as  $(V_\varepsilon(0) - V_\varepsilon(1))$ . This is intuitive; as the benefits derived from increased levels of policy precision increase, the likelihood of  $A$  choosing to bear the cost,  $\kappa$ , of high effort increases as well.

This environment is illustrative for policy areas in which agencies generally enjoy high levels of judicial deference. In particular, the ordering of the variances,  $V_\varepsilon(1) < V_\varepsilon(0) < V_\omega$ , represent policy areas in which the understanding of where to set policy takes precedence over the effective implementation or enforcement of policy.  $C$  always defers to agency-made policy because the uncertainty associated with the correct policy choice elevates  $A$ 's technical expertise to the point of swamping concerns over the implementation of policy. That is, the information asymmetry with respect to the underlying correct policy is great enough that  $C$  cannot credibly commit to reversing  $A$ 's actions based on effort investment.<sup>26</sup> This result is in line with the fact that courts are generally reluctant to overturn agency actions on the basis of the agency's technical policy choices (e.g., Kagan 2001; Stephenson 2006). Outcomes are so uncertain without agency intervention that even with low effort investment the agency improves upon what, in expectation, obtains otherwise. In this way, the model incorporates and provides a foundation for understanding when agencies will be granted what appear to be abnormally high levels of deference.

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<sup>26</sup>This raises another interesting question regarding when courts can commit, ex ante, to standards that allow them to overcome commitment problems such as this. For instance, Stephenson (2008) presents a model that illustrates how courts can incentivize agency research in support of policy actions by committing, ex ante, to evidentiary standards. Stephenson characterizes when different ex ante commitments are optimal. While this is certainly an important and interesting vein of research I, in contrast, am considering a world in which the court has been mandated to review the agency actions in question and the incentive effects that arise in such an environment, e.g., by Congressional statutory language or the like.

Finally, consider the policy environment characterized by  $A$  facing a *Conditional-Deference Court* (i.e., when  $V_\varepsilon(1) < V_\omega < V_\varepsilon(0)$ ). Part (c) of Proposition 1 describes  $A$ 's behavior when the choice of  $e$  is dispositive with respect to judicial deference. We see that  $A$  invests high effort if the reduction of variance in implementation is sufficiently large relative to the latent variance of policy outcomes in agency-free settings. Subsequently, the likelihood that  $A$  chooses  $e = 1$  is increasing in  $\beta$ ,  $(V_\omega - V_\varepsilon(1))$  and, in contrast to facing a *Perfectly Deferential Court*,  $\pi$ . Put simply,  $A$  will invest high effort only if the benefits derived from increased policy precision ( $\beta(V_\omega - V_\varepsilon(1))$ ) and not being reversed by  $C$  ( $\pi$ ) outweigh the costs necessary to obtain these benefits ( $\kappa$ ). As long as that condition is met,  $A$  will invest high effort toward policy implementation and  $C$  will uphold  $A$ 's policy choice. The presence of judicial review plays an integral role in inducing high effort investment from the agency by lowering the net cost of effort. The specter of losing out on the added benefit of not being reversed,  $\pi$ , reduces the threshold necessary for the benefits derived from high effort investment to outweigh the cost paid for that effort,  $\kappa$ . This is also arguably the most empirically interesting equilibrium result emanating from analysis of the model because it is the most realistic environment in many policy areas.

Recall that the District Court chose to reverse the FEMA precisely because they had not invested sufficient effort in policy implementation. Implicit in the decision is the fact that if the FEMA had invested high effort—for instance, if the FEMA had already been generating intelligible letters of acceptance or denial to disaster relief applicants—perhaps the court would not have reversed the FEMA. In this way, the FEMA's effort level was dispositive with respect to the District Court's deference to their actions. Both parties wanted disaster relief provided, but the FEMA was implementing policy such that there were unduly high levels of error due to low effort investment and the court had to reverse.

Overall, the results embodied in Proposition 1 provide several insights into the role that judicial review can play in the policymaking game between agencies and courts. Even in the relatively extreme regimes, parts (a) and (b) of Proposition 1, the model provides a rationale for strict scrutiny standards as well as a foundation for understanding why there may appear to be high levels of def-

erence granted to agencies operating in particular policy areas. In the case of part (c) of Proposition 1, we see that judicial review can directly induce desirable behavior from bureaucrats by lowering the cost of high effort for agency policymakers. The bureaucrat works harder because the aversion to being overturned, coupled with a sufficiently high level of policy improvement, justifies paying the effort costs. This suggests that even when agencies are not “drifting,” judicial review, as an institution, can improve welfare by indirectly increasing the precision with which policy is ultimately implemented.

However, the way in which judicial review impacts agency effort when implementing policy is not unconditional. In the environment where agency policy actions are upheld if and only if high effort is invested toward implementing policy effectively, i.e., the environment in part (c) of Proposition 1, there are three possibilities for how the presence of a court with the power to overturn the agency affects effort incentives: it can have no impact and the agency either always invests low effort or always invests high effort; it can strengthen the incentives for high effort investments; or it can harm the incentives for the agency to invest high effort. The next section provides analysis that, when the agency is facing a conditional-deference court, characterizes the effect of judicial review on agency effort incentives.

## **Judicial Review, Incentives, and Agency Effort**

This section examines the impact of judicial review on bureaucratic effort incentives. Specifically, I assess how the policymaking system is affected by the introduction of judicial review of agency policy actions. The results below highlight the differential impact judicial review can have on the incentives for agencies to invest high effort toward effective policy implementation. Judicial review may have no impact on the agency’s effort choice. This is true any time effort costs are either too high or too low. In these environments the agency either always invests high effort (costs too low) or is deterred from investing high effort by prohibitively high effort costs. When judicial review does affect agency effort choices it can have two effects. The first represents a desirable trait of subjecting agency actions to judicial oversight. In this environment the presence of judicial review induces the

agency to make high effort investments when it would not have otherwise. However, there is also the possibility of an undesirable role for review. In this case the introduction of judicial review of agency policy actions actually induces the agency to invest low effort when it would have invested high effort if there were no judicial review of its actions. This effect is predicated on the court's ability to bail out the agency. The following proposition characterizes these possible effects.

**Proposition 2.** *When effort costs are extreme (high or low) judicial review has no effect on agency effort. Otherwise, judicial review strengthens effort incentives if the policy cost of implementing low effort policy relative to the reversion is less than the agency's aversion to being overturned and harms them otherwise (i.e.,  $e = 1$  if  $\beta(V_\epsilon(0) - V_\omega) < \pi$ ).*

Proposition 2 presents the conditions that must be met in order for judicial review—when it does have an impact—to strengthen agency effort incentives. First, recall that this is an environment in which the agency is facing a conditional-deference court so  $V_\epsilon(1) < V_\omega < V_\epsilon(0)$ . When costs are intermediate, and therefore judicial review does impact agency effort choices, the policy cost of implementing low effort policy relative to the reversion level of precision must be outweighed by the agency's aversion to being reversed by the court. As the level of reversion precision,  $V_\omega$ , approaches the precision associated with low effort agency-made policy,  $V_\epsilon(0)$ , judicial review is more likely to incentivize high effort when the agency would have invested low effort absent review. This is because the policy precision improvement for investing high effort relative to the reversion level of precision is growing as  $V_\omega$  increases and the agency's aversion to being overturned, coupled with this policy improvement, is large enough to outweigh the effort costs. Similarly, holding policy improvements fixed, increasing the level of agency aversion,  $\pi$ , and/or the level of agency policy motivation,  $\beta$ , increases the likelihood that the presence of judicial review strengthens agency effort incentives. The dynamics of the relationships between the possible levels of policy precision are presented graphically in Figure 1.

