Settlement and Trial: Selected Analyses of the Bargaining Environment

by

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1. Introduction

This *Handbook* chapter provides a brief review of selected settlement bargaining models in some areas where new work is developing and where additional work is likely to yield yet further important results. This work has focused on what might be thought of as the *environment* of the settlement negotiation process, where bargaining failure generally results in trial, and our survey will use that perspective to organize the work discussed.

Several rationales for why settlement negotiations may fail have been proposed. Among them are simple intransigence (that is, a value for "having one's day in court"); optimistic beliefs about the likelihood of prevailing at trial (e.g., Shavell, 1982); and asymmetric (or private) information. Asymmetric information occurs when one party knows something relevant that the other doesn't know (note that both parties may have their own private information at the same time), it is difficult or costly to verify this information, and a party with private information has a strategic incentive to conceal or misreport this information to the other party. This, in turn, means that the other party (or parties) must try to account for this asymmetry of information during settlement bargaining, and this may result in the breakdown of negotiations (usually leading to a trial and the expenditure of costs that might have been avoided by a successful settlement bargain). In this paper, we will focus on private information as the source of settlement failure.

Since failed settlement negotiations may result in trial,[1] it is important to have a model of

[1] Most settlement models assume that it is credible for a plaintiff to proceed to trial if settlement fails; of course, this may not hold. Nalebuff (1987) was the first paper to consider the credibility issue, and allowed plaintiffs to drop suits rather than proceed to trial. He showed that

how trial outcomes are determined. One branch of models concentrates on what the court learns about the case by assuming it receives a signal about what the privately-informed party (or parties) knows; this is a model of a Bayesian decision-maker who draws an inference based on the signal. This signal is typically viewed as being costless to the court, but trial is modeled as being costly to both parties. Most of the models in this vein assume that a *perfectly-informative* signal is received by a rational (Bayesian) court: going to court means that whatever relevant information is unknown, or privately known, by the parties during negotiations is learned by the judge (or jury) at trial.[2] Since this version is so extensively-used, in what follows, when referring to a model with a Bayesian court receiving a perfectly-informative signal, we will refer to this interchangeably as a "PSB court" (i.e., perfect-signal Bayesian court) or as an "omniscient" court.

In anticipation of the private information becoming revealed perfectly at a trial before a PSB court, litigants form expectations about what the court will learn based on beliefs about the private information (which may be influenced by actions during settlement negotiations), so a party possessing private information is better-positioned to predict the trial outcome should trial

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endogenizing the decision of whether to proceed to trial if negotiations failed resulted in tougher bargaining by the plaintiff.

[2] Rarer are models in which the Bayesian court is not omniscient in that the signal received by the court is imperfectly-informative, so that there is some probability of court error (e.g., Daughety and Reinganum, 1995, 2000; and Landeo, Nikitin, and Baker, 2007). The results in such papers also suggest that a potentially profitable direction of future research would be to relax the assumption of PSB court and allow for more models with imperfectly-informed Bayesian courts.

occur. For instance, if a defendant, D, privately knows the extent of his liability for the plaintiff's (P's) harm (as in Bebchuk, 1984), or P privately knows her true damages (as in Reinganum and Wilde, 1986), then this information is learned at trial and determines the trial outcome. When the court learns the parties' private information at trial, and that information determines the outcome, then (in anticipation of this) the parties can engage in strategic bargaining that reveals (possibly imperfectly) their private information to the other party.

In Bebchuk (1984), D privately knows the extent of his liability (modeled as a probability that he will be found liable, and referred to as D's "type"), while P's damages are common knowledge. Given any settlement demand made by P, there will be a particular D-type (that is, a particular probability of liability) that is just indifferent between accepting P's demand and rejecting it and going to trial. Higher D-types will prefer to accept P's demand (as they expect a worse outcome at trial) and lower D-types will reject P's demand (as they expect a better outcome at trial). Such a model, in which an uninformed party makes the settlement demand (or offer), is called a "screening" model: the equilibrium offer acts to reveal some information through the reaction (e.g., settle or go to trial) of the types receiving the offer. It involves only partial revelation of D's information, as it partitions the set of D-types into just two subsets: those that accept P's demand and those that reject it and go to trial. There are both distributional and efficiency effects of private information in a screening model. In particular, types that go to trial receive their full-information payoffs whereas types that settle receive "information rents;" that is, they enjoy higher payoffs than they would under full information (and thus they have strategic incentives to conceal their private information). Inefficiency arises from the fact that trial costs are expended, and they are typically viewed as a social loss.

