# SUING SOLELY TO EXTRACT A SETTLEMENT OFFER

*LUCIAN ARYE BEBCHUK*\*

## I. INTRODUCTION

In many disputes, the potential plaintiff recognizes that the expected value to him of going to trial is negative. This might be the case either because the chances of winning a trial are small (the suit is "frivolous") or because the expected judgment is small relative to the expected litigation costs. In such situations, however, the negative expected value of litigation might not deter the plaintiff from suing: the plaintiff might sue—hoping to extract a settlement offer from the defendant, and planning to drop the case if such an offer is not received.

This article seeks to contribute to the understanding of such negative-expected-value (NEV) suits. What enables plaintiffs with such suits to extract a settlement offer? What determines when such suits would be successful and by how much? What are the effects of the presence of such suits on the litigation process as a whole? These are the questions this article attempts to answer.

### A. The Problem of Threat Credibility

Suing solely to extract a settlement offer is rational, of course, only if there is some likelihood that the plaintiff will indeed receive such an offer. Thus, to explain why plaintiffs with NEV suits might file a claim, we must first understand why they might hope to get a settlement offer.

The first systematic analysis of this question was done five years ago by I. P. L. P'ng.[1] In P'ng's analysis, a plaintiff with an NEV suit might

succeed in extracting an offer even though the defendant is assumed to know that the expected value of litigation to the plaintiff is negative. The defendant might make such an offer because he is assumed to believe that, in the absence of settlement, the plaintiff will go to trial. Given this belief, it will be rational for the defendant to prefer a settlement as long as the settlement amount is less than the defendant's expected cost of a trial. The problem with P'ng's analysis, however, lies in the defendant's assumed belief that the plaintiff would go to trial in the absence of a settlement. Although this belief is not going to be contradicted by the facts (as it leads the defendant to settle), it is nonetheless an implausible belief for the defendant to hold. For, given P'ng's assumptions, the defendant knows that it would not be in the plaintiff's interest to go to trial in the absence of a settlement; there is thus no reason for the defendant to believe that this would happen; and the defendant's best strategy is, therefore, to sit tight.[2]

The problem that confronts any analysis of NEV suits, then, concerns the issue of threat credibility. For a threat to be effective, it must be credible; the threatened side will not be affected by the threat if it knows that the other side will not carry it out. The question thus arises: why would a defendant be moved by a litigation threat from a plaintiff with an NEV suit?

Much work has been done in the last few years in the economic analysis of the litigation process.[3] However, apparently because of the problem of threat credibility, this work has largely ignored the subject of NEV suits. Analysts' recognition of the credibility issue has been reflected in their careful effort to ensure that, in their models, parties do not make noncredible threats. To this end, all the recent models of settlement decisions have employed assumptions limiting the analysis to situations in which the plaintiff has a positive-expected-value (PEV) suit.[4]

[2] In the terminology of economics, while the defendant's offering to settle does belong to the set of Nash equilibria, it should be ruled out as one that does not belong to the set of *perfect* equilibria.

[3] See, for example, Lucian A. Bebchuk, Litigation and Settlement under Imperfect Information, 15 Rand J. Econ. 404 (1984); Barry Nalebuff, Credible Pretrial Negotiation, 18 Rand J. Econ. 198 (1987); Jennifer F. Reinganum and Louis L. Wilde, Settlement, Litigation and the Allocation of Litigation Costs, 17 Rand J. Econ. 557 (1986).

