THE EFFECT OF OFFER-OF-SETTLEMENT RULES
ON THE TERMS OF SETTLEMENT

Lucian Arye Bebchuk[*] and Howard F. Chang[**]

[*]Professor of Law, Economics, and Finance, Harvard Law School.

[**]Professor of Law, University of Southern California Law School.

THE EFFECT OF OFFER-OF-SETTLEMENT RULES
ON THE TERMS OF SETTLEMENT

Lucian Arye Bebchuk and Howard F. Chang

Abstract

Under an "offer of settlement" rule, a party to a lawsuit may make a special offer to settle with the other party, such that if the other party rejects this offer, then this offer (unlike an ordinary offer) becomes part of the record in the case and may affect the allocation of litigation costs. Specifically, if the parties litigate to judgment, then the allocation of litigation costs may depend on how the judgment compares with the special offer. This paper develops model of bargaining under offer-of-settlement rules that can be used to analyze the effect that such rules have on the terms of settlement. The analysis first sets forth a general principle that identifies the settlement amount under any such rule. We then apply this principle to derive the settlement terms under the most important of these rules, and we identify a large set of seemingly different rules that produce identical settlements. Our results have both positive and normative implications.

Howard Chang
University of Southern California
 Law Center
699 Exposition Blvd., University Park
Los Angeles, CA 90089
Phone: (213) 740-0145
Email: hchang@law.usc.edu

Lucian Bebchuk
Harvard Law School
1557 Massachusetts Avenue
Cambridge, MA 02138
Phone: (617) 495-3138
Email: bebchuk@law.harvard.edu

I. INTRODUCTION

This paper analyzes the effects of "offer of settlement" rules on the terms of settlement. The analysis shows that such rules can systematically shift the terms of settlement, and we derive surprisingly sharp results regarding the direction and magnitude of these shifts. The analysis also shows how we can design such rules to neutralize the advantage that parties with lower litigation costs would otherwise enjoy.

Under an offer-of-settlement rule, a party to a lawsuit may make a special offer to settle with the other party, such that if the other party rejects this offer, then this offer (unlike an ordinary offer) becomes part of the record in the case and may affect the allocation of litigation costs. Specifically, if the parties litigate to judgment, then the allocation of litigation costs may depend on how the judgment compares with the special offer. The court may shift costs to the party that fails to improve on the special offer at trial.[1]

Offer-of-settlement rules can vary with respect to several features: If only one party may make a special offer, which party may do so? For each party that may make a special offer, is such an offer mandatory or optional? If both the plaintiff and the defendant may make special offers, does the rule regulate the sequence in which they make these offers? If so, what order does the rule specify? For each special offer, if the offeree rejects the offer, then what are the implications for the allocation of litigation costs? For example, under one-sided cost-shifting, such an offer can trigger cost-shifting only in favor of the party making the offer: if an offeree who rejected the offer fails to improve upon that offer at trial, then the court may require the offeree to pay the costs incurred by the other party since making the special offer. If the rule triggers <u>two</u>-sided cost-shifting instead, then party making the rejected offer similarly may be required to pay the corresponding costs of the offeree if the judgment at trial is less favorable to the offeror than the special offer. Thus, there is a large family of possible offer-of-settlement rules.

Numerous jurisdictions in the United States have adopted such rules in order to encourage parties to settle out of court. The most notable example is Rule 68 of the Federal Rules of Civil Procedure. Like many parallel state rules, Rule 68 provides that a defendant may make a special offer of judgment. If the plaintiff accepts the offer, then court enters judgment as specified in the offer. Otherwise, the offer can trigger one-sided cost-shifting: if the plaintiff finally obtains a judgment that is not more favorable than the offer, then the plaintiff must pay the costs incurred by the defendant after making of the offer. Rule 68 has been the subject of substantial debate and has provoked proposals for reform.[2]

---

[1]Similar rules may shift legal costs against parties that reject a proposed mediation award (rather than a settlement proposed by one of the parties) and then fail to improve on that proposal at trial. Farber and White (1991) provide an empirical analysis of medical malpractice litigation in a state that requires such mediation.

[2]See, e.g., Preliminary Draft of Proposed Amendments to the Federal Rules of Civil Procedure, 98 F.R.D. 339, 361-63 (1983); Preliminary Draft of Proposed Amendments to the Federal Rules of Civil Procedure, 102 F.R.D. 425, 432-33 (1984).

Other countries also use offer-of-settlement schemes. For example, in England a defendant may make a special offer through "payment into court" (see Toran (1986)). Under the English rule of cost allocation, a party that loses at trial bears the litigation costs (including attorneys' fees) of the winning party. Under the "payment into court" procedure, if the plaintiff rejects the defendant's special offer, then the plaintiff will recover costs and fees from the defendant <u>only</u> if it wins <u>more</u> at trial than the amount of the special offer. If the plaintiff wins at trial but fails to improve on the special offer, then the plaintiff must pay the costs incurred by the defendant since the date of the special offer.[3]

The economic analysis of Rule 68 and of similar offer-of-settlement rules has focused on the effect of such rules on the likelihood of settlement.[4] Scholars have examined the claim that rules like Rule 68 increase the likelihood of settlement.[5] In contrast to this literature, our focus is on the effects of such rules on the terms of settlement.

Understanding the effects of procedural rules and institutional arrangements on the terms of settlement is very important.[6] The vast majority of cases end in settlement rather than in judgment. The main impact of the law on outcomes (and in turn on ex ante behavior) is therefore not directly through judgments rendered by courts but rather indirectly by shaping the terms of settlements. Thus, identifying the effects of the legal system on settlement terms is important for any positive or normative analysis of the outcomes produced by the system.

---

[3]If the defendant wins at trial instead, then it will recover costs from the plaintiff according to the usual English rule of cost allocation.

[4]For the application of economic theory to this issue, see Miller (1986), Anderson (1994), Spier (1994), Farmer and Pecorino (1996), Chung (1996), and Hylton (1996). For empirical work on this question, see Rowe and Vidmar (1988), Anderson and Rowe (1995), and Rowe and Anderson (1996).

[5]The important paper by Spier (1994), for example, examines pretrial bargaining under asymmetric information to see if cost-shifting rules based on the settlement offers made by the parties leads to more settlement. In a mechanism-design framework, she concludes that cost-shifting based on offers of settlement would yield a higher settlement rate than any other cost-shifting rule a court could adopt. The threat of cost-shifting deters the parties from making extreme settlement offers and encourages them to negotiate in good faith. Thus, under offer-of-settlement rules, special offers are more credible signals of the offeror's beliefs. By facilitating the exchange of credible information, these rules can increase the likelihood of settlement.

[6]For a general discussion of the importance of gaining such an understanding, see Bebchuk (1997).

This paper provides a framework for identifying the terms of settlement under offer-of-settlement rules. To this end, we develop a model of bargaining that can be used to identify the settlement terms expected under such rules.[7] Indeed, the paper derives a general result that enables us to identify the expected settlement terms under any given offer-of-settlement rule. We then apply this result to derive the outcomes under the most important of these rules.

An essential element of the framework we will develop is the effect of a special offer on any subsequent bargaining between the parties. If an offeree rejects a special offer, this rejection does not imply that the parties will not settle. The parties may still subsequently make ordinary settlement offers, as they could in the absence of a special offer, and thereby reach a settlement. The parties will conduct these settlement negotiations, however, in the shadow of a different threat point than they would in the absence of a special offer. The presence of a special offer will affect the expected payoffs for the parties if the case goes all the way to judgment at trial. Therefore, the outcome of the bargaining game that the parties would play if an offeree rejects a special offer is a function of the settlement amount proposed in the special offer. Thus, an offeror would make a special offer in light of its anticipated effect on subsequent bargaining.

The identification of the settlement amount expected under any given offer-of-settlement rule will enable us to examine: (i) which party benefits from each rule, and (ii) how the settlement amount compares with the expected judgment (that is, the mean amount that the parties expect the plaintiff to win at trial). The analysis shows, surprisingly, that a large set of seemingly different rules produce identical settlements.

Our model has important implications for both positive and normative analysis. The model enables us to derive not only the settlement outcomes that emerge under existing offer-of-settlement rules but also those that would occur under proposed offer-of-settlement rules (should they be adopted). This analysis is essential for any positive account of the outcomes produced by legal rules as well as for any normative evaluation of performance of these rules in producing desired outcomes.

One normative implication that we explore is the following. Parties often differ considerably in their litigation costs.[8] In the absence of an offer-of-settlement rule, settlement amounts can be expected to deviate from the expected judgment in favor of the party with lower litigation costs. If the expected judgment in a case is the best available proxy for the outcome that is desired (from either a fairness or an efficiency perspective), then such deviations from the

---

[7]In contrast to other papers that consider these settlement terms, such as Miller (1986) and Anderson (1994), we explicitly model the process of bargaining between the parties.

