

# JUDICIAL AUDITING

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## ABSTRACT

This paper presents a simple framework for analyzing a hierarchical system of judicial auditing. We concentrate on (what we perceive to be) the two principal reasons that courts and/or legislatures tend to scrutinize the decisions of lower-echelon actors: imprecision and ideological bias. In comparing these two reasons, we illustrate how each may yield systematically distinct auditing and reversal behaviors. While auditing for imprecision tends to bring about evenhanded review/reversal, auditing for political bias tends to be contingent on the first mover's chosen action. Examples of these tendencies can be found in a number of legal applications, including administrative law, constitutional law, and interpretive theories of jurisprudence. Our analysis also suggests that political "diversity" among initial decision makers (in addition to its other laudable goals) may be an important and generally underappreciated means for economizing on judicial administrative costs.

## I. INTRODUCTION

NEARLY everyone recognizes that delegating authority conserves scarce institutional resources. Indeed, as the regulatory state has expanded and evolved in increasingly complex and subtle directions, virtually every governmental entity has by necessity delegated at least some of its traditional decision-making authority.<sup>1</sup> Legal institutions are no different: we now

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<sup>1</sup> There is now ample evidence that both the regulatory state and the degree of internal auditing within it have grown consistently throughout the twentieth century, even during periods where deregulatory parties dominated the presidency and/or Congress. See Richard H. Pildes & Cass R. Sunstein, *Reinventing the Regulatory State*, 62 U. Chi. L. Rev. 1, 2 (1995). A similar phenomenon appears manifest in Great Britain. See, for example, Christopher

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stand witness to a correspondingly vast and stratified system of decision-making hierarchies, populated by judicial or quasi-judicial actors—particularly within lower-level courts and administrative agencies—each of whom has been delegated the *de jure* or *de facto* authority to make initial regulatory, legal, and/or policy decisions.<sup>2</sup> Moreover, within a broader analytical framework, it is sometimes appropriate (with the exception of constitutional jurisprudence) to conceive of the entire judicial branch of government as a delegated decision maker for legislative and executive entities.<sup>3</sup>

The benefits of delegation, however, come hard-earned. In spite of all its economizing attraction, delegation (by definition) divorces at least some real authority from a central, accountable actor, creating a fissure within which at least two types of institutional conflict are bound to thrive. First, lower-level decision makers may possess relatively limited resources to collect and process the information that is relevant to the ultimate policy choices at stake, thereby leading to an increased likelihood of error. And second, those who are entrusted with initial decision-making authority need not share the same aspirations or interpretive ideologies as their superiors in the hierarchy, thereby leading to greater strategic manipulation.

While each of these potential problems has been studied in isolation, their combination has garnered significantly less attention among legal scholars.<sup>4</sup> Our chief goal in this essay is to tease out how error costs and agency costs interact with one another within a judicial system and, in particular, how they affect the nature of oversight exercised by upper-echelon actors (for example, high courts) on their lower-level counterparts (for example, trial courts). Using a game-theoretic model of judicial review, we illustrate how the dual concerns of (1) imprecision and (2) ideological bias affect equilibrium auditing stra-

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Hood *et al.*, *Bureaucratic Gamekeeping: Regulation of UK Public Administration 1976–1996* (Economic and Social Research Council study L124251015, September 1997) (noting that since the mid-1970s, the number of auditing and inspecting bodies in the United Kingdom has grown by nearly 20 percent and the staff associated with those bodies has grown by around 60 percent).

<sup>2</sup> In federal administrative agencies, the initial decisions are made by administrative law judges (ALJs). The percentage of ALJ decisions reviewed at higher levels within the agency varies widely. See the data presented in S. Breyer *et al.*, *Administrative Law and Regulatory Policy* 792–94 (1998).

<sup>3</sup> For instance, the U.S. Constitution explicitly authorizes Congress to “make all Laws which shall be necessary and proper for carrying into execution . . . all . . . Powers vested by this Constitution in the Government of the United States.” U.S. Const. art. I, § 8. This power includes, *inter alia*, the ability to change law in a way that alters or nullifies the prospective application of existing judicial opinions, and even retrospective application of such opinions to appealable cases or those pending appeal. See, for example, *Plaut v. Spendthrift Farms*, 514 U.S. 211 (1995).

<sup>4</sup> See, for example, McNollgast, *Legislative Intent: The Use of Positive Political Theory in Statutory Interpretation*, *Law & Contemp. Probs.*, Winter 1994, at 3; Steven Shavell, *The Appeals Process as a Means of Error Correction*, 24 *J. Legal Stud.* 379 (1995).

tegies employed by upper-echelon actors. Our analysis of this model leads to a prediction that these strategies turn critically on which concern tends to predominate. On the one hand, when lower-court imprecision predominates, a rational upper-echelon decision maker will tend to adopt an even-handed policy of intervention, in which the likelihood of review and reversal depends relatively little on the precise content of the lower court's decision. Conversely, when concern over political bias predominates, a rational upper-echelon decision maker will often favor a significantly more contingent strategy, using the precise holding reached below to decide whether to review that decision (or alternatively, to choose the intensity of review).

We will further argue that the auditing strategy described above helps explain some of the traditional conflicts over judicial review. In particular, our analysis reveals that when lower courts are heterogeneous in their ideology, seemingly identical holdings issued by two different lower courts need not be treated alike on appeal. In addition, our analysis provides a useful empirical prediction that bears significantly on the ongoing debate surrounding purported "threats" to judicial independence.<sup>5</sup>

Finally, our analysis isolates a potential benefit that flows from political differences between lower- and upper-echelon decision makers, particularly when *both* imprecision and political bias coexist. Indeed, when an upper-level actor delegates authority to an ideological "clone" that is nonetheless susceptible to error, the upper-level actor may have to adopt a costly strategy of reviewing a relatively large number of holdings. In contrast, when authority is delegated to a politically distinct (but equally error-prone) lower-level actor, the upper-level actor can use her counterpart's political differences as a type of screening mechanism to assist her in deciding whether she should review a particular decision.<sup>6</sup> Moreover, this economizing characteristic of political diversity within hierarchies holds true even when (and in fact especially when) the lower court's information about the "empirical" world is relatively noisy or imprecise.

The remainder of this paper consists of four parts. In Section II, we posit and analyze a game-theoretic model of judicial decision making within a two-tiered hierarchy. There are a number of possible interpretations of such a hierarchy. For example, it might (alternatively) represent the relationship between lower and higher courts, administrative agencies and district courts, or a unitary (statute-interpreting) judiciary and a unitary (statute-

<sup>5</sup> See, for example, ABA Commission on Separation of Powers and Judicial Independence, *An Independent Judiciary* (1997) (hereinafter ABA Report).

<sup>6</sup> For example, were the Supreme Court decidedly more liberal than a circuit court on a particular issue, then a decision by that conservative lower court to uphold a relatively liberal statute (or alternatively, to strike down a relatively conservative one) provides a sufficiently strong signal to the Supreme Court that it need not review the instant opinion.

making) legislature.<sup>7</sup> We then demonstrate that the decision-making heuristics described above characterize equilibrium behavior within the strategic framework of the model. We also show that an error-prone lower-echelon actor may, ironically, be audited relatively less frequently when its political ideology is distinct from that of the upper-echelon actor. In Section III, we attempt to apply these general arguments more specifically. We argue that our strategic account of decision-making heuristics spawns intuitions that are helpful within a number of legal settings, including administrative law, constitutional law, interpretive theories of jurisprudence, and the tension between judicial independence and accountability. Section IV presents concluding remarks followed by a technical Appendix.

## II. A MODEL OF JUDICIAL AUDITING

In this section we develop our principal arguments more formally, through an institutional model of hierarchical judicial review. In particular, we characterize a plausible equilibrium allocation of authority between a lower court and a higher court, when the latter faces costs in reviewing lower-court opinions. We are ultimately interested in characterizing the equilibrium strategy of the higher-echelon actors (such as appellate courts or legislatures) in auditing the decisions of lower-echelon actors (such as trial courts or administrative agencies), and its relationship to both ideological differences and measurement error within the lower-echelon actors.

The analysis below fits squarely within the category of so-called *rational actor* models within political science and economics; we assume that the relevant law-creating actors (in this case, agencies, courts, and/or legislative bodies) have well-specified preferences regarding outcomes and that they act in a way that is strategically calculated so as to satisfy these preferences, given their beliefs about the preferences and actions of other actors.<sup>8</sup>

<sup>7</sup> Although it may seem peculiar at first to think of a legislative entity as a judicial actor, within the strict statutory (as opposed to constitutional) context, legislatures are widely known to act in a manner that is de facto tantamount to reviewing—and possibly overruling—perceived errors in statute interpretation by traditional judicial actors. See note 1 *supra*.

<sup>8</sup> Similar approaches are employed by Donald R. Songer, Jeffrey A. Segal, & Charles M. Cameron, *The Hierarchy of Justice, Testing a Principal-Agent Model of Supreme Court-Circuit Court Interactions*, 38 *Am. J. Pol. Sci.* 673 (1994); David Epstein & Sharyn O'Halloran, *A Theory of Strategic Oversight: Congress, Lobbyists, and the Bureaucracy*, 11 *J. L. Econ. & Org.* 227 (1995); and McNollgast, *Politics and the Courts: A Positive Theory of Judicial Doctrine and the Rule of Law*, 68 *S. Cal. L. Rev.* 1631 (1995). Some have called the approach the "attitudinal model," stressing its emphasis on the dominant role that political ideologies play relative to traditional legal formalism in affecting outcomes. See, for example, Frank B. Cross & Emerson H. Tiller, *Essay: Judicial Partisanship and Obedience to Legal Doctrine: Whistleblowing on the Federal Courts of Appeals*, 107 *Yale L. J.* 2155, 2157 (1997). Our approach is somewhat distinct, however, because it combines the attitudinal approach with a complementary account of judicial review as a form of error correction.

Though such an approach is admittedly stylized, its simplicity enables us to analyze the most intuitively compelling characteristics of a problem and to study their mutual interaction.

### A. *Framework and Fundamentals*

#### 1. Description of the Players and Regulatory Environment

Consider a decision-making hierarchy consisting of two players. The first is denoted by H (representing the “High Court,” or perhaps a court reviewing an administrative agency, or possibly even a legislative body attempting to legislate around a judicial opinion). The second player is denoted by L (representing, respectively, the “Low Court,” or an administrative agency, or possibly a unitary court system). These two players jointly interact in a strategic, hierarchical choice mechanism (described at greater length below), the “outcome” of which determines the content of a legal, public, or regulatory policy.

