Judicial Fact Discretion

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ABSTRACT

Following legal realists, we model the causes and consequences of trial judges exercising discretion in finding facts in a trial. We identify two motivations for the exercise of such discretion: judicial policy preferences and judges' aversion to reversal on appeal when the law is unsettled. In the latter case, judges exercising fact discretion find the facts that fit the settled precedents, even when they have no policy preferences. In a standard model of a tort, judicial fact discretion leads to setting of damages unpredictable from true facts of the case but predictable from knowledge of judicial preferences, distorts the number and severity of accidents, and generates welfare losses. It also encourages litigants to take extreme positions in court and raises the incidence of litigation relative to settlement, especially in new and complex disputes for which the law is unsettled.

1. INTRODUCTION

Does the identity of a judge matter for the outcome of a trial? Since the advent of legal realism, it has been generally understood that that answer is yes, in part because of the considerable discretion that trial courts have in finding fact. While constrained by law, trial courts can select, describe, and characterize the facts to which the law is applied with some freedom. When a judge exercises such fact discretion, his or her identity begins to matter.

Frank (1951, p. 57) defines judicial fact discretion as follows: "When

the oral testimony is in conflict as to a pivotal fact-issue, the trial judge is at liberty to choose to believe one witness rather than another. In other words, in most cases the trial judges have an amazingly wide 'discretion' in finding the facts, a discretion with which upper courts, on appeals, seldom interfere, so that, in most instances, this 'fact discretion' is almost boundless."

Frank recognizes that some fact discretion is unavoidable, since judges necessarily have to decide which witness accounts to trust. But Frank (and later Posner [2005]) also recognizes that fact discretion creates significant leeway for the expression of judicial preferences, which derive from political, social, or economic views or even from a judge's career concerns. Such expression need not be conscious or unethical. Judges may unconsciously interpret the evidence, or disregard some inconvenient truths, through the lens of their experiences, beliefs, or ideologies or perhaps even something as mundane as attitudes toward specific litigants or lawyers.[1] Yet discretion leads to unpredictability of judicial decisions from the objective facts of a case and elevates the importance of knowing who the judge is for predicting the outcome of a trial.

This paper introduces judicial fact discretion into a formal analysis of trial court decision making and examines its consequences.[2] We identify two distinct motives for the exercise of fact discretion. The first, emphasized by legal realists, is judicial bias.[3] As Posner (2005, p. 14)—echoing Frank (1930, 1932)—writes about federal district (that is, trial) judges, "But [deciding a particular case in a particular way might increase the judge's utility] by advancing a political or ideological goal, economizing on the judge's time and effort, inviting commendation from

1. In the words of Karl Llewellyn (1951, p. 45), A judge is "a lawyer, and as such skilled in manipulating the resources of persuasion at his hand. A lawyer, and as such prone without thought to twist analogies, and rules, and instances, to his conclusion. . . . More, as a practiced exponent of the art of exposition, he has learned that one must prepare the way for argument. You set the mood, the tone, and you lay the intellectual foundation—all with case in mind, with the conclusion—all, because those who hear you also have the case in mind, without the niggling criticism which may later follow. You wind up, as a pitcher will wind up—as in the pitcher's case, the wind-up often is superfluous. As in the pitcher's case, it has been known to be intentionally misleading."

2. Although our model focuses on judges, much of the discussion—particularly the sections focused on judicial bias—is applicable to juries as well. Strictly speaking, our model deals with fact-finder fact discretion.

3. Gennaioli (2004) formally introduces judicial bias into a model of adjudication. Gennaioli and Shleifer (2007a) and Ponzetto and Fernandez (2008) examine the consequences of appellate courts' bias for the evolution of the law. Mullainathan and Shleifer (2005) model a similar kind of fact discretion by the media in its reporting of the news.

people whom the judge admires, benefiting the local community, getting the judge's name in the newspaper, pleasing a spouse or other family member or a friend, galling a lawyer whom the judge dislikes, expressing affection for or hostility toward one of the parties—the list goes on and on."

The second motive, specific to trial judges, is the dislike of being overruled by appellate courts. As Posner (2005, p. 16) comments, "Judges also don't like to be reversed, even though a reversal has no tangible effect on a judge's career if he is unlikely to be promoted to the court of appeals in any event." Appellate courts typically do not revisit facts found by trial courts but only the application of the existing law to those facts.[4] When such application is uncertain, a trial court has an incentive to fit the facts into the settled precedent, so that from the point of view of the appellate court, the application of the law to the facts is uncontroversial.

We consider each of these motives for the exercise of judicial fact discretion in a standard model of a tort. In this model, the first-best efficient legal rule is strict liability with all harms being legally cognizable for the calculation of damages. In Section 3 we assume that trial courts follow this rule but can distort facts about harm. We show that the damages awarded by judges are unpredictable from true facts of the case but predictable from knowledge of judicial preferences. We show how precautions, accidents, and welfare losses depend on factors such as the polarization of judicial preferences, the relative proportion of pro-injurer judges, the sensitivity of judicial preferences to the case's facts, and the factual complexity of a dispute.

Section 4 enriches this model by allowing for appellate review. In our model, when all harms are legally cognizable, appellate review is irrelevant, as trial courts avoid reversal by simply finding the level of harm that triggers their preferred damages. When instead the law is unsettled, appellate review increases trial courts' incentive to distort harm. This is due to trial courts' uncertainty over appellate bias. Because different appellate courts address new factual circumstances differently, trial courts can avoid being overruled by fitting their finding of harm into a settled precedent, that is, by finding facts to which the law has already been applied. Crucially, this implies that under unsettled law even un-

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4. In some rare instances, such as "clear error" or "constitutional facts" (Hoffman 2001), federal appeals courts review facts. The rarity and special features of these instances only justify our basic assumption of no factual review. If in addition appellate courts are biased (as in our model), it is unlikely that a review of facts reduces fact discretion.

biased judges distort harm so as to avoid reversal by biased appellate courts.

In Section 5, we consider whether this conclusion holds in a model of adversarial litigation. When the law is unsettled, competition among litigants—often seen as beneficial (for example, Milgrom and Roberts 1986)—encourages them to take extreme (and uninformative) positions catering to judges' desire to find facts insulating their decisions from reversal. Such litigant extremism also increases the incidence of litigation as opposed to settlement.

These predictions are consistent with the empirical findings of Schanzenbach and Tiller (2007), who document that, in spite of the U.S. sentencing guidelines, significant disparities in the sentencing of federal criminal defendants remain, with Democrat-appointed judges giving shorter sentences than Republican-appointed judges for street crimes involving violence, theft, and drugs. The evidence shows that judges meet their goals by distorting fact finding, especially if their preferences conflict with those of the reviewing circuit court. Consistent with our model, since fact finding has little precedent value, trial courts engage in fact discretion so as to avoid being reversed on appeal by a court with different preferences.

In sum, fact discretion not only creates leeway for the expression of judicial biases, it also undermines the appeals process and adversarial litigation. Although these mechanisms are sometimes believed to put a beneficial check on trial courts, under fact discretion they lose their effectiveness. Taken together, our results suggest that trials are likely to result in poor outcomes in the areas of law that are fact intensive, relatively new (so precedents are undeveloped), and vulnerable to judicial bias. The controversial product accident litigation may fit this description.

Our paper follows a large literature on the consequences of court errors. Calfee and Craswell (1984), Craswell and Calfee (1986), Kaplow (1994), and Kaplow and Shavell (1994, 1996) examine the effects of both random and nonrandom judicial errors on precautions. Although we also consider precautions, we start with judicial preferences and biases and derive court errors from those. This allows us to ask additional questions. Milgrom and Roberts (1986), Froeb and Kobayashi (1996), and Daughety and Reinganum (2000) examine the effects of adversarial litigation for revelation of information at trial. Since we begin with judicial preferences, we can ask when judges are unwilling to use information rather than just process it in a biased way. We compare our

results with those from these studies throughout the paper but here only emphasize that none of these papers model explicitly purposeful judicial behavior.

Before turning to the formal analysis, we present an example of the exercise of judicial fact discretion in one famous case. We note, first, that fact discretion has been studied in the context of appellate courts, where the idea has been that appellate judges sometimes simplify the facts to elucidate a legal principle. A very clean example of this is Cardozo's extreme mischaracterization of facts in *MacPherson v. Buick* (Henderson 2003), but Cardozo appears to have altered the facts at least marginally in *Palsgraf* as well (Posner 1990). Dershowitz and Ely (1971, p. 1227) denounce the Burger Supreme Court for its extreme mischaracterization of facts in *Harris v. New York*, an exercise of fact discretion that the authors call "the failure of logic and candor."

Our example of judicial fact discretion in action comes from one of the first cases in the standard torts textbook (Keeton, Sargentich, and Keating 2004), *Garratt v. Dailey* (46 Wash. 2d 197, 279 P2d 1091 [1955]). In textbooks, the case stands for the proposition that knowledge of possible harm is sufficient to find intent in battery so the plaintiff does not need to show purpose to harm to establish the defendant's liability. But the case is also a clear instance of judicial fact discretion. Although it does not deal with the exact situation we study, *Garratt v. Dailey* shows a trial judge completely changing his fact finding after an appellate court remands the case to him on a matter of law.