[8]For example, in some tort cases the defendant might face lower costs because of greater expertise or access to information, whereas in other tort cases the defendant might face higher litigation costs because a trial would disrupt the defendant's operations.

expected judgement are undesirable. Our analysis shows how, under some common circumstances, we can design offer-of-settlement rules to eliminate the bargaining advantage that the party with lower litigation costs would otherwise enjoy. Furthermore, to design these rules to accomplish this goal, public officials would not need to know in advance which party has the lower litigation costs. While we find the possible use of offer-of-settlement rules to neutralize the bargaining advantage of parties with lower litigation costs quite interesting, we wish to emphasize that, for the reasons discussed earlier, analysts who have no interest in this particular goal should still find relevant our general analysis of how offer-of-settlement rules affect settlement terms.

The analysis in this paper is organized as follows. Section II presents our framework of analysis. Section III analyzes bargaining both with and without offer-of-settlement rules and puts forward the basic lemma that subsequent sections will use to identify the outcome under particular offer-of-settlement rules. Section IV analyzes the case of one special offer and one-sided cost-shifting, Section V analyzes the case of one special offer and two-sided cost-shifting, and Section VI analyzes the case in which each side makes a special offer. Section VII addresses an important extension of the model. Section VIII considers the implications of the model for the outcomes under the existing Rule 68. Section IX discusses some implications for the design of offer-of-settlement rules. Finally, Section X concludes.

II. FRAMEWORK OF ANALYSIS

Suppose that a risk-neutral plaintiff files a suit against a risk-neutral defendant at time $t = 0$. Assume that unless the parties settle out of court, the court will render judgment. If the parties proceed all the way to judgment, then in the intervening time, the plaintiff incurs positive litigation costs in the amount C_p, and the defendant, in the amount C_d. The parties may incur different litigation costs. For example, they may differ in terms of the costliness of the evidence they must produce in court or in terms of how disruptive they find litigation to be. Let C denote the total litigation costs: $C = C_p + C_d$.

Assume that there are n stages to the litigation process, from the filing of a suit to judgment at trial, and that the parties' litigation costs are spread over these n stages. At each stage $i = 1, ..., n$, each party incurs some portion of its total litigation costs. Let c_p^i and c_d^i denote the litigation expenditures in stage i by the plaintiff and the defendant respectively. Assume that the court can observe these litigation costs and can therefore allocate these costs between the parties according to any applicable cost-shifting rule.[9] Assume that the parties have identical discount rates and that all money values are expressed in terms of their present discounted value at time $t = 0$.

---

[9]We can extend our analysis to include cases in which the court can observe and shift only part of these litigation costs. We analyzed such an extension in an earlier draft of this paper, which is available from the authors upon request. We also consider partial cost-shifting in Section VIII, in which we consider the effects of the existing Rule 68.

Both parties share the same expectation regarding the outcome at trial. Let us assume at first that the defendant concedes liability and the parties dispute only the amount of damages that the defendant should pay the plaintiff. Let D represent the damages that the court would award to the plaintiff at trial. From the perspective of the parties, D will be a random variable. Let _ denote the expected value of D, where _ > 0. Assume that D is distributed according to a continuous probability density function f(D). Assume also that the probability that D exceeds its mean equals the probability that it does not: that is, assume that $\Pr(D \le \_) = \Pr(D > \_) = \frac{1}{2}$ We will later extend our analysis to include skewed distributions, for which $\Pr(D \le \_) \ne \frac{1}{2}$ as well as disputes over liability.

Let J represent the total amount that a judgment at trial would require the defendant to pay to the plaintiff. Under an offer-of-settlement rule, this judgment may include a cost-shifting element in addition to damages: J may include a positive amount in order to reimburse the plaintiff for its litigation costs, or J may include a negative amount in order to reimburse the defendant for its litigation costs. The amount J will be uncertain because D is a random variable and cost-shifting under an offer-of-settlement rule will turn on the value of D. Even in the absence of any offer-of-settlement rule, J will be a random variable, because then J = D.

The parties may make ordinary offers to settle out of court without invoking any offer-of-settlement rules. As is customary in the bargaining theory literature, assume that the parties would make ordinary offers in a sequence of bargaining rounds. In particular, assume that before each stage of the litigation process, there would be a bargaining round in which one party would make an ordinary offer and the other party would either accept or reject the offer, the identity of the party making the offer would be determined randomly at the start of the round, and each party would be equally likely to be the offeror. If the offeree rejects the offer, then the parties would begin the next stage of the litigation process, in which the parties would incur another fraction of their litigation costs, and the parties would enter another round of bargaining.

Given that the parties are risk-neutral, the defendant seeks to minimize its expected costs (its litigation costs plus any payment to the plaintiff), and the plaintiff seeks to maximize its expected payoff (any payment from the defendant minus its litigation costs). Assume that the parties have no mechanism (such as a repeat player might develop by cultivating a reputation for intransigence) that would enable them to bind themselves to a particular bargaining strategy. That is, neither party can commit credibly to a strategy of intransigence, which would enable it to obtain a larger fraction of the gains from settlement. Thus, each party would accept an offer if and only if it were unable to improve its expected payoff by rejecting the offer instead.

For simplicity, assume that an offeror under any applicable offer-of-settlement rule makes a special offer at time t = 0 before the first stage of the litigation process, before the parties incur any litigation costs, and before the first round of ordinary bargaining. We can extend the analysis to include the case in which special offers can be made at later points in time.[10] Given the

---

[10]In an earlier draft of this paper, which is available from the authors upon request, we explored such an extension and found

opportunity to make a special offer, the offeror would choose to make an offer if and only if it were unable to improve its expected payoff by doing otherwise.

The structure of the bargaining game described above, including n, _, f(D), and c_d^i and c_p^i for i = 1, ..., n, as well as any applicable offer-of-settlement rule, is common knowledge to the participants. This assumption ensures that settlement occurs with certainty and always occurs before the parties incur any litigation costs.[11] The assumption of perfect information allows us to focus on the issue that we are interested in studying: the effect of various offer-of-settlement rules on settlement amounts.

It will prove useful to refer to a more specific example throughout our analysis. For this purpose, suppose that $C_p = 60$, $C_d = 20$, and D is uniformly distributed in the interval (60, 140), so that _ = 100. We will use this numerical example to illustrate our results below.

III. BARGAINING WITH AND WITHOUT SPECIAL OFFERS

In this section, we examine the outcome of bargaining under two different regimes. First, we analyze bargaining in the absence of offer-of-settlement rules. Second, we will introduce the possibility of invoking offer-of-settlement rules.

A. Bargaining Without Offer-of-Settlement Rules

Consider bargaining in the absence of any offer-of-settlement rules. Let B represent the expected outcome of such an ordinary bargaining game. That is, let B denote the amount that the defendant can expect to pay the plaintiff in a settlement, which we can express as a function of _. We can derive the expected settlement amount B(_) as the solution to this bargaining game.

Proposition 1: The parties will settle in the first round of bargaining, and the expected settlement amount would be:

$$B(\_) = \_ + \tfrac{1}{2}(C_d - C_p). \tag{1}$$

Proof: See Appendix.

---

that as long as both parties can make special offers, the option of making them later rather than sooner does not change the outcome.

[11]A plaintiff will choose to file a suit only if it expects a positive payoff from doing so. We may assume that the cases considered in this model are only hypothetical, and we would only actually observe suits in those cases in which the expected settlement is positive.

Remark: Note that the parties each receive their expected payoff from trial (net of litigation costs) plus a share of the surplus obtained through agreement. They divide this surplus -- that is, the total litigation costs avoided by settlement, $C = C_d + C_p$ -- equally. This outcome is the same as under the Nash bargaining solution.[12]

The settlement outcome will be more favorable to the plaintiff than one would expect the judgment itself to be if and only if $C_d > C_p$. Conversely, the settlement would be less favorable to the plaintiff if and only if the opposite inequality holds. Compared with the expected judgment _, the expected settlement amount B(_) will favor the party with lower litigation costs.

Example: To illustrate this effect, consider our numerical example, in which $C_d < C_p$. In that case, the expected settlement would be B(_) = 80, which is less than 100, the expected judgment. Thus, B(_) < _, and compared to the expected judgment, the expected settlement would favor the defendant.

