

Discovery Disclosure and Deterrence

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Courts, practitioners, and scholars have recently expressed concern over the ex post costs of discovery in civil litigation. In this Article, we develop a game theoretic model of litigant behavior to study an overlooked phenomenon—the ex ante effects of discovery on a defendant’s incentive to engage in unlawful conduct. We focus on motions to seal, which limit the disclosure of discovered information to the public, but permit disclosure to the court and parties. Specifically, we examine the effect different rules regarding such motions have in deterring defendants from engaging in unlawful behavior. We show that as a rule becomes more permissible in granting motions to seal, a potential defendant has greater incentive to engage in unlawful actions that would result in reputational loss. The welfare effect of this result, however, is ambiguous because protecting a defendant from such reputational losses may be welfare enhancing. After setting forth the model, we discuss extensions and provide some thoughts on further directions for research.

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INTRODUCTION

There has been a recent focus by federal courts, rulemakers, practitioners, and scholars on the costs of discovery.¹ Discovery is a phase of litigation that allows the parties to compel the production of evidence from each other and third parties. Because, under the “American rule,” the parties bear their own litigation costs,² courts and scholars have focused on the strategic use of discovery to impose costs on opposing parties.³ The potential for such strategic behavior has inspired recent amendments to the Federal Rules of Civil Procedure, such as an amendment making clear to trial courts that they have the discretion to refuse to enforce discovery requests that they do not consider “proportional.”⁴ Moreover, the Supreme Court has expressed concern in the context of pleading that “the threat of discovery expense will push cost-conscious defendants to settle even anemic cases before reaching those proceedings.”⁵

Although the ex post costs of discovery are a worthy area of study, in this Article we examine an often overlooked phenomenon—the effect of discovery on a party’s ex ante behavior. Here we focus on the ability of the parties to control the disclosure of information. Specifically, we focus on motions to seal, which allow a party to disclose information to the judge and to the other parties but withhold

1. *E.g.*, William H.J. Hubbard, *The Discovery Sombbrero and Other Metaphors for Litigation*, 83 CATH. U. L. REV. 867, 868 (2015) (noting that “there is no shortage of anecdotes decrying excessive costs and burdens of discovery (usually from the defense bar),” although further noting that “it is hard to judge the extent of these problems or what, if anything, should be done about them”). A number of articles presented in this symposium also demonstrate a concern with discovery costs. *See, e.g.*, Jessica Erickson, *Bespoke Discovery*, 71 VAND. L. REV. 1873 (2018) (“Parties complain that discovery is too expensive . . .”); Alexandra D. Lahav, *A Proposal to End Discovery Abuse*, 71 VAND. L. REV. 2037 (2018) (highlighting that critics of discovery “focus[] mostly on its private, largely monetary, costs and benefit”).

2. Thomas D. Rowe, Jr., *The Legal Theory of Attorney Fee Shifting: A Critical Overview*, 1982 DUKE L.J. 651, 651 (1982).

3. Jonah B. Gelbach & Bruce H. Kobayashi, *The Law and Economics of Proportionality in Discovery*, 50 GA. L. REV. 1093, 1103–05 (2016). For a classic statement of this problem, see Frank H. Easterbrook, *Discovery as Abuse*, 69 B.U. L. REV. 635, 637 (1989).

4. FED. R. CIV. P. 26(b); *see also* Gelbach & Kobayashi, *supra* note 3, at 1095 (noting that the 2015 Amendments “continue [a] trend” of “focus[ing] on organizational changes to the rules, . . . motivated by the assumption that sparse use of the proportionality rule resulted, in part, from the courts’ and litigants’ lack of knowledge regarding the Rules’ applicability to their case”).

5. *Bell Atl. Corp. v. Twombly*, 550 U.S. 544, 558–59 (2007).

information from the public. In general, courts recognize a common law “right to inspect and copy public records and documents, including judicial records and documents.”⁶ Nevertheless, the right is not absolute, and in some circumstances a party can move to seal documents from public disclosure if, for example, “the release of the documents will cause competitive harm to a business.”⁷

Motions to seal are not covered by the Federal Rules of Civil Procedure, but their prevalence in civil litigation has caused many federal districts to adopt local rules governing such motions.⁸ Despite their prevalence, motions to seal have not been examined in great detail by scholars.

In this Article we develop a game theoretic model of litigant behavior to study the effect of different rules regarding motions to seal on a potential defendant’s incentive to engage in unlawful conduct. When deciding whether to take an unlawful action, the potential defendant weighs the benefits and costs of the action, including the reputational loss that the potential defendant may suffer. In general, motions to seal allow a party to avoid the reputational loss from choosing an action. Accordingly, by shielding a defendant from reputational losses, a defendant has a greater incentive to engage in unlawful actions insofar as they generate such losses. The model confirms this intuition, showing that as motions to seal are more likely to be granted, a potential defendant is more likely to engage in unlawful conduct. This means a more permissible rule on sealing may result in lower deterrence. To our knowledge, this is the first article that points out this potential cost of granting motions to seal in discovery.

A potential benefit of granting motions to seal is that it can prevent the chilling of risky, but socially optimal, conduct. In Part V, we extend our model to consider the chilling effect of a more permissible rule with regard to motions to seal. We show that a more permissible rule can either increase or decrease the chilling of a risky but socially optimal act depending on the initial rule on sealing. We also show that the deterrence effects we identify in the baseline model continue to exist in the alternative model.

Finally, the parties may be able to avoid reputational losses by settling a dispute prior to discovery. By settling prediscovery, the parties would have no need to file a motion to seal to prevent the public disclosure of information harmful to the defendant’s reputation. In Part VI, we extend our model to include the possibility of prediscovery

6. *Nixon v. Warner Commc’ns, Inc.*, 435 U.S. 589, 597 (1978).