We conceive of the ultimate outcome as some choice that can be represented by a single point  $y$  that lies somewhere along the real number line. The precise interpretation of  $y$  is left purposely general, but for the sake of discussion (and to motivate a subsequent application of our model), suppose that  $y$  represents the degree of contractual autonomy accorded to market participants over the selection of passive restraints for passenger vehicles.<sup>9</sup> Under this interpretation,  $y = -\infty$  would represent “no autonomy” for buyers and sellers (or, equivalently, extreme regulation and requirements for passive restraint equipment),  $y = \infty$  would represent “infinite autonomy” (or no regulation whatsoever), and intermediate values would represent proportionally intermediate degrees of autonomy.<sup>10</sup>

Players L and H must sequentially make a binary policy choice between two options: the status quo ante state of the law and a “new” regulation. In particular, suppose that  $y_0$  denotes the spatial location of “current law” as dictated by a status quo, and  $y_1$  denotes the “new” law (such as an administrative policy, executive order, statute, or electoral initiative). The locational values of the status quo ante and new proposal are assumed to be common knowledge among the players. Moreover, we shall suppress the mechanism by which these two choices are put on the agenda, noting for

<sup>9</sup> See Section IIIA *infra*.

<sup>10</sup> It might seem more natural to conceive of  $Y$  as the intensity of regulation, so that  $y = -\infty$  would represent “no regulation” and  $y = \infty$  would represent extreme regulation. We have chosen the opposite conception, however, merely for descriptive ease. Given that the desire for regulation is more frequently associated with the political Left, and that  $y = -\infty$  corresponds to the extreme left of the regulatory space  $Y$ , our ordering in fact provides a more natural analogy to the political spectrum.

now that this is a common constraint in legal decision making.<sup>11</sup> In order to explore a particular numerical example, however, we will assume in the text that follows that  $y_0 = -1$  and  $y_1 = 1$ . In terms of the ongoing conceptual example, then, the proposed shift from  $y_0$  to  $y_1$  represents a “deregulatory” change, in the same spirit as the National Highway Traffic Safety Administration’s 1982 decision to rescind a motor vehicle safety standard requiring automobiles to be equipped with “passive restraints,” such as automatic seatbelts or airbags.<sup>12</sup>

The players, acting in sequence, rule on the validity of the proposed change from  $y_0$  to  $y_1$ . Player L is assumed to have no choice whether to review the new regulation (that is, L must hear out a challenge if made).<sup>13</sup> Once L has heard the case, she issues a holding—denoted hereafter by  $y^L$ —representing overturning or upholding the new law, respectively. (Note that  $y^L$  must equal either  $y_0$  or  $y_1$ , since these are the only two choices available to L.) Player H, on the other hand, is less constrained. After L moves, H observes  $y^L$  and is given the option to review L’s holding. The strategies available to H at this point are binary, consisting of either a decision to review L’s decision (that is, “grant” certification) or a decision to abstain from reviewing (“deny” certification).<sup>14</sup> Note that H need not take a “symmetric” approach to auditing: She might, for instance, decide to grant certification only if L overturns  $y_0$ , but not otherwise. In fact, the process of auditing is not a cheap one and may impose costs on H. For the purposes of our example, we shall suppose that it can cost anywhere between \$0 and \$1 for H to audit L’s holding and that the precise realization of this cost distributed uniformly between \$0 and \$1.<sup>15</sup>

<sup>11</sup> The choice of appropriate value for  $y_1$  is itself an interesting stage that might precede this model. One could imagine a legislature with its own preferences trying to come up with a law that would pass muster in the court system. Certainly, the outcome of this game will provide an indication as to which laws would survive relative to  $y_0$ . We hope to pursue this question in greater detail in subsequent work.

<sup>12</sup> See Section IIIA *infra*. The precise values of  $y_0$  and  $y_1$  are not absolutely critical from a qualitative perspective.

<sup>13</sup> We motivate this assumption based on the stylized fact that initial fact finders (such as trial courts and administrative agencies) generally have no choice about hearing litigants’ arguments, with players further up in the hierarchy enjoying substantially more discretion about whether to revisit the issue (and with what intensity to do so). We conjecture the effects of making player L’s decision to collect information endogenous at Section IIC *infra*.

<sup>14</sup> We recognize that for some H/L pairings (such as federal district courts and circuit courts), H’s decision of whether to hear an appeal is not discretionary. However, even in these situations the intensity of review exercised by the appellate court may be subject to considerable discretion. For just such an example, see Section IIIA *infra*.

<sup>15</sup> Explicitly, H is assumed to know the realization of her reviewing cost at the time she makes her own auditing decision, but all that L knows about H’s auditing cost when issuing her initial decision is its uniform probability distribution. The assumption that the costs to

Nevertheless, should H decide to audit L, she will be permitted to hear the case again and then to issue her own holding—denoted hereafter by  $y^H$ —that is assumed to trump L's. Equivalently, the final legal policy that emerges at the end of the game is  $y^H$  should H audit and  $y^L$  should H abstain.

## 2. Judicial Preferences

The judicial decision makers within this model care about two things. First, they are interested in effecting an ultimate legal outcome that is as consistent as possible with their own policy preferences, given their ideology and any empirical information about the world that is available. Second, the players wish to avoid bearing the administrative costs of reviewing others' decisions.<sup>16</sup> To this end, then, we shall suppose that each of L and H attempts to minimize the expected sum of (1) the expected squared distance<sup>17</sup> between the final legal outcome  $y^F$  and their respective "ideal points" and (2) any administrative costs they personally bear in reviewing a decision from below.<sup>18</sup>

The term "ideal point" has a special connotation in our analysis. In particular, we assume that each player's most-preferred outcome in  $y$ -space depends on an existing (and potentially verifiable)<sup>19</sup> state of the world. From a practical standpoint, the state of the world could represent any empirical determination that is relevant to a subsequent policy choice by judges.

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review lie uniformly between \$0 and \$1 is a simplifying one. In the Appendix, we present a more general framework in which the cost of auditing (interpretable as an opportunity cost) is given by  $c \in C \equiv [0, \infty)$ , with associated distribution function  $G(c)$ . Additionally, it is possible for the lower court to face an "embarrassment" cost of having been reversed. We suppress this added assumption (for now) to concentrate on the central intuitions of our analysis, but revisit it again (conjecturing how it would affect our conclusions) at Section IIC *infra*.

<sup>16</sup> In order to conduct any analysis of judicial behavior within the sequential framework described above, one must first specify how judges evaluate various legal outcomes. Within a game-theoretic framework, it is thus important to make some assumption about what the actors in this model attempt to "maximize" in making their decisions. To be sure, this question is the subject of significant current debate, but that debate is largely beyond our ken for current purposes. For an even more comprehensive list of judicial concerns than those employed here (and review of the literature), see Richard A. Posner, *Overcoming Law* 108–44 (1995).

<sup>17</sup> The distance function utilized is for mathematical convenience, as we have no good intuitions about the exact shape of this function (other than it is increasing as  $y$  moves away from the player's ideal point).

<sup>18</sup> Quite obviously, the second consideration is only relevant for player H, since player L cannot avoid having to decide on a given case. See note 13 *supra*.

<sup>19</sup> We say "potentially" because the verifiability of the state of the world depends on the precision with which adjudicating players can measure it, a question taken up at greater length below.

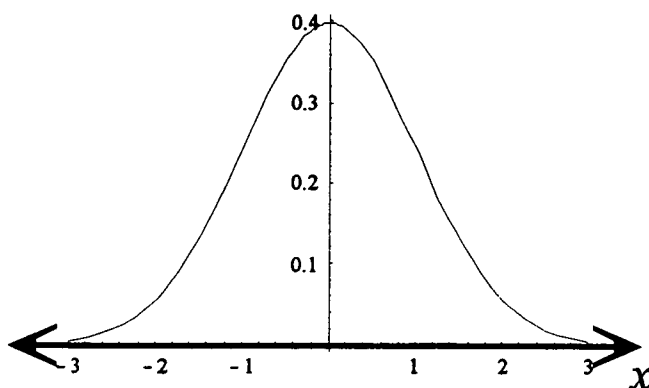


FIGURE 1.—Prior density of the state of the world ( $X$ )

Thus, borrowing from the example above, the state of the world might embody scientific evidence about the marginal net benefits of increasing the autonomy of market participants over the selection of safety restraints in passenger vehicles. To simplify matters, we shall assume that the relevant characteristics of the state of the world can be represented by a one-dimensional random variable  $X$ , whose realized value  $x$  could be any point on the real line between  $-\infty$  and  $\infty$ .<sup>20</sup> Under the interpretation above, then,  $x = -\infty$  would denote extremely small net benefits of autonomy, while  $x = \infty$  would denote the opposite. For analytical simplicity, we shall assume that both players begin with identical prior beliefs that  $X$  is distributed according to a normal distribution, with mean 0 and variance 1. Figure 1 depicts the classic bell-shaped structure of the standard normal probability density.<sup>21</sup>

Given the state of the world, each player's ideal point is assumed to be governed by a correspondence between a realized state of the world (that is,  $x$ ) and a legal outcome ( $y$ ). This correspondence, of course, might differ among the players according to their ideology. In our motivating example, for instance, players who place relative high a priori value on personal liberty would require a fairly strong evidentiary showing to convince them

<sup>20</sup> More formally, we assume that  $x \in X \equiv \mathfrak{R}$ .

<sup>21</sup> In the Appendix, we present a more general framework in which the priors on  $X$  are assumed normal with mean  $\mu$  and variance  $1/\tau$ , so that the precision of the players' prior beliefs on  $X$  is simply  $\tau$ . The qualitative results below are fully generalizable to that framework. In fact, this framework even lends itself to the analysis of an "ignorant" prior: which corresponds to a limiting distribution in which  $\tau \rightarrow 0$ . Although the prior distribution on  $X$  is not well defined for this limiting case, the posterior distributions may well be. See Morris H. DeGroot, *Optimal Statistical Decisions* 190–98 (1970).



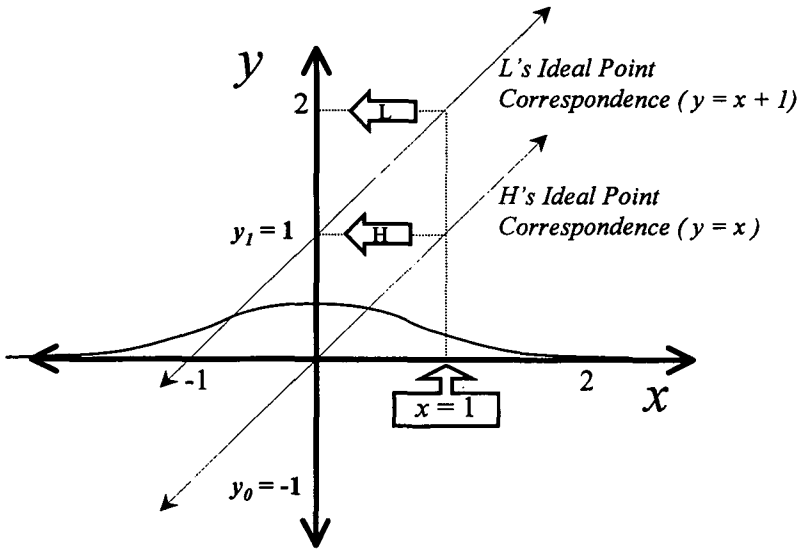


FIGURE 2.—H's and L's ideal point correspondences ( $\Theta = 1$ )

that requiring safety restraints at the cost of constraining individual autonomy is worthwhile. Other players who value safety, on the other hand, might require analogously strong evidence to convince them that the relative dangers in constraining autonomy are large. We attempt to capture the intuition behind these interpretive differences by assuming that player H (whom we shall treat as a baseline player) possesses an ideology that is completely “centrist.” That is, if the state of the world were equal to  $x$ , H’s ideal law would simply set  $y = x$ . In contrast, we assume L’s ideal point is represented by  $x + \theta$ , where  $\theta$  is a parameter reflecting L’s ideology relative to H. Note that if  $\theta > 0$ , L’s ideal point is uniformly higher (more libertarian) than H’s for every possible state of the world. Such a situation is captured in Figure 2 for the special case of  $\theta = 1$ , indicating a situation in which L is more reticent than is H to constrain individual autonomy through regulation. Note from the figure that if the state of the world were  $x = 1$ , then player H’s ideal law would also be  $y = 1$ , but that L’s ideal point would be even higher (that is, less regulatory) than H’s, at  $y = 2$ . Conversely, if  $\theta < 0$ , L’s ideal point is uniformly lower (more regulatory) than H’s for every possible realization of facts.<sup>22</sup>

<sup>22</sup> The differential mapping from  $x$  into  $y$  is, of course, tantamount to asserting that the two players differ in how they interpret known facts  $x$ .