In Figure 1 the cut-point,  $\beta(V_\epsilon(0) - V_\omega) = \pi$ , represents the point at which the policy cost of implementing low effort policy relative to the reversion (scaled by policy motivation) is equal to the agency's aversion to being overturned. Assuming effort costs are neither too low nor too

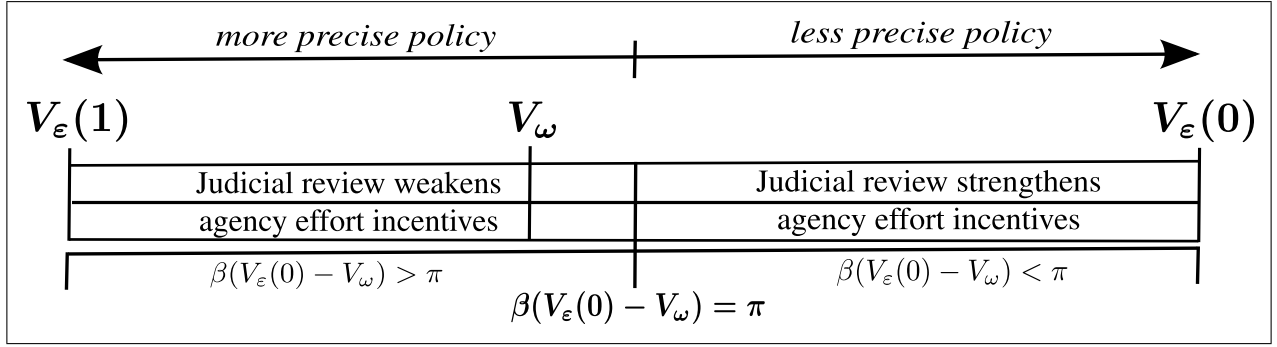


Figure 1: **An example in which judicial review weakens agency effort incentives.**

*Note:* Recall that  $V_\epsilon(1) < V_\omega < V_\epsilon(0)$ . The location of  $V_\omega$  within the interval between  $V_\epsilon(1)$  and  $V_\epsilon(0)$ , given intermediate effort costs and holding other relevant parameters fixed, dictates whether judicial review strengthens or harms effort incentives. Policy precision decreases left to right.

high and holding  $\beta$ ,  $V_\epsilon(0)$ , and  $\pi$  fixed, as  $V_\omega$  decreases  $\beta(V_\epsilon(0) - V_\omega)$  increases, outweighing  $\pi$ . Conversely, as  $V_\omega$  increases  $\beta(V_\epsilon(0) - V_\omega)$  decreases and is outweighed by  $\pi$ . In the figure  $V_\omega$  is located below the cut-point ( $\beta(V_\epsilon(0) - V_\omega) = \pi$ ) and, therefore, represents a situation in which the presence of judicial review will deter the agency from making a high effort investment even when it would have preferred, based on its own policy motivations, to invest high effort absent review. The relative policy precision improvement from high effort agency-made policy relative to the reversion precision level dictates whether judicial review encourages or deters agency effort.

If the difference between the policy precision that would obtain absent agency action (i.e., if the agency is reversed by the court) and high effort agency-made policy is relatively large— $V_\omega$  approaches  $V_\epsilon(0)$ —then judicial review induces high effort when the agency would have invested low effort absent review. However, if  $V_\omega$  is relatively close to  $V_\epsilon(1)$ —denoting marginal policy precision improvement for high effort policymaking—then judicial review deters high effort investment from the agency through a bail out effect. Since the policy precision improvement for investing high effort is marginal and the agency knows that if it invests low effort the court will reverse them, thereby allowing  $V_\omega$  to obtain, the agency is deterred from investing high effort to forego paying effort costs. That is, the presence of judicial review takes the extremely imprecise policy outcome,  $V_\epsilon(0)$ , off the table by providing a sort of policy insurance through the assurance of, at worst,  $V_\omega$  and since  $V_\epsilon(1)$  is only marginally more precise than this possibility the agency chooses to invest low effort and be

reversed rather than pay the effort costs,  $\kappa$ .

The locations of  $V_\varepsilon(1)$ ,  $V_\omega$ , and  $V_\varepsilon(0)$  relative to one another have a natural substantive interpretation in the realm of administrative policymaking. Namely the location of  $V_\omega$  relative to  $V_\varepsilon(1)$  and  $V_\varepsilon(0)$  can be understood as representing how much the agency is needed to regulate effectively in a given policy area. If  $V_\omega$  is closer to  $V_\varepsilon(0)$  relative to  $V_\varepsilon(1)$  then the agency-free environment is highly uncertain. Even though low effort implementation by the agency would worsen the situation marginally, high effort policy implementation by the agency would improve outcomes greatly. In this situation agency action is integral to improving policy outcomes relative to what would obtain if private actors were left unregulated. Conversely, if  $V_\omega$  is close to  $V_\varepsilon(1)$  relative to  $V_\varepsilon(0)$  then the agency-free environment is relatively good and uncertainty in outcomes is relatively low. Low effort agency-made policy would worsen outcomes greatly but the presence of judicial review insures against that possibility. Even though high effort implementation would marginally improve policy precision the agency is not needed in terms of new policy actions as much as in the environment with high agency-free policy uncertainty. The location of  $V_\omega$  in the interval between agency-made—high and low effort—policy dictates the relative level of complexity or uncertainty present in the policy environment without agency intervention. Thus, judicial review is most useful in incentivizing high agency effort precisely when the policy environment is highly uncertain in terms of realized outcomes. The substantive thrust of the results can also be extended to executive review (by the OIRA) and points to implications for the structure and understanding of Congressional oversight.