An alternative game form, in which the informed party makes the settlement demand (or

offer), can result in more extensive revelation, and is referred to as a "signaling" model: now, frequently, the equilibrium offer itself reveals some information. For instance, in Reinganum and Wilde (1986), P privately knows the extent of her damages, while D's likelihood of being found liable is common knowledge. P-types with higher damages make higher demands, and D rejects higher demands with a higher probability. D must be skeptical of P's demand and reject higher demands with a higher probability or else lower-damaged plaintiffs will strategically inflate their demands to "mimic" the demands of higher-damaged plaintiffs. P-types with higher damages are willing to risk a higher probability of rejection because they know that the court will award them higher damages at trial. In this model every P-type makes a different settlement demand, so the equilibrium involves full revelation of P's private information (that is, P's true damages can be inferred perfectly from her settlement demand). Inefficiency arises because every P-type goes to trial with a positive probability and thus society incurs trial costs; moreover, every P-type receives less than she would if her damages were private information. In this model, P's private information is actually disadvantageous; nevertheless it may be difficult or costly for P to persuade D about her damages because she has a strategic incentive to misreport them as higher than they really are.

Another branch of the decision-making literature uses a "contest success function" model of trial,[3] wherein the trial outcome is determined by the extent of effort chosen by the parties at the time of trial. Here the usual model involves a non-Bayesian decision-maker essentially flipping a coin to choose a winner. The important modeling advance is that the probability of a "heads" can be influenced via effort on the part of the individual litigants;[4] more effort on the

[3] See Corchon (2007) for an extensive tour and discussion of contest success functions.

[4] A primary example of effort expended at a trial is effort in providing evidence; for an

part of P increases her chance of winning, while more effort on the part of D decreases P's chance of winning.[5] In such models, other aspects of the case (e.g., damages) are either commonly-known or privately-known but assumed to be learned perfectly at trial. Because the parties take another decision (i.e., effort at trial) following failed negotiations, they may be more – or less – willing to reveal their private information either through signaling, screening, or direct disclosure/discovery.[6]

In what follows, we will discuss a variety of contributions to the literature on settlement and trial that augment one of these basic models in a significant manner in order to consider specific examples of legal, financial, or organizational issues that affect bargaining success or failure; we refer to this as the bargaining environment. We will classify the articles in terms of the primary model of the court (Bayesian or contest) employed and whether the analyses involve screening or signaling behavior (or both).[7] Readers interested in more extensive and

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extensive discussion of theoretical models of the generation of evidence, see Sanchirico (2012).

[5] For examples, see Posner (1973); Katz (1988); and Froeb and Kobayashi (1996), who consider both contest success function and Bayesian arguments to model a jury.

[6] Integration of both Bayesian and contest methods in representing courts may further yield fruitful research; we discuss two papers that do this, but much of the existing research treats these two approaches as orthogonal.

[7] There are also a few papers involving simultaneous offers/demands (e.g., Chatterjee and Samuelson, 1983; Daughety and Reinganum, 1993; and Friedman and Wittman, 2007) or mechanism-design models (e.g., Spier, 1997; and Klement and Neeman, 2005). These require the specification of a rule that reconciles offers/demands and determines when settlement will occur and what each party will pay or receive.

comprehensive histories of the settlement bargaining literature are referred to Daughety and Reinganum (2005 and 2012)[8] and Wickelgren (2013). In particular, we will consider the impact on settlement and trial of (1) procedural strategies such as motions for a preliminary injunction, permissive joinder, and discovery and disclosure; (2) pre-trial investments, either by the parties themselves, or by third parties; and (3) the delegation of bargaining authority to the plaintiff's attorney.

2. Models Addressing Procedural Strategies

In this section we consider a few analyses that examine the effect of procedural rules and options on settlement. In particular, we discuss a recent model addressing the role of preliminary injunctions, a few papers that have considered the effect of permissive joinder of cases (including class actions), wherein both plaintiffs and defendants may have strategies for affecting the likelihood of settlement and trial (as well as the likelihood of filing suit), and a few papers about discover and disclosure.[9]

2.1. Pre-trial Motions as Signaling Devices

Jeitschko and Kim (2013) examine the strategic use of a pretrial motion, such as a request by P for a preliminary injunction (PI) against a D; these procedural moves are common in

[8] Daughety and Reinganum (2014) discuss a selection of models (some of which are also discussed herein) from the perspective of how information is revealed to (or concealed from) various agents in the economy due to the bargaining activity and procedural strategies of the litigants.

[9] We will include some earlier works in our discussions, but space precludes us from spending much time on the earlier literature; we refer the interested reader to the previously-cited more-comprehensive surveys.

intellectual property and in antitrust cases. The court therefore appears twice in the game: once if P files a PI and then at the end of the game if settlement negotiations fail and trial ensues. Since a PI provides equitable (rather than legal) relief, the issue in court is who wins. In this paper the court is taken as flipping a coin, where both litigants ascribe the same weight to the likelihood that the coin will come up heads. Later in the analysis, they allow for the hearing on the PI to provide possible information about the merits of the case, should it go to trial (that is, a court's PI decision allows the litigants to update their beliefs about the likely trial outcome).

