The Impact of Fee-Shifting Tort Reform on Out-of-Court Settlements

Lisa L. Posey*

Abstract: Among the goals of proponents of tort reform is the goal of encouraging out-of-court settlement of claims, rather than burdening the court system. Congressional discussions of tort reform have included a proposal aimed at promoting out-of-court settlement by making the party rejecting an offer not improved upon at trial responsible for the other party's attorney's fees as well as litigation costs. This plan is similar to Federal Rule 68, adopted in 1938 and infrequently used. This paper analyzes the impact of Rule 68 on the optimal range of settlement offers. Under certain conditions, the settlement range—the range of settlements over which the plaintiff and defendant are willing to negotiate—is qualitatively different than previously shown. The range may be shifted upward, in favor of the plaintiff in that the lowest (greatest) offer that the plaintiff (defendant) has an incentive to accept (make) may be greater than the expected payoff at trial after the offer is rejected. Comparative statics are performed to show how changes in attorneys' fees, court costs, and the probability of a high judgment affect the characteristics of the outcome.

INTRODUCTION

Tort reform is an issue that continues to receive attention at the state and federal level. In the past few decades, most states have adopted some forms of tort reform to address the increasing costs of litigation. Reforms that continue to be advocated include limits on attorneys' fees, caps on awards for pain and suffering (non-economic damages), elimination of punitive damages or making them payable to the state, elimination of joint and several liability, and elimination of the collateral source rule so that awards can be reduced for other sources of compensation. Given

*Lisa L. Posey is Associate Professor of Business Administration in the Department of Insurance and Real Estate at the Pennsylvania State University.

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the fluid nature of the tort reform debate, continued analysis of these and other proposed reforms may be helpful in determining which ideas gain momentum in the future.

Although certain reforms have had modest success, some proponents believe that reform at the federal level is needed to address what they feel is a national problem.[1] The issue of tort reform received its greatest recent media attention at the federal level from candidates for the 104th Congress with their "Common Sense Legal Reform" component of the "Contract With America." A topic that has received much analysis in the law and economics literature became an issue in the discussions that followed: designing rules for shifting court and attorneys' fees to increase incentives for out-of-court settlements.

One often debated proposal is to require the loser at trial to pay the attorneys' fees and other litigation costs of the winning party (the so-called English rule). Although in some cases courts have ordered losing parties to pay winning parties' court costs, responsibility for attorneys' fees, which are usually much higher, has not been transferred in such a manner as yet. One proposal made at the congressional level makes the party rejecting an offer not improved upon at trial responsible for the other party's attorney's fees as well as litigation costs.[2] This latter proposal is a potential revision of the current U.S. Federal Rule of Civil Procedure 68, adopted in 1938. Rule 68 states that if a plaintiff refuses an offer made by a defendant and that offer is not improved upon at trial, the plaintiff is responsible for the defendant's post-offer litigation costs (excluding attorneys' fees).[3] Proposals that include the shifting of attorneys' fees along with the other litigation costs shifted in Rule 68 make the stakes much higher for parties contemplating whether to accept or reject an out-of-court settlement offer. Although such proposals have received much attention, Rule 68 has been invoked relatively infrequently.

Out-of-court settlement possibilities under Rule 68 have been analyzed from an economic perspective in a number of studies (see Priest, 1982; Miller, 1986; Schwarzer, 1992; Anderson, 1994; Spier, 1994; Chung, 1996). The focus of much of this research has been the settlement range, which has been defined as "the set of settlement offers that the defendant has an incentive to make and that the plaintiff has an incentive to accept" (Chung, 1996). Intuitively, it is the range of settlements over which the two parties are willing to negotiate. This settlement range has been refined so that the parties compare their settlement options to the expected outcomes at trial if negotiations break down. Under Rule 68, the facts of the negotiation affect the fees each party must pay after a trial. In a circular manner, they also affect the expected payoffs from a trial, in turn affecting the settlement

negotiations. The endpoints of the settlement range are known as the threat points of the plaintiff and defendant.