Brian Dailey, a 5-year-old boy, accompanied his mother on a visit to his aunt, Ruth Garratt, in the garden of Garratt's house. The boy allegedly pulled a chair from under his aunt as she started to sit down; she fell and injured herself and subsequently sued Brian. According to the appellate court review of the evidence, "the trial court had accepted boy's statement that he had moved chair and seated himself therein, but when he discovered that plaintiff was about to sit at place where chair had been, attempted to move chair toward plaintiff, and was unable to get it under plaintiff in time" (*Garratt v. Dailey*, 279 P.2d 1091, 1091 [1955]). Having accepted the boy's view that he was trying to help his aunt rather than hurt her, the trial court ruled for the boy on the grounds that he did not have the purpose—and therefore intent—to harm her.

The appellate court ruled that purpose to harm is not required to prove intent in battery and that knowledge of possible harm is sufficient and remanded the case to the trial judge (in this case, superior court). "Upon remand for clarification on the issue of the defendant's knowl-

edge, the superior court reviewed the evidence, listened to additional arguments and studied briefs of counsel, and entered a finding to the effect that the defendant knew, with substantial certainty, at the time he removed the chair, that the plaintiff would attempt to sit down where the chair had been, since she was in the act of seating herself when he removed the chair" (49 Wash. 2d 499, 500 [1956]). The trial court shifted all the way from the finding that the boy was moving the chair toward the aunt as she was sitting down to the finding that he was pulling it from under her.

There may be a number of explanations, some innocent, for how the trial court found such entirely different facts after the case was remanded. But there are two simple stories. First, the judge might have been initially annoyed with the aunt for bringing a case against her 5-year-old nephew, presumably to collect insurance, and so accepted the boy's somewhat bizarre testimony to reach his initial verdict. He could have, and of course eventually did, accept the other testimony instead. This judicial bias view of fact discretion is analyzed in Section 3.

Alternatively, the trial judge might have feared reversal. When he thought that the standard of intent in battery was purpose, he found the facts under which the boy could have hardly had the purpose to harm his aunt, namely, that he was moving the chair toward her. Under the legal rule the judge believed, the factual finding that the boy was pulling the chair from under his aunt would have raised the question of his purpose and exposed the judge to the risk of reversal if the appeals court ruled that pranks are not purposeful. To the judge's surprise, the appellate court took a radically different view of the standard of intent in battery. So when the trial judge learned that the standard of intent was merely knowledge of possible harm, and not purpose to harm, he found the facts under which knowledge was pretty much obvious, even to a 5-year-old. Had he stuck to his old finding of facts that the boy was trying to put the chair back, the question of knowledge would have been legally controversial. In both of his decisions, the trial judge found the facts that render the application of the law that he believed to be in place utterly straightforward. We consider this motivation for fact discretion in Section 4.

2. THE MODEL

Consider a tort in which injurer I harms victim V. I could be a company using explosives and V a resident whose person or property is damaged

in an accident with explosives. V's harm from the injury, denoted by h, is uniformly distributed on [0, 1]. We assume that I knows the victim's harm h before he or she engages in the potentially harmful action.[5]

At a cost $c(p) = \frac{1}{2}p^2$, I can take precautions $p \in [0, 1]$ and avoid the injury with probability p. For example, p could represent the company's effort to transport explosives more securely or to store them further away from V's property. Since the level of harm h is known in advance to I, expected social losses from taking precautions p are given by

$$(1 - p)h + \frac{1}{2}p^2. \tag{1}$$

First-best precautions are then equal to $p_{fb}(h) = h$. Aggregate social losses in the first best (L_{fb}) when I takes optimal precautions are equal to

$$L_{fb} = \int_0^1 \left[(1 - h)h + \frac{1}{2}h^2\right] dh = \frac{1}{3}. \tag{2}$$

We study torts in which there is no contract or, alternatively, where it is too costly for the parties to specify precautions contractually. As in the standard model of torts (Posner 1972; Shavell 1987), I's precautions are shaped by the damages set by courts in light of the prevailing legal rule. For simplicity and in line with the explosives example, we study the strict-liability regime but distinguish two situations within that regime. The first, settled law, is defined as $d(h) = h$ for all possible kinds or levels of harm.[6] This definition of settled law includes both strict liability and the assumption that all harms are legally cognizable—the situation that yields first-best precautions under standard assumptions. In the second situation we consider, unsettled law, not all factual scenarios have been previously considered by courts, so the function $d(h)$ has been defined only for some fact situations h. In the explosives example, it might not have been settled by precedent whether mental anguish is a legally cognizable form of harm. Unsettled law tends to be the standard situation in new or complex areas of law (Llewellyn 1960; Stone 1985).

The timing of the model is as follows: at $t = 0$, I observes h and takes

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5. If h is unknown to I, the problem becomes trivial. The analysis goes through if I is imperfectly informed about h.

6. Studying fact discretion under negligence rules would complicate the analysis because in that case precautions may jump rather then change smoothly with judicial error. We leave the study of negligence rules for future research.

precautions; at $t = \frac{1}{2}$, V is injured; at $t = 1$, a trial judge is randomly selected from the population of judges. The selected judge observes h (we drop this assumption in Section 5), finds h' that is potentially different from h, and awards damages $d(h')$ to the victim.

A judge's fact-finding policy is thus summarized by the function $h'(h)$ assigning to every true harm level h the utility-maximizing harm level actually found by the judge. In our definition, the judge engages in fact discretion when the facts found $h'(h)$ differ from those revealed at trial h. Fact discretion is possible because, to verify harm, courts must evaluate soft evidence, whose interpretation is vulnerable to distortion. Some of the evidence presented to them may be oral, and so they may choose whom to believe. The documents in the evidence may include ambiguous language, which judges are free to interpret. The victim's harm may depend on a multitude of conflicting factors. By emphasizing certain pieces of evidence and neglecting others, a judge may discretionally alter the facts of the case to meet his or her desired level of harm.

To find h' when true harm is h, the judge bears the cost $c(h' - h)^2/2$. A larger discrepancy between estimated and true harm is more costly to the judge. A smaller c reflects a lower cost of fact discretion. Empirically, a low c may capture factual complexity. The higher the number of material dimensions determining h, the greater the judicial discretion in estimating it.[7]

A study of fact discretion requires that we specify judicial preferences. We define judicial preferences over damages, so that judge j's loss from setting damages d in case h is equal to

$$L_j = \frac{[d - d_j^*(h)]^2}{2}. \tag{3}$$

Here $d_j^*(h)$ is the judge's ideal level of damages when true harm is h. A measure one of judges is distributed according to their ideal damages. Share u of judges is unbiased, with $d_j^*(h) = h$; share i of judges is biased for the injurer (pro-I), with $d_j^*(h) < h$; and share ν is pro-victim (pro-V), with $d_j^*(h) > h$. The distribution of judicial biases is common knowledge. Notice that u measures judicial polarization: the smaller u is, the greater is the share of biased judges in the population. Empirically, u may measure the political or social sensitivity of a dispute. For example, environmental torts or discrimination disputes are likely to have a smaller u.

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7. The cost c may be interpreted as the cost for a judge of bending facts so as to avoid reversal for clear error.

3. ENFORCEMENT OF SETTLED LAW UNDER JUDICIAL DISCRETION

Consider how trial courts enforce settled law. At any harm level h, judge j finds h'_j and sets $d_j = h'_j$ so as to minimize $[d_j - d_j^*(h)]^2/2 + c(d_j - h)^2/2$. This judge j sets

$$d_j(h) = \frac{d_j^*(h) + ch}{1 + c}. \tag{4}$$

Judge j's choice of damages is a weighted average of his or her ideal damages $d_j^*(h)$ and true harm h. Unbiased judges set the first-best damages; the damages of pro-I (pro-V) judges are lower (higher) than true harm h. The discrepancy between biased judges' damages and true harm decreases in c. If judges can freely distort facts ($c = 0$), they set their ideal damages. If instead fact discretion is impossible ($c = \infty$), adjudication is entirely driven by the facts of the case.

3.1. Unpredictability of Damages and Social Welfare

Before moving to the observable implications of fact discretion for trial courts' behavior, expression (4) allows us to examine how fact discretion affects precautions and welfare. Since I chooses p before knowing the judge's type, his or her choice of precautions at h is

$$p_{sl}(h) = E_j(d_j(h)|h) = \frac{E_j[d_j^*(h)] + ch}{1 + c}, \tag{5}$$

which averages the damages set by pro-V, pro-I, and unbiased judges. The pattern of precautions at a given harm h depends entirely on the average judicial bias at h. If $E_j[d_j^*(h)] > h$, judges are on average pro-V and the injurer takes overprecautions. If $E_j[d_j^*(h)] < h$, judges are on average pro-I and the injurer takes underprecautions. Correct precautions are only taken if judges are on average unbiased, that is, when $E_j[d_j^*(h)] = h$. Section 3.2 provides conditions under which adjudication is on average unbiased. For now, we take the average bias as given and find the following (all proofs are given in the Appendix):

Proposition 1. Under settled law, if for some h, $E_j[d_j^*(h)] \neq h$, then first-best social welfare is attained if and only if $c \to \infty$. Social losses relative to the first best fall as c or u increase. The marginal social cost of a decrease in c is larger when u is smaller.

Intuitively, judicial bias is responsible for the welfare loss from fact discretion. As pointed out by Kaplow and Shavell (1996), if damages

are on average equal to true harm, then the first best is attained irrespective of judicial errors. If instead average damages are sometimes different from true harm, the first best is no longer attained. The deviation of precautions (and welfare) from the first best depends on c and u. An increase in judges' ability to misrepresent harm (that is, a decrease in c) distorts precautions, thereby reducing welfare. A similar effect is triggered, for a given c, by an increase in the proportion of biased judges (a decrease in u). The extent of fact discretion and judicial bias interact: as c falls, biased judges are better able to distort the setting of damages, so judicial polarization has a more detrimental impact on precautions.