### 3. Informational Environment

The above details describe each player's preference correspondence between "facts" and "law," but conditional upon knowing the true state of the world. Such information, however, is generally not easy to come by, which (in our minds) provides a principal rationale for having a court hear a case—that is, to receive some more refined information about the existing state of the world. Within the context of our model, then, the process of hearing a case is tantamount to receiving a signal (albeit possibly a noisy one) about the true state of the world. The precise characteristics of these signals are detailed below.

When L hears a case, she observes a signal, which we shall represent with a random variable,  $Z$ . We shall suppose that L's signal is not fully informative, in that it consists of the true state of the world plus some additional "noise." In particular,  $Z$  is drawn from a normal distribution with a mean precisely equal to the true state of the world,  $x$ , and variance equal to  $1/\gamma \geq 0$ , so that the precision of L's signal is  $\gamma > 0$ . Note that implicit in this definition (though not critical) is an assumption that L receives an unbiased signal of the facts. Of greater importance here is the precision parameter  $\gamma$ , which represents a measure of L's accuracy when adjudicating the facts. If  $\gamma$  is close to zero, player L receives a somewhat uninformative signal about the world. Conversely, as  $\gamma$  grows arbitrarily large, the accuracy of L's signal grows accordingly.

In contrast to L, player H's decision comes in two stages: H must first decide whether to review L's decision, and then she must rule on the merits should she decide to audit. In making the former decision, we assume that H may observe only L's final decision,  $y^L$  (making whatever inferences she can from L's decision). Should H decide to audit, however, she will be able to review the lower court's evidentiary record, thereby observing the realization of  $Z$  directly. Additionally, the process of auditing gives H access to a second signal,  $V$ , which is assumed to be normally distributed independent of  $Z$ , with mean  $x$  and precision  $\sigma \geq 0$ . The intuitive interpretation of  $V$  is that it embodies additional information that is sometimes at the disposal of a reviewing entity (in the form of the parties' appellate briefs, amici briefs, additional questioning, and the like). The parameter  $\sigma$  can be interpreted as H's marginal accuracy advantage over L. As  $\sigma$  gets close to zero, H's decision is not significantly better informed than L's (though, of course, political differences may dictate a different ideal point for the same signal). However, as  $\sigma$  grows large, H's knowledge about the state of the world becomes increasingly more informed than L's.

As noted above, H's cost of auditing is unobservable to L at the time she renders her decision. This could be either because it is privately known by

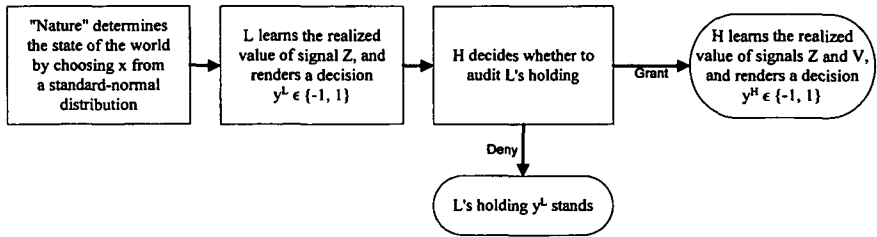


FIGURE 3.—Sequence of moves for judicial auditing game

H or (more plausibly) because when L makes her decision, neither party knows the next period’s workload of H, which directly affects H’s opportunity cost associated with hearing this case.<sup>23</sup> The precise sequence of the interaction between L and H is represented in Figure 3.

*B. Equilibrium Behavior*

With the framework of the model fully specified, we now proceed to consider the “equilibrium” behavior of the respective players. In order to avoid an overly technical and tedious analysis of this framework (which is beyond the scope of this paper), we shall concentrate on a few questions that bear directly on the relationship between the relative imprecision of L and ideological differences between H and L. In particular, we are interested in the principal determinants of both the auditing and reversal rate exhibited by H. For readers who are somewhat uninterested in the equilibrium description, our primary insights are as follows:

1. Player H will tend to audit L for one of two reasons: (1) ideological differences between L and H (embodied by a value of  $\theta$  that differs from zero) and (2) imprecision of L relative to H (embodied by a value of  $\sigma$  that differs from zero).
2. When imprecision dominates ideology as a reason for auditing, H will tend to engage in a two-sided review strategy, in which the rates of auditing and reversal are qualitatively similar regardless of whether L’s decision favors  $y_0$  or  $y_1$ .
3. When ideology dominates imprecision as a reason for auditing, H will tend to engage in a one-sided review strategy, in which H audits only those

<sup>23</sup> The realized opportunity cost of reviewing a case might be interpreted as the shadow value on a binding constraint that H faces limiting it to hearing some fixed number of cases. See McNollgast, *supra* note 7. Under this interpretation, H’s workload is assumed exogenous; although particularly productive lower courts or collusion among lower courts might make H’s workload endogenous, we do not examine such possibilities here.

decisions that are consistent with L's ideological leanings, and not those that are inconsistent with them.

4. Because a difference in ideology saves H from having to audit at least one type of L's decisions, in certain (though not all) circumstances H may review an ideological adversary's opinions less often than those of an ideological clone. An interesting consequence of this last observation is that an ideologically diverse judiciary at the lower levels may play a cost-saving role in administering a judicial auditing system.

To best illustrate these arguments, we find it most convenient to consider a number of special cases of the framework described above. First, we will consider the case in which the sole reason for auditing is to correct for L's relative imprecision because there are no ideological differences between H and L. Second, we will consider the case in which the sole reason for auditing is to respond to ideological differences because H has no informational advantage over L. Finally, we will compare a few cases in which both imprecision and ideological differences provide H with rationale for reviewing L.

*Case 1: Auditing for "Pure Imprecision" ( $\theta = 0$ ;  $\sigma$  "Large" Relative to  $\gamma$ ).* Consider first the case in which H's motivation to review L emanates *solely* from superior information about the world and not from ideological differences. In terms of the parameters of the model above, this case corresponds to a situation where  $\theta = 0$ , but  $\sigma$  is "large."<sup>24</sup> For ease of explanation, suppose in particular that  $\gamma = 1/2$  and  $\sigma = 1$ . In such an environment, what equilibrium strategies will the players exhibit?

Before answering this question numerically, it seems prudent first to at least attempt to answer it intuitively, keeping in mind the respective players' information at the time that each acts. Recall that the signals received by L and H are informative indications about the existing state of the world. Moreover, the parties' signals are positively correlated with the underlying state of the world, so that the larger the respective player's signal, the stronger the evidentiary case for favoring  $y_1$  over  $y_0$  (regardless of the players' respective ideologies). Using this intuition, one would guess that L would be more likely to support the new regulation ( $y_1$ ) when she observes a relatively high signal ( $z$ ) and, conversely, would tend to prefer the status quo ante ( $y_0$ ) when she observes a relatively low signal. The same can be said for H, at least in those situations where H audits L's opinion: only when the combined signals observed by H (that is,  $z$  and  $v$ ) are sufficiently high will H will tend to favor the new regulation, and not otherwise.

<sup>24</sup> It is important to note that  $\sigma$  need not be larger than  $\gamma$ , only that it be positive. Recall that since an auditing H is assumed to observe both L's signal  $z$  and her own signal  $v$ ,  $\sigma$  measures H's advantage in precision over and above L's, and thus whenever  $\sigma > 0$ , H has an informational advantage over L.

TABLE 1  
EQUILIBRIUM STRATEGIES FOR PLAYERS H AND L: PURE IMPRECISION

Player and Action	Equilibrium Strategy
L's holding ( $y^L$ )	Uphold ( $y^L = y_1 = 1$ ) whenever $z \geq 0$ Strike down ( $y^L = y_0 = -1$ ) whenever $z < 0$
H's auditing rate	Audit $y_1$ ( $y^L = 1$ ) 18% of the time Audit $y_0$ ( $y^L = -1$ ) 18% of the time
H's holding ( $y^H$ ) if H audits	Uphold ( $y^H = y_1 = 1$ ) whenever $\frac{1}{2}z + v \geq 0$ Strike down ( $y^H = y_0 = -1$ ) whenever $\frac{1}{2}z + v < 0$

The equilibrium strategies of the parties in the “pure imprecision” case are specified in Table 1. Note from the table that L’s and H’s strategies correspond well with the intuitions developed above. Indeed, L (the first mover) will base her holding solely on the content of her signal,  $z$ , and its position relative to her equilibrium “cut point” at  $z = 0$ . When  $z$  is negative, L will favor the status quo; when  $z$  is positive, L will favor the new regulation. This seems a sensible strategy on intuitive grounds, since L shares the same ideology as H and she (like H) begins with prior beliefs that give her no strong ex ante preference between the status quo and the new regulation. After learning the value of  $z$ , however, L can make a more refined deduction about whether the true state of the world ( $x$ ) is closer to  $y_0 = -1$  or to  $y_1 = 1$  and will fashion her holding accordingly.

In deciding whether to audit L’s opinion, H may take some solace from knowing that L shares a common ideology and, thus, employs a similar decision-making heuristic (albeit with more limited information).<sup>25</sup> Consequently, H will tend audit only if the expected value of the additional information is equal to or exceeds the costs of auditing. Given L’s strategy, H is indifferent between auditing L and abstaining when her realized cost of auditing is approximately \$0.18. Thus, viewed from the ex ante perspective, the probability that H audits either type of holding is 18 percent.<sup>26</sup>

Finally, should H decide to audit L, she will learn the content of not only

<sup>25</sup> Importantly, if player H adopted an asymmetric auditing policy, the shared ideologies among the players might actually provide L with a perverse incentive to choose the holding that is most likely to be reviewed, no matter what her signal may be. The intuition behind this behavior is that L cares only about the expected distance between the *final* legal outcome and her ideal point, and H must privately bear the cost of collecting the additional signal about  $x$ . Player L may therefore have an incentive to free ride off of H’s efforts, at least if L faces no embarrassment costs associated with reversal.