This paper shows that under certain conditions, the refined settlement range may be qualitatively different than has been previously shown. In particular, the range of settlement offers over which the parties will be willing to negotiate actually may be shifted upward, in favor of the plaintiff, from the range of expected payoffs from the trial that would follow the failed settlement negotiations. This situation may apply if the distribution of judgments at trial is such that the minimum possible judgment is greater than zero, with an interval between zero and that minimum judgment, or the largest possible judgment is finite, or both. One situation that falls into this category is the case where liability has been determined "by verdict, order or judgment, but the amount or extent of the liability remains to be determined by further proceedings"(FRCP 68).[4] In some cases where settlement has not been reached in the early part of the trial, the bargaining power shifts toward the plaintiff in the later stage in which damages are being determined by the jury.

The case analyzed in this study is the simplest distribution for judgments at trial required to illustrate the issue: a discrete distribution with two possible outcomes, both above zero. This distribution illustrates the situation in which liability has been determined, but the amount of damages has yet to be determined by further proceedings where the two parties plan to present opposing views on the appropriate methodology for valuing damages, with each methodology leading to a specific judgment amount. The results hold for continuous distributions that have the required characteristics as well, including the uniform distribution with appropriate parameter values.

THE MODEL WITH A RANGE OF POSSIBLE JUDGMENTS AT TRIAL GREATER THAN OR EQUAL TO ZERO

To aid in the discussion, first consider the model presented by Miller (1986) and Chung (1996). Let $x \geq 0$ be the size of judgment for the plaintiff at trial, let $G(\cdot)$ be the probability distribution of x, and assume initially that G(x) is a continuous distribution with the minimum possible value of x being zero. Let C_p and C_d be the component of the costs of the plaintiff and defendant, respectively, for which the loser of the case is held responsible (or, when Rule 68 is applied, for which the plaintiff is held responsible if he/she rejects a settlement offer that is not improved upon at trial), and let F_p and F_d be the component of their own costs that the plaintiff and

defendant each must bear regardless of the outcome of the case. It is initially assumed that a system similar to the current system is in place, in which each party must pay for his / her own attorneys' fees, the loser must pay both parties' other litigation costs, and the plaintiff must pay the defendant's litigation costs if he / she rejects an offer made by the defendant that is not improved upon at trial. Therefore, until otherwise noted, F_i will be referred to as attorneys' fees and C_i will be referred to as other litigation costs.

American Rule (without Rule 68)

Under the American Rule (without Rule 68), in which the loser pays both parties' litigation costs and each party pays his / her own attorney's fees, the expected payoffs at trial for the plaintiff and defendant are

$$U_p = E[x] - F_p - G(0)(C_p + C_d) \quad (1)$$

and

$$U_d = E[x] + F_d + (1 - G(0))(C_p + C_d), \quad (2)$$

where $E[\cdot]$ is the expectations operator. These payoffs are the plaintiff's and defendant's threat points and define the settlement range $[U_p, U_d,]$. The plaintiff expects to obtain a net amount of U_p from a trial and has an incentive to accept any offer greater than or equal to that amount. The defendant expects to pay out U_d as a result of a trial and has an incentive to make settlement offers less than or equal to that amount to avoid a trial. The parties should be willing to negotiate for an out-of-court settlement over this range. The litigation differential, which is the size of the settlement range, is $U_d - U_p = F_p + F_d + C_p + C_d$, .

Rule 68 with Continuous Distribution and Possible Judgments at Trial ≥ 0

Under Rule 68, when a settlement offer is made and rejected, the expected payoffs at trial for both parties depend on the amount of the settlement offer. If trial is reached, the plaintiff has rejected the offer, and Rule 68 can be invoked to shift the court costs of the defendant if the award at trial is not an improvement on the offer. The expected payoffs at trial for the plaintiff and defendant after an offer of S has been made and rejected are

$$U_p(S) = E[x] - F_p - G(S)(C_p + C_d) \quad (3)$$

and

$$U_d(S) = E[x] + F_d + (1 - G(S))(C_p + C_d). \quad (4)$$

Define $\underline{s}$ and $\bar{s}$ by $U_p(\underline{s}) \equiv \underline{s}$ and $U_d(\bar{s}) \equiv \bar{s}$. Equation (3) defines $\underline{s}$ as the settlement offer that, if rejected, gives the plaintiff an expected payoff at trial (following his or her rejection of the offer) exactly equal to the settlement offer itself. The plaintiff should have an incentive to accept any settlement offer greater than or equal to $\underline{s}$, since he or she does not expect to obtain more at trial if the offer is rejected. Equation (4) defines $\bar{s}$ as the settlement offer that, if made by the defendant and then rejected, gives the defendant an expected payoff at trial (after the offer is rejected) exactly equal to the offer itself. The defendant should have an incentive to make settlement offers less than or equal to this amount, because if an offer of exactly this amount is made and rejected he or she expects to pay out that much as a result of the trial.