7. *Apple, Inc. v. Samsung Elec. Co.*, 727 F.3d 1214, 1221 (Fed. Cir. 2013).

8. *See, e.g.*, S.D. FLA. R. 5.4(b) (detailing procedure for filing under seal in civil cases).

settlement. We show that even when the parties can settle prior to discovery, the incentive to engage in unlawful action still increases as the permissibility of a motion to seal rule increases.

The Article is presented as follows. Part I presents a literature review. Part II develops the game theoretic model. Part III solves for the equilibrium of the game. Part IV considers the impact of different rules regarding motions to seal on deterrence. Part V discusses an alternative model that takes into account the effect of such rules on the chilling of conduct. Part VI extends the model to include the possibility of prediscovery settlement. The Appendix provides formal proofs of our results.

I. LITERATURE REVIEW

For purposes of this Article, we focus on motions to seal in federal courts. For dispositive motions, courts typically grant a motion to seal only if “compelling reasons” are shown.⁹ Courts have found “compelling reasons” when court records may “become a vehicle for improper purposes” such as the use of records “to gratify spite, promote public scandal,” “to serve as reservoirs of libelous statements for public consumption,” or to serve “as sources of business information that might harm a litigant’s competitive standing.”¹⁰ A “compelling reasons” standard applies to dispositive motions because “the resolution of a dispute on the merits, whether by trial or summary judgment, is at the heart of the interest in ensuring the public’s understanding of the judicial process and of significant public events.”¹¹

A lower, “good cause” standard applies to nondispositive motions, as “those documents are often unrelated, or tangentially related, to the underlying cause of action.”¹² This standard mirrors the “good cause” standard that applies to protective orders under Rule 26(c).¹³ Moreover, a majority of circuits have gone further to conclude that the public does not have presumptive access to pretrial discovery materials because “a holding that discovery motions and supporting materials are subject to a presumptive right of access would make raw

9. See *Apple*, 727 F.3d at 1221 (acknowledging that compelling reasons can outweigh the strong presumption of access by overriding public policy toward disclosure).

10. *Nixon*, 435 U.S. at 598.

11. *Kamakana v. City of Honolulu*, 447 F.3d 1172, 1179 (9th Cir. 2006) (citations omitted); see also *Rushford v. New Yorker Magazine, Inc.*, 846 F.2d 249, 252 (4th Cir. 1988).

12. *Kamakana*, 447 F.3d at 1179 (quoting *Seattle Times Co. v. Rhinehart*, 467 U.S. 20, 33 (1984)).

13. See *Apple*, 727 F.3d at 1222; see also FED. R. CIV. P. 26(c) (“The court may, for good cause, issue an order to protect a party or person from annoyance, embarrassment, oppression, or undue burden or expense.”).

discovery, ordinarily inaccessible to the public, accessible merely because it had to be included in motions precipitated by inadequate discovery responses or overly aggressive discovery demands.”¹⁴

The Supreme Court has emphasized that the decision to seal records “is one best left to the sound discretion of the trial court, a discretion to be exercised in light of the relevant facts and circumstances of the particular case.”¹⁵ In exercising this discretion, “[c]ourts have weighed competing interests in a variety of contexts in determining whether to grant access to judicial documents.”¹⁶ For example, courts weigh the presumption in favor of access against “law enforcement concerns, judicial efficiency, and the privacy interests of the parties.”¹⁷

Few scholars have examined motions to seal in depth. Those articles that have examined the policies behind sealing, or discovery disclosure in general, tend to weigh the benefits of making the adjudicatory process transparent with the privacy costs of the parties.¹⁸

14. *Leucadia Inc. v. Applied Extrusion Tech. Inc.*, 998 F.2d 157, 164 (3d Cir. 1993); *see also* *SEC v. TheStreet.com*, 273 F.3d 222, 233 (2d Cir. 2001) (concluding that discovery materials “do not carry a presumption of public access”); *Anderson v. Cryovac, Inc.*, 805 F.2d 1, 13 (1st Cir. 1986) (“There is no tradition of public access to discovery, and requiring a trial court to scrutinize carefully public claims of access would be incongruous with the goals of the discovery process.”) Nevertheless, some circuits have extended the right to access when such access can be inferred from the federal rules. *See* *Pub. Citizen v. Liggett Grp., Inc.*, 858 F.2d 775, 790 (1st Cir. 1988) (modifying a protective order under Rule 26(c)); *see also In re Agent Orange Prod. Liab. Litig.*, 821 F.2d 139, 145–46 (2d Cir. 1987) (“Unless the public has a presumptive right of access to discovery materials, the party seeking to protect the materials would have no need for a judicial order [under Rule 26(c)] since the public would not be allowed to examine the materials in any event.”).

15. *Nixon*, 435 U.S. at 599.

16. *United States v. Amodeo*, 44 F.3d 141, 147 (2d Cir. 1995) (citing cases).

17. *See, e.g., Diversified Grp., Inc. v. Daugerdas*, 217 F.R.D. 152, 159 (S.D.N.Y. 2003) (noting that, in determining whether to *unseal* documents, such “countervailing factors” must be considered against “the presumption of access” of certain judicial documents); *see also Dependable Sales & Serv., Inc. v. Truecar, Inc.*, 311 F. Supp. 3d 653, 665 (S.D.N.Y. 2018) (in deciding on motion to seal, court must weigh presumption of access “against ‘countervailing factors,’ including ‘the privacy interests of those resisting disclosure’” (quoting *Lugosch v. Pyramid Co. of Onondaga*, 435 F.3d 110, 120 (2d Cir. 2006))).