## **Implications for Executive Oversight**

The model provides implications for executive oversight conducted by the Office of Information and Regulatory Affairs (OIRA), an office housed in the president's Office of Management and Budget (OMB). The president uses this oversight to attempt to ensure that agency-made policy remains in congruence with his agenda (Copeland 2005). OIRA review, as I will refer to it, closely parallels the process of judicial review discussed throughout this paper. It is similar to judicial review in that it is reactive and is limited to either approving or effectively vetoing agency policy (Bueno de Mesquita



and Stephenson 2007). The reactive nature of both types of oversight allow the agency to “set the agenda” by taking initial policy actions that will subsequently be reviewed. In the case of the OIRA, the agency proposes a rule prior to a public commenting period and resubmits the rule in final draft form.<sup>27</sup> The OIRA must approve the final rule before it can be published in the *Federal Register*, at which point it carries the full force of law. The OIRA can make or break agency policymaking by approving or rejecting agency rules (Copeland 2005).<sup>28</sup>

Of central importance to having a rule approved is the record provided by the agency justifying its proposed rule. This record consists of, among other things, research and analysis supporting rule content, responses to public comments on the proposed policy, cost-benefit calculations, and analyses of possible policy alternatives (Copeland 2005; Gailmard and Patty 2014). Recent work highlights how the presence of OIRA review affects agency rulemaking. Focusing on the initial proposal stage of the process, Potter (2014) argues that “agencies that want their rulemaking proposals to succeed must do their homework and *invest considerable resources* in the early phases of the process” (p. 3, emphasis added). The idea that agencies must invest in the quality of their rulemaking efforts dovetails nicely with the model analyzed in this paper. Specifically, if we interpret the agency’s ex ante effort investment as directed toward amassing a sufficient record to facilitate OIRA approval the results speak to how the presence of executive oversight may structure agency effort incentives. The presence of executive oversight can induce agencies to invest more effort in amassing a sufficient record than they otherwise would, or deter them from doing so. This further suggests that the president may be made better off by classifying executive oversight requirements according to the characteristics of the agency and the policy environment they are asked to regulate.

The results in the previous section suggest that agencies that operate in policy environments that are highly volatile (high  $V_\omega$ ) are more likely to respond positively to OIRA oversight. That

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<sup>27</sup>So-called notice-and-comment rulemaking or informal rulemaking, required by the Administrative Procedures Act, is the most used process for agency policymaking (Copeland 2005).

<sup>28</sup>Technically, the OIRA cannot directly “reject” agency rules. It can, however, recommend that the agency withdraw the rule (at least in its current form) or indefinitely delay the approval of the rule. This is akin to judicial review for the purposes of this paper as it can be thought of as an effective veto.

is, these are agencies that are more likely to make high effort investments to ensure that their policies are approved by the OIRA. Thus, for agencies operating in these types of policy environments, subjection to extensive executive oversight will often lead to desirable agency policymaking behavior. However, in less volatile environments (low  $V_\omega$ ) the president may benefit from insulating agency actions from OIRA review. This would allow the agencies to invest effort based on their own motivations and avoid the bail out effects identified above. As an example, agencies must specify whether a proposed rule is “economically significant” when it is submitted for OIRA review. This identification, along with a classification of the policy area, could be used to inform appropriate levels of scrutiny in the oversight process that may allow the president to enjoy the upsides of review while avoiding some of the pitfalls. Overall, as in the case of judicial review, there is the potential to produce both desirable (high effort investment) and undesirable (low effort investment) agency policymaking behavior through executive oversight. The characteristics of the particular agency making policy and the environment they are asked to regulate are important in determining which will ultimately obtain.

## Implications for Congressional Oversight

The results of the model also provide implications for the structuring of administrative procedures like judicial review provisions in authorizing legislation and the use of oversight hearings directed at agency actions. Both implications are intimately connected to the structure of the underlying policy environment that the agency is acting within. Of particular importance is whether the policy environment is characterized by more or less uncertain agency-free levels of policy precision, which dictates when agency regulatory intervention is more or less necessary for effective policy implementation. From a legislative perspective, Congress may have the ability to affect the level of aversion the agency has to having its policy actions overturned,  $\pi$ , through oversight decisions.<sup>29</sup>

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<sup>29</sup>This brings a classic literature examining the structure of administrative procedures (e.g., Bawn 1995; McCubbins, Noll and Weingast 1987, 1989) as well as bureaucratic control through direct Congressional oversight (e.g., Bawn 1997; McCubbins and Schwartz 1984; Shipan 2004) back to the forefront in the realm of agency effort incentives when effective implementation, rather than ideological subversion, is the primary concern. That is, the effort incentive effects

The effectiveness of ex post oversight in terms of its ability to strengthen agency effort incentives is conditional on the underlying policy environment. In particular, in environments where the agency-free level of precision is quite low (near  $V_{\varepsilon}(0)$  in Figure 1) ex post oversight mechanisms like judicial review or oversight committee hearings are effective in inducing higher agency effort investments than would otherwise be obtained absent that type of oversight. Possibilities for strengthening oversight in this environment include lowering standards for citizens or other affected parties to challenge agency actions in federal courts in these policy areas while crafting provisions in authorizing legislation or, if we substitute a Congressional oversight committee for the court in the model, increasing the overall level of oversight hearings held in which the agency must defend its policy actions to Congressional committees with the power to cut agency funding, contract agency policy jurisdiction, or the like. These types of Congressional oversight activities, in the terminology of the model, increase the agency's aversion to having its actions reversed (i.e., increases  $\pi$ ). The results suggest that Congressional action along these lines will serve to strengthen the desirable effort incentive effects that judicial review (or other ex post monitoring) can produce. Conversely, in policy areas in which high effort investment only marginally improves the precision of realized outcomes, crafting provisions that insulate agency actions from judicial scrutiny may be desirable to avoid the bail out effect that ex post review can induce. Similarly, considering Congress as the overseer, allowing the agency to operate without continuously being brought in to justify its actions in front of oversight committees allows Congress to directly lower the agency's concern with being overturned ( $\pi$ ) by effectively taking veto possibilities off the table.

The level of oversight that is optimal from the Congressional perspective given the effects identified in this paper depends crucially on the structure of the underlying policy environment. In some policy areas agencies are best incentivized by subjection to strong forms of oversight in which their actions may be overturned on a regular basis while in other areas agencies ought to have their policy actions insulated from judicial (or other forms of) scrutiny to avoid the perverse bail out effect

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of judicial review discussed in the previous section have implications for the usage of both police patrols and fire alarms for bureaucratic oversight and control (Aberbach 1990; Ferejohn and Shipan 1990; McCubbins and Schwartz 1984).

ex post oversight may introduce. These implications highlight how the results of the analysis in this paper are directly related to several other important aspects of the American policymaking process as well as a potentially fruitful next step in extending the framework.

## **Conclusion**

This paper provides a theory of policymaking between administrative agencies—empowered to choose and implement policy—and courts—empowered to review and potentially invalidate agency actions. The results highlight the multifaceted impact an ex post review mechanism such as judicial review can have on the incentives for agencies to invest high effort toward effective policy implementation. These effects are characterized without appeal to ideological policy preference divergence between the agency and the court. Thus, the effects of judicial review discussed in this paper apply exclusively to agency effort investments. At times judicial review can provide strong ex ante incentives for the agency to invest high effort toward implementation when it would not have otherwise through the threat of ex post reversal. This leads to more precise policy outcomes. However, in other environments judicial review can lead to perverse incentive effects by providing a bail out effect for the agency. In that case the presence of judicial review deters high effort investments and leads to imprecisely implemented outcomes.