The refined settlement range is defined as the range of post-offer expected payoffs at trial, eliminating any offers that are equilibrium-dominated. An offer is said to be equilibrium-dominated for a player if there exists an alternative offer such that the worst payoff the player can obtain under the alternative offer is better than the equilibrium payoff under the original offer (given that the other player will choose his or her optimal response).[5] The refined settlement range, which represents the range of offers that the plaintiff has an incentive to accept and the defendant has an incentive to make, is $[\underline{s}, \bar{s}]$, in this case of a continuous distribution of judgments with $x \geq 0$, since none of the offers in this range are equilibrium-dominated.[6] With T_p and T_d as the threat points for the plaintiff and defendant, respectively, the threat points are the lower and upper bounds of the settlement range, determining how low the plaintiff is willing to go and how high the defendant is willing to go in the settlement negotiations. In this case T_p (the lowest the plaintiff will go) = $\underline{s}$, and T_d (the highest the defendant will go) = $\bar{s}$.

REFINED SETTLEMENT RANGE WHEN LOWEST POSSIBLE JUDGMENT IS SOME INTERVAL ABOVE ZERO AND HIGHEST POSSIBLE JUDGMENT IS FINITE

The case considered here is a discrete distribution of judgments at trial with two possible values, the second being a uniform distribution of judgements at trial. This case represents the simplest distribution that can illustrate the potential shifting of the refined settlement range in favor of the plaintiff. As will be shown, this shift occurs through the upward shifting of the threat points for one or both of the parties beyond their

expected payoffs at trial if settlement negotiations fail after an offer is made. Similar results may be obtained using a continuous distribution with the lowest possible judgment at trial being some interval above zero, the lowest possible judgment being finite, or both (for example, a uniform distribution with a positive lower limit).

Consider the simple discrete distribution of judgments for the plaintiff at trial:

$$x = \begin{cases} W_L \text{ with probability } (1-q) \\ W_H \text{ with probability } q \end{cases} \tag{5}$$

where $0 < W_L < W_H$, $0 < q < 1$.[7] This distribution can represent the case in which both parties believe that the plaintiff will win with certainty but are uncertain which of two potential sizes the judgment award will be, or in which liability has been determined "by verdict, order or judgment, but the amount or extent of the liability remains to be determined by further proceedings"(FRCP 68) and, once liability has been determined, the two parties present opposing views on the appropriate methodology for valuing damages, with each methodology leading to a specific judgment amount.

Expected payoffs at trial depend on the settlement offer, which can be in any one of three intervals

$$A = (0, W_L)$$
$$B = (WL, WH)$$
$$C = (WH, \infty).$$

Therefore, the expected payoffs for the parties are

$$U_p^A = U_p(S \in A) = (1-q)W_L + qW_H - F_p$$
$$U_p^B = U_p(S \in B) = (1-q)W_L + qW_H - F_p - (1-q)(C_p + C_d)$$
$$U_p^C = U_p(S \in C) = (1-q)W_L + qW_H - F_p - (C_p + C_d) \tag{6}$$

and

$$U_d^A = U_d(S \in A) = (1-q)W_L + qW_H + F_d + (C_p + C_d)$$
$$U_d^B = U_d(S \in B) = (1-q)W_L + qW_H + F_d + q(C_p + C_d)$$

$$U_d^C = U_d(S \in C) = (1 - q)W_L + qW_H + F_d. \tag{7}$$

Note that $U_d^A > U_d^{\mathbf{B}} > U_d^C > U_p^A > U_p^B > U_p^C$.[8]

Under what conditions will $\underline{s} = U_p(\underline{s})$ and $\bar{s} = U_d(\bar{s})$ exist, and how will the refined settlement range be defined when either $\underline{s}$ or $\bar{s}$ does not exist? The conditions in (6) and (7) define the expected payoffs at trial following rejected settlement offers in each of the possible ranges of settlement offers, A, B, and C. The question is, following a settlement offer in a particular range, is the expected payoff at trial for a given party actually in that range? If the answer is no for each of the ranges A, B, and C, then there is no $\underline{s} = U_p(\underline{s})$ if it is the plaintiff, or there is no $\bar{s} = U_d(\bar{s})$ if it is the defendant. This may be true for either party or for both parties. If this is the case, the alternative threat points must be determined in order to determine what that party's "bottom line" is in the settlement negotiation process.