The model assumes that P can choose whether to seek a PI (which is costly to prepare as a motion) before D makes a settlement offer (here P is privately-informed as to the extent of damages, so this is a screening model at the settlement stage). Since P can choose whether or not to seek a PI, that action serves to signal something about P's damages (that is, they are high enough to make it worthwhile to seek a costly PI). Since the action is binary, the signal reflects a threshold value of damages, so that the signal is not perfectly informative to D, but it does allow D to update his assessment of how much P might win at trial, thereby potentially affecting D's settlement offer. Rejection of D's settlement offer by P means P and D go to trial wherein P wins with a probability that is commonly-believed by both parties. Moreover, since the action by the court with regard to granting or refusing a PI is potentially informative about the merits of the case, then both parties can use this information to yet further refine their beliefs about P's ultimate chance of prevailing, and their strategies in the settlement phase. The authors show that PI rulings that are informative in this regard increase the overall predicted likelihood of settlement relative to not accounting for such informativeness on the part of the court's action. Furthermore, in comparison with the case wherein the action by the court about the PI is not informative about the eventual merits should the case go to trial, a rejection of the PI by the court

increases the likelihood of settlement relative to the non-informative case, while a grant of the PI decreases the likelihood of settlement.

2.2. Aggregation of Cases

Various procedures (joinder, case consolidation within a court, multi-district litigation aggregating cases across courts, and class actions) exist wherein lawsuits by different parties making related claims against the same defendant (or group of defendants) are aggregated. Aggregation of cases can lead to two effects. First, by bringing cases together, they may (as a group) be stronger (e.g., patterns of behavior by D may be demonstrable). Second, while each individual case may be a negative-expected-value (NEV) case (i.e., the expected returns are less than the costs of pursuing the case), joinder of cases can result in lower per-plaintiff costs and thereby convert negative-expected-value suits into positive-expected-value suits.

Che (1996, 2002) has focused on the formation of coalitions of plaintiffs to pursue an aggregate suit, when individual Ps may have different levels of damages. In particular, if P's damages are her private information, then there is an internal information problem among the plaintiffs. In order to get the individual Ps to reveal (within the class) their true damages (so as to successfully maintain the class and divide any award or settlement), the class will require a higher settlement offer than would be needed to settle if the internal information problem did not exist. Che and Spier (2008) argue that (when an individual suit is NEV) a plaintiff coalition might be vulnerable to a "divide-and-conquer" attack from D, wherein D induces enough of the plaintiffs to settle that the increased per-plaintiff litigation costs for the remaining plaintiffs make it optimal for them to drop, rather than pursue, their case against D. The plaintiff coalition can defend itself against a divide-and-conquer attack by D if it can commit to a unanimity rule for accepting a settlement offer; if it can make a commitment not to accept discriminatory offers; or

if it can employ side payments. Basically, the plaintiff coalition wants to commit to an acceptance rule that internalizes the externalities among plaintiffs and thus maximizes the coalition's joint receipts from D.

Kim (2004) and Deffains and Langlais (2011) provide dynamic models with exogenous timing as to when two plaintiffs file suit. In both analyses, the harm for the plaintiffs is known and the first plaintiff has an NEV suit that the second plaintiff may choose to join (bringing additional favorable evidence and/or lower per-plaintiff costs).[10] Daughety and Reinganum (2011) develop a dynamic model of settlement in the case of one D facing a random number of Ps (for simplicity, two), each of whom has private information about their damages; the randomness is to model the situation wherein a manufacturer (D) knows the total sales of some product, but he does not know the number of customers who have been harmed by the good (potential Ps). Ps make individual decisions about whether to file suit (which is costly) or wait to see if some other P files; that is, the timing in this model is endogenously-determined. If Ps file at the same time, they can join their cases and capitalize on a potentially-improved likelihood of winning as well as reduced per-plaintiff costs of suit and trial. For simplicity, settlement in this model is assumed to take place under symmetric information about P's damages, but now D can strategically use settlement offers so as to undermine the filing of later suits. In particular, if D settles with an early P, then a P who waited to file will have no one to join, and thus cannot gain

[10] These models, as well as Daughety and Reinganum (2011), assume that the members of the plaintiff coalition are able to coordinate on the acceptance of a settlement offer, and therefore any plaintiff coalition is not vulnerable to unraveling as described in Che and Spier (2008).

from sharing information or litigation costs. Anticipating this possibility encourages Ps to file early, turning a "bandwagon equilibrium" (that is, some plaintiffs file early, whereas others wait and only file if someone else does so first) into a type of "gold rush" (all filing occurs at the first opportunity, as any P that waits will find that early filers have settled and are unavailable to join forces). Moreover, if D can file confidentially with the early-filing plaintiff, then confidential settlement can rob any waiting plaintiffs of the information that might encourage them to file or enhance their prospects for winning at trial.