In short, while judicial review can be a powerful institutional tool for incentivizing administrative agencies to invest in high policy effort, this is not unconditional. The theory provides insight into how and when we may expect review of agency actions to produce better or worse final policy outcomes. This leads to implications for how legislative decisions regarding different choices of review provisions in authorizing legislation or the frequency of oversight hearings, for example, may be affected conditional on the structure of the underlying policy environment. Moreover, it speaks to the efficacy of intra-branch oversight like executive review conducted by the OIRA.

Ultimately, this general line of inquiry holds promise to further our understanding of political agency problems such as oversight of policymakers by courts and when this system is welfare-enhancing in terms of policy outcomes. Research similar to the route taken in this paper, combined

with research examining the impact of judicial review on democratic performance (e.g., Fox and Stephenson 2011, N.d.), the importance of differentiating between substantive policy choice and implementation in bureaucracy (e.g., Carpenter 2001; Huber and McCarty 2004; Ting 2011), a more realistic conceptualization of policymaking as inherently uncertain (e.g., Callander 2008, 2011*a,b*), incorporating studies of oversight from multiple angles (see e.g., Strayhorn, Carrubba and Giles 2014), and the additional consideration of both policy choice and investment to improve the quality of policy (e.g., Hirsch and Shotts 2013*a,b*, 2015) can provide a clear path forward to more realistically assess the effects of institutions such as judicial review on the complicated inter-institutional policymaking processes of the American political system.

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## Appendix

Recall the assumption  $t_A = t_C = 0$  employed throughout the analysis above. In line with this assumption all the proofs that follow treat utility for the agency and the court as follows.

**Agency utility:**

$$\begin{aligned} u_A(e, y, r) &= -\beta(y - t_A)^2 - \kappa e - \pi r, \\ &= -\beta y^2 - \kappa e - \pi r. \end{aligned}$$

**Court utility:**

$$\begin{aligned} u_C(e, y, r) &= -(y - t_C)^2, \\ &= -y^2. \end{aligned}$$

## Proofs of Results.

**Lemma 1.**

$$s_C^*(e) = \begin{cases} r = 0 & \text{if } V_\varepsilon(e) \leq V_\omega, \\ r = 1 & \text{if } V_\varepsilon(e) > V_\omega. \end{cases}$$

**Proof.** This follows from the fact that  $F_\omega$  and  $G_e$  have the same expectation and  $C$  is risk averse. ■

**Lemma 2.**  $s_A^{x*}(\omega) = \omega$ .

**Proof.** To prove that the Agency, in weakly undominated strategies, will always choose  $x = \omega$  in equilibrium we need only show that  $A$  does not benefit from deviating from this choice (1) when  $C$  remands,  $r = 1$ , and (2) when  $C$  upholds,  $r = 0$ . I deal with both of these possibilities in turn.

(1) First, assume  $C$  will strike down  $A$ 's policy choice according to Lemma 1. Let  $s_A^{x*}(\omega) = \omega$  and let  $\delta \geq 0$  denote the deviation by  $A$ . Thus, if  $A$  deviates policy is  $\omega + \delta$ .  $A$ 's expected payoff for this

deviation is then:

$$\begin{aligned}\Delta U_A(\delta) &= -\beta V_\omega + \beta V_\omega + \kappa e - \kappa e \\ &= 0.\end{aligned}$$

Thus,  $A$  gains nothing from deviating by  $\delta$ .  $\square$

(2) Assume  $C$  will uphold  $A$ 's policy choice according to Lemma 1. Again, let  $s_A^{x*}(\omega) = \omega$  and let  $\delta \geq 0$  denote the deviation.  $A$ 's expected payoff for this deviation is then:

$$\begin{aligned}\Delta U_A(\delta) &= -\beta \delta^2 + \beta V_\varepsilon(e) - \beta V_\varepsilon(e) + \kappa e - \kappa e \\ &= -\beta \delta^2\end{aligned}$$

Thus, if  $\delta = 0$  (or  $\beta = 0$ )  $A$ 's expected payoff is 0, which is at best equal to what  $A$  would receive in expectation given sticking to  $s_A^{x*}(\omega) = \omega$ . If  $\delta > 0$ , then  $A$ 's disutility is increasing and  $A$  is therefore strictly worse off.  $\square$

Having shown that  $A$  does not benefit by a deviation in any situation, the result follows.  $\blacksquare$

**Proposition 1.** I prove Proposition 1 by proving each part — (a), (b), and (c) — in order.

**Proof.** Part (a). Given  $s_C^*(e)$ ,  $s_A^{e*} = 0$ .

Recall that the ordering of the variances for part (a) is  $V_\omega < V_\varepsilon(1) < V_\varepsilon(0)$ . Holding  $C$ 's equilibrium strategy constant,  $s_C^*(e)$ , we know that  $C$  will always choose  $r = 1$ . First, recall that anytime  $s_C^* = 1$ ,  $y = -\omega$  and therefore  $E[y] = -V_\omega$ . Thus, we can look at the net payoff that  $A$  receives for investing high effort. The expected payoff for investing low effort is given by:

$$U_A(e = 0) = -\beta V_\omega - \pi,$$

and the expected payoff for investing high effort is:

$$U_A(e = 1) = -\beta V_\omega - \kappa - \pi.$$

Combining these, the net payoff to  $A$  is:

$$\begin{aligned}\Delta U_A(e) &= -\beta V_\omega + \beta V_\omega - \kappa - \pi + \pi \\ &= -\kappa.\end{aligned}$$

$A$  always pays a net cost of  $\kappa$  if  $s_A^e = 1$ . This could be avoided by  $A$  choosing  $e = 0$ . Thus, when  $s_C^* = 1$ ,  $s_A^{e*} = 0$ .  $\square$

Part (b). Given  $s_C^*(e)$ ,  $s_A^e = 1$  if and only if  $-\beta(V_\varepsilon(1) - V_\varepsilon(0)) \geq \kappa$ .

Recall that the ordering of variances for part (b) is  $V_\varepsilon(1) < V_\varepsilon(0) < V_\omega$ . Holding  $s_C^*(e)$  constant, we know that  $C$  will always choose  $r = 0$ . First, recall anytime  $s_C^* = 0$ ,  $y$  is the final policy outcome so  $E[y] = -V_\varepsilon(e)$  given  $s_A^{x*}$ .  $A$ 's expected payoff for  $e = 0$  is given by

$$U_A(e = 0) = -\beta V_\varepsilon(0)$$

and  $A$ 's expected payoff for  $e = 1$  is

$$U_A(e = 1) = -\beta V_\varepsilon(1) - \kappa.$$

Combining, and rearranging, we have the condition for  $A$  to choose  $e = 1$ , given by

$$\begin{aligned}-\beta V_\varepsilon(1) - \kappa &\geq -\beta V_\varepsilon(0) \\ &= -\beta V_\varepsilon(1) + \beta V_\varepsilon(0) \geq \kappa \\ &= -\beta(V_\varepsilon(1) - V_\varepsilon(0)) \geq \kappa.\end{aligned}$$

So,  $s_A^{e*} = 1$  if the condition holds. Notice that  $\pi$  is not in  $A$ 's calculation. This gives the result,  $A$  will invest high effort only if it would independent of  $C$ 's choice. In other words, because  $\pi$  is not part of the condition,  $A$  pays  $\kappa$  only if  $A$ 's benefits from the increased policy precision justifies that choice independent of being reviewed by  $C$ .  $\square$

Part (c). Given  $s_C^*(e)$ ,  $s_A^e = 1$  if and only if  $-\beta(V_\varepsilon(1) - V_\omega) + \pi \geq \kappa$ .