Algebraic manipulation gives the following conditions for the expected payoffs at trial for the plaintiff given in (6):

$$U_p^A \begin{matrix} < \\ \geq \end{matrix} W_L \text{ if } (W_H - W_L) \begin{matrix} < \\ \geq \end{matrix} \frac{F_p}{q} \tag{8}$$

$$U_p^A < W_H \qquad \text{always}^9 \tag{9}$$

$$U_p^B \begin{matrix} \geq \\ < \end{matrix} W_L \text{ if } (W_H - W_L) \begin{matrix} \geq \\ < \end{matrix} \frac{F_p + (1 - q)(C_p + C_d)}{q}. \tag{10}$$

Equations (8) through (10) give parameter conditions that determine when the expected payoffs at trial are in the range of the settlement offers that correspond to them. They show a correspondence between the existence of $\underline{s}$ and the judgment differential, $(W_H - W_L)$, which is the difference between the highest and lowest possible judgments at trial. When $\underline{s}$ does not exist, then the threat point for the plaintiff will not be the expected payoff at trial following settlement negotiations.

Figure 1 illustrates these conditions for the plaintiff. The first line of the figure depicts the difference between the high and low judgment at trial, $W_H - W_L$, called the judgment differential. The second line graphs the expected payoffs at trial under the parameter values in the various ranges in line 1. Line 3 gives the resulting threat points, as discussed in Proposition 1 and below.

Intuitively, conditions (8) to (10) show the importance of which of the following three potential regions the judgment differential falls into:

$$(W_H - W_L) \in \left(0, \frac{F_p}{q}\right)$$

$$(W_H - W_L) \in \left[\frac{F_p}{q}, \frac{F_p + (1-q)(C_p + C_d)}{q}\right), \text{or}$$

$$(W_H - W_L) \in \left(\frac{F_p + (1-q)(C_p + C_d)}{q}, \infty\right).$$

PROPOSITION 1.

(i) If $(W_H - W_L) \in \left(\frac{F_p}{q}, \frac{F_p + (1-q)(C_p + C_d)}{q}\right)$, then $\underline{s} = U_p(\underline{s})$ does not exist and the plaintiff's threat point is $T_p = W_L$ rather than the plaintiff's expected payoff at trial after the offer is rejected.

(ii) If $(W_H - W_L) \in \left(0, \frac{F_p}{q}\right)$, then $U_p^A \in A$, so $\underline{s} = U_p^A$ and the threat point for the plaintiff is $T_p = U_p^A$, which equals the expected payoff at trial after the offer is rejected.

(iii) If $(W_H - W_L) \in \left(\frac{F_p + (1-q)(C_p + C_d)}{q}, \infty\right)$, then $U_p^B \in B$, so $\underline{s} = U_p^B$ and the

plaintiff's threat point is $T_p = U_p^B$, which equals the expected payoff at trial after the offer is rejected.

Proof. See Appendix.

PROPOSITION 2. When $(W_H - W_L) \in \left(\frac{F_p}{q}, \frac{F_p + (1-q)(C_p + C_d)}{q}\right)$, any offer the plaintiff is willing to accept, including the threat point $T_p = W_L$, is not as small as his or her expected payoff at trial if that offer is rejected.

Proof. See Appendix.

Proposition 2 indicates that under the stated parameter conditions, the smallest settlement offer the plaintiff would be willing to accept is W_L, and this settlement offer is greater than the expected payoff at a trial that would follow if the offer were instead rejected.

COROLLARY 1. If $(W_H - W_L) \in \left(\frac{F_p}{q}, \frac{F_p + (1-q)(C_p + C_d)}{q}\right)$, the difference between the plaintiff's threat point and his or her expected payoff at trial after that offer is $W_L - U_p^B = F_p + (1-q)(C_p + C_d) - q(W_H - W_L)$. The amount over the expected payoff at trial that the plaintiff requires on the threat point is the expected value of attorneys' fees and litigation costs minus the expected improvement at trial over the offer. This difference is increasing in F_p, C_p, and C_d and decreasing in $(W_H - W_L)$ and q.