B. Bargaining with Offer-of-Settlement Rules

Let us now turn to bargaining under an offer-of-settlement rule. We will start by setting forth a general result that will enable us to predict the outcome under any given offer-of-settlement rule. The subsequent analysis will use this basic lemma to derive the settlement outcome under several specific offer-of-settlement rules.

Suppose that one party may make one special offer at time $t = 0$, immediately before the first round of ordinary bargaining and before the first stage of litigation. First, let us assume that only one party may make such an offer and that this party will indeed make this offer. Let S denote the amount proposed in this special offer. Later, in Section VI, we will extend our analysis to two-party rules, under which both parties can make special offers.

The key point to recognize is that if the special offer were rejected, this rejection would not necessarily mean that the case would not be settled; the parties might still make ordinary settlement offers and thereby reach a settlement. The parties will conduct these settlement negotiations, however, in the shadow of a different expected judgment than they would in the absence of a

---

[12]The Nash bargaining solution is a cooperative game solution. It was introduced to the litigation context, and extensively used there, by Robert Cooter. See, e.g., Cooter (1989) and Cooter and Ulen (1988).

Our model follows the non-cooperative approach to bargaining which, unlike the cooperative approach, seeks to model explicitly the bargaining process. As envisioned by Nash, the outcome of non-cooperative models is often equivalent to that predicted by the "black-box" models of the cooperative approach. For an analysis of the relationship between cooperative and non-cooperative models, see Binmore, Rubinstein and Wolinsky (1986).

special offer. Under an offer-of-settlement rule, the special offer will affect the payoffs that the parties can expect if the case ends in a judgment at trial. Specifically, if the special offer S is rejected, then the judgment J may include a cost-shifting element, depending on how D compares with S. Thus, the judgment will be a function of S: let J(S) represent the judgment from trial, including the cost-shifting due under the relevant offer-of-settlement rule given the special offer S. Let B again denote the payoff to plaintiff from the ordinary bargaining game, in this case, the ordinary bargaining game that the parties would play if an offeree rejects a special offer. The outcome B is still a function of the expected judgment, but E[J] is no longer simply _, the expected damages, because J is now a function of S.

Consider the effect of an increase in S upon the judgment J(S). In those cases in which S changes from an amount less than D to an amount greater than or equal to D, liability for C_d will shift to the plaintiff, or liability for C_p will shift back to the plaintiff, or both, depending on which costs shift under the offer-of-settlement rule. In all other cases, the increase in S will not affect J(S). Therefore, the expected judgment, denoted E[J(S)], taking the expectation with respect to different possible values of D, is a nonincreasing function of S.

Thus, B is now a function of the settlement amount S proposed in the special offer, because B is a function of E[J(S)]. Let B(S) denote this function, and let S^* denote the optimal special offer for the offeror. We can now show the following lemma:

Lemma 1: If one party makes a special offer of settlement, then it can maximize its own payoff by choosing the S that equals the payoff to the plaintiff from the ordinary bargaining game that the parties would play if the offeree were to reject the special offer. That is:

$$S^* = B(S^*), \qquad (2)$$

which implies:

$$S^* = E[J(S^*)] + \tfrac{1}{2}(C_d - C_p). \qquad (3)$$

The offeree would accept this special offer.

Proof: By analogy to Proposition 1, we know that:

$$B(S) = E[J(S)] + \tfrac{1}{2}(C_d - C_p). \qquad (4)$$

If the offeree rejects S, then the parties immediately begin ordinary bargaining. The Nash bargaining solution, like that described in Proposition 1, results from this ordinary bargaining game. The same proof applies, where the expected judgment E[J(S)] substitutes as a generalization of the expected damages _.

Equality (2) follows from the behavior of the parties as they seek to maximize their payoffs. For example, suppose the plaintiff makes the special offer. Given (4), we know that $B'(S) \leq 0$,

because E[J(S)] is a nonincreasing function of S. The plaintiff knows that if it demands S, it will receive S immediately if S ≤ B(S), because the defendant would accept such a special offer, but B(S) immediately if S > B(S), because the defendant would reject such a special offer. That is, the plaintiff receives min[S, B(S)]. Given that B'(S) ≤ 0, the plaintiff could maximize this payoff, min[S, B(S)], by choosing S such that S = B(S). The plaintiff can improve the terms of a settlement by increasing the demand S, but the plaintiff would choose to do so only as long as the defendant would still agree to the demand. To raise it any higher would not only entail rejection but also reduce the plaintiff's payoff from such a rejection (because it increases the likelihood of unfavorable cost-shifting). Thus, the plaintiff chooses the S that is so large as to be barely acceptable to the defendant.

Suppose instead that the defendant makes the special offer. By similar reasoning, the defendant would have to

Remark: Figure 1 illustrates why S = B(S) is the optimal offer for either party to make.[14]

[Figure 1]

The function B(S) represents the plaintiff's payoff if the offeree rejects the special offer and the parties instead settle through ordinary bargaining. B(S) is a nonincreasing function of S, because a larger S increases the plaintiff's expected litigation costs under an offer-of-settlement rule. The 45-degree line represents S, which is the plaintiff's payoff if the offeree accepts the special offer S.

If the plaintiff makes the special offer S, then the defendant would choose S if S ≤ B(S) and B(S) otherwise. Thus, the plaintiff's payoff as a function of S would be min[S, B(S)], represented by the lower envelope of S and B(S). The plaintiff would maximize this function, min[S, B(S)], by choosing the S identified by the intersection S = B(S).

Similarly, if the defendant makes the special offer S, then the plaintiff would choose S if S

---

[13]If B(S) is constant at the S that solves (2), then there may be a range of S values that yield the same payoffs for the parties. The party making the special offer would be indifferent between the solution to (2) and any of these other possible special offers. Assume for simplicity that the party would always choose the solution to (2).

[14]After developing our lemma, we learned about an independent effort by Farmer and Pecorino (1996), who develop a model of one particular offer-of-settlement rule (a defendant-only rule like Rule 68) and focus on its effects on the incentives to settle. Farmer and Pecorino use a similar figure to illustrate a result similar to our lemma, but they state this result in a form specific to their model of a particular offer-of-settlement rule, with only one special offer by the defendant and one ordinary offer by the plaintiff. Our lemma is more general: it applies to either party under a wide variety of offer-of-settlement rules and allows for more complex bargaining games.

$\geq$ B(S) and B(S) otherwise. Thus, the plaintiff's payoff as a function of S would be max[S, B(S)], represented by the upper envelope of S and B(S). The defendant would minimize this function, max[S, B(S)], by choosing the S identified by the intersection S = B(S).

IV. ONE SPECIAL OFFER WITH ONE-SIDED COST-SHIFTING

We will now apply the general principle set forth in Lemma 1 to derive the settlements that emerge under particular offer-of-settlement rules. Offer-of-settlement rules may provide for cost-shifting only in one direction, or they may provide for two-sided cost-shifting. In this section, we assume that the offer-of-settlement rule would only shift costs in favor of the party making the special offer. For example, suppose the defendant makes a special offer S. Under an offer-of-settlement rule shifting costs only in favor of the defendant, the plaintiff would be obliged to pay C_d to the defendant if the damages D are less than or equal to S.

A. Defendant Makes the Special Offer

First, we will consider a one-sided cost-shifting rule that allows the defendant to make one special offer. We will show that whether the rule requires such an offer or, like Rule 68, merely permits one, the outcome will be the same. Subsequently we also address the case in which the plaintiff may make the only special offer.

Proposition 2: If an offer-of-settlement rule with one-sided cost-shifting permits the defendant to make a special offer, then:

(a) The defendant will always choose to exercise this option, and the plaintiff will accept the special offer.
(b) The settlement amount S^* will solve:

$$S^* = \_ + \tfrac{1}{2}(C_d - C_p) - C_d Pr(D \leq S^*). \tag{5}$$

(c) The settlement amount will be (i) no greater than the expected settlement amount without the offer-of-settlement rule and (ii) strictly less than the expected damages _.

Proof: See Appendix.

Remark: One-sided cost-shifting can never hurt an offeror who invokes an offer-of-settlement rule: the offeror might win reimbursement but would never have to reimburse the offeree. Thus, given the option of making a special offer under a one-sided cost-shifting rule, the defendant would always choose to make such an offer. Therefore, when cost-shifting is one-sided, it makes no difference whether the rule requires or merely permits the defendant to make a special offer. Furthermore, because the defendant cannot harm its bargaining position by making a special offer

under such an offer-of-settlement rule, the settlement it can obtain by invoking the rule will never be less favorable to the defendant than the expected settlement in the absence of such a rule.