2.3. Discovery and disclosure

The basic bargaining models described in the Introduction involved one or both parties having private information about some aspect of the case (e.g., perhaps only the plaintiff knows her harm or damages, or only the defendant knows the extent to which he was responsible for the plaintiff's harm). This private information has both distributional and efficiency effects (in particular, it is the source of bargaining breakdown between fully-rational parties). This suggests that one or both parties would like to engage in either voluntary disclosure of one's own private information or, alternatively, mandatory disclosure (that is, discovery) of the other party's private information. Credible disclosure of one's private information or discovery of the other party's private information may not always be possible at a reasonable cost (e.g., information may be "soft" and unverifiable), but in some cases it is likely to be of low or moderate cost and then disclosure and/or discovery become interesting strategic choices.

Sobel (1989) provides a model in which each party has private information (only P knows her damages and only D knows the strength of the case against him) and each party can make a settlement offer (or demand). He specifies the following timing: D makes a settlement offer to P. If P accepts, then the game is over, whereas if P rejects, then D must reveal his

private information, and then P makes a settlement demand. If D accepts, then the game is over, whereas if D rejects, then the case goes to trial. At trial, the judge or jury learns the parties' private information (that is, the model of trial corresponds to the PSB court model described earlier), and determines the payoffs to P and D. This game has elements of both signaling and screening, since the first offer may reveal D's private information and, at the same time, induces different types of P to make different decisions about accepting D's offer (and thus, the different P-types are screened). The demand made by P following discovery is made under common knowledge about D's type. Sobel finds that discovery always reduces the probability of trial, and it always makes the plaintiff better off and the defendant worse off. Thus, discovery improves efficiency but favors the plaintiff over the defendant in distributional terms.[11]

Mnookin and Wilson (1998) provide a model wherein each party has private information, and each party can engage in discovery to "sample" the other party's private information. The discovery process takes place before settlement negotiation. They use a mechanism-design approach wherein the parties are viewed as jointly selecting a plan for discovery and the case disposition (i.e., settlement or trial), conditional on what is revealed through discovery. Although they have private information at the time they select this mechanism, Mnookin and Wilson show that, under their particular information and payoff structure, the parties actually agree about the optimal plan, which maximizes the sum of their expected gains (subject to incentive compatibility and individual rationality constraints). Their model of trial is consistent

[11] A limiting assumption of Sobel's model is that only the defendant is subject to discovery; however, he notes that if both parties were subject to discovery prior to settlement bargaining, then all information-based obstacles to settlement would be gone and the parties would settle for sure.

with a PSB court that observes the parties' private information and awards the appropriate compensation to the plaintiff. Since the results of discovery are observed by both parties, this process results in the parties' assessments becoming more precise, and thus the likelihood of settlement increases over time. Mnookin and Wilson show that although both parties benefit from an instance of discovery (as it increases the likelihood of settlement and the optimal mechanism provides for both parties to share in the associated gain), the party that engages in discovery gains more than does the party that is the subject of discovery, so there are distributional impacts as well.

Schrag (1999) provides a model wherein D is privately informed about whether or not he was negligent. P, who has been harmed, makes a settlement demand, which D accepts or rejects. If D rejects P's demand, then D makes a settlement offer to P, which P accepts or rejects. If the parties do not settle, then both can employ discovery, followed by another round of settlement and, if necessary, trial.[12] When P makes her first settlement demand, she must anticipate how she will react in terms of pursuing discovery depending on D's response, which may be informative about his negligence. For instance, suppose she makes a demand that she expects will be accepted by a negligent defendant but rejected by a non-negligent defendant. Following a rejection, her incentives to engage in discovery will be weak as she believes that she faces a non-negligent defendant. In order to ensure that she has a credible incentive to engage in discovery, she may have to eschew a demand that would sort D-types in this way. Similarly,

[12] The analysis summarizes the post-discovery behavior (settlement and/or trial) via a reduced-form function of D's true type (negligent versus non-negligent) and the levels of discovery chosen by the two parties. Thus the focus of the analysis is on the parties' chosen levels of discovery and the equilibrium likelihood of early settlement.

when it is D's turn to make a settlement offer, he may avoid making an offer that reveals his type (negligent, or non-negligent) because of the impact it will have on P's future discovery.