<sup>26</sup> That is, since the cost of auditing is uniformly distributed on  $[0, 1]$ , the ex ante probability of H auditing is equal to the ex ante probability that her costs are below \$0.18. This numerical figure, and those to follow, are based on a numerical solution to the model specified here and described in greater detail in the Appendix.

L's realized signal ( $z$ ) but also an independent signal ( $v$ ) that adds greater precision to her inference about the state of the world. Like L, H will base her decision on the content of her information but in this case will form a composite of the two available signals in order to determine an outcome. Note that the composite signal is simply the sum of the two signals H observes, weighted by their respective levels of precision. Thus, H's observation of  $v$  will receive twice the weight as her observation of  $z$ . Consequently, the (unconditional) probability that H reverses L is also symmetric and equal to approximately 3.3 percent.

Before moving on, there are a few qualitative features of the "pure imprecision" case that bear emphasis. First, note that when the dominant reason for auditing is L's imprecision (rather than ideology), player H will tend to adopt a *two-sided auditing procedure*, in which she is equally likely to review a decision to uphold the new regulation as she is to review a decision striking it down.<sup>27</sup> Moreover, not only is the auditing rate symmetric, but it also is positively related to the informational advantage that H has over L (embodied by  $\sigma$ ). Thus, for example, if H's advantage were smaller than that depicted in the table (such as  $\sigma = 1/2$ ), then the *ex ante* auditing rate would fall to less than 5 percent and the *ex ante* probability of reversal would analogously fall to less than 1 percent. Conversely, if H's advantage were significantly larger (such as  $\sigma = 2$ ), then the auditing rate would increase to around 36 percent and the reversal rate would likewise increase to approximately 6.7 percent.

*Case 2: Auditing for "Pure Ideology" ( $\theta \neq 0$ ;  $\sigma$  "Small" Relative to  $\gamma$ ).* Now consider the case in which H's motivation to review L emanates solely from a divergent ideology and not from L's relative imprecision. In terms of our model, this case corresponds to a situation where  $\theta \neq 0$  and  $\sigma$  is relatively "small." For the purposes of illustration, suppose in particular that  $\theta = 1$  (so that L has a more deregulatory ideology than does H),  $\gamma = 1/2$ , and  $\sigma = 0$ . In such an environment, what equilibrium strategies will the players exhibit?

Once again, it seems prudent first to explore intuitively how the players would respond to such an environment. Even though the parties' ideologies differ, it is still the case that both L and H would more likely tend to support the new regulation ( $y_1$ ) when they each observe high signals and would tend to prefer the status quo ante ( $y_0$ ) when they observe low signals. The only difference in this case, however, is that L has a decidedly more

<sup>27</sup> One small caveat deserves mention here: the two-sided auditing strategy adopted by H is accentuated when (as in this example) the two possible outcomes ( $y_0$  and  $y_1$ ) are equally preferable on a priori grounds. Nevertheless, even when such a condition fails to hold, our qualitative account of the equilibria persists (with some modifications).

TABLE 2  
EQUILIBRIUM STRATEGIES FOR PLAYERS H AND L: PURE IDEOLOGY

Player and Action	Equilibrium Strategy
L's holding ( $y^L$ )	Uphold ( $y^L = y_1 = 1$ ) whenever $z \geq -2.9$ Strike down ( $y^L = y_0 = -1$ ) whenever $z < -2.9$
H's auditing rate	Audit $y_1$ ( $y^L = 1$ ) 65% of the time Audit $y_0$ ( $y^L = -1$ ) 0% of the time
H's holding ( $y^H$ ) if H audits	Uphold ( $y^H = y_1 = 1$ ) whenever $z \geq 0$ Strike down ( $y^H = y_0 = -1$ ) whenever $z < 0$

autonomy-oriented ideology than does H. As such, it would take a significantly stronger factual case against personal autonomy to convince L that  $y_0$  is preferable to  $y_1$ . Moreover, because L is a "harder sell" on regulatory stances than is her counterpart H, one could easily imagine that knowledge of these differences would likewise affect H's auditing strategy, since H would reasonably perceive L's holding as a biased distortion of the signal L observed.

The equilibrium strategies of the parties in the "pure ideology" case are specified in Table 2. Once again, L's and H's equilibrium strategies correspond well with the intuitions developed above. Indeed, L will favor the (regulatory) status quo ante only if the evidence from the case strongly supports regulation ( $z < -2.9$ ). Otherwise, L will tend to support the deregulatory option.

L's ideological bent provides an interesting strategic tool for H in deciding whether to audit L's opinion. In particular, it allows H to pursue a one-sided auditing strategy. She will never choose to audit a decision by L that favors the status quo ante ( $y_0$ ). H's decision not to audit such a holding is perfectly sensible and stems from the following reasoning: "L's holding tells me that she observed a signal that was sufficiently convincing to overcome her own penchant for autonomy. Since I am much more sympathetic to proregulatory policies, and since auditing will yield no more information to me than that which L possessed when making her decision, it is clear that I should not review this decision."<sup>28</sup>

By the reverse reasoning, L's relative ideology will make H even more

<sup>28</sup> For the pop culture cognoscenti, the reasoning described in the text is much akin to that of the 1970s-era television commercials starring the extraordinarily finicky child named "Mikey," purported to hate everything. In each commercial, Mikey's clever brothers exploited their younger sibling's discriminating tastes by using him to screen among new breakfast cereals, correctly reasoning that "if Mikey likes it, we'll all like it a fortiori." (It is unlikely that Mikey's siblings were actually conversant in pretentious phrases like "a fortiori," but the take-away message was nonetheless the same.)

TABLE 3  
A COMPARISON OF EXPECTED AUDIT AND REVERSAL RATES (%)

Expected Rate	Pure Imprecision ( $\theta = 0, \gamma = .5, \sigma = 1$ ) (1)	Mixed Motive ( $\theta = .25, \gamma = .5, \sigma = 1$ ) (2)	Pure Imprecision ( $\theta = 0, \gamma = .2, \sigma = 1$ ) (3)
Audit	18	15	23
Reversal	3.3	4.8	5.1

suspicious when L issues a holding that supports the new deregulatory policy  $y_1$ . Indeed, H will be unsure whether L issued such a holding on account of a strong signal or because L's ideological proclivities caused her to interpret an otherwise weak signal in a biased fashion. Consequently, then, a decision by L to uphold the new regulation will be extremely susceptible to review by H: 65 percent likely, in this example.

Finally, when H decides to audit, she will base her opinion solely on the content of the same signal that was observed by L, since in this case H is assumed to have no informational advantage over L. Thus, when  $z < 0$ , H will favor the status quo; when  $z > 0$ , H will favor the new regulation. All told, the expected rate of reversal for this case is approximately 26 percent, a rate that tends to grow as the ideological differences between H and L widen.

*Case 3: Auditing for "Mixed Motives" ( $\theta \neq 0$ ;  $\sigma$  "Large" Relative to  $\gamma$ ).* The previous two cases describe how *either* relative imprecision or relative political bias can create incentives for H to audit's L's decisions. It is also possible to explore what happens when *both* incentives exist. Doing so, however, does not substantially affect the intuitions illustrated above. In particular, when both imprecision and ideology exist, H's auditing decision will tend to respond to the most dominant effect. Thus, for example, if one slightly alters case 1, so that  $\gamma = 1/2$ , and  $\sigma = 1$ , but  $\theta$  takes on a positive but relatively small value such as .05, the equilibrium strategies change slightly (but not dramatically) in the direction of one-sided auditing. Rather than employ symmetric auditing at a frequency of 18 percent, H will now audit a  $y_0$  holding 13 percent of the time but will audit a  $y_1$  at a 23 percent rate. This behavior still constitutes two-sided auditing, but it is becoming increasingly asymmetric and moving in the direction of the exclusive one-sided auditing strategy discussed in case 2.

Perhaps of greater interest is the question of how ideological differences affect auditing and reversal rates. Although one's intuition is that *ceteris paribus*, greater ideological differences should be reflected in greater rates of review and reversal, this need not always be the case. For example, Table 3 compares (1) "pure imprecision" as per case 1, (2) a small variation of



case 1 in which L has slightly antiregulatory proclivity of  $\theta = .25$ , and (3) a different version of the pure-imprecision case in which the precision of L's signal is  $\gamma = 0.2$ .

Consider first the comparison of columns 1 and 2, which differ only the ideology parameter  $\theta$  (with L having a slight deregulatory bias in column 2). Although the reversal rate is as one's intuition might suggest, the expected audit rate for column 2 is in fact lower than that of column 1, even with relative precision levels held constant. This lower rate of review reflects a potential benefit of a one-sided auditing regime, in which H need audit only one type of decision by L. In order to implement such a regime, however, it is necessary for L to have an ideology that is distinct from H's. To the extent that H's workload makes it difficult for her to audit all cases, the comparison of columns 1 and 2 suggests that political differences between L and H may serve to economize on the frequency of audits. Moreover, as a comparison of columns 2 and 3 illustrates, H may both audit and reverse a relatively accurate (though politically distinct) L less often than she would one whose ideological bent was closer to H's but who was relatively inaccurate. Once again, this comparison suggests that there are some plausible situations in which some "diversity" in the political ideology of lower-echelon actors may be beneficial to those further up in the decision-making hierarchy.<sup>29</sup>

Moreover, these observations suggest that attempts to measure empirically the role of ideology within the judiciary should exercise caution in interpreting the relationship between politics and judicial review. As noted above, it is tempting to think that observed review and reversal rates are a reliable proxy for ideological differences between lower- and upper-echelon judicial actors.<sup>30</sup> As this discussion demonstrates, however, empirical auditing and reversal rates need not bear a systematic relationship to political differences when there is variable precision within lower courts.<sup>31</sup>

### C. Robustness

The analysis above has made a number of simplifying assumptions on the structure of the game in order to underscore the principal intuitions of

<sup>29</sup> It is important to qualify this conclusion in at least two respects. First, only moderate amounts of diversity within lower courts can have the economizing effects described in the text. Indeed, if the lower court were an "ideologue" (for example,  $\theta = \infty$ ), then the holding issued by L would provide a completely uninformative signal to H. Second, even when H's ideology corresponds with that of society at large, it need not follow that maximizing H's welfare equates to maximizing society's, since the holding issued by H is a public good while the costs of auditing are borne privately by H. Hence, it is possible for judicial diversity to be good for H but actually bad for society.

<sup>30</sup> See, for example, Cross & Tiller, *supra* note 8.

<sup>31</sup> This discussion is taken up again in Section III B *infra*.

our model. While such simplifications are common to all applied models, it is nonetheless important to explore whether the model's results are robust to variations in these assumptions. Before moving on to our principal applications, then, we briefly comment on two such variations, conjecturing how they would affect our results.