By making a special offer under a one-sided cost-shifting rule, the defendant can also obtain a settlement for less than _, the damages expected at trial. The defendant can do so because a special offer of _ under such a rule would give the defendant a threat point to its advantage: if S = _, then each side would be equally likely to bear C_d under the cost-shifting rule, but only the plaintiff could bear C_p. Given the threat of an outcome worse than _ for the plaintiff, the plaintiff would be willing to accept a special offer below _.

Example: Consider our numerical example again. In that example, D is uniformly distributed in the interval (60, 140), and therefore:

$$Pr(D \leq X) = X/80 - \tfrac{3}{4} \tag{6}$$

for $60 \leq X \leq 140$. Using (6) and our specific values for _, C_d, and C_p to substitute in (5) and solving for S^* yields $S^* = 76$. Thus, S^* is not only less than the expected damages, _ = 100, but also less than the settlement under ordinary bargaining in the absence of a special offer, B(_) = 80.

B. Plaintiff Makes the Special Offer

Suppose now that the plaintiff makes the special offer to settle for an amount S. Consider an offer-of-settlement rule shifting costs only in favor of the plaintiff. Specifically, suppose the defendant would be obliged to pay C_p if the damages D are greater than S. The same intuition set forth above applies by analogy to this case. By the same reasoning used to prove Proposition 2, we can show the following:

Proposition 3: If an offer-of-settlement rule with one-sided cost-shifting permits the plaintiff to make a special offer, then:

(a) The plaintiff will always choose to exercise this option, and the defendant will accept the special offer.

(b) The settlement amount S^* will solve:

$$S^* = \_ + C_p Pr(D > S^*) + \tfrac{1}{2}(C_d - C_p). \tag{7}$$

(c) The settlement amount will be (i) at least the expected settlement amount without the offer-of-settlement rule and (ii) strictly greater than the expected damages _.

V. ONE SPECIAL OFFER WITH TWO-SIDED COST-SHIFTING

With two-sided cost-shifting, it is no longer unambiguously in a party's interest to make a special offer to settle, because such an offer will entail the risk that costs will shift against that party. Consider first a scheme in which such an offer is mandatory for the party in question. We will subsequently consider a scheme in which the party chooses whether to make such an offer.

A. Mandatory Offers

Suppose that either the defendant or the plaintiff must make a special offer. Applying Lemma 1, we can show the following:

Proposition 4: If an offer-of-settlement rule with two-sided cost-shifting requires either party to make a special offer, then the settlement amount will be $S^* = \_$.

Proof: See Appendix.

Remark: To see the intuition for this result, consider our numerical example. Suppose the defendant must make a special offer. If the defendant offers 100 and the plaintiff rejects this offer, then the parties will be equally likely to bear any litigation costs. Once the scheme incorporates two-sided cost-shifting, it no longer matters which party would have larger litigation costs. Instead, expectations regarding the final allocation of the total litigation costs C, which would turn upon the trial outcome, will determine the terms of settlement under any subsequent ordinary bargaining. If either party makes a special offer of 100, then each side would be equally likely to bear these litigation costs, and therefore the expected judgment is simply 100. Thus, the parties will settle for 100 whether the offeree accepts or rejects the special offer.

Can the defendant gain by making a special offer that does not equal 100? The defendant cannot gain by making any offer greater than 100, because the plaintiff would accept such an offer,[15] and as a result the defendant would have to pay more than 100. If the defendant made a special offer less than 100, then the plaintiff would reject. The defendant would then be more likely than the plaintiff to bear any litigation costs, the expected judgment would be greater than 100, and the threat point would favor the plaintiff in the ordinary bargaining that would follow. Thus, the defendant would expect to pay more than 100 in the settlement that would follow rejection of a special offer of less than 100.

Finally, if the plaintiff rather than the defendant makes the special offer, the same logic applies. If the plaintiff makes a special offer of 100, then the plaintiff will obtain 100 in a settlement. If the plaintiff were to make any other special offer, then the plaintiff would receive less than 100 in a settlement.[16]

_____

[15]Rejection by the plaintiff would only make the plaintiff more likely than the defendant to bear any litigation costs, so that the expected settlement in any subsequent ordinary bargaining would be less than 100.

[16]In this sense, two-sided cost-shifting restores symmetry to

B. Optional Offers

If the use of the offer-of-settlement rule is optional, then a party's decision on whether to invoke the rule will depend on whether a special offer would improve the terms of settlement for the offeror. If the effect on these terms favors the defendant, then the defendant will gain from invoking an offer-of-settlement rule, but the plaintiff will not. If this effect favors the plaintiff instead, then the plaintiff will prefer not to use such a rule, but the defendant will prefer to do so. Thus:

Proposition 5: If an offer-of-settlement rule with two-sided cost shifting permits but does not require the party in question to make a special offer, then the party will make such an offer if and only if its litigation costs are higher. Specifically:

(a) The defendant would choose to make a special offer if and only if $C_d > C_p$.
(b) The plaintiff would choose to make a special offer if and only if $C_p > C_d$.

If the party that has the option elects to make a special offer, then the settlement will be S^* = _.

Proof: See Appendix.

Remark: If we wanted to ensure that the parties settled for an amount equal to the expected damages, we could do so using either one of two offer-of-settlement rules: (i) we could <u>require</u> either one of the parties to make a special offer that would trigger two-sided cost-shifting, or (ii) we could give the party with higher litigation costs the option of making such an offer. We could implement the second rule only if we know how C_p and C_d compare. The first rule does not require such knowledge.

VI. SPECIAL OFFERS BY BOTH PLAINTIFF AND DEFENDANT

In this section, we allow up to two special offers, S_p and S_d, by the plaintiff and by the defendant, respectively. Specifically, first one party may or must make a special offer. If the first party does not make a special offer, or if the second party rejects the special offer, then the second party may or must make a special offer. Assume that the second party can reject the first special offer and make a second special offer immediately. If neither party accepts a special offer, then the parties immediately enter the first round of ordinary bargaining.

```
the bargaining power of the parties in settlement negotiations.
The special offer of settlement eliminates any effect that a
difference in litigation costs, Cd - Cp, would have on the
settlement amount.
```

Given one or both of these special offers, the offer-of-settlement rule then provides for possible cost-shifting if the parties litigate to judgment. If $D > S_p$, then the defendant reimburses the plaintiff for its litigation costs. If $D \leq S_d$, then the plaintiff reimburses the defendant for its litigation costs. If $S_d < D \leq S_p$, then the plaintiff pays the defendant's costs if and only if the plaintiff's special offer triggers two-sided cost-shifting, and the defendant pays the plaintiff's costs if and only if the defendant's special offer triggers two-sided cost-shifting.

We will refer to all offer-of-settlement rules fitting the description set forth above as "two party" rules. Let S_1 denote the first special offer, and if the second party rejects that offer and makes a second special offer, let S_2 denote the second special offer. That is, let S_i represent the special offer by party i, whether party i is the plaintiff or the defendant, and let S_i^* denote the optimal special offer for party i.

The structure we have described includes many possible two-party rules, which vary with respect to whether:

(1) the plaintiff or the defendant is the first party to move,
(2) the rule requires or merely permits the first party to make a special offer,
(3) the first special offer triggers one-sided or two-sided cost-shifting,
(4) the rule requires or merely permits the second party to make a special offer, and
(5) the second special offer triggers one-sided or two-sided cost-shifting.

Thus, there are thirty-two possible two-party rules depending upon the five binary choices listed above. As it turns out, however, none of these choices affect the outcome. All these two-party rules prove to be equivalent and lead to a settlement for the amount _:

Proposition 6: Under any two-party offer-of-settlement rule, the settlement will be $S_1^* = \_$.

Proof: See Appendix.

Remark: The basic intuition for this result is as follows. Once a party can invoke the offer-of-settlement rule, it can do at least as well as it can under a settlement for the amount _. If both sides can invoke the rule, then the outcome must be a settlement for the amount _.

VII. SKEWED DISTRIBUTIONS AND DISPUTES OVER LIABILITY

The preceding analysis has assumed that D is distributed about its mean such that $\Pr(D \leq \_) = \frac{1}{2}$ That is, $D \leq \_$ and $D > \_$ are equally likely events. The distribution of D may instead be skewed, however, so that $\Pr(D \leq \_) \neq \frac{1}{2}$ Suppose we relax our assumption that $\Pr(D \leq \_) = \frac{1}{2}$ Lemma 1, which did not turn on this assumption, would still hold. We would, however, need to reconsider the specific conclusions that we derived from the application of that lemma to particular offer-of-settlement rules.

