A NEW THEORY CONCERNING THE CREDIBILITY AND SUCCESS OF THREATS TO SUE

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ABSTRACT

Negative-expected-value (NEV) suits are ones in which the expected litigation costs exceed the expected judgment. This article offers a new theory for the credibility and success of plaintiffs with NEV suits. The theory is based on recognizing that litigation costs are generally not incurred all at once but rather over time; this divisibility of the litigation process is shown to play a crucial strategic role. The analysis identifies the conditions under which a plaintiff with an NEV suit will have a credible threat and succeed in extracting a settlement. It is demonstrated that plaintiffs have credible threats in a much wider set of cases—including in numerous small-stakes cases—than has been suggested by prior economic analysis of the subject.

I. INTRODUCTION: WHAT CAN MAKE NEV SUITS CREDIBLE?

A. *The Puzzle*

A negative-expected-value (NEV) suit is one in which the plaintiff would obtain a negative expected return from pursuing his suit all the way to trial, that is, one in which the plaintiff's expected litigation costs would exceed the expected judgment. An NEV suit need not be one in which the plaintiff is unlikely to win; it may be one, for example, in which the plaintiff is certain to win but the needed litigation costs exceed the amount that could be won.

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It is clear that NEV suits are abundant. For one thing, NEV suits arise in a large fraction, if not the overwhelming majority, of small-stakes cases. Because the costs of legal proceedings are unlikely to be negligible even if the amount pursued is small, a party that has a justifiable claim to a small amount might well have a potential NEV suit.

A plaintiff will pursue an NEV suit only if he expects to extract a positive settlement offer from the defendant.[1] The question, however, is, Why would a defendant agree to pay any settlement amount to a plaintiff with an NEV suit? To be sure, the defendant may prefer such a settlement to a trial. But why would the defendant believe that, in the absence of a settlement, the plaintiff would pursue his suit rather than drop it? The critical issue, therefore, concerns the credibility of the plaintiff's threat. The defendant would not agree to any positive settlement amount unless she found the plaintiff's threat to litigate credible. However, forced to choose between litigating his case all the way to judgment or dropping it, a rational plaintiff with an NEV suit would choose to drop his suit. Thus, it is necessary to understand what could make the plaintiff's threat credible in the eyes of the defendant.

Resolving whether and when NEV suits are credible is important for understanding the effects of the legal system. There are numerous instances in which legal rules provide parties with entitlements that are worth less than what it would cost to litigate them. If plaintiffs do not have credible threats to pursue legal action, the ability to litigate these entitlements will play little role in shaping the outcomes of such cases. Whatever plaintiffs get in these cases would have to result from other factors, such as defendants' integrity or defendants' caring about their reputations. But if threats to sue may be credible and successful even in NEV cases, then plaintiffs' power to seek legal remedies does affect the outcomes in these numerous cases.

B. The Literature

The early economic literature on litigation, beginning in the early 1970s with papers by Landes, Gould, and Posner,[2] has largely avoided the puz-

[1] In some situations, a plaintiff can expect to get, at some intermediate point during the litigation process, some additional information about his chances. Getting favorable information may turn an NEV suit into one that has positive expected value. See Bradford Cornell, The Incentive to Sue: An Option Pricing Approach, 19 J. Legal Stud. 173 (1990); William M. Landes, Sequential versus Unitary Trials: An Economic Analysis, 22 J. Legal Stud. 99 (1993). My focus in this article, however, is on suits in which the expected judgment is expected to be lower than the plaintiff's total litigation costs even if things turn out favorably for the plaintiff.

[2] William M. Landes, An Economic Analysis of the Courts, 14 J. Law & Econ. 61 (1971); John P. Gould, The Economics of Legal Conflicts, 2 J. Legal Stud. 279 (1973); Richard A. Posner, An Economic Approach to Legal Procedure and Judicial Administration, 2 J. Legal Stud. 399 (1973).

zle of NEV suits by focusing on settlement decisions in positive-expected-value (PEV) suits. In particular, looking at the papers written in the 1980s to model pretrial negotiation in the presence of asymmetric information,[3] one finds that they have all assumed that the parties are certain about one thing: that the plaintiff's suit has a positive expected value.[4] Only in recent years has research also focused on NEV suits.

One explanation for NEV suits that I gave in an earlier paper focuses on the effects of imperfect information.[5] The defendant may not know whether the plaintiff's expected value of litigation is positive or negative. Consequently, the defendant cannot be certain that, in the absence of a settlement, the plaintiff would drop his suit. To avoid the risk of incurring litigation costs, the defendant therefore may elect to offer a positive settlement amount. This uncertainty model cannot explain, however, the success of suits that defendants know to be NEV suits. And there are clearly many cases of NEV suits which defendants can identify as such. For example, most small-stakes situations will be recognized by defendants as NEV suits.