[4] Such assumptions were made by all the authors cited note 3 *supra*. They all assume that the expected value to the plaintiff of going to trial is positive and that this fact is known by the defendant. It was assumed that the defendant might save some uncertainty concerning the size of the expected value to the plaintiff of going to trial but not about the "sign" of this expected value. The attention given to the issue of threat credibility is especially highlighted by Nalebuff's article, *supra* note 3. His model considers a plaintiff who views his suit as a PEV one but recognizes that the defendant might have some private information bearing on the expected outcome of a trial. In such a situation, a rejection of the plaintiff's demand by

The only analysis subsequent to P'ng's work that modeled NEV suits was done by David Rosenberg and Steven Shavell.[5] Like P'ng's model, the Rosenberg-Shavell model is also one in which the defendant knows that the plaintiff's suit is an NEV one. Rosenberg and Shavell, however, recognize that in this situation the defendant would not be concerned about the possibility that the plaintiff would go to trial. Nonetheless, the plaintiff in their model does succeed in extracting an offer—not because the defendant is concerned about the possibility of a trial but, rather, because the defendant wants to avoid the costs of even having to respond to the suit. The Rosenberg-Shavell result arises from their assumptions concerning the order in which the parties' litigation costs will often have to be incurred. They assume that after the plaintiff files a suit at little or no cost the defendant must incur some significant costs of responding (because failure to respond would produce a summary judgment against the defendant) before the plaintiff has to incur any significant costs. Thus, although the defendant knows that the plaintiff will drop the case if the defendant responds, the defendant will still be willing to pay a settlement amount of up to the cost of responding solely in order to avoid having to make such a response.

Although the Rosenberg-Shavell explanation might well be relevant in some or many situations, it is clearly not applicable to many cases where NEV suits are believed to arise and often succeed. In particular, the Rosenberg-Shavell explanation is applicable only to situations where the defendant must incur significant responding costs before the plaintiff must incur any significant litigation costs; furthermore, it can at most explain settlement offers up to the amount of such responding costs. If the success of many NEV suits cannot be explained by the defendant's mere desire to avoid the responding costs, then it presumably must be due to the defendant's attaching at least some weight to the possibility of a trial. But, as already emphasized, the defendant will not be concerned about a trial if the defendant knows, as has been assumed in both the P'ng and Rosenberg-Shavell work, that the plaintiff has an NEV suit. All this suggests that the success of many NEV suits may be explained, as this article explores, by defendant uncertainty as to whether or not the suit is an NEV one.

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the defendant might require the plaintiff to revise downward his estimate of the expected value to him of going to trial. Consequently, Nalebuff shows, the plaintiff's demand might be affected by his desire to be able to maintain his initial judgment that the suit is a PEV one (and hence also the credibility of his litigation threat).

[5] See David Rosenberg and Steven Shavell, A Model in Which Suits Are Brought for Their Nuisance Value, 5 Int'l Rev. L. & Econ. 3 (1985).

## B.  The Approach of This Article

In seeking to explain how an NEV suit might be successful, then, this article focuses on the presence of uncertainty. The defendant might be uncertain whether the plaintiff would go to trial in the absence of settlement. Such defendant uncertainty might arise from the plaintiff's having some private information concerning the expected value to him of going to trial. For example, the plaintiff might have private information concerning the level of damages that he suffered as a result of the defendant's actions; or the plaintiff might have private information concerning his expected litigation costs (including out-of-pocket expenses, the costs of the plaintiff's own time, the costs of the delay involved, and psychological costs). Consequently, a defendant might not know whether the expected value of litigation to the plaintiff is positive. As will be shown, such defendant uncertainty might enable a plaintiff with an NEV suit to extract a settlement offer.[6]

Section II develops a model of how, in the presence of such defendant uncertainty, a defendant will decide whether or not to make a settlement offer and, if so, how much to offer.[7] The defendant will consider two possibilities. On the one hand, the plaintiff might have an NEV suit, in which case offering to settle would be wasteful since the plaintiff would not go to trial anyway. On the other hand, the plaintiff might have a PEV suit, in which case making a settlement offer would possibly prevent litigation and produce a beneficial settlement. The defendant will balance these considerations in deciding whether or not to make a settlement offer.