14

Under one-party offer-of-settlement rules with one-sided cost-shifting, it remains true that a party with an option to make a special offer would always choose to make such an offer. Furthermore, the offeror would still never be better off under a regime in which it could not make a special offer. It would no longer be true, however, that a special offer would always yield an outcome better than _ for the offeror.[17]

Under one-party offer-of-settlement rules with two-sided cost-shifting, the optimal special offer would no longer necessarily equal _. Suppose the applicable rule makes a special offer mandatory. Then we can show the following:

Proposition 7: If a one-party offer-of-settlement rule with two-sided cost-shifting requires a party to make a special offer, then:

(a) If $Pr(D \leq \_) > \frac{1}{2}$ then the settlement amount will be $S^* < \_$.
(b) If $Pr(D \leq \_) < \frac{1}{2}$ then the settlement amount will be $S^* > \_$.

Proof: See Appendix.

Cases in which the defendant contests liability present a particularly important category of skewed distributions. The distribution of possible payoffs for the plaintiffs in such cases generally feature a discrete probability mass at $D = 0$. With some technical modifications, we can extend our model to include payoff distributions with such discrete probability masses. If a defendant that prevails on liability can invoke cost-shifting under an offer-of-settlement rule, then this possibility would skew the distribution relevant for calculating the expected cost-shifting at trial. As suggested by Campbell (1987), the possibility that the defendant could prevail on liability may imply a median strictly below the mean.[18] If so, then in these cases $Pr(D \leq \_) > \frac{1}{2}$ It is also possible, however, that $Pr(D \leq \_) < \frac{1}{2}$ when liability is in dispute.

To take a simple example, consider a case in which the parties agree on damages and dispute only liability. Let L denote the damages that the defendant would pay the plaintiff if the court were to find liability. Let p denote the probability that the plaintiff prevails on liability, with 0

---

[17]If $Pr(D \leq \_) \geq \frac{1}{2}$, then an offer-of-settlement rule favoring the defendant would still ensure a settlement less than _. If $Pr(D \leq \_) > \frac{1}{2}$, however, a rule favoring the plaintiff would not ensure a settlement greater than _. The S^* in (7) could be less than _.

If $Pr(D \leq \_) \leq \frac{1}{2}$, then a rule favoring the plaintiff would ensure a settlement greater than _. If $Pr(D \leq \_) < \frac{1}{2}$, however, then a rule favoring the defendant would not ensure a settlement less than _. The S^* in (5) could be greater than _.

[18]Campbell (1987) argued that as a result, even under a two-party offer-of-settlement rule, the outcome would be biased in favor of the defendant.

15

$< p < 1$. Thus, the distribution features a discrete probability mass of p at $D = L$ and a discrete probability mass of 1-p at $D = 0$. In this example, $\_ = pL$, and $Pr(D \leq \_) = 1\text{-}p$. In this case, Proposition 7 implies the following:

Corollary: If a one-party offer-of-settlement rule with two-sided cost-shifting requires a party to make a special offer, and the parties dispute only liability, then:

    (a) If $p < \frac{1}{2}$ then the settlement amount will be $S^* < \_$.
    (b) If $p > \frac{1}{2}$ then the settlement amount will be $S^* > \_$.

Finally, by the same reasoning used to prove Proposition 6, we can also show that the same outcomes would emerge under a two-party offer-of-settlement rule. In particular, if both parties can make a special offer, settlement will always occur at the same S^*, because each party could ensure an outcome at least that favorable for itself by making a special offer.[19] Therefore, both Proposition 7 and its corollary would apply under any two-party rule.

VIII. IMPLICATIONS FOR OUTCOMES UNDER THE EXISTING RULE 68

Our analysis enables us to identify the outcome under any given offer-of-settlement rule. To illustrate, let us now apply this analysis to the outcomes expected under the existing Rule 68. As noted, under Rule 68 as it currently stands, only the defendant has the option of making a special offer, and such an offer can trigger only one-sided cost-shifting.

Assume for a moment that if the plaintiff obtains less at trial than the special offer, the defendant would always get full reimbursement for all litigation costs. Under this assumption, the settlement amount would be the S^* that solves equation (5):

$$S^* = \_ + \tfrac{1}{2}(C_d - C_p) - C_d Pr(D \leq S^*).$$

The above assumption, however, does not now hold with respect to the existing Rule 68 for two reasons.

First, under the existing Rule 68, cost-shifting is only partial. Reimbursement of expenses covers only court fees and not attorneys' fees. Let $\hat{e}$ denote the fraction of the defendant's costs C_d that the plaintiff would have to pay in the event of cost-shifting.

Second, in <u>Delta Air Lines v. August</u>, 450 U.S. 346 (1981), the Supreme Court held that a defendant cannot invoke Rule 68 cost-shifting if it prevails on liability. Thus, the defendant will be reimbursed only if the plaintiff prevails on liability but wins less in damages than the special offer S^*. Suppose that if the plaintiff prevails on liability, it always wins a positive amount. Thus, the defendant receives reimbursement if $D \leq S^*$, but only if $D > 0$ also.

---

[19]Specifically, the settlement will occur at the S^* that solves equation (13) in the Appendix.

With these two limitations on reimbursement for the defendant, the settlement amount S^* under the existing Rule 68 will solve:

$$S^* = \_ + \tfrac{1}{2}(C_d - C_p) - \hat{e}C_d\Pr(0 < D \leq S^*). \tag{8}$$

Equation (8) reveals why Rule 68 currently has little practical significance and why defendants in many cases do not take advantage of the opportunity to make special offers. The only difference that the existing Rule 68 makes is the introduction of the cost-shifting term, $\hat{e}C_d\Pr(0 < D \leq S^*)$, in the equation for the equilibrium settlement amount. If $\hat{e}$ is small, as it is likely to be under the existing rule, this term will be small even if the optimal special offer implies that $\Pr(0 < D \leq S^*)$ is positive.

Moreover, given that the defendant receives no reimbursement if it wins on liability, even the best special offer S^* may imply that the probability of reimbursement equals zero. To illustrate, consider the example we have used above, with $\_ = 100$, $C_p = 60$, $C_d = 20$, and $\hat{e} = 1$, but suppose that the dispute is over only liability rather than damages. In particular, suppose that the plaintiff will win either 200 or 0, and each outcome is equally likely. In this case, the solution to (8) would be $S^* = 80$, which implies that the probability of reimbursement is zero: $\Pr(0 < D \leq S^*) = 0$. In fact, any special offer below 200 in this example would fail to trigger any Rule 68 cost-shifting. Thus, under Rule 68 as it currently stands, the expected settlement in this case would be the same with a special offer as without any special offer, and the defendant would have nothing to gain by invoking the rule.

Note that our analysis also enables identifying the settlement terms that would result from any of the various amendments of Rule 68 that have been proposed. Amendments have been proposed to (i) allow either party to make a special offer of settlement under Rule 68, (ii) to include attorneys' fees in the costs that may be shifted to the party rejecting the offer, and (iii) to allow a defendant that wins on liability to invoke the rule. [20] As is suggested by the preceding analysis, if these amendments would have been adopted, they would have considerably increased the use of Rule 68 offers. And, by using our Lemma 1 and our propositions, it is possible to identify the effect that each of these amendments would have on the terms of settlement.

IX. IMPLICATIONS FOR THE DESIGN OF OFFER-OF-SETTLEMENT RULES

Our analysis has normative implications. The main effect of the law on outcomes is through its influence on settlement terms. Therefore, in designing an offer-of-settlement rule we should take into account the rule's potential effect on the terms of settlement. The model

---

[20] See Preliminary Draft of Proposed Amendments to the Federal Rules of Civil Procedure, 98 F.R.D. 339, 361-63 (1983); Preliminary Draft of Proposed Amendments to the Federal Rules of Civil Procedure, 102 F.R.D. 425, 432-33, 437 (1984).

developed in this paper enables us to identify this effect.

One interesting implication of the analysis is the possibility of designing rules to eliminate or reduce the divergence between settlement terms and the expected judgment. While settlement terms are always chosen in anticipation of the expected judgment at trial, they might well diverge from it rather than mimic it. To be sure, the legal system, recognizing that settlement outcomes might diverge from the expected judgment, might set the expected judgment not at the level of the desired outcome but rather at the level that would result in settlement terms close to the desired outcome (see Bebchuk (1997)). In many contexts, however, it is reasonable to assume that the legal system has set expected judgments at the level that is equal to the desired outcomes. In such cases, it would be desirable to have settlement terms mimic the expected outcome of the trial -- that is, to eliminate the divergence between these terms and the expected judgment.