Therefore, as the litigation costs and attorneys' fees for which the plaintiff may be responsible increase, the amount over the expected payoff at trial that the plaintiff requires on his or her lowest acceptable offer increases. But as the probability of a high judgment award increases or the judgment differential increases, the amount above the expected payoff at trial that the plaintiff requires on the threat point decreases.

COROLLARY 2. Consider the interval $\left(\frac{F_p}{q}, \frac{F_p + (1-q)(C_p + C_d)}{q}\right)$ with length $\frac{(1-q)(C_p + C_d)}{q}$. This is the range of judgment differentials that result in a plaintiff's threat point of $T_p = W_L$, greater than the expected payoff at trial. (i) As F_p increases, this interval shifts upward but does not change length. (ii) As C_p or C_d increases, this interval increases in length through an upward shift in its right endpoint. (iii) As q increases, this interval shifts downward and decreases in length.

As the plaintiff's attorneys' fees increase, the difference between the low and high judgment award must be larger, on average, to result in a threat point of W_L, which is greater than the expected payoff at trial. Some smaller judgment differentials no longer have this threat point, while some larger judgment differential result in this threat point, which they formerly did not. But the size of the range of judgment differentials with this type of outcome is unchanged. When the litigation costs of either the plaintiff or defendant increase, a larger range of judgment differentials have threat point W_L, greater than the expected payoff at trial. No smaller judgment differentials are eliminated from this range, but some larger ones are added to it. The effect of an increase in the probability of winning a large award at trial is twofold. Both the lowest and the highest judgment differentials resulting in a threat point of W_L decrease, but the latter decreases by more, leading to a smaller range of judgment differentials with this type of outcome.

COROLLARY 3. If the legal rule is altered to require the loser of the case to pay the winner's attorneys' fees as well as court costs and to require the plaintiff to do so after rejecting a settlement offer that has not been

improved upon at trial, $F_i = 0$ and C_i = (litigation plus attorneys' fees), for i = p,d. In this case, the range of judgment differentials over which the plaintiff will have a threat point greater than his/her post-offer expected payoff at trial will increase.

Proof. See Appendix.

COROLLARY 4. The amount over the post-offer expected payoff at trial that the plaintiff requires on the threat point, given in Corollary 1, will increase (decrease) when the rule is changed to include attorneys' fees if $\frac{q}{(1-q)} \lessgtr \frac{\text{(plaintiff's attorneys' fees)}}{\text{(defendant's attorneys' fees)}}$. This is so since, by Corollary 1, the gap between the post-offer expected payoff at trial and the threat point is stated as $F_p + (1-q)(C_p + C_d) - q(W_H - W_L)$.

Turning to the defendant's problem, once again the assumption is made that the system is similar to the current system, in which each party must bear his/her own attorneys' fees and the responsibility for other litigation costs depends upon the outcome of the case. Conditions for the defendant's expected payoffs at trial, similar to (8)–(10) for the plaintiff, are

$$U_d^A > W_L \qquad \textit{always} \tag{11}$$

$$U_d^B \gtrless W_H \qquad \textit{if } (W_H - W_L) \lessgtr \frac{F_d + q(C_p + C_d)}{1-q} \tag{12}$$

$$U_d^B > W_L \qquad \textit{always} \tag{13}$$

$$U_d^C \geqslant W_H \qquad \textit{if } (W_H - W_L) \leqslant \frac{F_d}{1-q}\ . \tag{14}$$

Figure 2 illustrates these conditions. The first two lines are similar to Figure 1 and line 3 gives the threat points for the defendant for the corresponding intervals discussed in Proposition 3.

PROPOSITION 3.

(i) If $(W_H - W_L) \in \left(\frac{F_d}{1-q}, \frac{F_d + q(C_p + C_d)}{1-q}\right)$, $\bar{s} = U_d(\bar{s})$

does not exist and the defendant's threat point is $T_d = W_H$ rather than the defendant's expected payoff at trial following the offer.

(ii) If $(W_H - W_L) \in \left(0, \frac{F_d}{1-q}\right)$, then $U_d^C \in C$, so $\bar{s} = U_d^C$, and the threat point for the defendant is $T_d = U_d^C$, which equals the defendant's expected payoff at trial following the offer.

(iii) If $(W_H - W_L) \in \left(\frac{F_d + q(C_p + C_d)}{1-q}, \infty\right)$, then $U_d{}^B \in B$, so $\bar{s} = U_d{}^B$, and the defendant's threat point is $T_d = U_d^B$, which equals the defendant's expected payoff at trial following the offer.