18. *See* Joseph F. Anderson, Jr., *Hidden from the Public By Order of the Court: The Case Against Government-Enforced Secrecy*, 55 S.C. L. REV. 711 (2003) (arguing in favor of document public access and against court-imposed secrecy); Dennis J. Drasco, *Public Access to Information in Civil Litigation vs. Litigant’s Demand for Privacy: Is the Vanishing Trial an Avoidable Consequence*, 2006 J. DISP. RESOL. 155 (discussing the impact of electronic filing on the public’s access to trial dockets); T.S. Ellis III, *Sealing, Judicial Transparency and Judicial Independence*, 53 VILL. L. REV. 939 (2008) (proposing that minimizing court document sealing and justifying sealing on the public record will bolster judicial independence); Andrew D. Goldstein, *Sealing and Revealing: Rethinking the Rules Governing Public Access to Information Generated Through Litigation*, 81 CHI.-KENT L. REV. 375 (2006) (asserting that the current litigation discovery access rules do not adequately protect or promote judicial accountability or public confidence in the judicial system); Lynn M. LoPucki, *Court-System Transparency*, 94 IOWA L. REV. 481 (2008) (proposing that new court data extraction technology can positively transform the court system into an even more transparent one); Arthur R. Miller, *Confidentiality, Protective Orders, and*

Some scholars have further noted the importance of “disseminat[ing] . . . vital information relevant to public health and safety.”¹⁹ Others have focused on the source and scope of the right to public access.²⁰ But no article, as far as we know, has addressed the effects of motions to seal or other disclosure procedures on ex ante behavior.

In developing the model below, we have relied on prior work modeling litigant behavior and the deterrence effect of law enforcement. We rely, in particular, on prior work that examines the effect of tort reforms on incentives to obey the law and incentives for care,²¹ as well as work on the theory of optimal law enforcement.²² Our own prior work with Christopher Cotton has analyzed how heightening pleadings standards may reduce deterrence.²³

II. MODEL

In this Part, we present a game theoretic model of litigant behavior. There are two players: a potential plaintiff P (she) who may experience harm and a potential defendant D (he) who may be liable for the harm.

In the first stage, D chooses between actions a_0 and a_1 , where a_0 represents a lawful action that benefits or otherwise does not harm P and a_1 represents an unlawful action that imposes a negative externality on P . If D takes costless action a_1 , P experiences a loss of value $h > 0$ with probability one, making D “liable” for P ’s harm. The lawful action a_0 decreases the probability that P suffers a loss, but imposes costs on D . If D takes action a_0 , he pays cost $K > 0$, and P experiences loss h with probability η , which represents a value between

Public Access to the Courts, 105 HARV. L. REV. 427 (1991) (rejecting court reforms increasing public access to discovery documents as jeopardizing privacy and property interests); Seymour Moskowitz, *Discovering Discovery: Non-Party Access to Pretrial Information in the Federal Courts 1938–2006*, 78 U. COLO. L. REV. 817 (2007) (advocating that the public’s legitimate interests in materials gained through discovery should require requisite filing of discovery materials).

19. Goldstein, *supra* note 18, at 403; Moskowitz, *supra* note 18, at 822.

20. See Daniel Lombard, *Top Secret: A Constitutional Look at the Procedural Problems Inherent in Sealing Civil Court Documents*, 55 DEPAUL L. REV. 1067 (2005) (exploring the procedural issues for right of access to judicial documents and suggesting that a Fourth Amendment framework could best protect First Amendment access rights); Meliah Thomas, *The First Amendment Right of Access to Docket Sheets*, 94 CALIF. L. REV. 1537 (2006) (arguing that public access to docket sheets should be afforded First Amendment protection and should be restricted only in narrow circumstances).

21. I.P.L. Png, *Litigation, Liability, and Incentives for Care*, 34 J. PUB. ECON. 61 (1987).

22. A. Mitchell Polinsky & Steven Shavell, *Legal Error, Litigation, and the Incentive to Obey the Law*, 5 J.L. ECON. & ORG. 99 (1989) (providing a survey of the literature).

23. Sergio J. Campos, Christopher S. Cotton & Cheng Li, *Deterrence Effects Under Twombly: On the Costs of Increasing Pleading Standards in Litigation*, 44 INT’L REV. L. & ECON. 61 (2015).

zero and one. D is “not liable” for P 's loss if he takes the lawful action a_0 . One can think of action a_0 as any costly action that reduces the expected losses of P . For example, when firms perform costly product quality inspections, firms are less likely to produce, and thus consumers are less likely to purchase, defective products. Let q indicate D 's liability: $q = 1$ if D is liable, and $q = 0$ otherwise.

In the second stage, P observes the harm she experienced but not D 's action or liability. She then decides whether to sue D . If P sues D , the game proceeds to the third stage. If P does not sue D , the game ends.

The third stage of the game represents the discovery phase of litigation. To simplify the analysis, we abstract from the details of discovery and assume that it perfectly reveals D 's liability to P .²⁴ To further simplify matters, we assume that the information revealed in discovery is accessible and can be widely disseminated to the public. If the public learns that D is liable for P 's loss, D suffers a reputational loss $L > 0$. Reputational losses arising from a finding of liability are common, as evidenced by the efforts of potential defendants in a number of industries to reduce or avoid such losses through the use of arbitration, nondisclosure agreements, public relations firms, and similar measures.²⁵ However, D can file a motion to seal, which it can use to withhold sufficient information from the public to obscure its liability. A judge grants a motion to seal with probability θ , which takes values between zero and one. We interpret θ as the rule regarding motions to seal. A higher θ value means sealing is more likely to be granted and thus represents a more permissible rule on sealing.²⁶ Accordingly, $\theta = 1$ represents the most permissible rule on sealing (motions to seal are always granted), and $\theta = 0$ represents the least permissible rule on sealing (motions to seal are never granted). Discovery imposes costs on both D and P , which we denote by $k_D > 0$ and $k_P > 0$ respectively.