Recall that the ordering of variances for part (c) is  $V_\varepsilon(1) < V_\omega < V_\varepsilon(0)$ . Holding  $s_C^*(e)$  constant, we know that  $C$  will choose  $r = 1$  if and only if  $s_A^e = 1$  and will choose  $r = 0$  otherwise. Thus,  $A$ 's investment in  $e$  is dispositive with respect to deference. First, recall that anytime  $s_C^*(e) = 1$  final policy is  $y = -\omega$  so  $E[y] = -V_\omega$ . This gives  $A$ 's expected payoff when  $e = 0$  (which is the only case, given  $s_C^*$  that  $r = 1$ ) as:

$$U_A(e = 0) = -\beta V_\omega - \pi.$$

$A$  avoids  $\kappa$  but must pay  $\pi$  because  $C$  chooses  $r = 1$ . Similarly,  $A$ 's expected payoff when  $e = 1$  (which is the only case, given  $s_C^*$ , that  $r = 0$ ) is given by:

$$U_A(e = 1) = -\beta V_\varepsilon(1) - \kappa.$$

Combining, and rearranging, we have the condition for  $A$  to choose  $e = 1$ , given by

$$\begin{aligned} -\beta V_\varepsilon(1) - \kappa &\geq -\beta V_\omega - \pi \\ &= -\beta V_\varepsilon(1) + \beta V_\omega + \pi \geq \kappa \\ &= -\beta(V_\varepsilon(1) - \beta V_\omega) + \pi \geq \kappa. \end{aligned}$$

So,  $s_A^{e*} = 1$  if the condition above holds. Notice that in contrast to part (b), the presence of  $C$  is integral in that calculation (through  $\pi$ ). The result follows naturally.  $\square$

Combining all of these constituent pieces, the overall result presented in Proposition 1 follows.  $\blacksquare$

**Proposition 2.** At the heart of Proposition 2 are the conditions for the agency to invest high effort when there is a reviewing court and when there is not. I first derive these conditions then show how different combinations of these conditions lead to the result.

**Proof.** The conditions:

(1) High effort with a Court: The agency's utility from investing high effort, which from Lemma 1

means its policy action will be upheld is given by,

$$U_A(e = 1|r = 0) = -\beta V_\varepsilon(1) - \kappa$$

The agency's utility from investing low effort, which means the court will reverse its policy action is given by,

$$U_A(e = 0|r = 1) = -\beta V_\omega - \pi$$

Combining and rearranging gives us the condition for the agency to invest high effort, i.e., choose  $e = 1$ , when it will face judicial review by a court:

$$U_A(e = 1|Court) = -\beta(V_\varepsilon(1) - V_\omega) + \pi \geq \kappa. \quad (3)$$

Thus, the agency will invest high effort—choose  $e = 1$ —if Equation 3 holds and choose  $e = 0$  if

$$U_A(e = 0|Court) = -\beta(V_\varepsilon(1) - V_\omega) + \pi < \kappa. \quad (4)$$

(2) High effort without a Court: The agency's utility from investing high effort when there is no court that will review the agency's action, and therefore the agency will never be reversed, is given by,

$$U_A(e = 1|r = 0) = -\beta V_\varepsilon(1) - \kappa.$$

The agency's utility from investing low effort without a court present is given by,

$$U_A(e = 0|r = 0) = -\beta V_\varepsilon(0)$$

Combining and rearranging gives us the condition for the agency to choose  $e = 1$  when there is no court:

$$U_A(e = 1|No\ Court) = -\beta(V_\varepsilon(1) - V_\varepsilon(0)) \geq \kappa. \quad (5)$$



Similarly, the condition for the agency to invest low effort,  $e = 0$ , when there is no court is given by,

$$U_A(e = 0|No\ Court) = -\beta(V_\varepsilon(1) - V_\varepsilon(0)) < \kappa. \quad (6)$$

Thus, when there is no threat of judicial review the agency will invest high effort—choose  $e = 1$ —when Equation 5 holds and invest low effort—choose  $e = 0$ —when Equation 6 holds. The different combinations of high/low effort with a court and high/low effort without a court yield the results in Proposition 2.

**Judicial review has no impact on agency effort.** If Equations 3 and 5 both hold then the agency will always invest high effort regardless of the presence of review since effort costs are so low. Conversely, if Equations 4 and 6 both hold then the agency will never invest high effort whether there is a reviewing court or not due to prohibitively high effort costs. Thus, judicial review has no impact on agency effort when costs are too low or too high.

**Judicial review does impact agency effort.** Assume that costs are intermediate. Then either,

$$-\beta(V_\varepsilon(1) - V_\omega) + \pi < \kappa < -\beta(V_\varepsilon(1) - V_\varepsilon(0)), \quad (7)$$

or

$$-\beta(V_\varepsilon(1) - V_\varepsilon(0)) < \kappa < -\beta(V_\varepsilon(1) - V_\omega) + \pi. \quad (8)$$

If the ordering is as in Equation 7 then judicial review harms effort incentives since Equations 4 and 5 both hold. The introduction of a reviewing court induces low effort when the agency would have invested high effort absent a court. If the ordering is as in Equation 8 then judicial review strengthens effort incentives since Equations 3 and 6 both hold. Introduction of a reviewing court induces high effort when the agency would have invested low effort absent a court. Since we are assuming that effort costs are intermediate the comparison is simply between  $-\beta(V_\varepsilon(1) - V_\omega) + \pi$

and  $-\beta(V_\varepsilon(1) - V_\varepsilon(0))$ . Namely if,

$$-\beta(V_\varepsilon(1) - V_\varepsilon(0)) < -\beta(V_\varepsilon(1) - V_\omega) + \pi,$$

the introduction of judicial review induces high effort when the agency would have invested low effort absent the court. Rearranging yields,

$$\beta(V_\varepsilon(0) - V_\omega) < \pi.$$

Thus, agency effort incentives are strengthened if  $\beta(V_\varepsilon(0) - V_\omega) < \pi$  and weakened otherwise as stated in Proposition 2. ■

## Supplemental Appendix

The purpose of this appendix is to show that the main results of the model hold under an alternative sequence of play. In particular, I focus on showing that the results embodied in Proposition 2 hold under this alternative sequencing. That is, this appendix shows that judicial review can induce both low or high effort from the agency when the agency would have chosen the opposite absent judicial review. With this goal in mind I will only focus on cases of conditional-deference review (part (c) in Proposition 1) as this is the environment of interest for Proposition 2. First, I set up the alternative sequencing of the game in this appendix. Then I proceed by positing a particular equilibrium, characterizing this equilibrium, and finally showing that qualitatively similar results to Proposition 2 in the original game also hold in this context.