Another explanation that was given by Rosenberg and Shavell[6] does apply to some NEV suits that are identified by defendants as such. Rosenberg and Shavell considered a situation in which, 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 lead to default or summary judgment against the defendant) before the plaintiff has to incur any costs. In this situation, even if the defendant knows that the plaintiff will drop the case once the defendant responds, the defendant will be willing to pay a settlement amount of up to the costs of responding in order to avoid incurring these costs. Although the Rosenberg-Shavell explanation may be relevant in some cases, it is applicable only to situations in which the defendant must incur substantial responding costs before the plaintiff incurs any meaningful litigation costs. Furthermore, un-

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

[4] Nalebuff's paper, *supra* note 3, illustrates especially well the analysts' focus on PEV suits. His paper emphasizes how plaintiffs structure their settlement strategies to rule out the possibility of their learning from the defendant's response that their suit is an NEV one.

[5] See Lucian A. Bebchuk, Suing Solely to Extract a Settlement Offer, 17 J. Legal Stud. 437 (1988). The imperfect information explanation was subsequently examined also by Avery Katz, The Effect of Frivolous Lawsuits on the Settlement of Litigation, 10 Int'l Rev. L. & Econ. 3 (1990).

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

der the Rosenberg-Shavell model, what the plaintiff can get in an NEV suit bears no connection to the expected judgment but depends only on the defendant's costs of responding.

C. *The Proposed New Approach*

This article offers a new explanation for the credibility and success of NEV suits. The explanation is based on the recognition that litigation costs are not incurred all at once but are spread over a period of time, with bargaining possibly taking place on numerous occasions throughout this period. The credibility of an NEV suit can arise from the fact that bargaining in "late" rounds occurs after some of the plaintiff's litigation costs are sunk. There may arrive a stage at which a threat to continue all the way to judgment becomes credible by virtue of the small fraction of the litigation costs that remains to be incurred. At this stage, it is rational for the defendant to agree to a settlement. The expectation that this will occur, it is shown, can lend credibility to the plaintiff's threat to proceed in earlier stages.

The analysis in the article identifies both the conditions under which an NEV suit will succeed and the amount that such a suit will extract in settlement. Whether the threat to sue is credible—and if so, what settlement it would produce—depends on the relationship between the two sides' litigation costs in a way that fits our intuition. Similarly, the credibility and success of the suit also depend on the expected judgment—again, in a direction that fits our intuition.

The explanation that this article offers applies to a large set of circumstances. In particular, it applies to cases that cannot be explained by the existing literature. Consider the numerous small-stakes cases in which the plaintiff's suit is known to be an NEV one and in which the plaintiff cannot force the defendant to incur large up-front litigation costs. The analysis shows that when the plaintiff's litigation costs are sufficiently divisible, and when bargaining can occur throughout the litigation process, the plaintiff's threat in these cases may nevertheless be credible.

While the article focuses on explaining the success of NEV claims, it also seeks to make a methodological contribution to the analysis of settlement decisions. The article highlights the strategic importance of the fact that litigation costs, including the costs of conducting a trial, are generally incurred in a divisible fashion. This divisibility might play an important role in settlement bargaining, and it might have a considerable effect on the parties' positions and their final payoffs.

Before proceeding, it is worth emphasizing that, throughout, the focus of the analysis is on positive issues—on understanding when potential

plaintiffs will be able to extract settlements from potential defendants. The analysis demonstrates that plaintiffs have a greater ability to extract settlements than has been previously suggested. While this conclusion has normative implications (is this greater ability to extract settlements socially desirable?), analysis of these implications is deferred to another occasion.

The article is organized as follows. Section II begins with an informal analysis that demonstrates the main results of the article through simple numerical examples. Section III develops a model of sequential bargaining between a plaintiff and a defendant, demonstrates in general the effect of divisibility on the plaintiff's ability to extract a settlement, and identifies the settlement amount. Section IV further explores the conditions under which NEV suits will succeed. Section V examines the effects of divisibility under the British (fee-shifting) rule of litigation finance. Section VI considers some extensions and generalizations of the analysis. Finally, Section VII offers concluding remarks.

II. Informal Analysis

A. The One-Stage Case

Consider a suit in which the expected judgment (the probability of the plaintiff prevailing, times the magnitude of the judgment that he will get if he prevails) is 100. If the parties proceed all the way to judgment, each party will incur litigation costs of 140. This is an NEV suit since the plaintiff's expected gain is $100 - 140 = -40 < 0$. Suppose, initially, that there is only one litigation stage in which all of the parties' litigation costs are incurred in a lump-sum fashion, with bargaining taking place prior to that stage.