The analysis will thus identify the factors that will determine whether a plaintiff who does not intend to go to trial will succeed in extracting a settlement offer. For example, it will be shown that the greater the defendant's expected litigation costs and the greater the probability attached by the defendant to the suit being a PEV suit, the more likely the possibility that the defendant will make a settlement offer. Similarly, in cases where a plaintiff with an NEV suit succeeds in extracting a settlement offer, the analysis will identify the factors that will determine the size of this offer. For example, as will be shown, the higher the probability attached by the

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[6] By focusing on uncertainty and informational asymmetry, this article joins the recent body of work, note 3 *supra,* on litigation and settlement decisions under imperfect information. As already noted, however, these recent models have abstracted from the subject of NEV suits.

[7] The model is similar in its analytical structure to the model developed in Bebchuk, *supra* note 3. But the present article urges its model to analyze an issue, namely, NEV suits, from which the earlier article abstracted.

defendant to the suit being a PEV suit, and the greater the defendant's litigation costs, then the greater the amount that the plaintiff will succeed in extracting.

Finally, the analysis will also identify the effect that the presence of NEV suits has on the resolution of PEV suits. The fact that defendants take into account the possibility that the suit is an NEV one (and that the plaintiff will thus drop it if no settlement is reached) hurts those plaintiffs who do have a PEV suit. It will be shown that the presence of NEV suits reduces the settlement amounts offered to plaintiffs with PEV suits and that it consequently increases the proportion of PEV suits that end up in a trial.

## II.   THE MODEL

### A.   Sequence of Events

A risk-neutral plaintiff files a suit against (or, more generally, makes a demand to) a risk-neutral defendant. Filing the suit (or making the demand) is assumed to be costless.

The subsequent sequence of events is as depicted in Figure 1. Following the suit, the defendant decides whether or not to offer to settle and, if
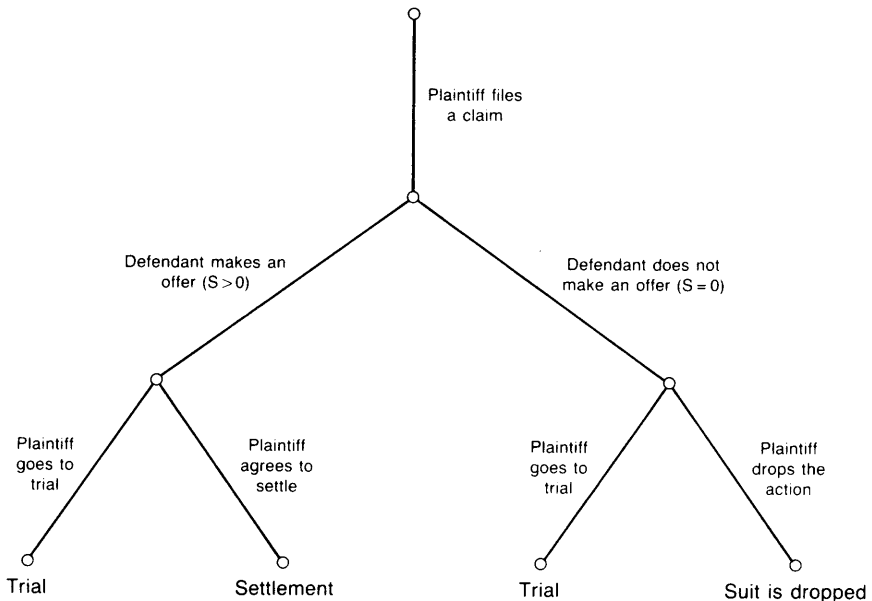
Figure 1.—Sequence of events

so, what settlement amount to offer. A decision to refrain from making a settlement offer will be referred to as a decision to offer settlement amount 0.

Following the defendant's decision, the plaintiff decides how to respond. If the defendant offers some positive settlement amount, the plaintiff will have to decide whether to accept the offered settlement amount or to go to trial. If the defendant does not offer to settle, the plaintiff will have to decide whether to drop the case (that is, accept settlement amount 0) or go to trial.