First, our analysis has thus far assumed that if H audits and reverses L's holding, L incurs no detriment over and above the "indirect" costs she suffers from a (potentially) less desirable outcome in the case. In some (though perhaps not all) contexts, however, a reversal by H can impose nontrivial direct costs on L, such as damage to one's reputation or simple dignitary harm. The exclusion of direct reversal costs such as these from our model probably biases our results in the direction of overstating the starkness of one-sided auditing. To understand why, consider an extreme case of pure ideological differences, in which L suffers a cost from reversal that is extremely large relative to other parameters in the model.<sup>32</sup> In such an instance, player L will tend to care principally about minimizing the probability she is audited and overruled; the ideological differences with H are now unimportant. Consequently, L's equilibrium behavior will tend to ignore such ideological differences, and L will decide the instant case as if she possessed H's preferences. Indeed, if L's equilibrium strategy prescribed deciding the case in a manner more consistent with her own ideology, H's best response would be to utilize an asymmetric monitoring strategy, reviewing only those decisions that are consistent with L's political leanings. Predicting this response, L would have an incentive to issue holdings that are contrary to her ideological preferences, which, in turn, would lead H to adopt the opposite one-sided auditing strategy, and so on, ad infinitum. This cycling behavior suggests that the only plausible equilibrium in the case of large direct reversal costs entails L adopting H's preferences to decide the case and H engaging in symmetric, two-sided auditing. In less extreme cases, of course (for example, where the relative direct costs of reversal are moderate or small), L's greater tolerance for reversals will lead to an intermediate sort of equilibrium, where H's auditing strategy is qualitatively two-sided but substantively stacked against those holdings that are consistent with L's relative ideology. Thus, the introduction of direct reversal costs will tend to dampen the predicted differences between pure ideology and pure imprecision, but it will not eliminate these differences so long as these direct costs do not swamp other concerns.

Second, our analysis assumed that player L had no choice but to hear a case while player H had complete discretion about whether to bear the costs

<sup>32</sup> In particular, suppose that  $\theta \neq 0$ ,  $\sigma$  is small relative to  $\gamma$ , and L suffers a direct cost of  $\beta$  if H audits and overturns L's holding, where  $\beta$  is positive and arbitrarily large.

of auditing. While such an assumption is probably justified in many instances, there may well be others where L has some discretion about whether to expend any effort in hearing a case. Such a variation, however, seems unlikely to nullify our original intuitions and may sometimes even amplify them. Consider, for example, an extreme case in which L and H differ only by ideology but L faces an arbitrarily large cost of effort in hearing a case. In such a circumstance, L will never choose to expend effort and will simply issue a holding based only on her *ex ante* information about *x*. Knowing that H's realized cost of auditing may sometimes be prohibitive, in equilibrium a rational L would issue the holding that comports best with her *ex ante* inclinations and ideology. Even though H *may* audit such a holding (now perhaps even more frequently than before), there is at least a chance that she will not, and taking such a gamble can often be more attractive than the alternative of issuing the opposite holding and having it stand. At the very least, then, the introduction of endogenous effort by L may complicate the intuitions above, but it need not reverse them.

### III. APPLICATIONS

The example from the previous section suggests some interesting predictions about auditing behavior among upper-echelon judicial actors. Most notably, it predicts an auditing strategy that can be either even-handed or asymmetric, depending on whether the dominant reason for reviewing is (respectively) imprecision or ideology. In this section, we use these intuitions to provide an interpretation of judicial behavior in a number of specific cases, and we posit its relevance for more general theories of adjudication.

#### A. *One-Sided Review in Legal Doctrine*

The issue of whether courts should apply one-sided or two-sided review of lower-level decision makers sometimes bursts into doctrinal prominence. Below we consider two examples of such episodes.

Before proceeding, however, one caveat deserves mention. Both of the examples explored below involve the review of regulations promulgated by federal administrative agencies. In each example, the administrative agency formulates a regulation, which is then challenged in the court of appeals.<sup>33</sup> The court of appeals's decision is then challenged in the Supreme Court. Thus, it appears that there are three levels of hierarchy, and our model of two levels does not apply in any straightforward way.

<sup>33</sup> Such cases are, in general, appealed directly to the court of appeals.

Nevertheless, there is a way to reconcile our model's results with the institutional structure of judicial review. To see how, assume first that the court of appeals is choosing strategically only with respect to the administrative agency.<sup>34</sup> Second, the Supreme Court, when it reviews the case, is choosing a rule for the court of appeals to apply in subsequent cases of this sort. When doing so, the Supreme Court is telling the court of appeals to decide future cases like this in the same way that the Supreme Court would if it were in the place of the court of appeals.

Such a pair of strategies may not be optimal for a fully rational court of appeals and Supreme Court. The fully optimal strategies chosen in a three-level game of hierarchy may differ from the equilibria described in this section and may be quite complex.<sup>35</sup> Fully specifying and solving such a model would be quite complicated and lies beyond the scope of our article. But the descriptions in the examples below can be understood and appreciated as a boundedly rational implementation of the optimal strategies derived above. The players have managed to understand and solve the two-level game of hierarchy—no mean feat by itself—and are doing the best they can by trying to utilize the two-level strategies in the ways described.<sup>36</sup>

### 1. Review of Administrative Decisions

Consider first a recurrent debate from administrative law. When an administrative agency promulgates a regulation that is admittedly within the agency's delegation, the parties subject to the regulation sometimes challenge the regulation as being "arbitrary or capricious."<sup>37</sup> The federal courts must then evaluate the regulation. At other times agencies take deregulatory actions by, for example, rescinding previously adopted regulations. Deregulatory actions can also be challenged as being "arbitrary or capricious." A central issue in such cases is whether courts should apply a more de-

<sup>34</sup> This is most likely because the probability of review is so small.

<sup>35</sup> See Emerson H. Tiller & Pablo T. Spiller, *Strategic Instruments: Legal Structure and Political Games in Administrative Law*, 15 *J. L. Econ. & Org.* 349 (1999).

<sup>36</sup> Completely solving such a model of bounded rationality is beyond the scope of this paper. There is another possible way to understand the following pair of examples. If the Supreme Court correctly believes that the court of appeals will follow the Supreme Court's directions as to any particular class of cases as a fully honest agent, but that the court of appeals either will not or cannot follow a general direction to "do as I would do in all cases," then the discussions in the opinions at the Supreme Court are fully consistent with our model. The Supreme Court justices can be understood as working out, without our two-level hierarchy, the appropriate strategy from their point of view. They then direct the court of appeals to implement the appropriate strategy. The court of appeals, which is not behaving strategically with respect to the Supreme Court, works out its own best two-level hierarchical strategy in the cases below.

<sup>37</sup> 5 U.S.C. § 706 (1999).

manding, less demanding, or equally demanding standard when evaluating deregulatory actions by administrative agencies, as compared to the standard applied to regulatory actions by the same agencies.

The Supreme Court directly faced this issue in *Motor Vehicle Manufacturers' Association v. State Farm Mutual Automobile Insurance Company*.<sup>38</sup> In *State Farm*, the Court evaluated the Reagan-era National Highway Traffic Safety Administration's (NHTSA) decision to rescind a motor vehicle safety standard that had required that all automobiles produced after 1982 be equipped with "passive restraints," such as automatic seatbelts or airbags.

Because NHTSA's action was deregulatory, the Court had to consider the parties' contentions that the appropriate standard of review was different from that for regulatory action. In an opinion by Abner Mikva (a Democrat often perceived as a political liberal), the court of appeals—after an extensive examination of the legislative history of the acts involved (and considerable handwringing)<sup>39</sup>—finally concluded that it must review the rescission of a safety standard more closely than a promulgation of a safety standard. Put differently, the court of appeals showed less deference to the deregulatory action than it would to a regulatory action. In complete contrast, the NHTSA argued that rescission of a safety standard deserved less intense review (and hence more deference) from the reviewing court than the promulgation of a safety standard. Both the court of appeals's and NHTSA's suggested standards are relatively one-sided review strategies. The Supreme Court, in an opinion by the moderate Justice White, rejected both suggestions and chose a two-sided review strategy. In other words, under the Court's opinion, the same standard should apply evenhandedly to both regulatory and deregulatory actions:

Unlike the Court of Appeals, we do not find the appropriate scope of judicial review to be the "most troublesome question" in these cases. . . . The agency's action in promulgating such standards therefore may be set aside if found to be "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." . . . We believe that the rescission or modification of an occupant-protection standard is subject to the same test.

Petitioner Motor Vehicle Manufacturers Association (MVMA) disagrees, contending that the rescission of an agency rule should be judged by the same standard a court would use to judge an agency's refusal to promulgate a rule in the first place—a standard petitioner believes considerably narrower than the traditional arbitrary-and-capricious test. We reject this view. . . . [T]here is no more reason to presume that changing circumstances require the rescission of prior action, instead of a revision in or even the extension of current regulation. If Congress established a presumption from which judicial review should start, that presumption—contrary

<sup>38</sup> 463 U.S. 29 (1983).

<sup>39</sup> 680 F.2d 206, 222, 228 (1982).

to petitioners' views—is not *against* safety regulation, but *against* changes in current policy that are not justified by the rulemaking record. While the removal of a regulation may not entail the monetary expenditures and other costs of enacting a new standard, and, accordingly, it may be easier for an agency to justify a deregulatory action, the direction in which an agency chooses to move does not alter the standard of judicial review established by law.<sup>40</sup>

The intuitions from the strategic analysis in the previous section animate an interesting interpretation of this judicial debate over standards of review. Indeed, the National Highway Traffic Safety Administration (and most other executive branch administrative agencies under the Reagan administration) was extremely conservative. Judge Mikva, writing for the court of appeals, had been a liberal Democratic member of Congress before being appointed to the D.C. Circuit. At the same time, it is unlikely that the court of appeals had much of an informational advantage over the NHTSA in observing and interpreting automobile safety data. Under such an arrangement—where ideological differences dominate concerns over imprecision—we would expect one-sided auditing, in which Judge Mikva would be inclined to engage in a rigorous review of only deregulatory actions, but not regulatory ones.<sup>41</sup> The Supreme Court, by comparison to Judge Mikva, was much more conservative. As a consequence, the Supreme Court's politics were fairly closely aligned with those of NHTSA. This is precisely where our model suggests that a two-sided auditing strategy by H is more likely.

Viewed thusly, the Supreme Court's opinion can be understood as a direction to the court of appeals to utilize a two-sided approach in review of administrative regulations that are grounded in solid expertise when the regulations are challenged as arbitrary and capricious. Although the Supreme Court's instruction may or may not be the best, fully rational strategy in a three-level hierarchy, it appears to be an acceptable boundedly rational strategy—solving the two-level game and then telling the agent that he will be expected to perform in accord with the optimal strategy for the principal.

## 2. Equal Protection Doctrine

The tension over one-sided or two-sided auditing has also surfaced in the law of equal protection. All members of the Supreme Court appear to agree

<sup>40</sup> 463 U.S. at 42.