In the fourth stage, D proposes a settlement offer to P . We use t to denote the D 's settlement offer made to P . We assume that settlement offer is nonnegative. If P rejects the offer, the game proceeds to stage

24. Our main conclusions continue to hold if discovery reveals D 's liability only some of the time.

25. See generally Kish Parella, *Public Relations Litigation*, 72 VAND. L. REV. (forthcoming 2019) (discussing the various measures corporate parties take to repair and enhance their reputations).

26. We note that such a range of rules is possible given the discretion trial courts have in granting motions to seal. See *Nixon v. Warner Commc'ns, Inc.*, 435 U.S. 597, 599 (1978) (holding that such discretion should be used “in light of the relevant facts and circumstances of the particular case”).

five. If P accepts the offer, P receives payment t from D and then the game ends.

The fifth stage of the game is a nonstrategic trial stage representing courtroom proceedings. We assume that trial perfectly reveals D 's liability. When $q = 1$, D is liable for P 's loss and must make monetary payment h to P . When $q = 0$, D is not liable and he does not have to compensate P . Trial imposes costs on both D and P , which we denote by $c_D > 0$ and $c_P > 0$ respectively.

We solve for the Perfect Bayesian Equilibrium ("PBE") of the game. A description of the equilibrium must define each player's strategy and their beliefs about D 's liability. In equilibrium, each player's strategy must be the best response given the strategies of the other players and the player's beliefs. P 's beliefs about D 's liability must be consistent with the Bayes' rule given D 's strategy.²⁷ We use ρ_1 to denote the probability that D takes the unlawful action in the first period. If P experiences harm h , her belief that D is liable is

$$\mu \equiv Pr(q = 1|h) = \frac{\rho_1}{\rho_1 + (1-\rho_1)\eta}. \quad (1)$$

If P does not experience harm, she believes that D is not liable.

In order to focus the analysis on the most relevant parameter cases, we introduce two assumptions regarding the value of P 's potential loss h and D 's cost of taking the lawful action a_0 .

First, we assume that the benefits to P of going to trial against a liable defendant are positive:

$$h - k_P - c_P > 0. \quad (A1)$$

When this assumption is violated, P would never sue D and rules regarding motions to seal have no impact on D 's ex ante behavior.²⁸

Second, we assume that D 's cost of taking the lawful action a_0 is neither too large nor too small:

$$h - c_P + (1 - \eta) k_D < K < h - c_P + (1 - \eta) k_D + L. \quad (A2)$$

When A2 is violated, rules regarding motions to seal have no impact on D 's ex ante action. We assume A2 to focus on litigation in which rules regarding motions to seal may affect deterrence.

27. Bayes' rule describes how to update probabilities of hypotheses given new evidence. See Bradley Efron, *Bayes' Theorem in the 21st Century*, 340 SCIENCE 1177, 1177 (2013).

28. In a prior article we examine situations where this condition is violated and P essentially files a nuisance suit. See Campos et al., *supra* note 23.

III. EQUILIBRIUM

In this Part, we use backward induction to derive the PBE of the game described in Part II. Before we derive the equilibrium, we present two useful results that greatly simplify our analysis.

Lemma 1: *In pretrial settlement (i.e., the fourth stage of the game), D in equilibrium proposes settlement offer $t = h - c_P$ to P when $q = 1$, and offers $t = 0$ when $q = 0$, and P in equilibrium accepts D 's offer in both cases.*

Before the settlement stage, D 's liability is perfectly revealed to P in discovery. When $q = 1$, D is willing to offer any settlement offer t no greater than $h + c_D$. Knowing that D is liable, P is willing to accept any settlement offer t no less than $h - c_P$. In equilibrium, D offers $t = h - c_P$, the lowest payment that P is willing to accept. When $q = 0$, P is willing to accept any settlement offer t that is nonnegative. Therefore, D offers $t = 0$ to P and both parties settle before trial.

Lemma 2: *In discovery (i.e., the third stage of the game), D in equilibrium always files a motion to seal when $q = 1$.*

When discovery reveals that D is liable for P 's harm, D always files a motion to seal to obscure his liability. This result is intuitive because sealing can prevent reputational losses for a liable D by prohibiting the disclosure of documents or information that would demonstrate D 's liability.

We divide the possible equilibria into two categories. First, we consider the possibility in which D plays a pure strategy when choosing between action a_0 and a_1 . Second, we consider the possibility in which D mixes between action a_0 and a_1 .

A. Pure Strategy Equilibrium

We can rule out the existence of an equilibrium in which D always takes the lawful action a_0 . In such an equilibrium, P 's equilibrium belief about D 's liability is consistent with D 's action, and thus P believes that D is not liable. In equilibrium, P does not sue D after experiencing harm. Given P 's equilibrium strategy, D anticipates payoff $-K < 0$ from the lawful action a_0 . When D deviates to the unlawful action a_1 , he expects payoff zero. Therefore, D has an incentive to deviate to the unlawful action a_1 and an equilibrium in which D always takes the lawful action a_0 does not exist.

When the court is very likely to grant a motion to seal, there exists an equilibrium in which D always takes the unlawful action a_1 . Specifically, such an equilibrium exists when

$$\theta > \theta^* \equiv \frac{h - c_P + (1 - \eta)k_D - K + L}{L}. \quad (2)$$

Assumption A2 ensures that θ^* is between zero and one. When $\theta > \theta^*$, the court is very likely to grant a motion to seal. D anticipates that even if he is liable, he is likely to avoid reputational losses by sealing evidence. This thus incentivizes D to always take the costless but unlawful action a_1 . A full characterization of the equilibrium must specify each player's strategy and beliefs, which can be found in the Appendix.