Aside from the welfare cost of fact discretion, what might be some of the observed consequences of this behavior of trial judges? First, the outcome of a dispute in this model is obviously determined by who the judge is. More specifically, the analysis has implications for statistical predictability of judicial decisions from case facts. By "unpredictability" we mean the variability of damages for given facts (that is, true harm h). That is, at harm h we define

$$\text{unpredictability } (h) \equiv V_j[d_j(h)] = \frac{V_j[d_j^*(h)]}{(1 + c)^2}, \tag{6}$$

where $V_j[d_j(h)]$ is the variance of damages at harm level h and $V_j[d_j^*(h)]$ is the variance of judicial ideal damages at harm h. We have the following:

Corollary 1.   Under settled law, unpredictability increases with $V_j[d_j^*(h)]$ and falls with c.

Under fact discretion (that is, if $c < \infty$), dispersion of judicial views fosters unpredictability in damages, even when legal rules are fixed. We expect more variability of outcomes in politically sensitive cases in which the dispersion of judicial biases is large. In addition, unpredictability falls when it is harder for judges to engage in fact discretion (when c is higher).

3.2. Average Damages and the Number and Severity of Accidents

To obtain predictions on average damages and on the number and severity of accidents, we must consider how $E_j[d_j^*(h)]$ varies with harm. We do so by presenting a flexible specification of judicial biases that allows us to stress the role of two key factors: the relative proportion of pro-I and pro-V judges and the slope of bias with respect to harm.

We assume that all pro-V and pro-I judges have ideal damage schedules $d_V^*(h)$ and $d_I^*(h)$, respectively, given by

$$d_V^*(h) = h + h^\alpha(1 - h) \quad \text{and} \quad d_I^*(h) = h - h(1 - h)^\alpha, \tag{7}$$

with $\alpha \geqslant 0$. To understand these expressions, consider the pro-V bias $h^\alpha(1 - h)$. This bias can be thought of as the product of two factors. The first factor, h^α, means that a pro-V judge tends to be more biased when harm is higher. The second factor, $(1 - h)$, means that the pro-V bias cannot exceed the distance between current and maximum harm $(1 - h)$; because of this physical constraint, pro-V bias tends to get smaller with h. Thus, the pro-V bias $h^\alpha(1 - h)$ initially rises but eventually falls with h. Similarly, with respect to pro-I bias, $(1 - h)^\alpha$ implies that a pro-I judge is more biased when harm is lower, while h is the maximal bias he or she is allowed to entertain.

As we show, by shaping the sensitivity of bias to the case's facts, the parameter α determines whether and when adjudication is on average pro-I, pro-V, or unbiased. When α is high, the bias actually exercised by a judge relative to its maximum possible level is higher the more the evidence favors his or her preferred party. Pro-V judges exercise greater bias when harm is high; pro-I judges do so when harm is low. If instead α is small, judicial bias is insensitive to evidence. At any harm h, the pro-V bias mainly depends on the maximum harshness $(1 - h)$ a judge is allowed to entertain, and the pro-I bias depends on the maximum leniency h a judge is allowed to entertain. In addition, the larger α is, the more judges pay attention to the case's facts and the less ideological they are (that is, the smaller their bias is). As $\alpha \to \infty$, all judges become unbiased.[8]

To study the shape of average damages under the functional forms in equation (7), consider the slope of the former at their interior intersection with first-best damages $h^* \equiv (i/v)^{1/(\alpha-1)}/[1 + (i/v)^{1/(\alpha-1)}]$ (the other intersections are $h = 0$ and $h = 1$). We then have the following:

Corollary 2.   When $\alpha > 1$, average damages are too steep at h^*. When $\alpha \leqslant 1$, average damages are too flat at h^*. When $\alpha = 1$ and $i = v$, average damages are first best.

The key parameter determining the location of over- and underpre-

8. In this respect, one might wonder about the difference between an increase in α and an increase in the cost of fact discretion c. The following analysis shows that the key difference is that an increase in α not only reduces the bias in adjudication but also tilts the distribution of accidents toward the less severe ones.
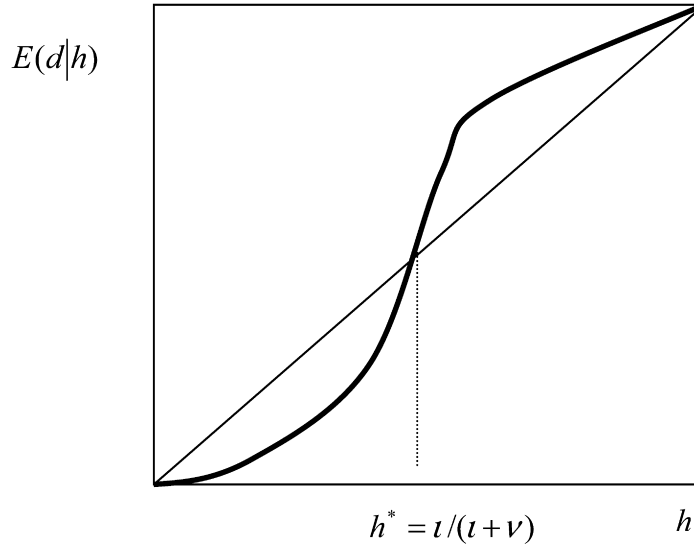
Figure 1. Average damages under fact discretion: $\alpha = 2$

cautions is α. Figure 1 plots the case with $\alpha = 2$. The bold line plots average damages under fact discretion, and the diagonal plots the first-best level of damages. Since $\alpha > 1$, average damages are too steep at h^*. In practice, this means that the pro-V bias is stronger at high levels of harm and that the pro-I bias is stronger at low levels of harm. As a consequence, average damages are too low at low values of h and too high at high values of h.

What about the opposite case, with $\alpha < 1$? Figure 2 plots the case $\alpha = 0$ in which ideal damages do not depend on actual harm: $d_V^*(h) = 1$, $d_I^*(h) = 0$. Once more, the bold line plots average damages under fact discretion. Unlike in the previous case, when $\alpha < 1$, expected damages are too flat (in this specific example, this is true globally). Indeed, for small values of α, the key factor is the physical constraint on bias: at low levels of harm pro-V judges have the greatest leeway to distort damages and the pro-V bias is stronger; at high levels of harm pro-I judges have the greatest leeway to distort damages and the pro-I bias is stronger. As a result, when $h < h^*$, average damages are too high; when $h > h^*$, they are too low.

In this respect, α shapes the extent of moral fault (Bauer 1933). When the value of α is high, judicial bias is sensitive to the facts of the case.
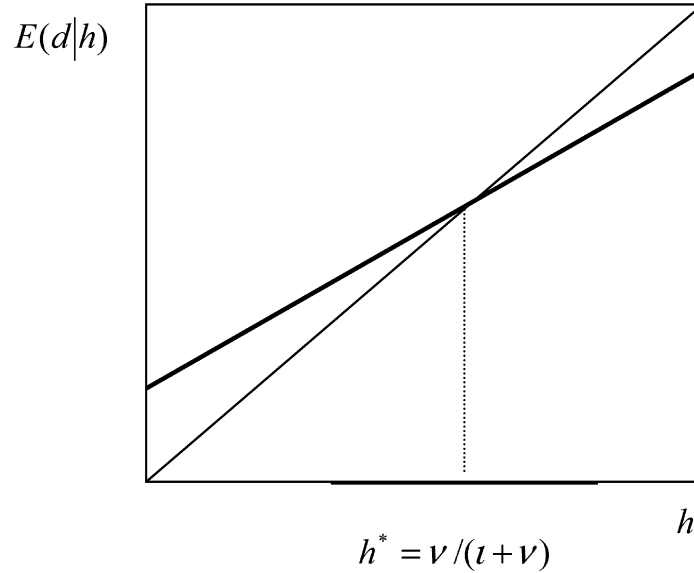
$E(d|h)$

$$h^* = v/(\imath + v)$$

h

Figure 2. Average damages under fact discretion: $\alpha = 0$

As a result, adjudication is more pro-V precisely when the victim's harm is higher. This flexible formulation of judicial biases also allows for the possibility that pro-V and pro-I biases exactly cancel out, so that average damages are unbiased and the first best is attained. This case requires not only $\alpha = 1$ but also $i = v$; namely, there should be an equal proportion of pro-I and pro-V judges. This knife-edge result shows that, when legal errors are not purely random, as in Kaplow and Shavell (1996), but are rather a product of the deliberate decisions of utility-maximizing judges, it is unlikely that opposite errors cancel out on average.

Having considered average damages, we can examine how fact discretion affects the observed number and severity of accidents. If average damages are too flat (that is, if $\alpha < 1$), underprecautions and thus accidents prevail at high levels of h. For a given total number of accidents, there are too many major accidents. If instead average damages are too steep (that is, if $\alpha > 1$), underprecautions and thus accidents prevail at low levels of h. For a given total number of accidents, there are too many minor accidents.

Consider next the impact of judicial biases on the total number of accidents, which is equal to $1 - E[E(d_i(h) \mid h)]$. We find the following:

Corollary 3.   Under settled law, the number of accidents is first best if and only if $i = v$. The number of accidents increases in the relative proportion of pro-I judges, i/v.