As we have seen, one important possible source of divergence (though, as discussed below, not the only source) is asymmetric litigation costs. In the absence of an offer-of-settlement rule, settlement terms (compared with the expected judgment) tend to favor the party with lower litigation costs. Fee-shifting rules, we have seen, can be designed to address this effect of asymmetric litigation costs. Under the conditions that we have identified, it is possible to design rules that would move settlements toward the expected damages. Furthermore, the design of these rules does not require public officials to have information that would be difficult to obtain ex ante (for example, which party is expected to have lower litigation costs).

As we have shown, one way to get settlements equal to the expected judgment is to require one of the parties to make a special offer with two-sided cost-shifting. As long as the cost-shifting includes all litigation costs, and is two-sided, this rule would produce an expected settlement equal to the expected judgment, whether the rule requires the plaintiff or the defendant to make the offer. An alternative that yields the same outcome is to give each party an option to make a special offer. Note that Rule 68 as it stands currently is quite different from the any of the rules that, under the identified circumstances, would ensure settlements that mimic the expected judgment. Under the existing Rule 68, (i) only the defendant may make a special offer, yet this offer is optional, (ii) the cost-shifting is one-sided, and (iii) the cost-shifting is only partial and does not include attorneys' fees. [21]

---

[21]Other mechanisms can also produce the same outcome. Anderson (1994) proposes two procedures, the "sincerity rule" and a "final offer auction," which would generate offers that mimic the expected award at trial, but to achieve this outcome, each procedure must include a prohibition on subsequent bargaining. The offer-of-settlement rules we describe would achieve this outcome without any prohibition on subsequent bargaining.

One particularly simple procedure could also eliminate the bargaining advantages derived from asymmetric litigation costs: at the end of a trial, the court could divide the total litigation costs evenly between the plaintiff and the defendant. This cost-shifting rule, however, would require the party that spends less on litigation to bear some of the costs of the party that spends more, even if the party with higher expenditures loses at trial. Because

While the potential use of offer-of-settlement rules to move settlement terms closer to the expected judgment is an interesting possibility, we wish to emphasize that we are at this stage far from being in a position to make any recommendations concerning such use of these rules. To start with, thus far we have shown how to ensure settlement terms equal to the expected judgment only in the situation in which the judgment is equally likely to be higher or lower than its expected value. Disputes over damages alone may come close to this situation, but cases that include a dispute over liability are unlikely to do so. To produce settlements equal to expected trial outcomes in cases of disputed liability, offer-of-settlement rules would have to be more complex; we leave this subject to future research.

Second, the effect that an offer-of-settlement rule has on settlement terms is not the only effect of the rule that should be taken into account in evaluating its merits. It would be important to consider also the rule's effect on the likelihood of settlement.[22] To focus on settlement terms, we assumed symmetric information which ensured that all cases will settle (with the only question being for how much).[23] It should be noted, however, that, using a model with asymmetric information, Spier (1994) has demonstrated that, in the case in which the parties dispute only damages and the judgment is equally likely to exceed or to fall below its mean, a certain two-party offer-of-settlement rule with two-sided cost-shifting will actually maximize the likelihood of settlement.[24]

Also, an assessment of an offer-of-settlement rule should take into account also the rule's effect on the level of litigation costs in the event of trial. In our model, we took this level to be

---

this type of cost-shifting would strike many as unfair, it seems unlikely to be adopted. The offer-of-settlement rules we describe seem more appealing from a fairness perspective, because they shift the burden of litigation costs toward the party that was apparently too intransigent in settlement bargaining. Furthermore, as discussed below, offer-of-settlement rules may have other desirable properties, such as increasing the probability of settlement.

[22]Indeed, a comprehensive normative analysis of an offer-of-settlement rule would include an evaluation of the effects not only on the parties' incentives to settle but also on the plaintiff's incentives to file suit and on the defendant's incentives to comply with the law (see Hylton (1996)).

[23] Models of litigation and settlement incorporating asymmetric information show that such asymmetries hinder settlement and create some positive probability that settlement negotiations break down and the parties go to trial. See, e.g., Bebchuk (1984) and Reinganum and Wilde (1986).

[24]She presents another model, however, which indicates that an offer-of-settlement rule can decrease the probability of settlement if the litigants disagree about liability and the damages are known.

given exogenously. As is true for any fee-shifting rule, however, an offer-of-settlement rule would increase the litigation costs in trial, because, in the event of trial, each party would know that, with some probability, it would not have to bear fully its litigation costs.

Finally, even focusing only on the terms of settlement, it should be noted that our model has focused on only one reason -- namely, asymmetric litigation costs -- for settlement terms to deviate from the expected judgement. In particular, we have assumed that all litigants are risk-neutral, cannot credibly commit to a strategy that insists on a disproportionate share of the gains from settlement, and have an equal ability to make settlement offers. Relaxing these assumptions would introduce other sources for divergence between the terms of settlement and the expected judgment -- such as differences between the parties in their ability to bear risk or to commit to a certain bargaining position. The presence of these other sources of divergence suggests that much analysis must be done before we know which rules and institutions would best align settlement outcomes with the expected judgment. We hope that future work will pursue this agenda for research.

X. CONCLUSION

This paper has analyzed the effect of offer-of-settlement rules on the terms of settlement. We first set forth a general result that enables us to identify the settlement amount under any such rule. We have then applied this result to derive the outcome under the most important of these rules, showing that a large set of seemingly different rules produces identical settlements. The identified effects of these rules on settlement terms have implications, which we have discussed, for any positive or normative evaluation of the rules.

REFERENCES

Anderson, David A. (1994), "Improving Settlement Devices: Rule 68 and Beyond," <u>Journal of Legal Studies</u>, Vol. 23, 225-246.

Anderson, David A. and Thomas D. Rowe, Jr. (1995), "Empirical Evidence on Settlement Devices: Does Rule 68 Encourage Settlement?," <u>Chicago-Kent Law Review</u>, Vol. 71, 519-545.

Bebchuk, Lucian A. (1984), "Litigation and Settlement Under Imperfect Information," <u>RAND Journal of Economics</u>, Vol. 15, 404-415.

Bebchuk, Lucian A. (1997), "On the Difference Between Settlement Terms and the Expected Judgment," mimeo.

Binmore, K., A. Rubinstein and A. Wolinsky (1986), "The Nash Bargaining Solution in Economic Modelling," <u>Rand Journal of Economiccs</u>, Vol. 17, 176-188.

Campbell, Thomas J. (1987), "Federal Rule of Civil Procedure 68: A Comment," Stanford Law School, Law and Economics Program, Working Paper No. 31.

Chung, Tai-Yeong (1996), "Settlement of Litigation Under Rule 68: An Economic Analysis," <u>Journal of Legal Studies</u>, Vol. 25, 261-286.

Cooter, R. (1989), "Toward a Market in Unmatured Tort Claims," <u>University of Virginia Law Review</u>, Vol. 75, 383.

Cooter, R. and T. Ulen (1988), <u>Law and Economics</u>.

Farber, Henry S. and Michelle J. White (1991), "Medical Malpractice: An Empirical Examination of the Litigation Process," <u>RAND Journal of Economics</u>, Vol. 22, 199-217.

Farmer, Amy and Paul Pecorino (1996), "Can Cost Shifting Reduce the Incidence of Trial? Pretrial Bargaining in the Face of a Rule 68 Offer," Department of Economics, University of Tennessee, and Department of Economics, Finance, and Legal Studies, University of Alabama, mimeo.

Hylton, Keith N. (1996), "Rule 68, the Modified British Rule, and Civil Litigation Reform," <u>Michigan Law & Policy Review</u>, Vol. 1, 73-98.

Miller, Geoffrey P. (1986), "An Economic Analysis of Rule 68," <u>Journal of Legal Studies</u>, Vol. 15, 93-125.

Reinganum, Jennifer F. and Louis L. Wilde (1986), "Settlement, Litigation, and the
Allocation of Litigation Costs," <u>RAND Journal of Economics</u>, Vol. 17, 557-566.

Rowe, Thomas D., Jr. and David A. Anderson (1996), "One-Way Fee Shifting Statutes and
Offer of Judgment Rules: An Experiment," <u>Jurimetrics Journal</u>, Vol. 36, 255-273.

Rowe, Thomas D., Jr. and Neil Vidmar (1988), "Empirical Research on Offers of Settlement:
A Preliminary Report," <u>Law and Contemporary Problems</u>, Vol. 51, 13-39.

Rubinstein, Ariel (1982), "Perfect Equilibrium in a Bargaining Model," <u>Econometrica</u>, Vol.
50, 97-109.

Spier, Kathryn (1994), "Pretrial Bargaining and the Design of Fee-shifting Rules," <u>RAND Journal
of Economics</u>, Vol. 25, 197-214.

Toran, Janice (1986), "Settlement, Sanctions, and Attorney Fees: Comparing English
Payment Into Court and Proposed Rule 68," <u>American University Law Review</u>, Vol.
35, 301-338.