## B.  The Consequences of a Trial

The parties' decisions are made against the background of a potential trial, which would involve litigation costs. The plaintiff estimates that, in the event of a trial, the expected judgment will be $J$ and his expected litigation costs will be $C_p$. Let $V = J - C_p$ denote the plaintiff's estimate of the (net) expected value to him of going to trial. A plaintiff with an estimate $V$ will be referred to as one of type $V$.

The situation to be considered is one in which the plaintiff has some private information about $V$. Clearly, since $J$ and $C_p$ are the two building blocks of $V$, the plaintiff's private information might arise from his having private information about $J$ and/or from his having private information about $C_p$. For simplicity of exposition, however, it will be assumed in this section that the plaintiff has private information only about one of these two elements, and for concreteness it will be assumed that this element is $J$. In other words, it will be assumed that the plaintiff has private information about $J$ and that the two parties have the same information about $C_p$.

This assumption, it should be emphasized, is not intended to suggest that defendant uncertainty concerning $C_p$ is less important than defendant uncertainty concerning $J$ in producing uncertainty concerning $V$. This assumption is used for convenience of presentation and without loss of generality. The model developed in this section could be easily adjusted to apply to the case in which the plaintiff has private information about $C_p$ but not about $J$. Indeed, the Appendix to this article extends the analysis to the most general case in which the plaintiff might have private information about both $J$ and $C_p$.

The defendant, then, does not know $V$, the plaintiff's type, but only the distribution from which $V$ is drawn.[8] Specifically, the defendant knows

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[8] If the plaintiff is of a high type, then it will be in his interest to eliminate the informational asymmetry and to have the defendant realize that the expected judgment is high. It will be assumed, however, that the plaintiff cannot eliminate the informational asymmetry in any way that is not prohibitively costly. A statement by the plaintiff about his high estimate

that $V$ is distributed with a (continuous and differentiable) density function $f(.)$ and a cumulative distribution function $F(.)$.

Let us denote by $\alpha$ the likelihood that the plaintiff has an NEV suit; that is, $\alpha = F(0)$. It will be assumed that $0 < \alpha < 1$; that is, the defendant views as possible both the plaintiff's having a PEV suit and the plaintiff's having an NEV suit. Let us also denote by $g(.)$ and $G(.)$ the density and cumulative distribution of $V$ conditional on $V \geq 0$. Thus, for any $x \geq 0$ we can rewrite the density function $f(x)$ as

$$f(x) = (1 - \alpha)g(x), \tag{1a}$$

and the cumulative distribution function $F(x)$ as

$$F(x) = \alpha + (1 - \alpha)G(x). \tag{1b}$$

Finally, $C_d$ will denote the defendant's estimate of his expected litigation costs in the event of a trial. (The plaintiff might or might not know $C_d$.)[9]

## C.  The Parties' Decisions

Consider first the plaintiff's decision whether or not to accept settlement amount $S$. Clearly, the plaintiff will accept $S$ if and only if

$$S \geq V.^{10} \tag{2}$$

Thus, the plaintiff will accept the offer if and only if his type is lower than $S$, the "borderline" type. In particular, settlement amount 0 will be accepted (that is, a refusal to settle will lead to the plaintiff's dropping the case) if and only if the plaintiff's suit is an NEV one.

Turn now to the defendant's decision concerning which settlement

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of the expected judgment will be disregarded unless the plaintiff provides the defendant with a verification of his high estimate. And the assumption is that the high-estimate plaintiff cannot provide such a verification, or that he cannot provide it without jeopardizing his chances should a trial take place.