The number of accidents depends on the relative proportion of pro-I and pro-V judges. If pro-I judges are relatively more prevalent, the average level of damages and thus precautions are too low, and there are too many accidents. The converse is true if pro-V judges are relatively more prevalent. The number of accidents should be higher in the areas of law in which relatively more judges are biased in favor of the injurer.[9]

These results relate to the research on accuracy in adjudication (for example, Kaplow 1994). This literature stresses that, when different errors do not wash out on average, otherwise optimal legal rules such as strict liability or negligence may distort precautions and lead to welfare losses (Craswell and Calfee 1986). By modeling legal error as the deliberate decision of utility-maximizing judges, we predict how the patterns of precautions, accidents, and welfare losses depend on factors such as the polarization of judicial preferences, the relative share of pro-I judges, the sensitivity of judicial bias to facts of a case, and the factual complexity of a dispute. These comparative statics may help compare legal rules across different areas of law.

More broadly, while fact discretion makes facts less helpful in predicting trial outcomes, it makes judicial preferences more helpful for so doing. Independent measures of judicial bias should predict resolution of identical disputes. Knowing who the judge is should be useful to researchers and not just to litigants. There is now an enormous literature indicating that race, gender, and the party of the nominating president affect the decisions of appellate judges, especially in politically sensitive cases. Some of the key studies are George and Epstein (1992), Brenner and Spaeth (1995), Revesz (1997), Pinello (1999), Klein (2002), Sunstein, Schkade, and Ellman (2004), and Hansford and Spriggs (2006). For trial courts, some studies find significant exercise of discretion in criminal sentencing (Partridge and Eldridge 1974; Abrams, Bertrand, and Mullainathan 2006) and in bankruptcy decisions (Chang and Schoar

9. Although we do not explicitly study the effect of a higher value of α on welfare, we can show that this effect is ambiguous. However, as α becomes very large, social welfare approaches the first best.

2006). Most relevant to the current study, Schanzenbach and Tiller (2007) find that, in spite of the sentencing guidelines, fact discretion allows judicial ideology to matter in the context of street crimes involving violence, theft, and drugs, with Democrat-appointed judges giving shorter sentences than Republican-appointed ones.

4. FACT DISCRETION AND APPELLATE REVIEW

A second possible determinant of fact discretion—pertinent to judges but not to juries—is appellate review. Our model of appellate review relies on the generally accepted idea that appellate courts take the trial courts' fact finding as given (except in the cases of clear error) but can reverse trial courts if the law was misapplied to the found facts. Although there are some exceptions, the acceptance of trial court's fact finding by appellate courts is a central feature of common law, which distinguishes it from the civil law tradition. One explanation is the greater reliance of common-law adjudication on open trials and on oral examination of witnesses at trial as a strategy of gathering evidence, which is not easily compatible with appellate review of fact finding (see Merryman 1985; Glaeser and Shleifer 2002).

For concreteness, suppose that a (randomly selected) trial court solves dispute h by choosing $(d', h'(h))$, where $h'(h) \in [0, 1]$ is the trial court's (potentially distorted) finding of facts and $d' \in [0, 1]$ is the corresponding level of damages set by the judge. After the trial, the case is automatically appealed.[10] The appellate court can either affirm or reverse the trial court's ruling. We assume that trial judges dislike being reversed and incur a psychic or reputational loss $r > 0$ when this happens. To simplify the analysis, we also assume that $\alpha = 0$, so that ideal damages are equal to zero for pro-I judges and one for pro-V judges, regardless of h. As before, the exercise of fact discretion is assumed to be costly to the trial judge.

An appeals court is randomly selected from the population of such courts. Crucially, appeals courts' preferences are identically distributed to those of the trial courts. In contrast to Bueno de Mesquita and Stephenson (2002) and Shavell (2006), we thus allow appellate courts to

10. Relaxing this assumption complicates the analysis without adding much insight. Because the key results of this section hinge on appellate courts' preferences being sufficiently polarized, little would change with endogenous appeals, as judicial polarization is also a prerequisite for appeals to occur (Section 5 formalizes this idea).

also be biased. In deciding whether to affirm or to reverse, the appellate court maximizes its utility but is compelled to apply the prevailing legal rule. If—given the trial court's fact finding $h'(h)$—the trial court's damages d' are consistent with the prevailing legal rule, then the appellate court must affirm, even if its bias tempts it to set a different level of damages.[11] In contrast, if the law specifies that a level of damages $d'' \neq d'$ should be set at $h'(h)$, then—irrespective of its preferences—the appellate court must reverse and award d''. The more interesting case arises when the law is unsettled in that for some facts $h'(h)$ the prevailing legal rule does not specify what level of damages should be correctly applied. In the explosion example, suppose that precedents have not settled whether victims should be compensated for mental suffering. Then our assumption implies that a trial court finding no mental suffering cannot be reversed, while a court introducing or denying compensation for mental suffering can be reversed on appeal.[12] In the latter case, Section 4.2 shows that the decision to affirm or to reverse crucially depends on the appellate court's bias.

4.1. Appellate Review under Settled Law

An immediate consequence of the working of judicial review in our model is that, under settled law, judicial review is irrelevant: trial courts can avoid reversal and still be able to set their preferred damages by simply distorting the facts. For example, when true harm is h_0 but the trial judge wants to set $d' = h_1 \neq h_0$, he or she just needs to find $h'(h_0) = h_1$. Because the appellate court takes h_1 as given, it cannot reverse $d' = h_1$: this ruling is precisely the one mandated by strict liability for the facts found. Reversal would occur only if the trial court finds h_0 but sets $d = h_1$, since then $d = h_1$ is a misapplication of the law to the facts. Yet the trial court never chooses the latter strategy: reversal can be simply avoided by engaging in fact discretion. We are back to the findings of Section 3. Note that, because in our model appellate

11. Appellate courts do not always follow established law and sometimes overrule precedents. We ignore overruling for two reasons. First, it is costly to appellate courts and is thus infrequent. Second, our key results are likely to hold even if overruling sometimes occurs, as it is still true that trial courts are more likely to be reversed when fact finding is inconsistent with precedents. See Gennaioli and Shleifer (2007b) on the causes and consequences of overruling.

12. This assumption is consistent with Schanzenbach and Tiller (2007), who find in the context of the U.S. sentencing guidelines that law-oriented departures from the guidelines concerning the kind or degree of an offense are subject to review on appeal, whereas fact determinations concerning the quantification of the offense level are not reviewed.
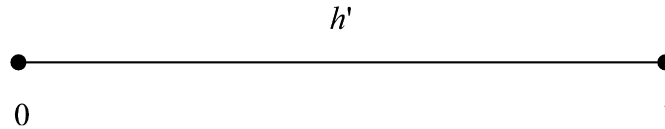
h'

Figure 3. Precedents and unsettled cases

courts are just as biased as trial courts, allowing the former to review the latter's fact finding would not change our results: it would only transfer to the appellate courts the ultimate control over fact discretion.

4.2. Appellate Review under Unsettled Law

Trial courts often deal with cases in which the mapping from true harm to damages remains unsettled by previous legal rulings. Because such gaps in the law are filled by appellate courts, a trial judge's freedom to set damages is limited by the appellate review of his or her decision.

This situation, which we call unsettled law, is typical in common law, where legal rules are a by-product of judges resolving specific disputes. When existing precedents fail to exhaust all factual circumstances, and new facts arise in a case, a trial judge who reports these facts truthfully must consider which precedent is controlling. After he or she renders his or her decision, the losing party may appeal his or her ruling by insisting that a more favorable precedent should be applied to the facts found by the trial court. An appellate court must then decide whether, given these facts, the current case as a matter of law is closer to the plaintiff's or the defendant's preferred precedent.

We capture the idea of unsettled law by studying the case with two precedents governing damages in the tort between I and V: one of them is the case $(h = 0, d = 0)$; the other is the case $(h = 1, d = 1)$. For harm levels away from the existing precedents, that is, for $h' \in (0, 1)$, the law is silent. This situation is represented in Figure 3, with the two precedents highlighted in bold.

To choose damages, an appellate court interprets the current case in light of existing precedents. It may deem h' sufficiently analogous to $h = 0$ and resolve the legal ambiguity in favor of $d = 0$. Alternatively, the appellate court may deem h' analogous to the precedent $h = 1$ and set $d = 1$. Finally, the appellate court may distinguish h from both precedents and award a third (new) level of damages. The choices of different appeals courts among these alternatives are key to understanding how

judicial review affects trial judges' incentives to engage in fact discretion. Consider the appellate courts' reaction to a trial ruling (we are still assuming that $\alpha = 0$):

Lemma 1. At $h' = 0$ and $h' = 1$, the trial court is affirmed if and only if $d' = 0$ and $d' = 1$, respectively. If $h' \in (0, 1)$, pro-V appeals courts reverse any $d' < 1$, pro-I appeals courts reverse any $d' > 0$, and unbiased appeals courts reverse any $d' \neq h'$.

Not surprisingly, appellate courts exploit legal ambiguities to affirm their biases. If the facts fit into existing precedents (that is, $h' = 0$ or 1), there is no legal ambiguity and appellate courts affirm trial court rulings, consistent with those precedents (that is, $d' = 0$ or 1, respectively). But if $h' \in (0, 1)$, the resolution of legal uncertainty over damages depends on the bias of the appellate court reviewing the case.

To illustrate, suppose that the victim contends that to properly estimate harm $h \in (0, 1)$ the judge should also consider mental suffering, which was not considered in existing precedents. From the standpoint of appellate review, a trial court's finding of no mental suffering is radically different from the finding that mental suffering should be excluded from the damage calculation. The former decision simply cannot be reversed, but the latter one can. Indeed, suppose the only harm at stake is mental suffering h and the trial court finds it correctly but rules that it is not cognizable for the damage calculation, so $d = 0$. In this case, a pro-I appellate court affirms the ruling that mental suffering is not cognizable, and a pro-V reverses and sets $d = 1$, by analogy with the existing precedent of severe harm.[13] An unbiased appellate court also reverses, rules that mental suffering is an admissible harm, but sets damages $d = h$. The trial court can avoid this appellate scrutiny, and possible reversal, by simply distorting the facts of the case so that one of the precedents applies exactly. By finding no mental suffering, the trial court can avoid any legal ambiguity in the setting of damages. In this case, fact discretion is no longer a prerogative of biased judges (compare *Garratt v. Dailey*).