APPENDIX

Proof of Proposition 1:

We prove this proposition by backward induction. As in the sequential bargaining game analyzed by Rubinstein (1982), the party making the offer in any given round would make the offer that is the least favorable to the other party among all the offers that the other party would find acceptable. This offer gives the other party the payoff that it would receive if it rejected the offer and went on to the next round of bargaining.

For example, suppose that the parties reach round n. If the plaintiff makes the offer in round n, then the plaintiff would demand an amount $\_ + c_d^n$, and the defendant would agree to pay it. If instead the defendant makes the offer in round n, then the defendant would offer to pay an amount $\_ - c_p^n$, and the plaintiff would accept the offer. Because each outcome is equally likely ex ante, the expected value of the settlement, conditional on the parties reaching round n, will be $\_ + \frac{1}{2}(c_d^n - c_p^n)$.

Suppose the parties reach round n-1. The settlement offers they would make would anticipate the expected val offer, it would offer to pay $\_ + \frac{1}{2}(c_d^n - c_p^n) - c_p^{n-1}$, and the plaintiff would accept the offer. Because each outcome is equally likely ex ante, the expected value of the settlement, conditional on the parties reaching round n-1, will be $\_ + \frac{1}{2}(c_d^n + c_d^{n-1} - c_p^n - c_p^{n-1})$. Continuing this reasoning to round 1, we arrive at the expected settlement amount set forth above in (1).[25] ∎

Proof of Proposition 2:

Let us first prove Proposition 2(b). Suppose the defendant chooses to make a special offer S. In this case, the defendant pays the plaintiff $D - C_d$ if $D \leq S$, but pays D otherwise. Because the court subtracts C_d from its judgment if and only if $D \leq S$, the expected value of the judgment equals:

$$E[J(S)] = \_ - C_d Pr(D \leq S). \tag{9}$$

Note that $E[J(S)]$ is nonincreasing in S (and strictly decreasing in S as long as $Pr(D = S) > 0$). Given (9), Lemma 1 implies that the optimal special settlement offer for the defendant, S^*, solves equation (5).

Note that (5) implies:

$$S^* \leq \_ + \frac{1}{2}(C_d - C_p), \tag{10}$$

_____

[25]Furthermore, if the litigation costs in the first stage, c_d^1 and c_p^1, are a small proportion of the total litigation costs, then little will turn on which party gets to make the offer in the first round, and the actual settlement will be correspondingly close to the expected settlement amount $B(\_)$.

and together with Proposition 1, inequality (10) implies Proposition 2(c)(i). Moreover, as long as $\Pr[D \leq \_ + \frac{1}{2}(C_d - C_p)] > 0$, then $S^* = \_ + \frac{1}{2}(C_d - C_p)$ will be inconsistent with (5) and the inequality in (10) must hold strictly. Thus, the defendant will always be willing to make a special offer, which the plaintiff will accept immediately, and the defendant will thereby pay no more than it would in the absence of the offer-of-settlement rule. In general, the defendant will benefit from invoking such a rule. Thus, Proposition 2(a) follows, because the defendant would make a special offer as long as this offer would yield its maximum possible payoff.

Finally, to prove Proposition 2(c)(ii), suppose $S = \_$. Given that $\Pr(D \leq \_) = \frac{1}{2}$ it would follow that (4) and (9) would imply that $B(S) = \_ - \frac{1}{2}C_p$. In this case, $B(S) < S$, and (2) implies that the defendant would prefer to reduce S in order to minimize its liability. Thus, the defendant will always make a special offer $S^* < \_$, which the plaintiff would accept immediately. ∎

Proof of Proposition 4:

Given a special offer for an amount S:

$$E[J(S)] = \_ - C_d\Pr(D \leq S) + C_p\Pr(D > S) = \_ + C_p - C\Pr(D \leq S) \qquad (10)$$

because the plaintiff receives C_p if and only if $D > S$, and pays C_d if and only if $D \leq S$. Note that again $E[J(S)]$ is nonincreasing in S (and strictly decreasing in S as long as $\Pr(D = S) > 0$).

Using (10) and Lemma 1, we find the optimal special offer S^* for either party must solve the equation:

$$S^* = \_ + \frac{1}{2}(C_d - C_p) + C_p - C\Pr(D \leq S^*), \qquad (12)$$

which implies:

$$S^* = \_ + C[\frac{1}{2} - \Pr(D \leq S^*)]. \qquad (13)$$

Given that $\Pr(D \leq \_) = \frac{1}{2}$ we find $S^* = \_$ is the unique solution for equation (13). Therefore, the optimal special offer for either party will always equal $\_$. ∎

Proof of Proposition 5:

We know from Proposition 4 that by making a special offer under a two-sided cost-shifting rule, either party can obtain a settlement for $\_$. Given the option of making such an offer, a party would choose to do so if and only if $\_$ is better for the offeror than the settlement it could obtain in the absence of a special offer, which we know from Proposition 1 would yield the amount $\_ + \frac{1}{2}(C_d - C_p)$. Thus, a special offer would eliminate the disadvantage that a party suffers as a result of higher litigation costs, and each party finds that a special offer improves its payoff if and only if it has higher litigation costs than the other party. ∎

Proof of Proposition 6:

The proof of this proposition will proceed in four steps. Each of the first three steps will focus on one possible scenario (the scenarios differ along the dimension of whether special offers are mandatory or optional) and establishes a lemma with respect to the outcome in such a scenario. The fourth step will put together the three lemmas to demonstrate the equivalence of two-party rules.

(1) Mandatory Special Offers

Consider a rule that requires the first party to make a special offer and also requires the second party to make a special offer if the second party rejects the first special offer. Whether the plaintiff or the defendant moves first, and whether the special offers trigger one-sided or two-sided cost-shifting, we can show the following lemma:

Lemma A1: Under any two-party offer-of-settlement rule that requires the first party to make a special offer and also requires the second party to make a special offer if the second party rejects the first special offer, the settlement amount will be $S_1^* = \_$.

Proof of Lemma A1: Suppose the plaintiff makes a special offer to settle for S_p, and the defendant makes a special offer to settle for S_d, and the parties litigate all the way to judgment at trial. Let $J(S_p, S_d)$ denote the judgment, including the cost-shifting due under the relevant offer-of-settlement rule given two special offers S_p and S_d. By reasoning similar to that used above with respect to $E[J(S)]$, we know that $E[J(S_p, S_d)]$ is nonincreasing in both S_p and S_d.

Let $B(S_p, S_d)$ denote the expected payoff to the plaintiff from the ordinary bargaining game that would follow the rejection of the special offers S_p and S_d. We know:

$$B(S_p, S_d) = E[J(S_p, S_d)] + \tfrac{1}{2}(C_d - C_p), \tag{14}$$

by analogy to Proposition 1. The same proof applies, where the expected net judgment $E[J(S_p, S_d)]$ substitutes as a generalization of the expected judgment $\_$.

By reasoning similar to that used to derive Lemma 1, the optimal special offer for either party would equal the expected payoff $B(S_p, S_d)$ to the plaintiff that would solve the ordinary bargaining game that the parties would play if each rejects the other's special offer. For example, suppose the plaintiff makes its special offer first, and the defendant immediately rejects the plaintiff's demand as too high. Given S_p, the function $B(S_p, S_d)$ is nonincreasing in S_d. Thus, the defendant could minimize its liability by making a special offer to pay $S_d = B(S_p, S_d)$, which the plaintiff would accept immediately. Anticipating this result, the plaintiff can increase $B(S_p, S_d)$ by reducing its demand S_p, which must be greater than $B(S_p, S_d)$ because we have assumed that the defendant rejects S_p. The plaintiff can maximize its payoff by reducing S_p until it equals $B(S_p, S_d)$ and is accepted immediately by the defendant. If the defendant moves first instead, then we can show the same result by similar reasoning.[26] Thus, it will not matter which party actually makes

---

[26]Similar reasoning applies if instead the defendant makes its

A-3

the first special offer. In either case, we find:

$$S_p^* = S_d^* = B(S_p^*, S_d^*). \tag{15}$$

Equations (14) and (15) imply:

$$S_p^* = S_d^* = E[J(S_p^*, S_d^*)] + \tfrac{1}{2}(C_d - C_p). \tag{16}$$

Equation (16) in turn implies that whether the special offers trigger one-sided or two-sided cost-shifting, the optimal special offer for the first mover (and for the second mover) would equal the amount S^* that solves the equation:

$$S^* = \_ + \tfrac{1}{2}(C_d - C_p) - C_d Pr(D \le S^*) + C_p Pr(D > S^*). \tag{17}$$

Combining terms as before, we find that (17) is equivalent to (13). Thus, $S^* = \_$ solves equation (17) as well as (13). Therefore, the first special offer will propose a settlement amount $S_1^* = \_$, and the offeree will accept. Given the assumption of symmetric information, the parties settle immediately on the terms of the first special offer, and the offeree finds no advantage in making a second special offer.