### Alternative sequencing: Observe state $\omega$ , set policy $x$ and choose effort $e$

**Sequencing.** The sequence is now as follows.

1. Nature draws  $\omega \in \mathbb{R}$  according to  $F$ .
2. The Agency observes  $\omega$ .
3. The Agency chooses to invest high effort,  $e = 1$ , or not,  $e = 0$ , and sets policy,  $x \in \mathbb{R}$ .
4. The Court reviews the Agency (observes  $e$ ) and chooses to uphold  $r = 0$  or reverse  $r = 1$ .
5. The game ends, final policy is set, and payoffs are realized.

Notice that the only difference in sequencing from the original game is that now the agency observes the true state  $\omega$  prior to making its effort investment choice,  $e$ .

**Policy and payoffs.** Policy outcomes are predicated on the agency's actions and whether the court upholds or overturns:

$$y = \begin{cases} x - \omega + \varepsilon & \text{if Court upholds,} \\ -\omega & \text{if Court overturns.} \end{cases}$$

Recall that  $\omega$  is distributed according to  $F$  with mean 0 and variance  $0 < V_F < \infty$  and  $\varepsilon$  is distributed according to  $G(e)$  with mean 0 and variance  $0 < V_\varepsilon(e) < \infty$ , which is further conditional on agency effort so that  $V_\varepsilon(1) < V_\varepsilon(0)$ .

Payoffs for the agency and court are as follows.

$$u_A = \beta y^2 - \kappa e - \pi r,$$

$$u_C = -y^2.$$

### Equilibrium.

Consider the following equilibrium. The court engages in conditional-deference review, i.e., the court upholds the agency if it observes high effort and reverses if it observes low effort. The agency sets policy sincerely, i.e., the agency chooses  $x = \omega$ , which it learns with certainty prior to setting policy and choosing high or low effort. The agency chooses low effort if it observes a sufficiently moderate state, i.e.,  $\omega$  sufficiently close to 0, and chooses high effort if the state is sufficiently extreme, i.e.,  $\omega$  sufficiently far from 0. Figure 2 displays an example of this equilibrium graphically.

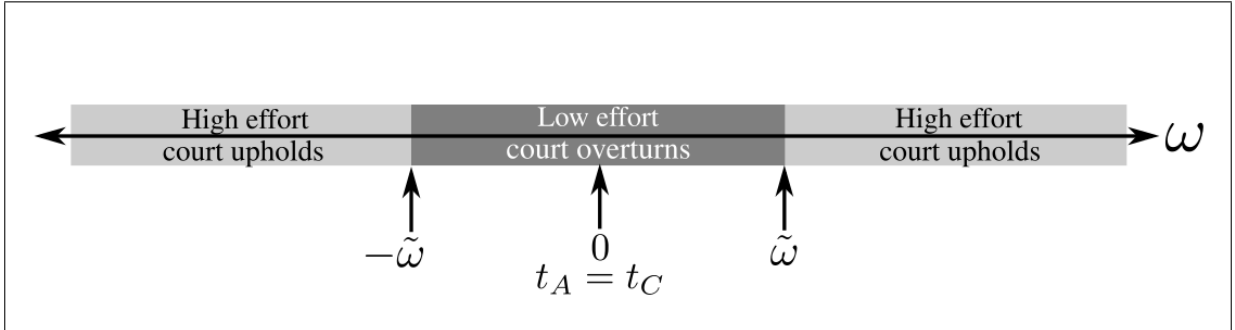


Figure 2: Example of the posited equilibrium

In what follows I construct this equilibrium then show that the results from Proposition 2 in the main text are present here as well.

**Equilibrium judicial review.** The court's subjective expected utility for upholding the agency is given by,

$$U_C(r=0) = -E_{s_A^{x*}}[x - \omega]^2 - V_{s_A^{x*}}[x - \omega] - E[\varepsilon|e]^2 - V[\varepsilon|e].$$

The court's subjective expected utility for reversing the agency is given by,

$$U_C(r=1) = -E[\omega|e]^2 - V[\omega|e].$$

Combining and rearranging, the court's subjective expected payoff for upholding the agency given observed effort  $e$  is given by,

$$\Delta U_C(r=0) = -E_{s_A^{x*}}[x - \omega]^2 - V_{s_A^{x*}}[x - \omega] - E[\varepsilon|e]^2 - V[\varepsilon|e] + E[\omega|e]^2 + V[\omega|e].$$

The court will only uphold the agency if  $\Delta U_C(r=0) \geq 0$ . This gives the incentive compatibility condition for the Court to uphold:

$$E_{s_A^{x*}}[x - \omega]^2 + V_{s_A^{x*}}[x - \omega] + E[\varepsilon|e]^2 + V[\varepsilon|e] \leq E[\omega|e]^2 + V[\omega|e].$$

Note that the agency still employs a sincere policy setting strategy:  $s_A^{x*}(\omega) = \omega$ . Further,  $E[\varepsilon|e] = 0$  and  $V[\varepsilon|e] = V_\varepsilon(e)$ . This reduces the court's incentive compatibility condition to uphold as follows,

$$V_\varepsilon(e) \leq E[\omega|e]^2 + V[\omega|e].$$

Thus, we have the following equilibrium judicial review strategy.

$$s_C^*(e) = \begin{cases} \text{uphold: } r = 0 & \text{if } V_\varepsilon(e) \leq E[\omega|e]^2 + V[\omega|e], \\ \text{reverse: } r = 1 & \text{otherwise.} \end{cases}$$

Notice that this is qualitatively similar to the equilibrium judicial review strategy under the original sequencing. The difference is on the RHS of the court's IC condition. In particular, now the court may learn something about  $\omega$  through its observation of  $e$ . Therefore,  $E[\omega|e]^2 + V[\omega|e]$  only reduces to  $V_F$  (as in the original game) if the agency pools on high or low effort always.

**Agency decision-making.** The agency sets policy  $x$  and chooses effort  $e \in \{0, 1\}$  after observing  $\omega$ . As under the original sequencing the agency has no incentive to set policy at anything other than matching it to the state so  $s_A^{x*}(\omega) = \omega$  (as noted above).