Schrag models discovery as suggested by Hay;[13] that is, discovery does not help a party learn the other party's private information, but rather generates new evidence that is helpful to one's own case. D's type affects the expected return to discovery in that D (resp., P) expects a higher return to discovery when D is negligent (resp., she believes that D is negligent) than when D is non-negligent (resp., she believes that D is non-negligent). The equilibrium in this model entails P making an initial settlement demand that is always rejected by the negligent D and sometimes rejected by the non-negligent D as well. Then it is D's turn to make a settlement offer; in equilibrium both types of D make the same offer, which is rejected by P. The negligent D mimics the non-negligent D because revealing his negligence will cause P to engage in aggressive discovery. Thus, the first round of settlement is not that productive as P acts to preserve her own incentives for discovery and D acts to manage P's expectations which, in turn, affect her incentives for discovery. Schrag then evaluates the impact of a managerial judge's decision to limit discovery on the part of P and/or D. It turns out that limiting P's discovery increases the likelihood of early settlement whereas limiting D's discovery decreases the likelihood of early settlement.

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[13] Hay (1994) argues that even if a party would prefer to retain its private information, failure to disclose it would be subject to an adverse inference and thus even private information that is unfavorable to one's own case may end up being revealed voluntarily. Hay goes on to argue that a more significant role for discovery is to reveal information that the court itself would otherwise not learn; that is, a less-than-omniscient court's decision-making can be improved by discovery that reveals this kind of information.

Farmer and Pecorino (2005) provide a model of disclosure, discovery, and settlement negotiation under the assumption that P privately knows her true level of damages. The model of trial corresponds to the PSB court model wherein the judge or jury learns the true damages and awards this compensation if the defendant is found liable. When there is no opportunity for discovery or disclosure and D makes the settlement offer (that is, a screening model), he makes an offer that is acceptable to a set of plaintiffs with lower damages but not acceptable to a set of plaintiffs with higher damages (a single "marginal plaintiff type" is just indifferent). The P types that accept the offer receive information rents (that is, they would have been willing to accept an even lower offer), whereas the P types that reject the offer receive their trial payoffs. Consequently, no P type would be willing to pay a positive amount to disclose her true damages; those going to trial cannot benefit and those that settle would lose their information rents if D could tailor his settlement offer to their true damages.[14] On the other hand, if D knew P's true damages, then he could make minimal acceptable offers to each P type, thus avoiding the payment of information rents to those with relatively low damages and saving the costs of trial against those with relatively high damages. Therefore, as long as it is not too costly, D would engage in discovery; that is, he would compel P to disclose her true damages.

Now suppose that it is the privately-informed P who makes the settlement demand (that is, a signaling model), and there is no opportunity for disclosure or discovery. Then the lowest-damaged P makes a demand that is accepted for sure, whereas every other P-type makes a higher

[14] Shavell (1989) considers a screening model in which voluntary disclosure and discovery are both costless; in this case, P-types with damages higher than those of the marginal plaintiff type disclose voluntarily and settle for what they would have obtained at trial. D would engage in discovery with any P-type that did not disclose voluntarily.

demand and faces a positive probability of rejection and trial.[15] In this version of the model, D is pushed to his concession limit by all P-types, and this would happen under complete information as well, so D would never be willing to engage in discovery if there was any cost involved. However, now each P-type would benefit from voluntary disclosure since it would allow D to accept P's demand without fear of mimicry by lower-damaged plaintiffs. Thus, as long as it is not too costly, there will be a set of higher-damages plaintiffs that employ voluntary disclosure.

Farmer and Pecorino (2013) provide a different model of disclosure, discovery, and settlement negotiation wherein P has private information about her damages. Whereas the usual PSB court model assumes that the trial outcome is determined only by the private information, and not by attorney effort, in this paper they use a contest model wherein the chance that P wins at trial is determined only by attorney effort. In particular, the chance that P wins is an increasing function of P's attorney's effort, and a decreasing function of D's attorney's effort. P's attorney's effort level will depend upon the privately-known level of damages, whereas D's attorney's effort level will depend upon his beliefs about P's level of harm. In order to influence the likelihood of settlement and, in the event of trial, D's attorney's effort levels, P may strategically engage in voluntary disclosure; alternatively, D may strategically engage in discovery (essentially, mandatory disclosure of P's private information).

The specific model involves P knowing whether her damages are high or low, with D making the settlement offer; thus, this is a screening model of settlement negotiations. First, consider what happens when there is no opportunity for disclosure or discovery. Then D makes

[15] Higher demands cannot be accepted for sure, else the lower-damaged P-types would also make the higher demands, and D would be better off going to court (as he would "over pay" when he accedes to the higher demand but P's damages were actually low).

a settlement offer that is acceptable to a P with low damages, but is unacceptable to a P with high damages (with whom he therefore goes to trial). Since D expects only high-damages plaintiffs to reject the settlement offer, D's attorney chooses high effort at trial (the higher the believed stakes, the higher is D's attorney's optimal effort level). Since the settlement offer is designed to make the low-damages P just willing to accept rather than go to trial (where she will face high effort by D's attorney because he believes that only high-damages plaintiffs go to trial), this equilibrium offer is quite low.