<sup>41</sup> To be precise, our model requires knowledge of both the precision of the lower level as well as the relative politics of the lower and the appellate level. One could argue that the NHTSA, by virtue of expertise, is likely to be precise in its technical predictions. If this is so, the model's predictions are clearly as described in the paragraph above. If not, the best we can say is that the doctrinal choices of the courts of appeal and of the Supreme Court are consistent with our model.

that racial classifications in laws that harm or disadvantage minority group members can be constitutional only if the laws pass muster under a “strict scrutiny” analysis. In *Metro Broadcasting, Inc. v. Federal Communications Commission*,<sup>42</sup> the Supreme Court faced the opposite issue of whether “benign” racial classifications should also garner strict scrutiny or some less demanding form of review. In *Metro*, the Federal Communications Commission, with some strong prompting from Congress, had adopted several programs that gave preferences to racial minorities<sup>43</sup> when the Federal Communications Commission (FCC) was awarding broadcasting licenses.<sup>44</sup> These policies were considered benign because their purpose, and probably their effect,<sup>45</sup> was to aid minority group members.

The majority, consisting of Brennan, Marshall, White, Blackmun, and Stevens, held that the FCC’s policies could be justified by an “important” governmental interest: “Congress and the FCC have selected the minority ownership policies primarily to promote programming diversity, and they urge that such diversity is an important governmental objective that can serve as a constitutional basis for the preference policies. We agree.”<sup>46</sup> The majority also concluded that the challenged policies needed to be “substantially related” to achieving the important governmental interest.<sup>47</sup>

The dissent, consisting of O’Connor, Rehnquist, Scalia, and Kennedy, would have applied strict scrutiny evenhandedly to both benign and harmful racial classifications. Explicitly, the dissent would have required a “compelling” state interest, and the challenged laws needed to have been “narrowly tailored” to achieve the compelling state interest: “To uphold the challenged programs, the Court departs from these fundamental principles and from our traditional requirement that racial classifications are permissi-

<sup>42</sup> 497 U.S. 547 (1990).

<sup>43</sup> There were, to a much lesser extent, programs for women.

<sup>44</sup> There were four such programs. First, when the FCC awarded most broadcasting stations it used a “comparative hearing,” in which all applicants were compared to one another. Minority applicants were given extra credit in the comparative hearing. Second, sometimes the FCC used a lottery to award broadcasting stations. Minority applicants got extra chances. Third, if a broadcaster sold its license to a minority purchaser, the seller would get a “tax certificate,” which allowed the seller to defer payment of tax on the gain from the sale. Fourth, sometimes broadcasters arguably violate the FCC’s rules and find themselves scheduled for a hearing before the FCC on the alleged violations. If, before the hearing, the licensee sold the license to a minority purchaser for no more than 75 percent of fair market value, the purchaser would take free of any violations committed by the seller. 497 U.S. at 557. See generally Matthew L. Spitzer, *Justifying Minority Preferences in Broadcasting*, 64 S. Cal. L. Rev. 293, 297–302 (1991).

<sup>45</sup> See Jeff Dubin & Matthew L. Spitzer, *Testing Minority Preferences in Broadcasting*, 68 S. Cal. L. Rev. 841 (1995).

<sup>46</sup> 497 U.S. at 566.

<sup>47</sup> *Id.* at 569.

ble only if necessary and narrowly tailored to achieve a compelling interest. This departure marks a renewed toleration of racial classifications and a repudiation of our recent affirmation that the Constitution's equal protection guarantees extend equally to all citizens."<sup>48</sup>

The *Metro* majority was composed of the five most liberal members of the court. Four of these members, Brennan, Marshall, Stevens, and Blackmun, were clearly to the left of both the lower federal courts and the center of gravity of the U.S. political scene during the Reagan/Bush era. Under these circumstances our model predicts that one might expect these four Supreme Court justices to favor one-sided auditing. Liberal choices—benign racial classifications—need garner only limited review. Conservative choices—harmful racial classifications—would require much more intense scrutiny.

The four members in the dissent, O'Connor, Kennedy, Rehnquist, and Scalia, were quite conservative, and hence were much more in line with the legislative and administrative bodies that were likely to be creating laws with racial classifications. In such circumstances, our model predicts that it is likely<sup>49</sup> that the conservative justices will prefer two-sided monitoring. Applying strict scrutiny to both benign and harmful racial classifications can be understood as a type of two-sided monitoring.

Justice White, in contrast, is a bit of a puzzle. In a previous case, *Richmond v. J.A. Croson Co.*,<sup>50</sup> Justice White had apparently opted for two-sided monitoring, voting with a majority that applied strict scrutiny to all racial classifications. In *Metro*, however, Justice White appeared to have a change of heart and voted (along with the four dissenters from *Croson*) in favor of one-sided monitoring. Because Justice White was politically centrist, our model is least able to make predictions about his choice. His change of heart could have been due to changes in the political environment or might have been because his own politics drifted to the left.

However, just 5 years later Justice Thomas had replaced Justice White and, in *Adarand Constructors, Inc. v. Peña*,<sup>51</sup> the Court reversed its position. *Adarand* involved minority preferences in contracting with the government and raised the same issue of benign racial classifications that the Court had decided (differently) in *Croson* and *Metro*. Justice O'Connor wrote for a majority that included (with minor disagreements, here and there) Rehnquist, Kennedy, Scalia, and Thomas. The four dissenters were Breyer, Ginsburg, Stevens, and Souter. The obvious conservative/liberal split produces

<sup>48</sup> *Id.* at 602.

<sup>49</sup> Assuming the appropriate levels of precision are met.

<sup>50</sup> 488 U.S. 469 (1989).

<sup>51</sup> 515 U.S. 200 (1995).



exactly the same result (on a justice-by-justice basis) that it produced in *Croson* and *Metro*.<sup>52</sup>

Does our model help to predict the same conservative/liberal split in 1995? By 1995, the federal government was controlled by conservative Republicans in the House and Senate and a middle-of-the-road Democratic president. This probably produces legislation similar to that of a federal government composed of a conservative Republican president and a Senate and House controlled by a middle-of-the-road Democratic Party.<sup>53</sup>

State governments are a trickier issue. In 1990 four state governments were unified Republican,<sup>54</sup> 29 were split, and 16 were unified Democratic. By 1995, 12 state governments were unified Republican, 29 were split, and eight were unified Democratic.<sup>55</sup> The median state government remained split, and indeed *most* state governments were under split control. Thus, one could argue that the political center of gravity in state governments had not changed substantially from 1990 to 1995. However, there was likely at least some rightward movement in state governments, since eight state governments moved from the “unified Democratic” to the “unified Republican” category. The expected product from a randomly chosen state would therefore be somewhat more conservative.<sup>56</sup> Consequently, our model can make no firm prediction that all judicial attitudes toward auditing would not change, vis-à-vis state legislation, between 1990 and 1995. We can say, however, that the liberal justices, all of whom favored intermediate scrutiny for benign classifications in 1990, should continue to do so in 1995. Extremely conservative justices who preferred strict scrutiny for benign classifications in 1990 should continue to do so in 1995. Moderately conservative justices who preferred intermediate scrutiny in 1990 could conceivably have been moved to prefer strict scrutiny in 1995 by a mild rightward shift in state politics. These justices might or might not have changed their attitudes.<sup>57</sup>

<sup>52</sup> It should be noted that even after *Adarand*, if a regulation makes no explicit racial classifications and is motivated by a desire to help minorities, it may be tested under less than strict scrutiny. See Ian Ayres, *Narrow Tailoring*, Symposium on Affirmative Action, 43 *UCLA L. Rev.* 1781 (1996).

<sup>53</sup> We are aware that the different roles played by the House and Senate—jointly proposing legislation—and the president—accepting or rejecting proposed legislation—will produce some difference. However, all three branches must accept changes from the status quo. Congress was “veto proof” in neither 1990 nor 1995. Hence, differences in legislation produced was probably small enough to allow our textual analysis to stand.

<sup>54</sup> “Unified Republican control” is defined as the governor and both upper and lower houses in control of Republicans. “Unified Democratic control” is defined as the governor and both the upper and lower houses in control of Democrats. “Split” government is anything else. Nebraska is omitted.

<sup>55</sup> Calculations on file with the authors.

<sup>56</sup> We presume the Supreme Court must choose one rule for all states.

<sup>57</sup> Again, we presume the right degrees of precision to make the political analysis work.

We can therefore conclude that the voting on doctrines in *Adarand* was entirely consistent with the predictions our model can make. However, our model cannot make predictions as to every justice regarding the review of state laws.

### *B. Empirical Predictions Based on Competence*

One may be able to use judicial competence—called precision in our model—to predict differences in reversal rates: less precise courts should be reversed more often. This result, while not surprising in and of itself, should be exacerbated by the monitoring behavior of the higher court. As the lower court's (or level's) precision falls, the higher court will move to two-sided auditing.

Ideally, from an empirical standpoint, one would like to be able to observe directly two-sided auditing or one-sided auditing, on a case-by-case basis, without the aid of a change in doctrine. If we could do so, and if we could come up with a proxy for precision, then we could directly test the prediction. We would, perhaps, regress reversal rates on lower-court precision, while controlling for politics and other relevant independent variables. Unfortunately, such an approach is probably unavailable. Indeed, since “auditing” in our model stands for taking a genuine reexamination of the record rather than a cursory wave of the hand, it may be difficult to discern, from the outside, whether the higher court has really “audited” a decision. As a consequence, it will be difficult to observe whether a court engages in one-sided or two-sided auditing. This will make it difficult to test directly the prediction about auditing and precision.

We can, however, posit another prediction with a somewhat more psychological basis. Assume that perceptions about judicial competence are inversely related to the empirical rate of reversal. Indeed, as more cases are audited, more should be reversed. More to the point, holding political differences constant, greater imprecision among lower courts will lead both to more two-sided auditing by higher courts and to higher reversal rates among audited cases. Consequently, those lower-court judges with reputations for lack of precision should face higher empirical reversal rates, in part because higher courts move to two-sided auditing in response to the reputation.

Furthermore, if the higher reversal rates help reinforce reputation, the lower-court judge's reputation might well be a self-fulfilling prophecy. Thus, if a judge starts with a reputation for being precise, one-sided auditing could produce a low enough reversal rate to sustain this reputation. Another judge, starting with a reputation for being imprecise, could, as an artifact of two-sided auditing, compile a high enough reversal rate to sustain the reputation. The two judges could, in actuality, be equally precise.

Now, can we find a good proxy for precision? Who would start with a reputation for being precise, and who would start with a reputation for being imprecise? We can suggest two possibilities. First, in his book on the federal courts, Richard Posner suggests that there are different categories of appointments.<sup>58</sup> Some are purely political payoffs. These judges might be regarded as relatively imprecise. Others are quality appointments. These judges might be regarded as more precise. They might get “tracked” into one-sided or two-sided auditing from the start. Holding politics constant, we would predict higher reversal rates, on average, for “political” appointees to the bench.