Proof. See Appendix.

COROLLARY 5. If $(W_H - W_L) \in \left(\frac{F_d}{1-q}, \frac{F_d + q(C_p + C_d)}{1-q}\right)$, then the defendant's threat point $T_d = W_H$, which is the largest offer the defendant has an incentive to make, is greater than his or her expected payoff at trial after that offer is rejected.

Proof. See Appendix.

COROLLARY 6. If $(W_H - W_L) \in \left(\frac{F_d}{1-q}, \frac{F_d + q(C_p + C_d)}{1-q}\right)$, then the difference between the defendant's threat point and the expected payoff at trial after the threat point is rejected is $W_H - U_p^C = (1-q)(W_H - W_L) - F_d$. This is the expected difference between the offer and the award at trial minus the defendant's attorneys' fees. This difference is decreasing in F_d and q and increasing in $(W_H - W_L)$.

COROLLARY 7. Consider the interval $\left(\frac{F_d}{1-q}, \frac{F_d + q(C_p + C_d)}{1-q}\right)$ with length $\frac{q(C_p + C_d)}{1-q}$. This is the range of judgment differentials that result in a defendant's threat point of $T_d = W_H$, greater than the expected payoff at trial. (i) As F_d increases, this interval shifts upward but does not change length. (ii) As C_p or C_d increases, this interval increases in length through an upward shift in its right endpoint. (iii) As q increases, this interval shifts upward and increases in length.

PROPOSITION 4. Regardless of the judgment differential, the size of the settlement range is smaller under Rule 68 than without it.[10]

Proof. See Appendix.

Proposition 4 states that although the results of this study give parameter conditions under which the refined settlement range is shifted upward in favor of the plaintiff from the refined settlement range shown in prior research, this range continues to be smaller than is the case without Rule 68. This means that settlement opportunities are lessened by Rule 68, rather than increased.

CONCLUSION

One often cited goal of proponents of tort reform is encouraging parties to reach out-of-court settlements to their disputes rather than further burdening the court system. Federal Rule of Civil Procedure 68 and other proposals similar to it are directly aimed at such a result. Yet Rule 68 has been shown to reduce settlement opportunities by reducing the range of settlement offers over which the parties will have an incentive to negotiate. This study confirms this result, although it shows that under certain conditions, the range of settlement opportunities is qualitatively different than has been previously shown. The conditions pertain to the relationships between the highest and lowest possible judgments at trial, the probability of a high judgment, and attorneys' fees and other litigation costs. When the potential judgment at trial is such that the minimum possible judgment is some amount above zero, or the maximum possible judgment is finite, then the range of settlement offers over which the parties will be willing to negotiate may be shifted upward, in favor of the plaintiff, from what has been previously shown. This implies that if the proceedings have reached a point where the liability of the defendant has been established but the amount of damages has yet to be determined, the plaintiff (defendant) may have more (less) bargaining power with Rule 68 than without it. This point has been illustrated with a simple discrete distribution of judgments for the plaintiff at trial, but it can hold under a continuous distribution as well. Either the plaintiff or the defendant or both may have a threat point greater than the post-offer expected payoff at trial. As the litigation costs of the parties increase, the range of judgment differentials for which this type of outcome occurs increases for both the plaintiff and the defendant. In addition, the difference between the plaintiff's threat point and his or her post-offer expected payoff at trial increases, while that of the defendant is unchanged. As the probability of a large judgment at trial increases, the range of judgement differentials with this type of outcome shifts downward and decreases in length for the plaintiff and shifts upward and increases in length for the defendant. Furthermore, the gap between the threat point and the post-offer expected payoff at trial decreases for both the plaintiff and the defendant as the probability of a large judgment at trial increases.

APPENDIX

Proof of Proposition 1: (i) When $(W_H - W_L) \in \left(\frac{F_p}{q}, \frac{F_p + (1-q)(C_p + C_d)}{q}\right)$,

and $\underline{s} = U_p(\underline{s})$ does not exist, the method of eliminating offers that are equilibrium-dominated gives a threat point of W_L, as follows. Any settlement offer $\hat{s}$ less than W_L is equilibrium-dominated by all $\tilde{s} \in (\hat{s}, W_L)$ since the worst the plaintiff could do under $\tilde{s}$ is $\tilde{s}$ while the equilibrium payoff for $\hat{s}$ is $\hat{s} < \tilde{s}$. A settlement offer of W_L is not equilibrium-dominated by any offers greater than W_L for the following reasons. The worst the plaintiff could do under offers greater than W_L is either U_p^B, if the offer is in $[W_L, W_H)$, or U_p^C, if the offer is W_H or greater. But both of these are less than W_L.