Indeed, it is lower than the corresponding offer that D would make if he *knew* that P had low damages. In this complete-information version of the model, a low-damages P that rejects D's settlement demand will face lower effort at trial by D's attorney (because D knows that P's damages are low). In both cases P knows that her damages are low, but in the complete-information case D also knows that P's damages are low, whereas in the asymmetric-information case he believes that any P that rejects the settlement offer has high damages, and thus responds more aggressively. Consequently, private information is disadvantageous for the low-damages P; if she could disclose voluntarily prior to negotiations, she would do so (as long as disclosure is not too costly).

If P does not have the option to make a voluntary disclosure, but D can engage in discovery, Farmer and Pecorino show that when the court outcome is modeled as a contest then D may choose not to discover P's private information (whereas under the PSB court model, D would employ discovery, providing it is not too costly). The reason is that if D knows P's level of damages, he will tailor his effort at trial (following rejection of the settlement offer) to the known level of damages. Hence, if he knows that P has low damages, then P knows that if she rejects D's offer she will be met with low effort on D's part at trial. If D remains ignorant of P's

true damages, then D believes that rejection of his settlement offer is a sign of high damages and he responds aggressively at trial. The P with low damages thus anticipates being met aggressively if she rejects the settlement offer, and this lowers the settlement offer that D needs to make to induce her to settle.

These results differ from those based on the PSB court model. In the screening version of that model, P would never disclose voluntarily (even if it were nearly costless), whereas D would engage in discovery (as long as it is not too costly). In the contest model, the low-damages P would disclose voluntarily (as long as it is not too costly), and D might eschew discovery (even if it were costless). The reason for the differing results is the opportunity to influence D's attorney's trial effort in the contest model, which is not a feature of the omniscient-court model.

Schwartz and Wickelgren (2009) also employ a screening model wherein P has private information about her damages; however, they allow these damages to be very small so as to incorporate the possibility of NEV (negative expected value) suits wherein P files suit solely to obtain a settlement. In their model, there are two possible rounds of settlement negotiation; the first round occurs prior to any discovery. Since discovery is costly, the parties may benefit from settling without having incurred these costs. However, if the first round of settlement fails, then the uninformed party (D) can engage in discovery prior to making the second settlement offer.

They find that a P with damages below a certain threshold accepts D's early (low) settlement offer, whereas a P with higher damages rejects the early offer, undergoes discovery, and then accepts D's second settlement offer (because D now also knows P's level of damages, this second offer is just enough to make P willing to settle rather than going to trial). This pattern of behavior is an equilibrium as long as D's threat to engage in discovery following the rejection

of an early settlement offer is credible, and this credibility requirement influences D's early offer. Recall that in a screening model without discovery, D will choose a marginal plaintiff type (i.e., a threshold level of damages) and will settle with that type, and all lower types, for the same amount. Those with lower damages obtain information rents, and these information rents represent an incentive for D to engage in discovery so as to tailor the settlement demand to each P type. To maintain a credible threat of discovery, it must be that the information rents associated with the set of P types that reject the early demand (and thus remain to be discovered and settled with later) are sufficient to warrant D's expenditure on discovery. The need to maintain a credible threat to employ discovery can severely limit the possible scope of early settlement. On the other hand, anticipating a low early settlement offer followed by discovery can also reduce the extent of NEV suits that are filed.

3. Investment in Cases

In this section we consider investments made before settlement bargaining begins. Such investments may involve the plaintiff herself investing to raise the strength of the case; if P has private information and the choice to invest is observable by D, then the fact that P invested may influence D's belief about P's case. Alternatively, a developing industry involves third parties investing in lawsuits, either through loans to plaintiffs or through financial arrangements with firms (for example, obtaining a share of what a law firm recovers in a case).

3.1. Investment by the Plaintiff in the Strength of Their Case

Choné and Linnemer (2010) allow for one of the parties (P) to make an investment before settlement negotiations commence that can raise her expected payoff from trial. In this model, P's type, which is her private information, is the "case strength," which translates into the expected value of the award. P can enhance the case strength by investing in effort, which might

increase the likelihood of winning (as in a contest model, but here in a one-sided version) or improve the documentation of evidence about the extent of harm suffered; both have the effect of scaling up the expected value of P's case. P's choice whether to enhance the case strength via a costly investment (in effort) is observable by D. Then D makes an offer to P (i.e., this is a screening model), having updated his beliefs about P's type and his expected cost if the case proceeds to trial. At trial, the court will receive a perfect signal of the enhanced case strength.