How does appellate review affect an unbiased trial judge's fact-finding policy $h'(h)$? Suppose that $h \in (0, 1)$. If the unbiased trial judge engages in fact discretion and rules $(d' = 0, h' = 0)$, he or she loses $(1 + c)h^2/2$; if he or she rules $(d' = 1, h' = 1)$, he or she loses $(1 +$

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13. The assumption that precedents are equivalent to the biased judges' ideal points is not important for our results.

$c)(1 - h)^2/2$. In neither case is the judge reversed. If instead the unbiased trial judge finds $h'(h) \in (0, 1)$, by lemma 1, he or she optimally finds the truth and rules ($d' = h$, $h' = h$). In this case, his or her expected loss is

$$i\frac{h^2}{2 + r} + u0 + v\left[\frac{(1 - h)^2}{2 + r}\right]. \tag{8}$$

The first term is the trial judge's loss from reversal by a pro-I appeals court that sets $d' = 0$. The third term is the trial judges' loss from reversal by a pro-V appeals court that sets $d' = 1$. If the appeals court is unbiased, it affirms the unbiased trial judge's ruling, who then loses nothing.

By comparing a trial court's loss from alternative strategies, we see that unbiased judges trade off the gain from setting first-best damages against the total reversal cost. Reversal is costly to the trial judge for two reasons. First, the appellate court may set damages too far away from the trial judge's ideal points. Second, the trial judge bears the psychic or reputational cost r. Taking into account the behavior of all trial courts, we find the following:

Proposition 2.   If $c \leqslant 1$ and $r \geqslant 1$, there are two thresholds $\overline{h}_V$, $\underline{h}_I$ such that pro-I trial judges set ($h' = d' = 0$) for $h \leqslant \underline{h}_I$ and [$h' = d' = ch/(u + c)$] otherwise, and pro-V judges set ($h' = d' = 1$) for $h \geqslant \overline{h}_V$ and [$h' = d' = (u + ch)/(u + c)$] otherwise. There are two thresholds $\overline{h}_U$, $\underline{h}_U$ ($\underline{h}_U \leqslant 1/2 \leqslant \overline{h}_U$) such that unbiased judges set ($h' = d' = 0$) for $h < \underline{h}_U$, ($h' = d' = 1$) for $h > \overline{h}_U$, and ($h' = d' = h$) otherwise.

As long as the cost of fact discretion is not too high (that is, if $c \leqslant$ 1) and the reversal cost is sufficiently high (that is, if $r \geqslant 1$), biased trial courts try to follow the precedent that is closest to their bias. They refrain from doing so (and moderate their exercise of fact discretion) only if the current facts are sufficiently far from their preferred precedent (relative to the reversal cost r).

More important, and in contrast with the previous section, under unsettled law even unbiased judges engage in fact discretion. Unbiased judges would ideally avoid fact discretion. However, with unsettled law, fear of reversal by a biased appellate court encourages them to distort fact finding so as to fit the current case into settled precedents. If all appellate courts are unbiased, then unbiased trial courts never risk reversal, refrain from fact discretion, and rule [$d' = h$, $h'(h) = h$]. If instead some appellate courts are biased, the adjudication by an unbiased trial court is represented in Figure 4 in terms of the cutoff points $\underline{h}$, $\overline{h}$ for various decisions.
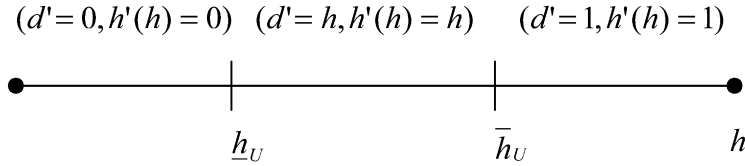
$$(d'=0, h'(h)=0) \quad (d'=h, h'(h)=h) \quad (d'=1, h'(h)=1)$$

$$\underline{h}_U \qquad\qquad \overline{h}_U \qquad\qquad h$$

Figure 4. Adjudication by unbiased judges

Corollary 4. The difference $\overline{h}_U - \underline{h}_U$ increases in u and c and decreases in r. There exists a $\hat{u}$ such that, for $u \leqslant \hat{u}$, $\overline{h}_U = \underline{h}_U = \frac{1}{2}$ and $\underline{h}_V = 0$, $\overline{h}_I = 1$.

The size of the region in which unbiased trial courts do not engage in fact discretion increases in c and falls in the proportion of biased judges $(1 - u)$ and in the pain of reversal r. The same is true for the region in which biased courts prefer not to fit the case in their preferred precedents. In particular, when $u \leqslant \hat{u}$, the cost of reversal is so high that trial courts always fit the case into existing precedents and even unbiased judges always engage in fact discretion.

What is the impact of unbiased courts' fact discretion on precautions and welfare? We answer this question by focusing on the case of corollary 4 in which $u \leqslant \hat{u}$. Besides being analytically more tractable, this case allows a sharper evaluation of how judicial review affects fact discretion. Figure 5 plots average damages in this case.

Compared with settled law, where average damages smoothly increase with harm, under unsettled law, damages jump sharply at $h = \frac{1}{2}$. Now biased judges rule, irrespective of harm, according to their preferred precedent, while unbiased judges only condition adjudication on whether h is above or below $\frac{1}{2}$. In this case, social welfare has the following properties:

Proposition 3. Under unsettled law, if $c \leqslant 1$, $r \geqslant 1$ and $u \leqslant \hat{u}$, welfare is lower than in the first best. There exists a $u^* \in [\hat{u}, 1]$ such that social welfare increases in u if and only if $u < u^*$.

Under unsettled law, fact discretion lowers social welfare relative to the first best. When $u < u^*$, as with settled law, judicial bias reduces the extent to which damages vary with harm, thereby inducing over- and underprecautions. Yet, in contrast to settled law, under unsettled law, greater polarization is beneficial for $u \geqslant u^*$. Under unsettled law, an
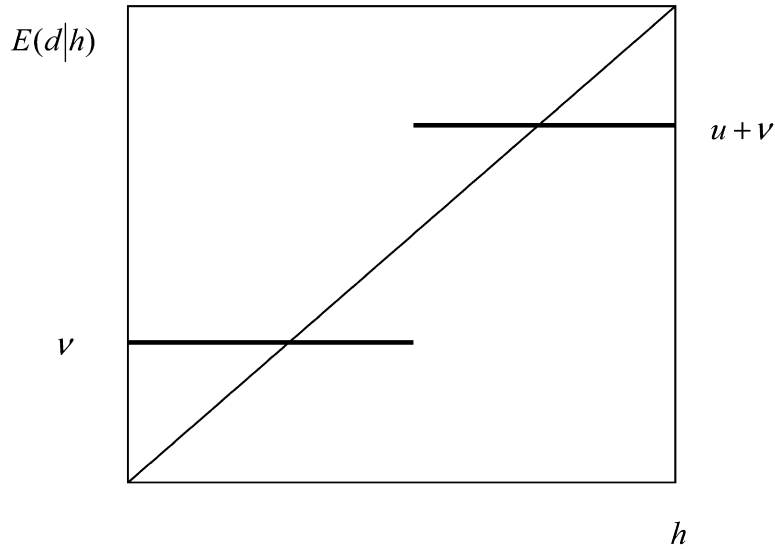
$E(d|h)$

$u + v$

v

h

Figure 5. Damages and precautions under unsettled law

increase in the share of biased judges reduces the jump in damages and thus in precautions at $h = \frac{1}{2}$. Because the marginal cost of precautions is increasing, this beneficially reduces the average cost of precautions by smoothing them across harm levels. In contrast to proposition 2, under the assumed parametric conditions, the cost of fact discretion c does not affect welfare at the margin.

More important, the main observable implications of fact discretion arising from judicial review line up with those arising from judicial bias. It is obviously still the case that the identity of the trial judge matters and that measurable judicial bias affects trial outcomes, although now even unbiased judges make biased decisions. It is still the case that damages are unpredictable from true harm, the more so the greater the polarization of judicial biases. Specifically, we have the following:

Corollary 5. If $c \leqslant 1$, $r \geqslant 1$, and $u \leqslant \hat{u}$, under unsettled law $V_j[d_j(h)] = v(1 - v)$ for $h \leqslant \frac{1}{2}$ and $V_j[d_j(h)] = i(1 - i)$ otherwise. Unpredictability increases in i and v.

With respect to the number of accidents, it is still the case that too many accidents occur if and only if $i > v$. With respect to the severity of accidents, it is still the case that at very high levels of harm damages

are flat and there are too many bad accidents. However, the sharp jump in damages occurring at intermediate levels of harm implies that there are also too many moderate accidents, which is consistent with the steepness of incentives in that region.

Two predicted consequences of judicial fact discretion arising from appellate review are new. First, the lower the congruence between the preferences of trial and appellate courts, the more the former should engage in fact discretion. Schanzenbach and Tiller (2007) find that the behavior of U.S. courts under the sentencing guidelines is consistent with this prediction. Second, we expect that in complex and unsettled areas of law, in which determination of liability requires answers to a variety of factual questions, the exercise of fact discretion would be more pronounced. If a researcher had an independent ability to observe the facts (perhaps from the documentary record) and compare them with the judge's summary of the evidence, it is precisely in these unsettled and fact-intensive areas of law that we expect the greatest mismatch between the true facts and the judge's representation of those facts. For it is precisely in these areas of law that mischaracterization of the evidence best protects the judge from reversal.