(2) Optional Special Offers

We now consider two-party rules that give the first party the option of declining to make a special offer. We can show that the first party cannot gain by declining to make such an offer. The next two lemmas consider in turn (i) two-party rule that make a special offer mandatory for the second party unless it has accepted a special offer from the first party, and (ii) two-party rules that make all special offers optional.

Lemma A2: Under any two-party offer-of-settlement rule that requires the second party to make a special offer unless it has accepted a special offer from the first party, the settlement amount will be $S_1^* = \_$.

Proof of Lemma A2: By the same reasoning used to derive Lemma 2, if the first party chooses to make an offer, then its optimal offer would be $S_1^* = \_$. The first party would choose to make this

---

```
special offer first, and the plaintiff immediately rejects the
offer as too low.  Given Sd, the function B(Sp, Sd) is nonincreasing
in Sp.  Thus, the plaintiff can maximize its payoff by reducing its
demand Sp until it equals B(Sp, Sd) and is accepted immediately by
the defendant.  Anticipating this result, the defendant can reduce
B(Sp, Sd) by increasing its special offer Sd, which must be less
than B(Sp, Sd) because we have assumed that the plaintiff rejects
Sd.  The defendant could minimize its liability by making a special
offer to pay Sd = B(Sp, Sd), which the plaintiff would accept
immediately.
```

special offer if and only if it cannot improve its own payoff by declining to make a special offer. If the first party declines to make a special offer, then the rule would require the second party to make an offer. If the second party's special offer triggers two-sided cost-shifting, then Proposition 4 implies that $S_2^* = \_$. If instead the second party's special offer triggers one-sided cost-shifting, then Proposition 2 and Proposition 3 together imply that the outcome can be no better than $S_2^* = \_$ for the first party. Therefore, the first party cannot gain by declining to make a special offer and would choose to offer $S_1^* = \_$, which the second party would accept.

Lemma A3: Under any two-party offer-of-settlement rule, the first party will make a special offer.

Proof of Lemma A3: We have already shown that the first party will choose to make a special offer if the offer-of-settlement rule would otherwise require the second party to make a special offer. We need only show that the first party will choose to do so even if the offer-of-settlement rule would permit rather than require a special offer by the second party. To prove this claim, we will first show that the first party can obtain at least $\_$ by making a special offer. We will then show that the first party can do no better by failing to make a special offer.

If the first party were to make a special offer $S_1 = \_$, then the second party would accept. By the reasoning used to prove Lemma 2, if the second party rejects $S_1 = \_$ and chooses to make its own special offer, then it can do no better than $S_2 = \_$. Nor can the second party do any better by rejecting $S_1 = \_$ and declining to make a special offer: if the special offer $S_1 = \_$ triggers two-sided cost-shifting, then Proposition 4 implies that $B(S_1) = \_$; if instead the special offer $S_1 = \_$ triggers one-sided cost-shifting, then Proposition 2 and Proposition 3 together imply that the outcome can be no better than $\_$ for the second party.

By similar reasoning, if the first party makes no special offer, then it can do no better than $\_$. If the second party can trigger one-sided cost-shifting through a special offer, then Proposition 2 and Proposition 3 imply that the second party would make a special offer that would yield an outcome no more favorable to the first party than $\_$. If instead the second party would trigger two-sided cost-shifting through a special offer, then Proposition 4 implies that either the second party would make a special offer, yielding a settlement for $\_$, or it would not make a special offer, yielding a settlement $B(\_)$ less favorable for the first party than $\_$.

(3) The Equivalence of All Two-Party Rules

With the preceding lemmas, we can now turn to prove the result stated in the proposition -- that the settlement under a two-party offer-of-settlement rule will be $S_1^* = \_$, whether the defendant or the plaintiff moves first, whether special offers are mandatory or optional, and whether cost-shifting is one-sided or two-sided.

We know from Lemma A3 that the first party will always make a special offer. We know from Lemma A2 that if rejection of this special offer triggers a mandatory special offer by the second party, then the first party would make a special offer $S_1^* = \_$, which the second party would accept. We need only show that the optimal special offer for the first party would be $S_1^* = \_$ even

if rejection of this offer would trigger only an optional special offer by the second party. To prove this claim, we will show that the first party can do no better by making any other special offer.

First, it can do no better by making a special offer less favorable than _: the second party would accept. Nor can the first party do any better by making a special offer more favorable for itself: the second party would reject. The second party could then make a special offer more favorable for itself than _, and the first party would accept this offer, yielding a settlement less favorable for itself than _. By the reasoning used to prove Lemma A1, we know that if the first special offer is more demanding than _, this offer would increase the likelihood of the first party bearing litigation costs in a judgment at trial, which would in turn imply a $B(S_1, S_2)$ function shifted in favor of the second party, and the second party would then be able to better for itself than _ by making a special offer
$S_2 = B(S_1, S_2)$. ∎

Proof of Proposition 7:

If $Pr(D \leq \_) \neq \frac{1}{2}$ then the proof for Proposition 4 is still valid up to and including equation (13), but now $S^* = \_$ does not solve (13). Suppose the offeror makes a special offer $S = \_$. If $Pr(D \leq \_) > \frac{1}{2}$ then $B(S)$ evaluated at $S = \_$ is strictly less than _. Therefore, Lemma 1 implies that the optimal special offer S^* for either party under two-sided cost-shifting, given by the solution to (13), also must be strictly less than _. By the same reasoning, if $Pr(D \leq \_) < \frac{1}{2}$ then $B(S) > \_$, and Lemma 1 implies that the offeror would prefer to offer some $S^* > \_$, which would satisfy (13). ∎

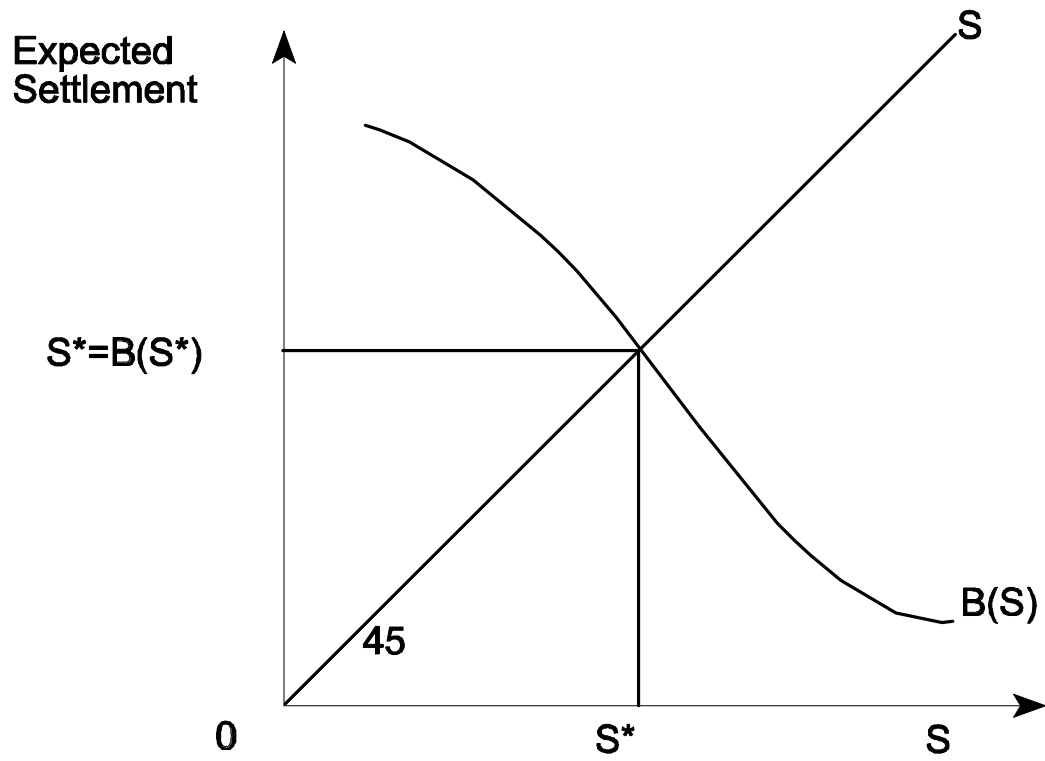**Figure 1**