Generally, since there is a cost associated with the investment in effort, it is the higher types of P who will find the investment worthwhile. Since D observes the fact of the investment and knows that it will be valuable to higher P-types, this means a fraction of lower P-types will also have an incentive to make the investment, so as to suggest to D that they have higher damages; that is, some lower types will try to "bluff" so as to influence D's choice of offer. Technically, Ps with sufficiently high initial case strength invest for sure, whereas those with weaker cases use a mixed strategy when choosing whether or not to invest. The proportion of bluffers is increasing in the cost to D of trial and decreasing in the cost of effort devoted to case preparation.

3.2. Investment by Third Parties in Plaintiffs' Cases

Historically, maintenance (support of a case by a third party) and champerty (a third party obtaining a share of the returns from cases) was illegal, but recent changes in the law in some common law countries (particularly Australia, the U.K., and the U.S.) have led to the growth of a worldwide industry comprised of firms that lend to either individual plaintiffs or law firms (or both). In general, this funding usually occurs before settlement negotiations commence; see Garber (2010) or Molot (2010) for extensive discussions of this developing industry.

In terms of its effect on settlement, loans made directly to plaintiffs may be of the

greatest interest, so we focus on these.[16] Such support generally takes the form of a non-recourse loan; these are loans to plaintiffs wherein repayment is limited to the amount that P obtains through winning at trial or settling with D (that is, no other assets are at risk). Initially some U.S. courts were concerned that such loans would cause plaintiffs to abandon efforts to settle, but courts have become more accepting of these financial arrangements.

Daughety and Reinganum (forthcoming) show that the non-recourse nature of the loan can have a surprising effect on settlement: for an optimally-structured loan, settlement always occurs. More precisely, using a signaling model (which would normally involve higher-damaged plaintiffs making higher settlement demands and facing a higher probability of trial), they show that the loan that maximizes the joint payoff to the lender and the plaintiff acts to eliminates the incentive for different P-types to signal their damages via their demands, leading to settlement with D at the expected value of the case. This occurs because the loan involves a very large repayment amount, so that different P-types expect the same payoff from trial (zero, net of the repayment amount). Indeed, the repayment amount is greater than what actually can be repaid, but this "default" is acceptable under the non-recourse nature of the loan. Because, under the loan contract, their payoffs from both settlement and trial are the same, all P-types pool at the same settlement demand, which D accepts. Thus, the form of the loan is an up-front transfer from the lender to the plaintiff, with a large repayment out of the proceeds of the case. They further show that if there are multiple lenders, then P can extract most of the expected value of the case via the up-front payment. Furthermore, such loans are likely to reduce costs to P's lawyer (as trial is avoided); to the degree that the market for legal services is competitive,

[16] Transactions that involve purchasing the case from the plaintiff, especially in cases of personal injury, are generally still illegal.

this would result in lower contingent fees for attorneys.

4. Delegation of Negotiation Authority

Although critical aspects of the conduct of her case (including control over the decision to drop the case, to settle it, or to go to trial) are subject to choice by P, there is a literature that explores the impact of delegating this authority to P's attorney, denoted PA. It has often been observed that delegating some of P's decisions to her attorney can result in agency costs to P, since PA's incentives are not perfectly-aligned with those of P. For instance, if PA is compensated under a contingency fee contract, then PA will be inclined to accept too few cases; to invest too little at trial; and to settle too often. Polinsky and Rubinfeld (2003) devise a mechanism that involves a third party and serves to align perfectly the interests of P and PA.[17] Among the things that are held constant in this analysis regarding P and PA is the behavior of D (in settlement negotiations and/or at trial). However, there are additional reasons to consider delegation when the model accounts fully for its effect on D.

Watts (1994) uses a screening model wherein D has private information regarding the likelihood that he will be found liable at trial. She models the plaintiff's side of the case as involving both P and her attorney, PA, who is compensated via a contingent-fee contract (with

[17] Plaintiffs sign up with the third party; lawyers make lump-sum bids to the third party for the case; the third party absorbs a share (equal to one minus PA's contingency-fee rate) of the litigation costs if the case goes to trial, and splits the proceeds of either settlement or trial between P and PA according to the specified contingent fee. This results in PA's payoff being a share of total receipts minus total litigation costs, so PA will conduct the case exactly as would a plaintiff-expert.

the same share applying to both the settlement and the trial award). The plaintiff's side can engage in discovery (and PA is more efficient at discovery than is P herself) that does not reveal D's private information perfectly; rather, discovery reveals that D's likelihood lies within a particular interval. Given this interval and the assumption that settlement negotiations are delegated to PA, the settlement model is analogous to the usual screening model. The benefit of hiring PA is that discovery costs are reduced; the cost is that PA will not be a perfect agent for P in settlement negotiations (PA will make a lower settlement demand and settle more often than P would like, because PA receives only a fraction of the settlement or award but pays all of the costs in the event of trial). Watts characterizes conditions under which there is a profitable contract between P and PA, and discusses the welfare effects of P's use of an attorney for the purpose of discovery and bargaining. She finds that there is a threshold level of efficiency for PA such that, if PA is more (resp., less) efficient than the threshold level then total surplus is increased (resp., decreased) by employing PA.