The agency's effort choice can serve as an informative signal about  $\omega$  for the court. This is true in the posited equilibrium. First, consider an agency's expected utility from investing in high effort and being upheld,

$$U_A(e = 1|r = 0) = -\beta V_\varepsilon(1) - \kappa.$$

The agency's expected utility from low effort and being reversed is given by,

$$U_A(e = 0|r = 1) = -\beta \omega^2 - \pi.$$

Combining these and rearranging gives the net expected payoff for high effort and being upheld.

$$\begin{aligned} \Delta U_A(e = 1) &= -\beta V_\varepsilon(1) - \kappa + \beta \omega^2 + \pi, \\ &= \beta(\omega^2 - V_\varepsilon(1)) - \kappa + \pi. \end{aligned}$$

Now, we can rearrange this expression to see what realizations of  $\omega$  are sufficiently extreme to necessitate a high effort choice by the agency:

$$\begin{aligned} \beta(\omega^2 - V_\varepsilon(1)) - \kappa + \pi &\geq 0, \\ \omega^2 &\geq \frac{\beta V_\varepsilon(1) + \kappa - \pi}{\beta}. \end{aligned} \tag{9}$$

This yields the following,

$$e = 1 \iff |\omega| \geq \sqrt{\frac{\beta V_\varepsilon(1) + \kappa - \pi}{\beta}}.$$

and, conversely,

$$e = 0 \iff |\omega| < \sqrt{\frac{\beta V_\varepsilon(1) + \kappa - \pi}{\beta}}.$$

Define  $\tilde{\omega} \equiv \omega > 0$  such that  $\omega = \sqrt{\frac{\beta V_\varepsilon(1) + \kappa - \pi}{\beta}}$  and  $-\tilde{\omega} \equiv \omega < 0$  such that  $\omega = -\sqrt{\frac{\beta V_\varepsilon(1) + \kappa - \pi}{\beta}}$  so that the interval  $(-\tilde{\omega}, \tilde{\omega}) \equiv \left(-\sqrt{\frac{\beta V_\varepsilon(1) + \kappa - \pi}{\beta}}, \sqrt{\frac{\beta V_\varepsilon(1) + \kappa - \pi}{\beta}}\right)$ . Additionally, define this set of possible realizations of  $\omega$  by  $\tilde{\Omega} = \{\forall \omega : \omega \in (-\tilde{\omega}, \tilde{\omega})\}$  so that if the agency observes  $\omega \in \tilde{\Omega}$  it chooses  $e = 0$  and is overturned by the court and if it observes  $\omega \notin \tilde{\Omega}$  (outside of the interval) it chooses  $e = 1$  and is upheld. To ensure (1) that the agency does not simply choose  $e = 1$  always and (2) that the radical is well-behaved assume that reversal aversion is sufficiently low. Specifically,  $\pi < \beta V_\varepsilon(1) + \kappa$ . If this were not true then the agency would always choose  $e = 1$  because its aversion to being reversed overpowers other motivations. This yields the agency's equilibrium effort strategy,

$$s_A^{e*}(\omega) = \begin{cases} \text{High effort: } e = 1 & \text{if } \omega \notin \tilde{\Omega}, \\ \text{Low effort: } e = 0 & \text{if } \omega \in \tilde{\Omega}. \end{cases}$$

This is the equilibrium effort strategy for the agency assuming that the court is employing conditional-deference.

**Completing the equilibrium.** Holding the agency's (pure) strategy outlined above fixed, the court's posterior beliefs about the realization of  $\omega$  conditional on its observation of  $e = 0$  are straightforward. If the court observes  $e = 1$  then it knows with certainty that  $\omega \notin \tilde{\Omega}$  and if it observes  $e = 0$  it knows with certainty that  $\omega \in \tilde{\Omega}$ . This means that the court's updated beliefs are the (conditional) probability distributions over states both within and outside the interval  $\tilde{\Omega}$ :

$$\mu_C(e = 0) = \begin{cases} \frac{f(\omega)}{\int_{-\tilde{\omega}}^{\tilde{\omega}} f(\omega) d\omega} & \text{if } \omega \in \tilde{\Omega}, \\ 0 & \text{otherwise.} \end{cases}$$

$$\mu_C(e = 1) = \begin{cases} \frac{f(\omega)}{\int_{-\tilde{\omega}}^{\tilde{\omega}} f(\omega) d\omega + \int_{\tilde{\omega}}^{\infty} f(\omega) d\omega} & \text{if } \omega \notin \tilde{\Omega}, \\ 0 & \text{otherwise.} \end{cases}$$

All that is left to show is that the court's expected payoffs given the agency's strategy (and correspondingly correct beliefs) are ordered as follows,

$$U_C(r = 0|e = 1) \geq U_C(r = 1|e = 1),$$

$$U_C(r = 0|e = 0) < U_C(r = 1|e = 0).$$

Taking expectations we get back the court's judicial review strategy conditional on the agency's choice of  $e$ :

$$V_\varepsilon(1) \leq E[\omega|e = 1]^2 + V[\omega|e = 1], \text{ and} \quad (10)$$

$$V_\varepsilon(0) > E[\omega|e = 0]^2 + V[\omega|e = 0]. \quad (11)$$

Equation 10 ensures the court upholds when it observes  $e = 1$  and equation 11 ensures the court overturns when it observes  $e = 0$ . Taken together, these conditions imply the court is engaged in conditional-deference review.

All of the analysis above characterizes the equilibrium:

1. The agency always sets  $x = \omega$ .
2. The agency chooses  $e = 0$  if  $\omega \in \tilde{\Omega}$  and  $e = 1$  if  $\omega \notin \tilde{\Omega}$ ,  
where  $\tilde{\Omega} = \left\{ \forall \omega : \omega \in (-\tilde{\omega}, \tilde{\omega}) \equiv \left( -\sqrt{\frac{\beta V_\varepsilon(1) + \kappa - \pi}{\beta}}, \sqrt{\frac{\beta V_\varepsilon(1) + \kappa - \pi}{\beta}} \right) \right\}$ .
3. The court's posterior beliefs are correct given the agency's strategy.
4. The court upholds the agency if and only if it observes  $e = 1$ : i.e.,  $V_\varepsilon(1) \leq E[\omega|e = 1]^2 + V[\omega|e = 1]$ , and overturns the agency otherwise: i.e.,  $V_\varepsilon(0) > E[\omega|e = 0]^2 + V[\omega|e = 0]$ .



### Effects of judicial review.

In this section I show that the results from Proposition 2 in the main text have qualitatively similar counterparts under this alternate sequencing. I will focus specifically on the second sentence of the proposition that summarizes the following:

1. Judicial review can induce high effort when the agency would have invested low effort with no review,
2. Judicial review can induce low effort when the agency would have invested high effort with no review.

Consider the agency's expected payoffs for choosing high and low effort when there is no court reviewing its actions,

$$\begin{aligned} U_A(e = 1|\text{No court}) &= -\beta V_\varepsilon(1) - \kappa, \\ U_A(e = 0|\text{No court}) &= -\beta V_\varepsilon(0). \end{aligned}$$

Combining these yields the incentive compatibility condition for the agency to choose high effort when there is no review,

$$\begin{aligned} \Delta U_A(e = 1|\text{No court}) &= \beta(V_\varepsilon(0) - V_\varepsilon(1)) - \kappa, \\ \beta(V_\varepsilon(0) - V_\varepsilon(1)) &\geq \kappa. \end{aligned} \tag{12}$$

Equation 12 gives the condition that must be met in order for the agency to choose  $e = 1$  when there is no court. If it is not met then the agency chooses  $e = 0$  when there is no court. Given the equilibrium constructed above it is straightforward to see that the results from Proposition 2 also obtain under this alternative sequencing. Recall that the cutoffs for high versus low effort were derived through the agency's incentive compatibility condition to choose high effort given conditional-deference so that cutoff incorporates the agency's decision-making when there is a court present reviewing its

actions. Combining the incentive compatibility conditions when there is no court and when there is a court yield the following results that are qualitatively equivalent to those in Proposition 2 under the original sequencing:

1. if equation 12 fails to hold and  $\omega$  is realized outside the interval  $(-\tilde{\omega}, \tilde{\omega})$  then the agency invests low effort without review and high effort when there is review.
2. if equation 12 does hold and  $\omega$  is realized within the interval then the agency chooses high effort without review and low effort with review.