B. Mixed Strategy Equilibrium

Next, we consider the possibility of a mixed strategy equilibrium, where D chooses the unlawful action a_1 only some of the time. We can show that such an equilibrium exists when

$$\theta \leq \theta^* \equiv \frac{h - c_P + (1 - \eta)k_D - K + L}{L}. \quad (3)$$

In the mixed strategy equilibrium, D takes the unlawful action a_1 neither so infrequently that he is never sued, nor so frequently that P always expects that he is liable. Rather, he mixes his choice of action a_1 and a_0 , taking action a_1 just often enough to leave P indifferent between suing or not suing after she experiences harm. In this equilibrium, D takes the unlawful action a_1 with probability

$$\rho_1 = \frac{\eta(c_P + k_P)}{h - (1 - \eta)(c_P + k_P)}, \quad (4)$$

which is between zero and one because of assumption A1. The Appendix provides a full characterization of the equilibrium.

IV. IMPACT OF A MORE PERMISSIVE SEALING RULE

The objective of our analysis is to study the impact of different rules regarding sealing on a defendant's ex ante behavior. Since a more permissible rule on sealing can be interpreted as an increase in θ in our model, we consider the impact of an increase in θ on D 's decision to take the unlawful action a_1 .

As shown in Part III, there exists a pure strategy equilibrium in which D always chooses the unlawful action a_1 when θ is larger θ^* .

When θ is in this range, changes in θ have no impact on deterrence. When θ is no greater than θ^* , there exists a mixed strategy equilibrium in which D chooses the unlawful action a_1 with a positive probability. Since this probability is independent of θ , changes in θ have no impact on deterrence.

Now suppose that θ increases from below θ^* to above θ^* . The analysis above implies that the probability that D takes the unlawful action a_1 will increase from less than one to one.

Proposition 1: *If θ increases from below θ^* to above θ^* , D is more likely to take the unlawful action a_1 .*

When a defendant decides whether to take an unlawful action, he weighs the benefits and costs of the action. One of the costs of taking the unlawful action is that D may experience reputational losses when the public perceives that he is liable for P 's harm. D can avoid reputational losses by sealing evidence in discovery. A more permissible rule on sealing increases the probability that a judge grants a motion to seal evidence in discovery, and thus reduces D 's expected reputational losses. This makes the liable action more attractive to D and D is thus more likely to take the liable action.

V. EXTENSION WITH CHILLING EFFECTS

In this Part, we extend the model developed in Part II to take into account chilling effects in which the threat of lawsuits makes a potential defendant take an overly safe action from the perspective of social welfare.²⁹ For example, a firm may stay out of a market because of its fear of product liability lawsuits, or a doctor may decline to treat high-risk patients to avoid potential malpractice lawsuits.

We consider an alternative model with an initial stage in which D decides whether to choose an overly safe action a_s . This action does not harm P and ensures that D is not sued. For example, a firm cannot be sued for product liability if it stays out of a market, and a doctor cannot be sued for malpractice if she refuses to treat patients. When D chooses the overly safe action a_s in the first stage, the game ends. In this case, P receives payoff zero and D receives payoff $-K_s$, where $K_s > 0$ represents the cost of taking action a_s . When D forgoes overly safe action a_s , the game proceeds to the game described in Part II in which D chooses between the lawful action a_0 and the unlawful action a_1 . P can perfectly observe whether D takes the overly safe action a_s , but she

29. See Louis Kaplow, *Multistage Adjudication*, 126 HARV. L. REV. 1179, 1189 (2013) (discussing chilling effects).

does not observe D 's choice between the lawful action, a_0 , and the unlawful action, a_1 . This is consistent with the fact that it is easy to observe whether a firm enters a market, or whether a doctor treats a patient, but it is difficult to observe whether a firm engages in anticompetitive behavior or whether a doctor takes sufficient care when treating patients. In the analysis, we assume that the cost of taking action a_S is neither too large nor too small:

$$K < K_S < K + \eta k_D. \quad (\text{A3})$$

When this assumption is violated, D either never chooses the overly safe action a_S or always takes that action.

The following lemma summarizes D 's decision with regard to the overly safe action a_S in equilibrium.

Lemma 3: *In the model with chilling effects, D forgoes the overly safe action a_S and then mixes between a_0 and a_1 when*

$$\theta \leq \theta_1 \equiv \frac{(K-K_S)(h-c_P+k_D+L)+\eta k_D K_S}{(K-K_S)L};$$

D forgoes action a_S and then takes the unlawful action a_1 with probability one when

$$\theta > \theta_2 \equiv \frac{h-c_P+k_D-K_S+L}{L};$$

and D takes the overly safe action a_S with probability one when θ is between θ_1 and θ_2 .

When θ is below θ_1 , D forgoes the overly safe action a_S and then mixes between a_0 and a_1 . As the rule regarding motions to seal becomes more permissive (i.e., as θ rises), D is more likely to avoid reputational costs. This makes the unlawful action a_1 more attractive to D . On the other hand, an increase in θ makes P more likely to file suit against D after she experiences harm. This makes the unlawful action a_1 less attractive to D , and thus makes the overly safe action a_S more appealing to D . When θ takes moderate values, the second effect dominates the first effect and D always takes the overly safe action a_S . When θ becomes sufficiently large, however, the first effect dominates the second effect and D always takes the unlawful action a_1 .