[9] It is worth noting an important implication of the model's assumption that the defendant is the party making settlement offers while the plaintiff, as will be presently described, is the party with private information. This assumption rules out the possibility of defendants learning private information from plaintiffs' demands: if the plaintiff were to make a settlement demand, the defendant might infer from it some information concerning the plaintiff's type (and the informational asymmetry might be consequently reduced). Reinganum and Wilde, *supra* note 3, systematically analyze, in a context where NEV suits are excluded, how plaintiffs' demands might transmit information. The possibility of information transmission is one that should be treated in a complete model of NEV suits.

[10] It is assumed for convenience that the plaintiff will settle if he is indifferent between settling and litigating; the model's results will be the same under the opposite assumption.

amount $S$ to offer. The defendant knows that, if he offers amount $S$, it will be accepted with a probability $F(S)$ and rejected with a probability $1 - F(S)$. In the latter case, a trial will take place and the defendant's estimate of the expected judgment in such a trial (that is, his estimate of $J$ conditional on $V$ being greater than $S$) is

$$E(J|V > S) = E(V + C_p|V > S) = \int_S^{K_2} (x + C_p)f(x)dx. \qquad (3)$$

Thus, the defendant's position, if he offers settlement amount $S$, will be

$$A(S) = -F(S)S - [1 - F(S)][C_d + \int_S^{K_2} (x + C_p)\frac{f(x)}{1 - F(S)} dx], \qquad (4a)$$

or, equivalently,

$$A(S) = -[\alpha + (1 - \alpha)G(S)]S -$$
$$-[1 - \alpha - (1 - \alpha)G(S)] \times \qquad (4b)$$
$$\times [C_d + \int_S^{K_2} (x + C_p) \frac{f(x)}{1 - \alpha - (1 - \alpha)G(S)} dx].$$

The first term on the right-hand side of (4a) and (4b) represents the possibility that the offer will be accepted. The second term represents the possibility that the offer will be rejected (and a trial will take place).

Thus, the defendant will choose $S$ to solve

$$\max_S A(S), \qquad (5)$$

and differentiating (4a) with respect to $S$ and rearranging terms we get

$$A'(S) = -F(S) + (C_p + C_d)f(S), \qquad (6a)$$

or, equivalently,

$$A'(S) = -[\alpha + (1 - \alpha)G(S)] + (C_p + C_d)(1 - \alpha)g(S). \qquad (6b)$$

The first term on the right-hand side of (6a) or (6b) represents the marginal cost of increasing $S$: there is a likelihood of $F(S) = \alpha + (1 - \alpha)G(S)$ that the plaintiff would accept the increased offer *and* would have accepted it even without the increase.

The second term on the right-hand side of (6a) or (6b) represents the marginal benefit of increasing $S$. Such an increase in $S$ would reduce the likelihood of litigation by $f(S) = (1 - \alpha)g(S)$. And observe that litigating against a plaintiff of the borderline type instead of settling with him involves a loss of $(C_p + C_d)$ to the defendant, for if the plaintiff is of the

borderline type, the settlement amount will give the defendant all of the settlement gains $(C_p + C_d)$.

### D.  When Will an NEV Suit Succeed?

Since a plaintiff with an NEV suit will in no case go to trial, an NEV suit will be successful if and only if $S^* > 0$—that is, if and only if the defendant elects to offer a positive settlement amount.

PROPOSITION 1.  (a) A necessary and sufficient condition for the defendant to offer a positive settlement amount is that there exists some $S > 0$ for which

$$[\alpha + (1 - \alpha)G(S)] \cdot S < (1 - \alpha)G(S)[C_d + \int_0^S (x + C_p) \frac{g(x)}{G(S)} \, dx]. \quad (7)$$

(b) A sufficient condition for the defendant to offer a positive settlement amount is that

$$\alpha < \frac{(C_p + C_d)g(0)}{1 + (C_p + C_d)g(0)}. \quad (8)$$

*Proof.* (a) $S^*$ is positive if and only if there exists some $S > 0$ for which $A(S) > A(0)$. Using (4a) and rearranging terms gives (7).