Second, we might be able to utilize American Bar Association (ABA) ratings of appointees to the bench. The ABA rates nominees as “highly qualified,” “qualified,” or “unqualified.” If these ratings can serve as proxies for decreasing levels of precision, we can fashion a second empirical prediction. Holding politics constant, we would predict higher reversal rates, on average, for nominees rated “qualified” than for those nominees rated “highly qualified.”

### *C. Deciding Like Cases Alike*

One of the basic principles of Anglo-American jurisprudence is that like cases should be decided alike. Legal analysts as diverse as Lon Fuller,<sup>59</sup> H. L. A. Hart,<sup>60</sup> and John Rawls<sup>61</sup> regard this principle as central to a system of law. Law professors teach law students to compare cases and evaluate them for consistency.<sup>62</sup> A court system that fails to treat like cases alike, runs traditional analysis, should suffer from a harsh critique.

Our analysis suggests that outside observers, such as lawyers, law professors, journalists, and ordinary citizens, may perceive a lot of failure to treat like cases alike. Our model predicts that a court of appeals judge will adjust her review strategy according to her assessment of the lower court’s accuracy and ideology. This can confound the outsider’s interpretation of the judicial process if the observer is not fully aware of the underlying strategic contours.

To see how this might work, consider Figure 4. The figure depicts a court system with two separate circuits, much like a stylized version of our fed-

<sup>58</sup> Richard A. Posner, *The Federal Courts: Challenge and Reform* 13–20 (1996).

<sup>59</sup> Lon L. Fuller, *The Morality of Law* 39 (rev. ed. 1964) (claiming that the failure to achieve consistency precludes the existence of law).

<sup>60</sup> H. L. A. Hart, *The Concept of Law* 155 (1961).

<sup>61</sup> John Rawls, *A Theory of Justice* 237 (1971).

<sup>62</sup> Steven J. Burton, *An Introduction to Law and Legal Reasoning* 25–47 (2d ed. 1995).

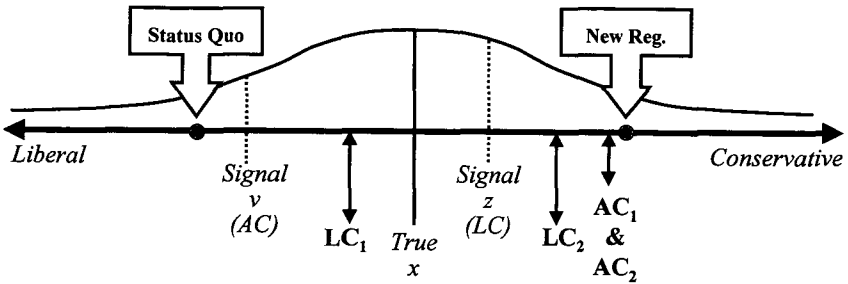


FIGURE 4.—Like cases need not be treated alike

eral court system. Circuit 1 has a lower court,  $LC_1$ , which has liberal ideology, and a court of appeals,  $AC_1$ , which is conservative. (The various courts' expected ideal points are noted with arrows on the diagram.)<sup>63</sup> Circuit 2 has a lower court,  $LC_2$ , which has conservative ideology and a precision identical to that of  $LC_1$ , and a court of appeals,  $AC_2$ , which has a conservative ideology identical to  $AC_1$  (and identical precision). The status quo ante is very liberal, and identical cases come up simultaneously before  $LC_1$  and  $LC_2$ . The two lower courts choose the identical conservative outcome, denoted "New Reg" in Figure 4. This is because both  $LC_1$  and  $LC_2$  happen to draw a very conservative signal, called "z" in Figure 4. The extremely conservative signal leads even the liberal lower court,  $LC_1$ , to choose the conservative New Reg.

The appellate court in Circuit 1,  $AC_1$ , may well have adopted one-sided auditing for  $LC_1$ . When the liberal  $LC_1$  issues a conservative decision, the  $AC_1$  may not bother to audit the decision, in essence affirming it without even looking. The appellate court will reason that if a lower court with liberal tendencies chose a conservative outcome, the lower court must have observed a very conservative signal. Hence,  $AC_1$  can save its resources and affirm the conservative outcome without an independent reexamination.

However,  $LC_2$  may well be subjected to two-sided auditing from  $AC_2$  in Circuit 2. When the appellate court in Circuit 2 reviews the case from  $LC_2$ , its review of the record may (at least sometimes) convince the appellate court to reverse the lower court's decision. For example, in Figure 4 we show what happens if  $AC_2$  reviews  $LC_2$  and gets a liberal signal, called  $v$  in Figure 4. The appellate court, which was able to conclude very little about the signal received by the conservative  $LC_2$ 's signal from the choice

<sup>63</sup> Recall that the courts may not know their actual idea points when they make a decision, because such points are contingent on having perfect information about  $x$ .

of the conservative outcome New Reg,<sup>64</sup> will revise its beliefs when it sees the liberal signal  $v$ . If  $v$  is liberal enough, as in Figure 4,  $AC_2$  will reverse  $LC_2$  and reinstate the status quo ante.

An observer, such as a law professor or a newspaper reporter who is reviewing the cases, will likely read both records—in essence auditing both of them. If the professor or reporter does not understand the dynamics underlying the two decisions, he or she will tend to embrace the following standard critique, based upon the rule of law. In particular, the observer will likely critique the courts of appeals in the two circuits by calling the cases “inconsistent” and conclude that the cases violate the rule of law. The decisions will not even be reconcilable on standard political grounds—that conservative judges like to approve only conservative results. Here both decisions were conservative. The observer, casting around for some way to reconcile the two decisions, may fasten onto the politics of the lower-court justices. But even here the observer may be frustrated; the two conservative courts of appeals appear to be punishing the conservative judge and rewarding the liberal one.

But our analysis suggests that the normative critique may not be right. It is possible that appellate courts are correct to utilize all the information at their disposal, including the political preferences of lower courts and the lower courts’ precision, to formulate a review strategy. For this to be true we would need to believe not only that politics are part of law, but that we should openly embrace (or at least tolerate) it. We would also need to acknowledge openly that not all lower-court judges are of equal ability and that some deserve less “independence” than others.<sup>65</sup> Resolving these issues lies well beyond the scope of our paper; but it is, however, worth noticing that there may be a severe conflict between appellate courts’ optimal auditing strategies and the appearance of legitimacy in the pattern of decisions that are approved and reversed.

#### *D. Independence and Accountability*

Finally, if one applies our framework to inter- rather than intrabranch conflict, it may be possible to glean some tentative insights into the current debate over judicial independence versus accountability. While the U.S. Constitution mandates formal institutional separation between the federal judiciary and other branches of government, the precise nature of that sepa-

<sup>64</sup> Assume that the appellate courts are not aware of the decisions of trial courts in other circuits.

<sup>65</sup> Even if these propositions about politics and accuracy are true, openly acknowledging them to be true is a controversial act. See Scott Altman, *Beyond Candor*, 89 Mich. L. Rev. 296 (1990).

ration has proven to be somewhat elusive. Indeed, though nominally independent, the federal judiciary is frequently hamstrung by a number of formal constraints on its independence and must yield to other branches on such matters as the creation and regulation of new courts, the appointment or impeachment of judges, judicial salary increases, and even the prospective (and sometimes retrospective) modification of judicial decisions.<sup>66</sup> It is in this sense that the judiciary has been described as simultaneously independent of and accountable to other branches of government. Although talented members of the bench, bar, and legal academy have wrestled with the enterprise of refining and clarifying these institutional contours, the tension between independence and accountability remains palpable and largely unresolved.<sup>67</sup>

To be sure, tensions such as these may simply be part and parcel of a healthy constitutional democracy, and therefore inevitable.<sup>68</sup> At the same time, however, such mirthful concessions do little to resolve the ongoing debate about the existence and magnitude of purported “threats” to judicial independence. Our analysis suggests that those interested in this debate may find it fruitful to decompose the possible rationales for external audits of the judiciary, and only then juxtapose the most likely of these to a normative account of judicial independence. Suppose, for instance, that one believed the principal normative justification of judicial independence is to provide a prophylactic against the dangers of cyclical factional politics—the so-called *countermajoritarian difficulty*.<sup>69</sup> Under such an account, external audits of the judiciary borne of ideological differences might constitute a bona fide threat, while auditing for imprecision would be substantially less objectionable. Although distinguishing between these two rationales is not always easy in practice,<sup>70</sup> our arguments suggest that empirical evidence of one-sided versus two-sided auditing may be a helpful diagnostic proxy. Thus, if judges were to receive external criticism from only one segment of the political spectrum, or if the judicial opinions that received substantial criticism were only those that paddled against the prevailing political current, then one might have a strong case for inferring an institutional threat

<sup>66</sup> See note 1 *supra*.

<sup>67</sup> See, for example, ABA Report, *supra* note 5, at 45 (noting the tension over interbranch conflict, that it is both “intractable” and “inevitable,” and offering little in the way of resolution other than a vague notion of “mutual respect”).

<sup>68</sup> *Id.* at 45.

<sup>69</sup> See, for example, Alexander Bickel, *The Least Dangerous Branch* 17–21 (2d ed. 1988); *The Federalist* No. 10 (Madison).

<sup>70</sup> See, for example, *The Federalist* No. 79 (Hamilton) (rejecting “inability” as a criterion for impeachment, apparently for fear that it would be susceptible to political opportunism and abuse).

to the judiciary. On the other hand, if external criticism were substantially bipartisan, more evenhanded across judicial opinions, or relatively procedural (rather than substantive),<sup>71</sup> interbranch conflict may be not only less troubling but also normatively appropriate.

#### *E. Further Work*

Our framework may allow some useful empirical tests of legal procedures not addressed here.<sup>72</sup> The most obvious example is the decision to grant certiorari. If our model is correct, then the Supreme Court may decide, in part, to grant certiorari based on a combination of expertise and politics. One could get the certiorari votes of justices, the politics of the lower courts, and the nature of the outcome in the court below. One could then predict that when conservative (liberal) justices review a conservative (liberal) decision by a liberal (conservative) lower court, certiorari would be refused.<sup>73</sup> One could then compare the rates at which justices voted for certiorari in such circumstances, compared to all others. Control variables would be needed.

Our framework might also help to explain the rate at which appellate courts grant oral argument. Assume that the refusal to grant oral argument indicates that no real review is taking place in that case.<sup>74</sup> Then our model would predict that conservative (liberal) appellate justice would not review a conservative (liberal) outcome from a liberal (conservative) lower court.<sup>75</sup> One could collect these data and analyze it, testing our prediction.

### IV. CONCLUSION

This paper has presented a simple framework for analyzing a hierarchical system of judicial auditing. We have concentrated on (what we perceive to be) the two most central reasons that courts and/or legislatures tend to scrutinize the decisions of lower-echelon actors: imprecision and ideological

<sup>71</sup> For example, the Senate Judiciary Committee's Subcommittee on Administrative Oversight and the Courts has recently circulated questionnaires to federal judges inquiring about judicial use of decision-making resources, support staff, and extrajudicial activities. ABA Report, *supra* note 5, at 31.