Proposition 2: *A more permissible rule regarding motions to seal (i.e., larger value of θ) can either increase or decrease the chilling of a risky but socially optimal action, depending on the initial rule on sealing.*

In our model, θ that takes values smaller than θ_1 avoids chilling and maximizes deterrence. Therefore, such a rule with regard to motions to seal is optimal in our model. But this does not necessarily mean that such a rule maximizes social welfare. A thorough welfare analysis requires a more general consideration of all potential costs and benefits of granting motions to seal, which is beyond the scope of this Article.³⁰ Our goal is to show that a more permissive rule with regard to motions to seal may decrease deterrence. We have proved this result in Part IV and this result continues to hold if we consider the chilling effect. Suppose θ increases from values below θ_1 to values larger than θ_2 in the model with the chilling effect; Proposition 2 implies that such a change will increase the probability that D takes the unlawful action from below one to one.

Proposition 3: *When θ increases from values below θ_1 to values larger than θ_2 in the model with the chilling effect, D is more likely to take the unlawful action a_1 .*

Therefore, our main results continue to hold in the model with the chilling effect: a more permissive rule with regard to motions to seal may decrease deterrence.

VI. EXTENSION WITH PREDISCOVERY SETTLEMENT

In the main body of the Article, we assume that D and P can only settle after discovery. In this Part, we consider the possibility that a liable D can avoid reputational loss by settling with P before discovery, and thus avoid the disclosure of any information to the public altogether.³¹ Accordingly, prediscovery settlement can serve as a substitute for a motion to seal and can possibly make the permissibility of a sealing rule have no impact on deterrence. Nevertheless, our results in the baseline model continue to hold when we allow for prediscovery settlement.

The model that we consider in this Part is the same as the model introduced in Part II except that we allow P to propose a “take it or leave it” settlement offer m to D after she files suit against D and before discovery starts. If D accepts the offer, he pays m to P and the game ends. If D rejects the offer, the game proceeds to discovery as in Part II.

30. See Louis Kaplow, *Optimal Multistage Adjudication*, 33 J.L. ECON. & ORG. 613, 613 (2017) (conducting thorough welfare analysis of termination of lawsuits at different points in multistage adjudication).

31. We do not consider the possibility that the parties settle only with respect to the motion to seal (e.g., D pays P to not oppose a motion to seal). For a discussion of such “bespoke” discovery procedures, see Erickson, *supra* note 1.

The following lemma summarizes D 's decision with regard to action a_1 and a_0 in the extension game with prediscovery settlement.

Lemma 4: *In the extension model with prediscovery settlement, there is an equilibrium in which D chooses a_1 with probability less than one when θ is below θ^* , and there is an equilibrium in which D takes the unlawful action a_1 with probability one when θ is above θ^* .*

Lemma 4 immediately implies the following proposition:

Proposition 4: *In the extension model with prediscovery settlement, D is more likely to take the unlawful action a_1 if θ increases from below θ^* to above θ^* .*

The intuition for the result is as follows: A more permissive rule on sealing increases the probability that a motion to seal evidence is granted, and thus reduces the likelihood that a defendant suffers reputational losses. This reduces the amount of money that D is willing to pay to settle with P before discovery. P anticipates this and demands a smaller amount of money from D in the prediscovery settlement stage. Therefore, a more permissive rule on sealing allows a liable D to settle with P at a lower cost before discovery and thus makes the unlawful action more attractive to D .

CONCLUSION

We conclude by discussing the two implications of our analysis. First, our analysis supports the intuitive conclusion that a more permissive standard for motions to seal will give a potential defendant greater incentive to engage in "liable" conduct. However, our analysis does not necessarily mean that a more permissive standard will lead to a loss of social welfare. This is most evident in situations where we do not want to chill beneficial behavior, such as research into vaccines or life-saving drugs.

But such situations may also arise even when the potential defendant is not "chilled" from engaging in the activity altogether. Although our analysis denotes the more harmful action as the "unlawful" action, in some circumstances the more harmful action may be optimal as a matter of social welfare. For example, in strict liability regimes the defendant would be liable no matter what action he chose, and it may be socially optimal to engage in the more harmful action (e.g., using dynamite rather than a less effective explosive for demolition). Nevertheless, in those situations a defendant may be deterred from taking the more harmful action because of the potentially

irrational public response to its conduct, and thus sealing could protect against such an irrational response.

Such irrational public response situations would require a change in the law. Under current law, a court typically cannot find “embarrassment” a sufficiently “compelling reason” to support a motion to seal a dispositive motion.³² However, given the common law status of the right to public access, a change in the law would not be difficult to implement. A larger concern is whether a court can accurately identify those situations where a motion to seal would be justified given the anticipated public reaction, although there may arise cases involving panics which may be clear cut.

Second, under our analysis the more harmful, unlawful action could be anything, including, as we referenced above, the failure to perform safety tests. But actions involving learning new information may incentivize a defendant to “play dumb” because, unlike other harmful actions, a failure to gain such information could obscure the defendant’s liability. For example, one could imagine a defendant who failed to keep any financial records, thus making it difficult for a plaintiff to prove fraud.

Although we do not model a situation where the more harmful action would reduce the probability of liability, our results would still hold if liability was strictly imposed for such failures to investigate. This is because such a strict liability rule for failing to investigate would make such a failure no different from committing the unlawful act itself. Indeed, such a strict liability rule for failing to investigate could work in tandem with motions to seal—together, they can induce defendants to gather such harmful information while protecting them from irrational public reactions to that information.

32. See, e.g., *Kamakana v. City of Honolulu*, 447 F.3d 1172, 1179 (9th Cir. 2006) (“The mere fact that the production of records may lead to a litigant’s embarrassment, incrimination, or exposure to further litigation will not, without more, compel the court to seal its records.”).