To further illustrate the equilibrium and the effects of review on effort consider the following specific example in which  $\omega$  is distributed according to a Uniform distribution over  $[-3, 3]$ .

**Example 1.** Consider the following mix of parameters:

$$\begin{aligned}\omega &\sim U[-3, 3], \\ V_{\varepsilon}(1) &= 1, \\ V_{\varepsilon}(0) &= 3.5, \\ \beta &= 1, \\ |\tilde{\omega}| &= 1.\end{aligned}$$

First, the court's prior beliefs regarding  $\omega$  are given by,

$$\begin{aligned}E[\omega] &= \frac{-3+3}{2} = 0, \\ V[\omega] &= \frac{(3-(-3))^2}{12} = 3.\end{aligned}$$

**Equilibrium.** These parameters imply (given the posited separating equilibrium) that  $\forall \omega \in (-\tilde{\omega}, \tilde{\omega}) \equiv (-1, 1)$  the agency chooses  $e = 0$  given the court will overturn any

observation of  $e = 0$ . Conversely,  $\forall \omega \notin (-\tilde{\omega}, \omega) \equiv \omega \leq -1$  or  $\omega \geq 1$  the agency will choose  $e = 1$  given the court will uphold any observation of  $e = 1$ . Holding this agency strategy fixed, consider the court's updated beliefs following an observation of  $e = 0$ .

$$\begin{aligned} E[\omega|e = 0] &= \frac{-1 + 1}{2} = 0, \\ V[\omega|e = 0] &= \frac{(1 - (-1))^2}{12} = \frac{1}{3}. \end{aligned}$$

Thus, when the court observes  $e = 0$  it overturns since,

$$V_\varepsilon(0) = 3.5 > E[\omega|e = 0]^2 + V[\omega|e = 0] = \frac{1}{3}.$$

Now, consider the court's updated beliefs following an observation of  $e = 1$  (still holding the agency's strategy fixed).

$$\begin{aligned} E[\omega|e = 1] &= \frac{(-3 + -1) + (1 + 3)}{2} = 0, \\ V[\omega|e = 1] &= \frac{((-1 - (-3)) + (3 - 1))^2}{12} = \frac{4}{3}. \end{aligned}$$

Thus, when the court observes  $e = 1$  it upholds since,

$$V_\varepsilon(1) = 1 < E[\omega|e = 1]^2 + V[\omega|e = 1] = \frac{4}{3}.$$

Therefore, given the agency's strategy the court will employ conditional-deference, i.e., the court reverses following  $e = 0$  and upholds following  $e = 1$ . Recall that the agency employs this strategy, given the court is employing a conditional-deference strategy, if

$$|\tilde{\omega}| = \sqrt{\frac{\beta V_\varepsilon(1) + \kappa - \pi}{\beta}}.$$

Given the chosen parameters this reduces to,

$$\begin{aligned} 1 &= \sqrt{\frac{1 + \kappa - \pi}{1}}, \\ &= \sqrt{1 + \kappa - \pi}. \end{aligned}$$

So, anytime  $\kappa = \pi$ , in this particular case, this condition is met and the agency will choose  $e = 0$  if  $\omega \in (-1, 1)$  and choose  $e = 1$  if  $\omega \notin (-1, 1)$  given conditional-deference.

**Effects of review.** To illustrate the effects of review recall that when there is no court the agency chooses  $e = 1$  if  $\beta(V_\varepsilon(0) - V_\varepsilon(1)) \geq \kappa$ . First, I will show that there are situations in which the presence of a reviewing court induces the agency to choose high effort when it would have chosen low effort if there were no court. Second, I show that there are also situations in which the presence of a reviewing court induces the agency to choose low effort when it would have chosen high effort without a court (as stated in Proposition 2 of the original game).

**Judicial review induces high effort.** First, consider the case in which  $\kappa = \pi = 3$ . In this case the agency still employs the posited separation strategy because,

$$\begin{aligned} |\tilde{\omega}| &= \sqrt{\frac{\beta V_\varepsilon(1) + \kappa - \pi}{\beta}}, \\ 1 &= \sqrt{\frac{1 * 1 + 3 - 3}{1}} = 1. \end{aligned}$$

When there is no court the agency chooses  $e = 0$  because,

$$\begin{aligned} \beta(V_\varepsilon(0) - V_\varepsilon(1)) &< \kappa, \\ 1(3.5 - 1) &< 3, \\ 2.5 &< 3. \end{aligned}$$

Thus, given this mix of parameters, when there is no court the agency chooses low effort  $e = 0$  with probability 1. However, when a court is present to review the agency, the agency chooses high effort  $e = 1$  with strictly positive probability. This is because there is a positive probability that the realization of the state will be such that  $\omega \notin (-1, 1)$ , which would lead the agency to choose high effort  $e = 1$ . This shows that there are situations in which the agency is induced by the court to choose high effort when it would have chosen low effort if there were no reviewing court.

**Judicial review deters high effort.** Finally, consider the case in which  $\kappa = \pi = 2$ . In this case the agency still employs the posited separation strategy because,

$$\begin{aligned} |\tilde{\omega}| &= \sqrt{\frac{\beta V_{\varepsilon}(1) + \kappa - \pi}{\beta}}, \\ 1 &= \sqrt{\frac{1 * 1 + 2 - 2}{1}} = 1. \end{aligned}$$

When there is no court the agency chooses  $e = 1$  because,

$$\begin{aligned} \beta(V_{\varepsilon}(0) - V_{\varepsilon}(1)) &\geq \kappa, \\ 1(3.5 - 1) &\geq 2, \\ 2.5 &\geq 2. \end{aligned}$$

Thus, given this parameterization, when there is no court the agency chooses high effort  $e = 1$  with probability 1. However, when a court is present to review the agency, there is strictly positive probability that the agency chooses low effort  $e = 0$ . Since there is a positive probability that the realization of the state will be such that  $\omega \in (-1, 1)$ , there is a positive probability that the agency will choose low effort  $e = 0$ . This shows that there are also situations in which the agency would have chosen high effort without a court reviewing, but when facing judicial review chooses low effort.  $\square$

This example illustrates an instance in which the equilibrium holds and the effects of review identified in Proposition 2 of the main text are present. This is sufficient to show that the effects are not dependent on the sequencing. Specifically, this lends itself to the idea that the pathologies identified here that are predicated on credible commitment problems for the overseer and incentive compatibility constraints on the agent are robust to the sequencing of the game. In the particular case discussed here, the “bail out effect” identified in the main text may also obtain in a signaling environment.