(ii) and (iii): Note from Figure 1 and conditions (8)–(10) that when $\underline{s} = U_p(\underline{s})$ exists, it is unique. Points (ii) and (iii) follow from this fact and are special cases of Chung's results. *Q.E.D.*

Proof of Proposition 2: By Proposition 1, only offers in the interval $[W_L, \infty)$ are not equilibrium-dominated and will be accepted by the plaintiff. These offers have expected payoff at trial equal to U_p^B or U_p^C, both of which are less than W_L. *Q.E.D.*

Proof of Corollary 3: The interval of judgment differentials in which such an outcome occurs is given in Corollary 2. The lower endpoint of the interval, F_p / q, decreases and the upper endpoint of the interval increases as F_p is reduced from α_p to zero and C_i is increased from K_i to $\alpha_i + K_i$. *Q.E.D.*

Proof of Proposition 3: (i) When $(W_H - W_L) \in \left(\dfrac{F_d}{1-q}, \dfrac{F_d + q(C_p + C_d)}{1-q} \right]$ and $\bar{s} = U_d(\bar{s})$ does not exist, the method of eliminating offers that are equilibrium-dominated gives a threat point of W_H, as follows. Any settlement offer $\hat{s}$ greater than W_H is equilibrium-dominated by all $\tilde{s} \in [W_H, \hat{s})$, since the worst the defendant could do under $\tilde{s}$ is $\tilde{s}$, while the equilibrium payoff for $\hat{s}$ is $\hat{s} > \tilde{s}$. (Recall that defendants prefer lower payoffs.) A settlement offer of W_H is not equilibrium-dominated by any offers less than W_H, since the worst the defendant could do under such offers is U_d^B, if the offer is in $[W_L, W_H)$, or U_d^A, if the offer is less than W_L, both of which are greater than W_H. (ii) and (iii): $\bar{s} = U_d(\bar{s})$ exists and is unique in these intervals, and Chung's results follow. *Q.E.D.*

Proof of Corollary 5: Only offers in the interval $(0, W_H]$ are not equilibrium-dominated. The defendant's threat point $T_d = W_H$ has a post-offer expected payoff at trial of U_d^C, which is less than W_H. Offers less than W_H have expected payoffs at trial equal to either U_d^B or U_d^A, both of which are greater than W_H. *Q.E.D.*

Proof of Proposition 4: The settlement range under the American Rule is $[U_p^A, U_d^A]$ and the size of this range is $F_p + F_d + C_p + C_d$. When $\underline{s} = U_p(\underline{s})$ and $\bar{s} = U_d(\bar{s})$ exist, the refined settlement range is $[\underline{s}, \bar{s}]$, and this range has been shown by Miller and Chung to be smaller than the settlement range under the American Rule. Five other cases must be considered: when the settlement range under Rule 68 is (i) $[W_L, U_d^C]$; (ii) $[W_L, W_H]$; (iii) $[W_L,$

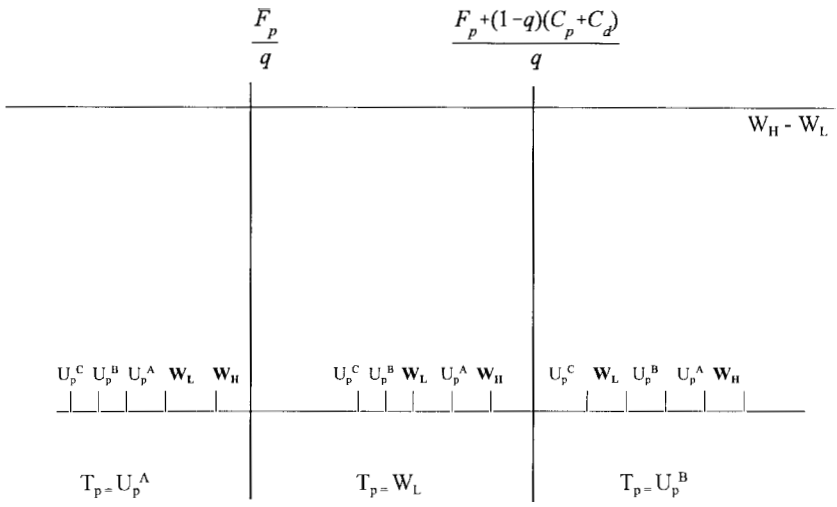

Fig. 1.