(b) Equation (8) implies that the value of $A'(S)$ (see [4b]) is positive at $S = 0$. It follows that (8) implies that $S^* > 0$. Q.E.D.

COROLLARY 1.  An increase in either $C_p$ or $C_d$ will make it more likely that the defendant will offer a positive settlement amount to the plaintiff.

REMARK.  An increase in either $C_p$ or $C_d$ increases (for any $S \geq 0$) the marginal benefit of increasing $S$ (see [6a] and [6b]). This is because the gain from settling with a plaintiff of the borderline type instead of litigating with him is equal to $(C_p + C_d)$.

*Proof.* An increase in either $C_p$ or $C_d$ increases the right-hand side of (7) and does not affect the left-hand side of (7). Therefore, such an increase makes it more likely that (7) will hold. Q.E.D.

COROLLARY 2.  An increase in the likelihood that the plaintiff's suit is an NEV one (that is, an increase in $\alpha$) will make it less likely that the defendant will offer a positive settlement amount.

REMARK.  For any $S$, increasing $\alpha$ both raises the marginal cost of increasing $S$ and decreases the marginal benefit of increasing $S$ (see [6a] and [6b]). First, increasing $\alpha$ raises the marginal cost of increasing $S$ because it increases the likelihood that the plaintiff will accept the settle-

ment offer even without the marginal increase in $S$. Second, increasing $\alpha$ lowers the marginal benefit of raising $S$ because it increases the extent to which this marginal increase in $S$ would lower the likelihod of litigation.

*Proof.* An increase in $\alpha$ will increase the left-hand side of (7) and will decrease the right-hand side of (7). Therefore, such an increase will make it less likely that (7) will hold. Q.E.D.

### E. How Much Will a Successful NEV Suit Yield?

When (7) holds, a plaintiff who does not intend to go to trial will nonetheless succeed in extracting a positive settlement amount from the defendant. Let us now examine the factors that shape the size of that settlement amount.

PROPOSITION 2. If the defendant elects to offer a positive settlement amount, that settlement amount will be characterized by

$$\alpha + (1 - \alpha)G(S^*) = (C_p + C_d)(1 - \alpha)g(S^*), \tag{9}$$

and

$$\frac{g'(S^*)}{g(S^*)} (C_p + C_d) < 1. \tag{10}$$

REMARK. Equation (9) is the first-order condition; it implies that at the defendant's optimal settlement offer the marginal cost and the marginal benefit of increasing the offer are equal. Equation (10) is the second-order condition.

*Proof.* In the situation under consideration, the optimal settlement offer $S^*$ is interior to the interval $(0, K_2)$ because we assume that (7) holds and hence $S^* > 0$ and because $A'(S)$ (see [6a]) is negative at $K_2$. Consequently, at $S^*$ the first-order and second-order conditions must hold. Requiring that $A'(S)$ be equal to zero at $S^*$ gives (9). Differentiating $A'(S)$ with respect to $S$, rearranging terms, and requiring negativity at $S^*$ gives (10). Q.E.D.

COROLLARY 1. An increase in either $C_p$ or $C_d$ will raise the amount that a successful NEV suit will yield.

REMARK. The intuition behind the above result is that, as already explained, an increase in either $C_p$ or $C_d$ will raise the marginal benefit of increasing $S$.

*Proof.* Differentiating (9) with respect to $(C_p + C_d)$ and rearranging terms gives

$$\frac{dS^*}{d(C_p + C_d)} = \frac{1}{1 - (C_p + C_d)\frac{g'(S^*)}{g(S^*)}}. \tag{11}$$

The second-order condition (10) implies that the right-hand side of (11) is positive. Q.E.D.

COROLLARY 2. An increase in the likelihood that the plaintiff's suit is an NEV one (an increase in $\alpha$) will reduce the amount that a successful NEV suit will yield.