APPENDIX

Details for Section II.A:

Here we derive the pure strategy equilibrium discussed in Section II.A. Consider an equilibrium in which D always takes the unlawful action a_1 . In such an equilibrium, P believes D is liable after experiencing harm and P anticipates benefits $h - k_P - c_P > 0$ from suing D . As a result, P in equilibrium always sues D after she experiences harm.

Given P 's strategy, D anticipates payoff $-h + c_P - k_D - (1 - \theta)L$ from action a_1 , and payoff $-K - \eta k_D$ from action a_0 . D prefers action a_1 to action a_0 when $-h + c_P - k_D - (1 - \theta)L > -K - \eta k_D$, or equivalently

$$\theta > \theta^* \equiv \frac{h - c_P + (1 - \eta)k_D - K + L}{L}.$$

Therefore, when $\theta > \theta^*$, the equilibrium outcome is as follows:

- In stage 1, D always takes unlawful action a_1 .
- In stage 2, P sues D with probability one after experiencing harm.
- In stage 3, D files a motion to seal with probability one.
- In stage 4, D offers settlement of $t = h - c_P$ and P accepts the offer.
- P believes that D is liable after she experiences harm.

Details for Section II.B:

Here we derive the mixed strategy equilibrium discussed in Section II.B. We first show that when D mixes between a_1 and a_0 in equilibrium, P must mix between suing and not suing after she experiences harm.

Suppose that P always sues D after she experiences harm. In this case, D expects payoff $-h + c_D - k_D - (1 - \theta)L$ from action a_1 , and expects payoff $-K - \eta k_D$ from the lawful action a_0 . Assumption A2 implies that $-h + c_P - k_D - (1 - \theta)L < -K - \eta k_D$, so D prefers to always take the lawful action a_0 . This contradicts that D plays mixed strategies.

Next, suppose that P never sues D after experiencing harm. In this case, D expects payoff zero from action a_1 , and expects payoff $-K$ from action a_0 . Since $\theta > -K$, D prefers to always take the unlawful action a_1 . This contradicts that D plays mixed strategies.

Now we have ruled out the possibility that P plays pure strategy when deciding whether to sue D . Therefore, P must mix between suing and not suing D in equilibrium. Suppose that D takes action a_1 with

probability ρ_I , and P sues D with probability ρ_S after observing harm. Given harm h , P is indifferent between suing and not suing when

$$\frac{\rho_I}{\rho_I + (1 - \rho_I)\eta} h - c_P - k_P - h = -h.$$

The left-hand side of the above equation represents P 's expected payoff from suing D , while the right-hand side of the above equation equals her expected payoff from not suing D . Solving this equation, we have D 's equilibrium strategy

$$\rho_I = \frac{\eta(c_P + k_P)}{h - (1 - \eta)(c_P + k_P)}.$$

Assumption A1 ensures that ρ_I is between zero and one.

D expects payoff $\rho_S(-h + c_P - k_D - (1 - \theta)L)$ from action a_I , and anticipates payoff $-K - \eta \rho_S k_D$ from action a_O . In a mixed strategy equilibrium, D is indifferent between a_I and a_O . This is the case when

$$\rho_S(-h + c_P - k_D - (1 - \theta)L) = -K - \eta \rho_S k_D.$$

Solving this equation, we have P 's equilibrium strategy

$$\rho_S = \frac{K}{h - c_P + (1 - \eta)k_D + (1 - \theta)L}.$$

Assumption A2 and $\theta < \theta^*$ ensures that ρ_S is between zero and one. Therefore, when $\theta > \theta^*$, the equilibrium outcome is as follows:

- In stage 1, D always takes unlawful action a_I with probability $\rho_I = \frac{\eta(c_P + k_P)}{h - (1 - \eta)(c_P + k_P)}$.
- In stage 2, P sues D with probability $\rho_S = \frac{K}{h - c_P + (1 - \eta)k_D + (1 - \theta)L}$ after experiencing harm and does not sue D if not experiencing harm.
- In stage 3, D files a motion to seal with probability one when he is liable.
- In stage 4, D offers settlement of $t = h - c_P$ if he takes the unlawful action a_I in the first stage, and offers settlement of $t = 0$ if he takes the lawful action a_O in the first stage; P accepts D 's offer and the case is settled.
- P believes that D is liable with probability $\frac{c_P + k_P}{h}$ after she experiences harm.

Proof of Lemma 3:

If D takes the overly safe action a_S , his payoff is $-K_S$. If D forgoes the overly safe action a_S , the game proceeds to the subgame described in Part II, which has two equilibria depending on the value of θ .

When $\theta < \theta^*$, the subgame after D forgoes action a_S has a unique equilibrium in which D mixes between action a_0 and a_1 . In this equilibrium, D expects payoff

$$-K\left(1 + \frac{\eta k_D}{h - c_P + (1-\eta)k_D + (1-\theta)L}\right).$$

In the first stage of the game, D chooses the overly safe action a_S when his payoff from action a_S is higher than his expected payoff from forgoing action a_S . This is the case when

$$-K_S > -K\left(1 + \frac{\eta k_D}{h - c_P + (1-\eta)k_D + (1-\theta)L}\right),$$

or equivalently

$$\theta > \theta_1 \equiv \frac{(K-K_S)(h-c_P+k_D+L)+\eta k_D K_S}{(K-K_S)L}.$$

Assumption A3 ensures that $0 < \theta_1 < \theta^*$. Therefore, when θ is between θ_1 and θ^* , there is an equilibrium in which D takes the overly safe action a_S . When θ is below θ_1 , there is an equilibrium in which D forgoes action a_S and then mixes between a_0 and a_1 .