5. FACT DISCRETION AND ADVERSARIAL LITIGATION

So far we have focused on judicial behavior, neglecting the role of litigants. However, it has been argued that adversarial litigation may improve fact finding by increasing information revealed in trials (Milgrom and Roberts 1986; Froeb and Kobayashi 1996). In Section 5.1, we consider a model of adversarial litigation to study whether competition among litigants can limit fact discretion and improve fact finding. We ask whether fact discretion affects the incidence of litigation as opposed to settlement in Section 5.2.[14]

5.1. Fact Discretion and Fact Finding

Can adversarial litigation reduce the extent of fact discretion and improve fact finding? To answer this question, consider the following game played by the litigants and the judge. Suppose the parties failed to settle and end up in a trial before a judge with a known bias (we discuss settlement later). Each party $P = I, V$ sends to the judge a message h_P

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14. For simplicity, we abstract from I's choice of precautions and study only the choice of litigation versus settlement.

concerning the level of harm. A litigant's message about harm represents his or her position in court and summarizes a possibly extensive characterization of evidence that the litigant submits to the judge. A litigant's position is thus more partisan the closer it is to his or her desired level of damages.

We continue to assume that judicial preferences are given by equation (7), with $\alpha = 0$. Instead of assuming that the judge finds out h costlessly, we assume that, after receiving the parties' messages, the judge decides whether to find out h at the cost of $k(h_V - h_I)^2/2$, with $0 < k < \frac{1}{3}$. One should think of $k(h_V - h_I)^2/2$ as an effort cost incurred by the judge in order to gather the evidence that, in addition to the parties' reports, is necessary to establish the true h.[15] If the judge does not search and remains uninformed, he or she effectively updates the posterior distribution of harm to be uniform on $[h_I, h_V]$. In this sense, the judge is Bayesian.

If the judge does not find out the truth, he or she rules according to one of the parties' messages (the cost of that is assumed to be zero). Thus, a judge choosing not to search cannot set his or her optimal level of damages given the posterior distribution of harm estimated on the basis of the parties' reports.[16] If instead the judge becomes informed, he or she has the additional possibility of finding a new level of harm that is a combination of true harm and the judge's preferred message among h_I, h_V. For algebraic simplicity, we study the case in which the weight attributed to the preferred party's message is positive but negligible. The possibility for the judge to find out the truth renders the litigants accountable ex post. If the judge is expected to search, a litigant refrains from misrepresentation to prevent the judge from shading the decision against him or her. Unlike in the models of Milgrom and Roberts (1986) and Froeb and Kobayashi (1996), the judge here plays a key role in shaping the willingness of litigants to submit truthful reports.

5.1.1. Fact Finding under Settled Law.

Suppose that the law is settled. When appearing before a judge with a known bias, the party that the judge favors sends a message equal to the judge's ideal damages. The

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15. The cost is assumed to increase in $|h_I - h_V|$ because when the parties' messages are far apart, they both likely neglect to report relevant evidence, which the judge must then identify to find out the true harm. This assumption simplifies the analysis, but our main results also hold with a fixed cost.

16. This assumption captures the idea that, when the judge does not exert search effort, the parties' arguments are of higher quality than the judge's argument and thus less likely to be reversed on appeal.

other party's message is irrelevant: in front of a pro-V judge, V sends $h = 1$ and the judge sets $d = 1$, irrespective of I's message; in front of a pro-I judge, I presents $h = 0$ and the judge sets $d = 0$. In this setting, the cost of fact discretion does not affect adjudication because the litigants themselves provide distorted facts to biased judges. As a consequence, when judges are biased, adversarial litigation does not improve adjudication.

Suppose, in contrast, that the judge is unbiased. Let the litigants' messages be h_I, h_V, with $h_I \leqslant h \leqslant h_V$, where h is true harm. (This is always true in equilibrium.) Then, if the judge decides to find out the truth, he or she rules ($d' = h$, $h' = h$), bearing a loss of $k(h_V - h_I)^2/2$. If instead the judge does not find out h, his or her loss is identical if he or she sets either $d = h_I$ or $d = h_V$ and is equal to $(h_V - h_I)^2/6$. Because $k < \frac{1}{3}$, the judge is always better off finding h. What is the impact of such judicial strategy on the parties' optimal choice of h_I, h_V?

Proposition 4.   Under settled law, if the judge is unbiased $h_I = h_V = h$ for any h and $d = h$. If the judge is pro-V, then $h_V = 1$, h_I can take any value, and $d = 1$. If the judge is pro-I, then $h_I = 0$, h_V can take any value, and $d = 0$.

By allowing unbiased judges to accurately fine-tune damages to harm, settled law gives unbiased judges a strong incentive to verify harm. As a result, each litigant tries to move closer and closer to the actual h so as to avoid having the judge shade damages against him or her. Settled law dampens partisanship by giving unbiased judges a strong incentive to scrutinize the litigants' positions in court. When $k > \frac{1}{3}$, judges never find out the truth and proposition 4 no longer holds. We assume that $k \leqslant \frac{1}{3}$ to illustrate the difference between settled and unsettled law in shaping litigants' partisanship. In sum, under settled law, we confirm that, with unbiased judges, adversarial litigation yields perfect fact finding, in the spirit of Milgrom and Roberts (1986).

5.1.2. Fact Finding under Unsettled Law.   What happens under unsettled law? Section 4 showed that, when the law is unsettled, even unbiased judges may set damages at the extremes. In our model of litigation, this finding has two implications. First, unbiased judges may prefer to remain uninformed, because—in contrast to settled law—unsettled law does not allow them to set their preferred damages anyway. Second, litigants may take partisan positions to cater to even an unbiased judge's need to fit

the facts into the existing law. Hence, under unsettled law, adversarial litigation may not improve adjudication.

To see how this works, suppose that $u \leqslant \hat{u}$, so unbiased judges consider only whether harm is larger or smaller than $\frac{1}{2}$ to choose between $d = 0$ and $d = 1$ (see corollary 4). Then, irrespective of the parties' messages, if the judge becomes informed, he or she obtains

$$\int_0^{1/2} \left(\frac{h^2}{2}\right) dh + \int_{1/2}^1 \left[\frac{(1-h)^2}{2}\right] dh + \frac{k}{2} = \frac{1}{24} + \frac{k}{2}. \tag{9}$$

This expected loss equals the judge's average loss from setting $d = 0$ when $h \leqslant \frac{1}{2}$ and $d = 1$ when $h > \frac{1}{2}$, plus the search cost $\frac{k}{2}$. Although the judge is fully informed, he or she rules according to the parties' extreme messages to avoid reversal. If instead the judge does not find out harm, his or her expected loss is the same if he or she sets $d = 0$ and $d = 1$ and is equal to $\frac{1}{6}$. Overall, we find

Proposition 5. If $k > \frac{1}{4}$, under unsettled law, even if the judge is unbiased, the parties' messages are $h_I = 0$, $h_V = 1$ and the judge randomizes between $d = 0$ and $d = 1$. If the judge is biased, then the outcome is the same as under settled law.

The key difference between settled and unsettled law concerns trials before an unbiased judge. With unsettled law, unbiased judges sometimes remain uninformed and choose to fit the case into an existing precedent. As a consequence, competition between parties is radically different from that prevailing under settled law. Now competition leads to extreme partisanship, not to convergence to the truth. To avoid reversal, even an unbiased judge may (randomly) endorse a partisan message such as $h_I = 0$ or $h_V = 1$ as opposed to a message claiming that h is in the middle. Litigants then compete by proposing extreme views so as to cater to the judge's demand for precedent-fitting narratives that render reversal less likely. In court, plaintiffs overreach and overclaim, while defendants refuse to acknowledge even the slightest liability for harm, each hoping that the judge simply buys their story.

One feature of this equilibrium is that no information trickles up to appellate courts, which slows down legal evolution. Trials fail to lead to accurate fact finding not only because of differential incentives of the litigants to gather information (Daughety and Reinganum 2000) but also

because of the incentives created by the appellate review, especially when the law is unsettled.

5.2. Litigation versus Settlement

Suppose now that, before learning the judge's type, the disputants have an opportunity to settle. What is the impact of fact discretion for the incidence of litigation under settled law? If settlement is cheaper than litigation, then parties litigate only in the presence of bargaining frictions, which may result from litigants' overoptimism (Landes 1971; Posner 1972) or private information (Bebchuk 1984) about the merits of the case. Although in our model the parties fully agree on the facts of the case, they may still fail to settle if each party is optimistic about the possibility of getting a favorable judge. This latter scenario is even more plausible when, as argued by Frank (1930), a judge's bias reflects his or her idiosyncratic sympathy or antipathy toward specific litigants rather than more stable, and therefore predictable in advance, policy preferences. A judge may be annoyed with a lawyer from an earlier case, sympathetic to one who previously clerked for him or her, or deferential to a government attorney who works in the same building.

For simplicity, we follow Yildiz (2004) and study the situation in which the parties' failure to settle is due to heterogeneous beliefs rather than to asymmetric information. Suppose that there is an equal proportion of pro-I and pro-V judges and that I believes that the share of pro-I judges is inflated by a factor $(1 + \delta)$ and that the share of pro-V judges is deflated by a factor $(1 - \delta)$, while V misperceives the share of pro-I and pro-V judges the other way around. The assumption $\delta \geqslant 0$ captures the divergence in litigants' beliefs: when δ is higher, both parties are more optimistic about the case being tried by a favorable judge. The individual litigation cost is assumed to be $C > 0$.