<sup>72</sup> We are indebted to the editor for these suggestions.

<sup>73</sup> Assuming that the relative levels of precision were appropriate.

<sup>74</sup> The refusal to grant oral argument might also have other causes. The briefs might have been so good as to render further argument useless. Or the briefs might have been so dreadful that the appellate judges want to spend no time with the lawyers on the case. Such explanations should be unsystematically distributed with respect to the phenomena discussed in text, and hence should not derail the arguments.

<sup>75</sup> Once again, assuming appropriate levels of precision.

bias. In comparing these two reasons, we have illustrated how each may yield systematically distinct auditing and reversal behaviors. While concern over imprecision tends to bring about evenhanded auditing/reversal, concern over political bias tends to engender significantly more one-sided strategies. Examples of these tendencies can be found in a number of legal applications, including administrative law, constitutional law, and interpretive theories of jurisprudence. Moreover, these tendencies may provide a helpful informational proxy by which to evaluate the existence and magnitude of purported threats to judicial independence. Finally, our analysis suggests that political “diversity” among initial decision makers (in addition to its other laudable goals) may be an important and generally underappreciated means for economizing on judicial administrative costs and easing the workload burdens on upper-echelon actors.

## APPENDIX

This Appendix explores a more general framework of analysis, from which the numerical results in the text were drawn. Recall that the model described in Section II contained the following variables:

- L = Low court (or administrative agency, or unified judiciary);
- H = High court (or court reviewing agency, or unified legislature);
- $y_0$  = status quo ante;
- $y_1$  = new regulation; assume (without loss of generality) that  $y_0 < y_1$ ;
- $X$  = random variable describing the “true” state of the world. Realizations of this variable are denoted by  $x$ , and we assume  $X \sim N(\mu, 1/\tau)$ ;
- $Z$  = random variable describing the signal received by L, assumed normally distributed around the true state with precision  $\gamma$ ;  $Z \sim N(x, 1/\gamma)$ ;
- $V$  = random variable describing the additional signal received by H, assumed normally distributed around the true state with precision  $\gamma$ ;  $V \sim N(x, 1/\sigma)$ ; and
- $c$  = H’s costs of auditing, where  $c \in C \equiv [0, \infty)$ ;  $c \sim G(c)$ , with associated density function  $g(c) > 0$ . The value of  $c$  is realized and observed only after L issues its opinion (and the rigor of H’s docket becomes known).

For notational ease, let  $A_i \in \{\text{Deny}, \text{Grant}\}$  represent H’s auditing strategy given a holding of  $y^L = y_i$  by L.

The solution concept we use for solving this game is perfect Bayesian equilibrium. We shall conjecture one solution (though there may be others) that corresponds with a “trigger strategy” profile for both L and H, as follows:

- L:  $y^L = y_1$  if and only if  $z \geq z^*$ ;
- H:  $A_0 = \text{Grant}$  if and only if  $c \leq c_0^*$ ;
- $A_1 = \text{Grant}$  if and only if  $c \leq c_1^*$ ;
- $y^H = y_1$  if and only if  $v \geq v^*$  (so long as H’s signal is informative);
- $y^H = y_0$  if and only if  $z \geq z^{**}$  (if H’s signal is uninformative).

To confirm that this indeed is an equilibrium, we proceed through standard backward induction techniques. First, we consider the optimal actions of H assuming



the auditing decision has been made. Second, we move backward to consider H's penultimate decision about whether to audit L's decision. Finally, we consider L's opinion in the initial case.

A. H's Strategy Conditional on Auditing  $y^L$

Suppose first that L has issued a judgment and that H has decided to audit this judgment. This is the last possible stage of the game, in which H need not consider the costs of auditing (which are now sunk) and can concentrate solely on choosing between  $y_0$  and  $y_1$  so as to maximize expected utility conditional on the realizations of signals  $z$  and  $v$ . For clarity of exposition, we shall assume in what follows that if a court is indifferent about the two potential outcomes, it will break the tie by upholding the new regulation.<sup>76</sup> An equivalent statement of H's problem, then, is as follows:

$$\min_{y \in \{y_0, y_1\}} E\{(y - X)^2 | z, v\}. \tag{A1}$$

Analysis of this expression yields the following lemma:

LEMMA 1. If H audits L's decision, it will favor  $y_1$  over  $y_0$  if and only if

$$\frac{\tau\mu + \gamma z + \sigma v}{\tau + \gamma + \sigma} \geq \frac{y_0 + y_1}{2}.$$

*Proof.* Equation (A1) implies that  $y_1$  yields a (weakly) greater payoff for H than does  $y_0$  if and only if

$$E\{(y_1 - X)^2 | v, z\} \leq E\{(y_0 - X)^2 | v, z\}, \tag{A2}$$

which—after expansion—simplifies to

$$E\{X | v, z\} \geq \frac{y_0 + y_1}{2}. \tag{A3}$$

Now recall that the players' prior beliefs are that  $X \sim N(\mu, 1/\tau)$ . Since  $Z|X \sim N(x, 1/\gamma)$  and  $V|X \sim N(x, 1/\sigma)$ , applying Bayes's rule one finds that the posterior distribution of  $X$ , conditional on the realizations of  $Z$  and  $V$ , is  $N((\tau\mu + \gamma z + \sigma v)/(\tau + \gamma + \sigma), 1/(\tau + \gamma + \sigma))$ .<sup>77</sup> Substituting the mean of this conditional distribution for the left-hand side of equation (A3) yields the expression given in the lemma. Q.E.D.

Assuming for the moment that  $\sigma > 0$ , then lemma 1 implies that H favors  $y^H = y_1$  if and only if

$$v \geq v^*(z) \equiv \frac{y_0 + y_1}{2\sigma} (\tau + \gamma + \sigma) - \left( \frac{\tau\mu + \gamma z}{\sigma} \right). \tag{A4}$$

Conversely, if  $\sigma = 0$ , then H will hold  $y^H = y_1$  if and only if

$$z \geq z^* \equiv \frac{y_0 + y_1}{2\gamma} (\tau + \gamma) - \frac{\tau\mu}{\gamma}. \tag{A5}$$

This establishes the first portion of our conjectured equilibrium: that is, conditional

<sup>76</sup> This assumption is easily relaxed without loss of generality.

<sup>77</sup> See DeGroot, *supra* note 21, ch. 10.

on auditing, H will hold  $y^H = y_1$  whenever  $v \geq v^*$  and signal  $V$  is informative but  $y^H = y_1$  whenever  $z \geq z^{**}$  and signal  $V$  is uninformative.

### B. The Decision to Audit

Consider now the analysis of H's auditing decision. Recall that when H must choose whether to audit L's holding, she is privy to very little information. In fact, all that H knows is the outcome favored by L. But because L can favor either of the two outcomes, it is necessary to consider H's strategy for both a lower-court holding striking down the new regulation ( $y_0$ ) and one that upholds it ( $y_1$ ). One must consider these cases one at a time.

1. *Auditing a Holding for the Status Quo.* Suppose first that L has struck down the new regulation (so that  $y^L = y_0$ ). Under the assumption that L has followed the trigger-point equilibrium strategy conjectured above, H will attempt to assess the expected net gains from auditing. In particular, H will audit only if her expected utility from doing so exceeds that of abstaining. Equivalently, H will audit if and only if

$$E_x\{(y_0 - X)^2 | z \leq z^*\} \geq c + E_{v,z}\{E_x\{(y^H - X)^2 | v, z\} | z \leq z^*\}. \quad (\text{A6})$$

The intuition behind this expression is simple. If H abstains, she will receive its expected payoff from  $y_0$  denoted on the left-hand side of equation (A6) knowing only that  $z \leq z^*$ . If H audits  $y^L = y_0$ , on the other hand, she will learn both  $v$  and  $z$ , but she will bear the cost of  $c$  to do so. Viewed at the time of the auditing decision, however, H must take expectations over the auditing payoff knowing only that  $z \leq z^*$ . Rearranging equation (A6) yields the result that H will audit  $y_0$  if and only if

$$c \leq c_0^*(z^*) \equiv E_x\{(y_0 - X)^2 | z \leq z^*\} - E_{v,z}\{E_x\{(y^H - X)^2 | v, z\} | z \leq z^*\}. \quad (\text{A7})$$

Thus, H will audit a holding of  $y_0$  if and only if  $c \leq c_0^*(z^*)$ , which corresponds to the hypothesized trigger point equilibrium strategy. Moreover, the ex ante probability that H audits a holding of  $y_0$  is equal to  $G(c_0^*(z^*))$ , which we denote  $G_0^*$  for short.

2. *Auditing a Holding for the New Regulation.* A symmetric analysis applies to the case of auditing a holding of  $y_1$  by L. Consequently, H will audit a holding of  $y_1$  if and only if

$$c \leq c_1^*(z^*) \equiv E_x\{(y_1 - X)^2 | z > z^*\} - E_{v,z}\{E_x\{(y^H - X)^2 | v, z\} | z > z^*\}, \quad (\text{A8})$$

which corresponds to the hypothesized trigger-point equilibrium strategy. The ex ante probability that H audits a holding of  $y_1$  is equal to  $G(c_1^*(z^*))$ , which we denote  $G_1^*$  for short.

### C. The Decision by L

Finally, assume that L knows H will audit after a holding of  $y_i$  with probability  $G_i^*$ . Thus, conditional on learning  $z$ , player L will hold  $y_i$  if and only if

$$(1 - G_0^*)E_x\{(y_0 - \theta - X)^2 | z\} \geq (1 - G_1^*)E_x\{(y_1 - \theta - X)^2 | z\} \\ + (G_1^* - G_0^*)[E_x\{(y^H - X - \theta)^2 | z, v\} | z], \quad (\text{A9})$$

which expands to

$$\begin{aligned}
 & (1 - G_0^*) \left[ \frac{1}{\tau + \gamma} + \left( y_0 - \theta - \frac{\tau\mu + \gamma z}{\tau + \gamma} \right)^2 \right] \\
 & \geq (1 - G_1^*) \left[ \frac{1}{\tau + \gamma} + \left( y_1 - \theta - \frac{\tau\mu + \gamma z}{\tau + \gamma} \right)^2 \right] \tag{A10} \\
 & + (G_1^* - G_0^*) [E_v\{E_x\{(y^H - X - \theta)^2 | z, v\} | z\}].
 \end{aligned}$$

In all cases where H follows a symmetric auditing strategy (so that  $G_0^* = G_1^*$ ), the conclusion is immediate that L will hold for  $y_1$  if and only if

$$z \geq z^* \equiv \left( \frac{y_0 + y_1}{2} - \theta \right) \left( \frac{\tau}{\gamma} + 1 \right) - \frac{\tau\mu}{\gamma}. \tag{A11}$$

When H follows an asymmetric auditing strategy, the analysis is more complex, and the existence of a trigger-point equilibrium as hypothesized may depend on the values of the parameters considered. For the examples in the text, however, such an equilibrium exists and is computed.