When $\theta > \theta_1$, the subgame after D forgoes the overly safe action a_S has a unique equilibrium in which D always takes the unlawful action a_1 . In this equilibrium, D expects payoff

$$-h + c_P - k_D - (1 - \theta)L.$$

In the first stage of the game, D chooses the overly safe action a_S when it gives him higher payoff than forgoing action a_S . This is the case when

$$-K_S > -h + c_P - k_D - (1 - \theta)L,$$

or equivalently

$$\theta < \theta_2 \equiv \frac{h-c_P+k_D-K_S+L}{L}.$$

Assumption A3 ensures that $\theta_2 > \theta^*$. Therefore, when θ is between θ^* and θ_2 , there is an equilibrium in which D takes the overly safe action

a_s . When θ is larger than θ_2 , there is an equilibrium in which D forgoes action a_s and then takes the unlawful action a_1 .

Proof of Lemma 4:

In the extension model with prediscovery settlement, a liable D anticipates payoff $-h + c_P - k_D - (1 - \theta)L$ if he rejects P 's settlement offer and the case proceeds to discovery. If D accepts P 's settlement offer, he receives payoff $-m$. Therefore, a liable D is willing to accept settlement offer $m \leq h - c_P + k_D + (1 - \theta)L$. A nonliable D anticipates payoff $-k_D$ from discovery and thus is only willing to pay $m \leq k_D$ to settle the case.

Pure strategy equilibrium:

Consider an equilibrium in which D always takes the unlawful action a_1 . In such an equilibrium, P believes that D is liable after experiencing harm and thus anticipates that D is willing to pay $m \leq h - c_P + k_D + (1 - \theta)L$ to settle the case. Therefore, P demands $q = h - c_P + k_D + (1 - \theta)L$ from D and D accepts the offer to settle before trial.

Given P 's strategy, D anticipates payoff $-h + c_P - k_D - (1 - \theta)L$ from action a_1 and payoff $-K - \eta k_D$ from action a_0 . D prefers action a_1 to action a_0 when

$$-h + c_P - k_D - (1 - \theta)L > -K - \eta k_D,$$

or equivalently

$$\theta > \theta^* \equiv \frac{h - c_P + (1 - \eta)k_D - K + L}{L}.$$

Assumption A2 ensures that θ^* is between zero and one. Therefore, when $\theta > \theta^*$, the equilibrium outcome is as follows:

- In stage 1, D takes the unlawful action a_1 with probability one.
- In stage 2, P sues D with probability one after experiencing harm.
- In stage 3, P demands $m = h - c_P + k_D + (1 - \theta)L$ from D to settle the case, and D agrees to pay such amount to settle the case.
- P believes that D is liable after she experiences harm.

Mixed strategy equilibrium:

Now let's consider an equilibrium in which D mixes between action a_1 and action a_0 . We can easily verify that in such an equilibrium P sometimes demands payment $m = h - c_P + k_D + (1 - \theta)L$ from D and sometimes demands payment $m = k_D$ from D in the pre-discovery settlement stage. Only a liable D is willing to pay $m = h - c_P + k_D + (1 - \theta)L$ to settle the case. Both a liable and nonliable D is willing to pay $m = k_D$ to settle the case.

P is indifferent between demanding $m = h - c_P + k_D + (1 - \theta)L$ and demanding $m = k_D$ when

$$\frac{\rho_1}{\rho_1 + (1 - \rho_1)\eta}(-c_P + k_D + (1 - \theta)L) + \left(1 - \frac{\rho_1}{\rho_1 + (1 - \rho_1)\eta}\right)(-k_P - h) = -h + k_D,$$

which gives

$$\rho_1 = \frac{\eta(k_D + k_P)}{h - c_P + \eta(k_D + k_P) + (1 - \theta)L}.$$

Assumption A1 ensures ρ_1 is between zero and one.

Suppose that P demands payment $m = h - c_P + k_D + (1 - \theta)L$ with probability ρ_m . Given P 's strategy, D anticipates payoff $\rho_m(-h + c_P - k_D - (1 - \theta)L) + (1 - \rho_m)(-k_D)$ from action a_1 and payoff $-K - \eta k_D$ from action a_0 . D is indifferent between action a_1 and action a_0 when these actions give him the same expected payoff. By setting these payoffs equal, we have

$$\rho_m = \frac{K - (1 - \eta)k_D}{h - c_P + (1 - \theta)L}.$$

Assumptions A1, A2, and $\theta < \theta^*$ ensure ρ_m is between zero and one. Therefore, when $\theta < \theta^*$, the equilibrium outcome is as follows:

- In stage 1, D takes the unlawful action a_1 with probability $\rho_1 = \frac{\eta(k_D + k_P)}{h - c_P + \eta(k_D + k_P) + (1 - \theta)L}$.
- In stage 2, P sues D with probability one after experiencing harm and sues D with probability zero if she does not experience harm.
- In stage 3, P demands $m = h - c_P + k_D + (1 - \theta)L$ from D with probability $\rho_m = \frac{K - (1 - \eta)k_D}{h - c_P + (1 - \theta)L}$ and demands payment $m = k_D$ from D with the complementary probability; a liable D is willing to pay no more than $m = h - c_P + k_D + (1 - \theta)L$ to settle the case, and a

nonliable D is willing to pay no more than $m = k_D$ to settle the case.

- In stage 4, D files a motion to seal evidence with probability one when he is liable.
- In stage 5, D offers $t = h - c_P$ when he is liable and $t = 0$ when he is not liable; P accepts D 's offer and the case is settled.
- After experiencing harm, P believes that D is liable with probability $\frac{k_D + k_P}{h - c_P + k_D + k_P + (1 - \theta)L}$.