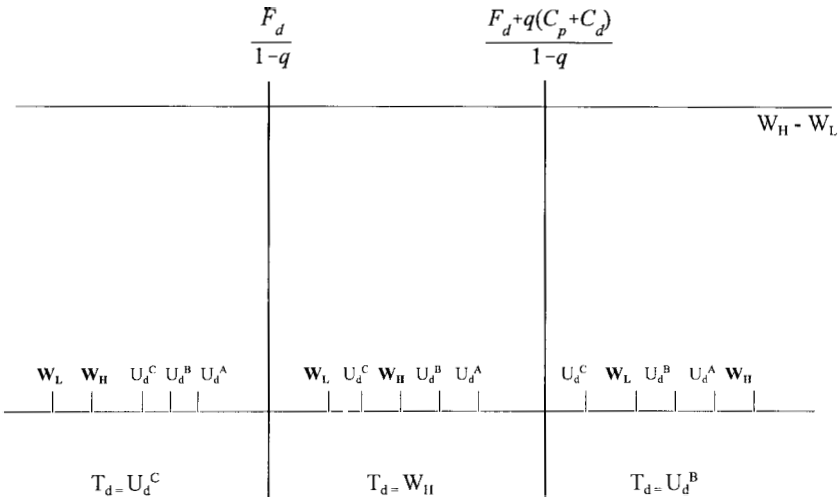

Fig. 2.

U_d^B]; (iv) [U_p^A , W_H]; and (v) [U_p^B ,W_H]. Algebraic manipulation of the difference between the upper and lower bound of each of these settlement ranges, along with consideration of the parameter conditions that correspond to each range, shows that each of these ranges is smaller than F_p + F_d + C_p + C_d. *Q.E.D.*

NOTES

[1] Vaughan and Vaughan (1999), p. 513.

[2] This proposal was considered by the 104th Congress in 1994 and was also considered in 1983, 1984, and in the early 1990s (see Schwarzer, 1992).

[3] Rule 68 specifically states: "At any time more than 10 days before the trial begins, a party defending against a claim may serve upon the adverse party an offer to allow judgment to be taken against the defending party for the money or property or to the effect specified in the offer, with costs then accrued. If within 10 days after the service of the offer the adverse party serves written notice that the offer is accepted, either party may then file the offer and notice of acceptance together with proof of service thereof and thereupon the clerk shall enter judgment. An offer not accepted shall be deemed withdrawn and evidence thereof is not admissible except in a proceeding to determine costs. If the judgment finally obtained by the offeree is not more favorable than the offer, the offeree must pay the costs incurred after the making of the offer. The fact that an offer is made but not accepted does not preclude a subsequent offer. When the liability of one party to another has been determined by verdict or order or judgment, but the amount or extent of the liability remains to be determined by further proceedings, the party adjudged liable may make an offer of judgment, which shall have the same effect as an offer made before trial if it is served within reasonable time not less than 10 days prior to the commencement of hearings to determine the amount or extent of liability"(FRCP 68).

[4] In the latter case, the assumption that the defendant pays the court costs if the settlement offer is not greater than the judgment at trial can be altered to allow each party to pay his/her own court costs with no qualitative impact on the results that follow.

[5] Chung (1996) argues that the refined settlement range is appropriate for analysis of Rule 68 and that it gives the settlement range arrived at by Miller (1986) (i.e., with the same upper and lower bounds) but for different reasons. Anderson's (1994) settlement range obtains the upper and lower bounds generated by Miller and by Chung's refined settlement range, although his specification of the model is somewhat different.

[6] $[\underline{s}, \bar{s}]$ is the settlement range obtained by Miller (1986) and Anderson (1994) as well.

[7] Priest (1982) considers this distribution, but limits the settlement offer to be between W_L and W_H.

[8] Plaintiffs prefer higher payoffs and defendants prefer lower payoffs, since they are losses to defendants.

[9] Note that this implies both $U_p^B < W_H$ and $U_p^C < W_H$.

[10] This result is consistent with Chung (1996).

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