REMARK. The intuition behind the above result is that, as already explained, increasing $\alpha$ will both raise the marginal cost of increasing $S$ and lower the marginal benefit of increasing $S$.

Proof. Differentiating (9) with respect to $\alpha$ and rearranging terms gives

$$\frac{dS^*}{d\alpha} = -\frac{(C_p + C_d) + [1 - G(S^*)]}{(1 - \alpha)\left[1 - (C_p + C_d)\frac{g'(S^*)}{g(S^*)}\right]}. \tag{12}$$

The second-order condition (10) implies that the right-hand side of (12) is negative. Q.E.D.

### F. The Effect of NEV Suits on the Resolution of PEV Suits

Let us now turn to the effect that the presence of NEV suits has on the resolution of PEV suits.

PROPOSITION 3. In comparison to the situation that would obtain if there were no NEV suits, the presence of NEV suits (a) lowers the settlement amounts for which PEV suits are settled, and (b) increases the proportion of PEV suits that are not settled but rather go to trial.

REMARK. The intuition behind the two parts of the proposition is as follows:

(a) As is clear from the remark explaining corollary 2 of proposition 2, the possibility that the suit is an NEV one leads defendants to offer lower settlement amounts than they would offer if such a possibility were not present.

(b) Because the presence of NEV suits lowers the settlement amounts offered by defendants, it increases the likelihood that a plaintiff with a PEV suit will reject the offer made to him and go to trial.

Proof. (a) Proposition 1(b) and corollary 2 of proposition 2 indicate that $S^*$ is lower than it would be if $\alpha$ were equal to zero—that is, if there were no likelihood that the plaintiff's suit is an NEV one. (b) The likeli-

hood that a PEV suit will lead to trial is $1 - G(S^*)$, which obviously increases as $S^*$ is lowered.

## III.  CONCLUSION

This article has shown how informational asymmetries might enable plaintiffs with NEV suits to extract a settlement offer. Because defendants might be uncertain whether the expected value to the plaintiff of going to trial is negative or positive, a defendant might make a settlement offer to a plaintiff with an NEV suit. The article has also identified the factors that determine when an NEV suit would be successful and how successful it would be, and it has pointed out the effect that the presence of NEV suits has on the resolution of PEV suits.

The observation that informational asymmetries might facilitate the success of NEV suits suggests a main way in which legal rules and institutions affect the incidence and success of such suits. Various legal rules and institutions affect the extent to which plaintiffs might have private information concerning the expected value to them of going to trial. For example, discovery rules often enable the defendant to learn some of the plaintiff's private information concerning the expected outcome of a trial. Rules and institutions that reduce such informational asymmetries are likely to make it more difficult for NEV suits to be successful, and they are thus also likely to increase the proportion of PEV suits that will be settled.

## APPENDIX

This appendix extends the analysis to the case where the plaintiff might have private information not only about $J$ but also about $C_p$.

Consider, under the new assumption, the defendant's choice of $S$. The defendant knows that an offer $S$ will be accepted with a probability $F(S)$ and rejected with a probability $1 - F(S)$. In the latter case, a trial will take place and the defendant's estimate of the expected judgment in such a trial is

$$E(J|V > S) = E(V + C_p|V > S) = E(V|V > S) + E(C_p|V > S) \quad \text{(A1)}$$

$$= \int_S^{K_2} x \, \frac{f(x)}{1 - F(S)} \, dx + \int_S^{K_2} E(C_p|V = x) \, \frac{f(x)}{1 - F(S)} \, dx.$$