Choi (2003) provides a model in which P hires an attorney under a contingent-fee contract and delegates the bargaining authority to the attorney. The trial is a contest, although it is one-sided as only PA's trial effort is modeled. Information is symmetric, and D makes the settlement offer. PA's share of the settlement need not be the same as his share of the trial award. Indeed, Choi argues that, by offering PA a high share of the trial award, P can motivate PA to exert more effort should the case come to trial. This implies that D will have to make a higher settlement demand to gain PA's acceptance. On the other hand, P can lower PA's share of the settlement until PA's expected payoffs from settlement and trial are equalized. When P raises PA's share of the award, she facilitates surplus-extraction from D, but enhances surplus-sharing with PA. Choi finds that there is a threshold level of bargaining power for P such that, if

her bargaining power is lower (resp., higher), then she should hire (resp., not hire) an attorney.

Chen, et. al. (2007) consider a model wherein P's damages are common knowledge, whereas D has private information about the extent to which he is liable for P's damages. If the case goes to trial, then D's liability is learned by the court, but P only prevails with a probability that is influenced by the efforts of both attorneys. Thus, the model of trial involves both aspects of a PSB court and a contest. In this model, P's attorney is compensated under a contingent fee contract, and all of the decisions regarding settlement and the effort at trial are delegated to PA. The model involves the uninformed PA making a settlement demand to D, so it is a screening model of settlement wherein some types of D (those with higher privately-known liability) accept the demand and other types (those with lower privately-known liability) reject it. Following a rejected settlement demand, Chen et. al. assume that PA also learns D's liability before making an investment in trial effort, so the trial occurs under symmetric information. Their main research question is how the equilibria of this model (in terms of cases filed, likelihood of settlement, and likelihood that P wins at trial) are affected if one changes from the American to the British rule for allocating litigation costs. They find that more cases are filed under the American rule; more resources are expended under the British rule by both parties, but proportionately more is spent by D, resulting in a lower likelihood that P will prevail under the British rule. PA's settlement demand is higher under the British rule, but the likelihood of settlement is higher under the British rule (resp., American rule) when P's damages are high (resp, low).[18]

[18] Although Chen et. al. do not address this issue, the model seems ripe for asking about the value of delegating decision-making to PA as compared to an equally-expert P conducting her own case. For instance, it is clear that P would invest more at trial than PA, as PA receives

Leshem (2009) compares P's equilibrium payoff in a signaling model (wherein P privately knows her damages) under alternative assumptions about the allocation of bargaining authority. One version corresponds to P herself doing the bargaining, whereas another version corresponds to P employing an attorney, PA, under a contingent-fee contract (with the same share applying to both the settlement and the trial award) and delegating the bargaining authority to PA. In both versions, the settlement demand for each P-type is actually the same, as it is devised to drive D to his concession limit. However, a consequence of P (or PA) having private information in a signaling model is that every P-type (except the very lowest) will end up facing a positive probability of trial. Moreover, it can be shown that the probability of trial is higher the greater the amount of money at stake. When P bargains on her own behalf, she keeps the full award and pays the litigation costs; when PA bargains, he receives only a fraction of the award and pays the litigation costs. As a consequence, the version of the model in which PA does the bargaining entails the same settlement demand, but a lower likelihood of trial in equilibrium, for every P-type. Essentially, PA can "signal" P's type at a lower expected litigation cost. The tradeoff for P is that she has to cede a fraction of the award to her attorney. There is a threshold expected value of the award such that it is optimal for P to hire PA (resp., not hire PA) when the

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only a fraction of the award but pays all of the litigation costs under a contingent fee contract. However, D would also invest more at trial against P than against PA (as is common in contest models, trial efforts are strategic complements), so delegating the effort decision to PA could potentially be beneficial to P. The model is quite complex, so it is unclear when P might gain by delegating bargaining authority to PA, but this is an interesting question for future research in such a model.

expected value of the award is higher (resp., lower) than the threshold level.

5. Conclusions

In this brief survey, we have focused on settlement-bargaining research that extends the primary models of negotiation to explore some bargaining-environment topics: 1) the use of procedural options and motions; 2) considerations of investment in cases; and 3) the effect of potential agency-generated conflicts on settlement. All of these attributes of the bargaining environment (and others yet to be explored) shape and influence the likelihood of settlement and the cost of using the legal system to address harms and culpability. Each of these topics will undoubtedly yield more investigations in the future, and future surveys will surely have yet more exciting work to discuss.

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