5.2.1. Litigation versus Settlement under Settled Law.
Consider the parties' decision to settle or litigate a case h when the law is settled. The previous assumption implies that litigants' expected payoffs from litigating case h are

$$Eu_{\text{injurer}} = -\frac{1}{2}(1 - u)(1 + \delta)0 - uh - \frac{1}{2}(1 - u)(1 - \delta) - C,$$

$$Eu_{\text{victim}} = \frac{1}{2}(1 - u)(1 - \delta)0 + uh + \frac{1}{2}(1 - u)(1 + \delta) - C. \tag{10}$$

With these payoffs, the parties fail to find a mutually profitable settle-

ment amount paid by the injurer to the victim and thus litigate if and only if

$$\frac{1}{2}(1 - u)\delta \geqslant C. \tag{11}$$

From this expression, we immediately obtain the following:

Proposition 6.   Under fact discretion, there exists a $\underline{\delta} \in [0, 1]$ such that the parties litigate if and only if $\delta > \underline{\delta}$; $\underline{\delta}$ increases in u.

Because under fact discretion judicial bias affects the setting of damages, the parties litigate when they are sufficiently optimistic about the chance of getting a favorable judge (that is, when δ is high enough). The required level of optimism is smaller when the proportion of biased judges is higher. By introducing extrinsic factors such as judicial bias into trials, judicial fact discretion may lead to wasteful litigation.

5.2.2. Litigation versus Settlement under Unsettled Law.   Under unsettled law, litigation is more likely, as disagreement over the judge's bias is not even necessary to obtain litigation. Key to this finding is the result (proposition 5) that, under unsettled law, even unbiased judges might remain uninformed and thus indifferent among extreme outcomes (as long as u is low enough). In such a case, litigants can hope to sway adjudication to their side through courtroom tactics, persuasion techniques, and so on. As a consequence, litigants' optimism about their ability to sway and influence the decision of an indifferent judge can lead them to litigate, irrespective of their optimism about judicial favor.

For concreteness, parameterize the parties' overconfidence about their ability to sway an unbiased judge with $\sigma > 0$. The injurer (victim) believes that he or she will be able to influence unbiased judges to set $d = 0$ ($d = 1$) with probability $\frac{1}{2} + \sigma$. Then, much in the spirit of expression (11), settlement fails when

$$\left[\frac{1}{2}(1 - u)\delta + u\sigma\right] \geqslant C. \tag{12}$$

Just as under settled law, divergence in beliefs as to the proportion of biased judges (δ) in the population fosters litigation. However, under unsettled law, the litigants' optimism (σ) about their ability to move an unbiased and therefore indifferent judge to their side also promotes litigation. Under settled law, the impact of σ is downplayed because unbiased judges become informed and have strict preferences over damages.

While under settled law, then, the parties readily settle after knowing the judge's type, under unsettled law they may fail to do so even if the judge is unbiased because disagreement remains until the ruling is released. Fact discretion promotes litigation to a greater extent when the law is unsettled.

This analysis of litigation under fact discretion yields two empirical predictions. First, litigation should be more prevalent in the politically or socially charged areas of law, where judicial views are more likely to be polarized. Likewise, litigation should be more prevalent in complex areas of law, where the application of legal rules requires the verification of many factual issues, even when the law is clear but especially when the law is unsettled. Second, when parties hold similar beliefs on the distribution of judicial bias and litigation does not occur, we predict that—owing to fact discretion—pretrial settlement amounts in different cases would cluster around the mean settlement, especially if judicial polarization is high. This finding stands in contrast to the standard prediction of Priest and Klein (1984) that pretrial settlements are especially likely to occur when the facts of a dispute are clear. In their model, settlement amounts should reflect the disparate facts of individual cases and presumably display considerable variance rather than converge to the mean. On the other hand, as do Priest and Klein (1984), our model predicts that settlement amounts should spread out once the identity of the judge, and therefore presumably his or her type, is revealed. In such settlements, the party whose position the judge is expected to favor should receive most of the benefit in the settlement.

More broadly, Section 5.2 suggests that the common-law system of dispute resolution will perform particularly poorly when the cases are factually complex, the law is unsettled, and fact-finder preferences are important for the determination of damages (or, for that matter, of liability). These conditions seem to describe adequately the determination of damages for pain and suffering, as well as of punitive damages, in product accident cases. Law and economics scholarship has been highly critical of how damages are set in these situations (Viscusi 1988, 1998; Cooter 1988), blaming the randomness of observed outcomes on the lack of clarity in the law, the sentiments of judges and juries, and the actual complexity of finding the correct answer. These conditions are, of course, a recipe for trouble in our model.

6. CONCLUSION

We have presented two models of judicial fact discretion. In the first, the motivation for the exercise of fact discretion is a trial judge's preference over the outcomes of litigation. This model is probably most relevant for politicized or otherwise emotionally charged disputes. In the second model, the motivation for the exercise of fact discretion is trial judges' aversion to reversal by appellate courts, which leads them to fit the facts of the current dispute into available precedents. This model is probably most relevant for new and developing areas of law with significant factual complexity and relatively few precedents. For both models, we have shown that the outcome of a trial is determined at least in part by who the judge is. Fact discretion leads to judicial behavior that is unpredictable from the facts of the case but predictable from the knowledge of judicial preferences. We have also shown that the exercise of fact discretion leads to systematic distortions in individual behavior, excessive and acrimonious litigation, and welfare losses.

In conclusion, we briefly mention some issues suggested by our model that we did not analyze. First, the model implies clearly and perhaps significantly that summaries of relevant facts that accompany written judicial opinions cannot be trusted. As we saw in *Garratt v. Dailey* and discussed throughout the paper, when judges summarize the facts, they do so to justify their legal conclusions. When a judge exercises fact discretion, this summary need not reflect the true facts of the case, even as seen and believed by the judge. In some instances, the summary of the facts might be possible to check against other available documents. Unfortunately, from the viewpoint of a researcher, a journalist, or a law student, the judge's summary is often all that is available. This aspect of judicial opinions does not necessarily undermine the study of legal principles but may shed only a dim light on the actual facts of any given case.

Second, without conducting a full analysis, our model suggests some possible strategies for using legal procedure to contain the effects of fact discretion. One strategy is to limit the range of legally cognizable harms. The economic loss rule might be one example of this general principle. Another strategy is to introduce procedural rules concerning admissibility of evidence or even, as in civil law systems, more extensive appellate review of fact finding. When judicial fact discretion becomes extreme, dispute resolution in court may become socially inefficient. In those instances, adjudication can be replaced by ex ante regulation based

on bright-line rules (Glaeser and Shleifer 2003). By relying on few cheap-to-verify facts, these rules are less vulnerable to fact discretion.

Third, we have focused our analysis on the exercise of fact discretion by judges, although of course the same phenomenon might be as or more prevalent among juries (Kalven and Zeisel 1966). In the case of juries, legal strategies aiming to control fact discretion tend to focus on the rules of evidence rather than on respecifications of legal rules that might not impress juries.

As a final point, we note that this paper is part of a growing body of research that suggests that the consequences and the efficiency of alternative legal arrangements cannot be evaluated without an explicit discussion of preferences and incentives of law enforcers. Rules and arrangements that appear highly desirable with benevolent and unbiased law enforcers, such as strict liability with all harms being legally cognizable, lose at least part of their appeal when enforced opportunistically. Judicial fact discretion is but one, although possibly very important, manifestation of this broader problem.

APPENDIX: PROOFS

Proof of Proposition 1.   Social losses are $\int_0^1 \{[1 - p_{sl}(h)] h + p_{sl}(h)^2/2\} \, dh$. For each h, optimal precautions are $p_{fb}(h) = h$. If for some h, $p_{sl}(h) \neq h$, social losses are larger than in the first best. Hence, if for some h $E[d_j^*(h)] \neq h$, the first best is attained if and only if $c \to \infty$. A marginal change $p_{sl}'(h)$ triggers a change $L' = \int_0^1 p_{sl}'(h) \, [p_{sl}(h) - h] \, dh$ in social losses. It is immediate to find that $\partial p_{sl}'(h)/\partial c = [h - p_{sl}(h)]/(1 + c)$ and $\partial p_{sl}'(h)/\partial u = [h - p_{sl}(h)]/(1 - u)$. This implies that $\partial L/\partial c < 0$, $\partial L/\partial u < 0$, and $\partial^2 L/\partial c \partial u > 0$. Q.E.D.

Proof of Corollary 1.   By inspection. Q.E.D.

Proof of Corollary 2.   Consider $\alpha > 1$. Damages are first best at $h = 0$, $h = 1$ and at $h^* = (i/\nu)^{1/(\alpha-1)}/[1 + (i/\nu)^{1/(\alpha-1)}]$. Damages are too steep if and only if $\partial Ed_j^*(h^*)/\partial h > 1$ because damages are too low if and only if $h < h^*$. This is always true for $\alpha > 1$. Consider $\alpha < 1$. Damages are first best at $h = 0$, $h = 1$ and at $h^* = (\nu/i)^{1/(1-\alpha)}/[1 + (\nu/i)^{1/(1-\alpha)}]$. Damages are too flat if and only if $\partial Ed_j^*(h^*)/\partial h < 1$ because damages are too low if and only if $h > h^*$. This is always true if and only if $\alpha < 1$. Consider $\alpha = 1$. If $i = \nu$, damages are optimal at any h. If $i \neq \nu$, damages are optimal only at $h = 0$ and $h = 1$. For $h \in (0, 1)$, damages are too low if $i > \nu$ and too high if $i < \nu$. Q.E.D.