Thus, the defendant's expected position if he offers a settlement amount $S$ will be

$$A(S) = -F(S)S - [1 - F(S)] \times$$

$$\times \left[ C_d + \int_S^{K_2} E(C_p|V = x) \, \frac{f(x)}{1 - F(S)} \, dx + \int_S^{K_2} x \, \frac{f(x)}{1 - F(S)} \, dx \right], \quad \text{(A2)}$$

or, equivalently,

$$A(S) = -[\alpha + (1 - \alpha)G(S)]{\cdot}S -$$

$$- [1 - \alpha - (1 - \alpha)G(S)] \times \qquad (A3)$$

$$\times \left[ C_d + \int_S^{K_2} E(C_p|V = x) \frac{f(x)}{1 - F(S)}\, dx + \int_S^{K_2} x \frac{f(x)}{1 - F(S)}\, dx \right].$$

The defendant will of course choose $S$ to maximize the value of $A(S)$. Differentiating the right-hand side of (A2) with respect to $S$ gives

$$A'(S) = -F(S) + f(S)[C_d + E(C_p|V = S)], \qquad (A4)$$

or, equivalently,

$$A'(S) = -[\alpha + (1 - \alpha)G(S)] + (1 - \alpha)g(S)[C_d + E(C_p|V = S)]. \quad (A5)$$

The interpretation of (A4) and (A5) is similar to that of (6a) and (6b). The first term on the right-hand side of (A4) or (A5) represents the marginal cost of increasing $S$: there is a likelihood of $F(S) = \alpha + (1 - \alpha)G(S)$ that the plaintiff would accept the increased offer and would have accepted the offer even without the marginal increase. The second term on the right-hand side of (A4) or (A5) represents the marginal benefit of increasing $S$. Such an increase in $S$ would reduce the likelihood of litigation by $f(S) = (1 - \alpha)g(S)$, and litigating against a plaintiff of the borderline type instead of settling with him would involve a loss of $[C_d + E(C_p|V = S)]$.

Proceeding in a similar way to that followed in Section II, the following propositions and corollaries can be proved.

PROPOSITION A1. (a) A necessary and sufficient condition for the defendant to offer a positive settlement amount is that there exists some $S > 0$ for which

$$[\alpha + (1 - \alpha)G(S)]\, S < (1 - \alpha)G(S)\left\{ C_d + \int_0^S [E(C_p|V = x) + x]\, \frac{g(x)}{G(S)}\, dx \right\}.$$

$$(A6)$$

(b) A sufficient condition for the defendant to offer a positive settlement amount is that

$$\alpha < \frac{[C_d + E(C_p|V = 0)]g(0)}{1 + [C_d + E(C_p|V = 0)]g(0)}\,. \qquad (A7)$$

COROLLARY 1. An increase in $C_d$ will make it more likely that the defendant will offer a positive settlement amount. Similarly, an upward shift in the distribution of $C_p$ (holding fixed the distribution of $V$) will make it more likely that the defendant will offer a positive settlement amount.

COROLLARY 2. An increase in the likelihood that the plaintiff's suit is an NEV one (an increase in $\alpha$) will make it less likely that the defendant will offer a positive settlement amount.

PROPOSITION A2.    If the defendant elects to offer a positive settlement amount, that settlement amount will be characterized by

$$\alpha + (1 - \alpha)G(S^*) = (1 - \alpha)g(S^*)[C_d + E(C_p|V = S^*)], \qquad (A8)$$

and

$$\frac{g'(S^*)}{g(S^*)} [C_d + E(C_p|V = S^*)] < 1. \qquad (A9)$$

COROLLARY 1.    An increase in $C_d$ will raise the settlement amount that a successful NEV suit will yield. Similarly, an upward shift in the distribution of $C_p$ (holding fixed the distribution of $V$) will increase the settlement amount that a successful NEV suit will yield.

COROLLARY 2.    An increase in the likelihood that the plaintiff's suit is an NEV one (an increase in $\alpha$) will reduce the amount that a successful NEV suit will yield.

PROPOSITION 3.    In comparison to the situation that would obtain if there were no NEV suits, the presence of NEV suits (a) lowers the settlement amounts for which PEV suits are settled, and (b) increases the proportion of PEV suits that are not settled but rather end up in a trial.