Proof of Corollary 3.   First of all, note that $Ed_j(h) = h + [\nu h^\alpha(1 - h) - ih(1 - h)^\alpha]$. In addition, $\int_0^1 h^\alpha(1 - h) \, dh = \int_0^1 h(1 - h)^\alpha \, dh = 1/[(\alpha + 1)(\alpha + 2)]$. Thus, $1 - E[d_j(h)] = \frac{1}{2} - (\nu - i)/[(1 + c)(\alpha + 1)(\alpha + 2)]$. Q.E.D.

Proof of Lemma 1. A trial ruling ($h' = d' = 0$ or $h' = d' = 1$) is not reversed: appeals courts must follow precedent. In any other case, and for $h' \in (0, 1)$, appeals courts can reverse. Pro-V appeals courts reverse any $d' < 1$, pro-I appeals courts any $d' > 0$, and unbiased appeals courts any $d' \neq h'$. Q.E.D.

Proof of Proposition 2. We must consider three cases.

Unbiased Judges. For $h = 0$ and $h = 1$, the trial judge finds the truth, sets $d = 0$ and $d = 1$, respectively, and is not reversed. If $h \in (0, 1)$ and the trial judge rules ($d' = 0$, $h' = 0$), he or she loses $(1 + c)h^2/2$; if he or she rules ($d' = 1$, $h' = 1$), he or she loses $(1 + c)(1 - h)^2/2$. If the judge rules ($d' = h$, $h' = h$), his or her loss is $(1 - u)r + ih^2/2 + v(1 - h)^2/2$. Call $h_{U*} \equiv \{v^2 + 2(u + c)(1 - u)r + v/2 - v\}/(u + c)$ and $\underline{h}_U = \min[12, h_{U*}]$. If $h \leqslant \frac{1}{2}$, the judge find the truth for $h > \underline{h}_U$, and ($d' = 0$, $h' = 0$) otherwise. If $h > \frac{1}{2}$, the judge finds the truth for $h < \overline{h}_U \equiv 1 - \underline{h}_U$, and ($d' = 1$, $h' = 1$) otherwise.

Pro-I Judges. If the judge rules ($d' = 1$, $h' = 1$), he or she loses $\frac{1}{2} + c(1 - h)^2/2$; if he or she rules ($d' = 0$, $h' = 0$), he or she loses $ch^2/2$. For $c \leqslant 1$, the pro-I trial judge always prefers ($d' = 0$, $h' = 0$) to ($d' = 1$, $h' = 1$). If the judge sets $d' = h' \in (0, 1)$, he or she solves $\min_{h'}(1 - u)r + v/2 + u(h')^2/2 + c(h - h')^2/2$, thereby setting $h' = ch/(u + c)$ and bearing a loss of $(1 - u)r + v/2 + uch^2/2(u + c)$. Define $h_{I*} \equiv (1/c)\sqrt{2(u + c)[(1 - u)r + v/2]}$ and $\overline{h}_I = \min[1, h_{I*}]$. Then the judge rules ($d' = 0$, $h' = 0$) for $h < \overline{h}_I$ and sets $d' = h' = ch/(u + c)$ otherwise.

Pro-V Judges. If the judge rules ($d' = 1$, $h' = 1$), he or she loses $c(1 - h)^2/2$; if he or she rules ($d' = 0$, $h' = 0$), he or she loses $1/2 + ch^2/2$. For $c \leqslant 1$, the pro-I trial judge always prefers ($d' = 1$, $h' = 1$) to ($d' = 0$, $h' = 0$). For $d' = h' \in (0, 1)$, the judge solves $\min_{h'}(1 - u)r + i/2 + u(1 - h)^2/2 + c(h - h')^2/2$, thereby setting $h' = (u + ch)/(u + c)$ and bearing a loss of $(1 - u)r + i/2 + uc(1 - h)^2/2(u + c)$. Define $h_{V*} \equiv 1 - (1/c)\sqrt{2(u + c)[(1 - u)r + i/2]}$ and $\underline{h}_V = \max[0, h_{V*}]$. Then the judge rules ($d' = 1$, $h' = 1$) for $h > \underline{h}_V$ and sets $d' = \overline{h} = (u + ch)/(u + c)$ otherwise. The relationship $r \geqslant 1$ implies that $\overline{h}_I > 0$, $\underline{h}_V < 1$. Q.E.D.

Proof of Corollary 4. The term $\overline{h}_U - \underline{h}_U = 1 - 2\underline{h}_U$, where $\underline{h}_U = \min[1/2, h_{U*}]$ and h_{U*}, is defined by $(1 - u)r + ih_{U*}^2/2 + v(1 - h_{U*})^2/2 = (1 + c)h_{U*}^2/2$. By using the implicit-function theorem, one can verify that h_{U*} (and thus $\underline{h}_U$) decreases in u, c and increases in r. Similarly, one can prove that h_{V*} (and thus $\underline{h}_V$) increases in u, c and decreases in r while h_{I*} (and thus $\overline{h}_I$) decreases in u, c and increases in r. If $u \leqslant \ddot{u} \equiv (8r - c)/(1 + 8r)$, then $h_{U*} \geqslant \frac{1}{2}$, which implies $\underline{h}_U = \frac{1}{2}$. Furthermore, there exists a $\tilde{u}$ such that, for $u \leqslant \tilde{u}$, $\overline{h}_I = 1$, $\underline{h}_V = 0$. Define $\hat{u} = \min[\tilde{u}, \ddot{u}]$. Q.E.D.

Proof of Proposition 3. If $c \leqslant 1$, $r \geqslant 1$, $u \leqslant \hat{u}$, precautions are $p(h) = v$ for $h \leqslant \frac{1}{2}$ and $p(h) = 1 - i$ otherwise. Social losses are $L = [1 - v + 2v^2 + 3i + 2(1 - i)^2]/8$, which is always larger than $\frac{1}{3}$, that is, social losses in the first best. Set $i/v = \theta$ and rewrite $i(u) = (1 - u)\theta/(1 + \theta)$, $v(u) = (1 - u)/(1 + \theta)$. Then

$\partial L/\partial u = (-1 + 4v)v'(u)/8 + [3 - 4(1 - i)]\,i'(u)/8$. It is easy to see that $\partial L/\partial u \leqslant 0$ if and only if $u \leqslant \bar{u} = (3 + 3\theta^2 - 2\theta)/4(1 + \theta^2)$. Define $u^* = \max[\bar{u}, \hat{u}]$. Q.E.D.

Proof of Corollary 5.   By inspection. Q.E.D.

Proof of Proposition 4.   If the trial judge is pro-V , $h_V < 1$ is not an equilibrium. If $h_V < 1$ and $h_I < 1$, for any search strategy of the judge, V deviates to $h_V = 1$ as the judge endorses (at least partly) such higher message. If $h_V < 1$ and $h_I = 1$, then—for any search strategy of the judge—I deviates to a lower h_I to prevent the judge from increasing damages. Hence, a pro-V judge induces $h_V = 1$, $h_I \in [0, 1]$, $d = 1$. The judge does not search. Similarly, the equilibrium in front of a pro-V judge has $h_V \in [0, 1]$, $h_I = 0$, $d = 0$, and the judge does not search. In front of an unbiased judge, for any two reports h_I, h_V, with $h_I \leqslant h \leqslant h_V$, if the judge searches, he or she rules $(d' = h, h' = h)$, bearing cost $k(h_V - h_I)^2/2$. If the judge does not search, his or her loss is identical if he or she sets either $d = h_I$ or $d = h_V$ and is equal to $\int_{h_V}^{h_I}[(d - h)^2/2]\,[1/(h_V - h_I)] = (h_V - h_I)^2/6$, $d = h_I, h_V$. Because $k < \frac{1}{3}$, the judge always searches. When the unbiased judge searches, he or she negligibly shades damages toward the message that was closer to h. What about the parties' messages? First, parties' messages are never worse than the truth; that is, $h_I \leqslant h \leqslant h_V$. Second, if the judge searches, the parties' competition to win the shading induces $h_I = h_V = h$ for every h. As a result, the equilibrium in front of an unbiased judge has $h_V = h_I = h$ and $d = h$. Q.E.D.

Proof of Proposition 5.   In front of biased judges, the behavior of the parties does not change. Suppose the judge is unbiased and $u \leqslant \hat{u}$. Even after observing the truth, an unbiased judge chooses between $d = 0$ and $d = 1$ depending on whether h is larger or smaller than $\frac{1}{2}$. Thus, if the parties expect the judge to search, it is optimal for them to send $h_I = 0$, $h_V = 1$. By searching, the judge obtains $\int_0 1/2\,(h^2/2)\,dh + \int_{1/2} 1\,[(1 - h)^2/2]\,dh + k/2 = 1/24 + k/2$. If the judge does not observe h, he or she is indifferent between $d = 0$ and $d = 1$: his or her expected loss is $\frac{1}{6}$ in both cases. Thus, even if the judge is unbiased, under unsettled law the parties send $h_I = 0$, $h_V = 1$. Furthermore, for $k \in [14, 13]$, under unsettled law, unbiased judges decide not to observe harm. As a result, the parties send $h_I = 0$, $h_V = 1$, and the judge randomizes between $d = 0$ and $d = 1$. Q.E.D.

Proof of Proposition 6.   By inspection. Q.E.D.

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