In this scenario, the plaintiff does not have a credible threat. If the defendant refuses to settle, the plaintiff would choose to drop his case and get zero rather than litigate the case and suffer an expected loss. Anticipating this, the defendant would refuse to settle for any positive amount. The suit has no credibility, and it thus cannot succeed.

B. How Two-Stage Division Can Bolster Credibility

Let us change the above example and suppose that the parties' litigation costs of 140 each are incurred not in a lump-sum fashion, but rather in two equal-cost stages. Suppose also that the parties can negotiate a settlement between stages. As will be shown below, the division of the suit into two stages might well make the plaintiff's threat to sue credible,

and it may thus enable the plaintiff to extract a settlement offer from the defendant.

In analyzing this case, as well as subsequent cases, we are going to apply "backward induction." This approach is the standard method used by economists for analyzing strategic interactions in which parties make decisions over several time periods.[7] According to this approach, an analysis of how parties decide at any one point in time must be preceded by an analysis of the decisions at later points in time. This is so because the consequences of a decision at any one time depend on the decisions to be made at later times. Parties' choices among actions depend on what they expect future decisions to be.

Thus, the backward induction approach suggests that the analysis should start by examining what parties will decide in the final stage. In this last stage, expectations about future decisions no longer play a role, and we can analyze the parties' decision given any set of circumstances in which they may find themselves (circumstances that may result, in part, from earlier decisions). Equipped with this understanding, we can proceed to analyze what will happen one stage earlier. Knowing what the parties will do in the last stage, we can determine their decisions for any set of circumstances in which they may find themselves in the stage before last. We can continue to proceed backwards in this way, identifying the decision that will be reached in each stage based on the understanding of the future consequence of each action. The analysis is complete once we reach the initial stage.

In the example that we consider now, the parties can negotiate and decide whether or not to settle at two points in time: before the first stage of litigation, and between the two stages—assuming they reach this point. Following the approach of backward induction, let us begin by considering the later point, the time between the two stages. Assuming that the parties reach this bargaining round, the plaintiff will have a credible threat to proceed to judgment. At this stage, the cost of the first stage of litigation is already sunk. Going all the way to judgment would involve an additional cost of only 70 and provide an expected judgment of 100.

Thus, if the parties somehow reach the bargaining round between the two stages, the plaintiff will have a credible threat and will be able to extract a settlement. For the plaintiff, any settlement amount exceeding 30 will be preferable to proceeding to trial. For the defendant, given that she will incur an additional cost of 70 if the case proceeds to trial, any

[7] For a technical presentation of the backward induction principle, see Drew Fudenberg & Jean Tirole, Game Theory 96–99 (1991). For a less technical approach, see David M. Kreps, A Course in Microeconomic Theory 399–402 (1990).

settlement below 170 will be preferable to proceeding to trial. Thus, the parties can be expected to settle somewhere between 30 and 170. If, for example, they have equal bargaining power, we can expect them to settle for 100 (the midpoint amount).

Having determined what will happen in the second round of negotiations, we can now take the analysis one step back in time. At the initial round, before the litigation costs of the first stage are incurred, the parties will recognize that if they reach the second round—after spending 70 each—the plaintiff will have a credible threat to proceed and will extract a settlement. If the parties expect this later settlement amount to be greater than 70, then the plaintiff will have a credible threat to proceed through the first stage. Proceeding through the first stage will cost the plaintiff 70, but it will provide him with the opportunity to extract a settlement exceeding 70. Because the plaintiff has a credible threat to proceed at the initial negotiations round, the parties can be expected to settle at that time.

The settlement amount agreed upon at the initial round will be shaped by the parties' costs at the first stage and by the settlement amount that is expected to be agreed on if the parties were to reach the second bargaining round. Suppose, for example, that the parties have equal bargaining power. Then, as explained, if they were to reach the point between the two stages, they would settle for 100. Given that the first stage litigation costs are 70 for each side, the settlement range in the bargaining that precedes the first stage is between 30 and 170. Parties with equal bargaining power will thus settle before the first stage at the midpoint of the settlement range, that is, for 100.

C. How Multistage Division Can Further Bolster Credibility

We have seen that a two-stage division can provide the plaintiff with a credible threat even if, without such division, the plaintiff would not have had a credible threat. We will show now that a division into more than two stages further expands the set of situations in which the plaintiff has a credible threat and thus can extract a settlement offer.

Consider the following example. Continue to assume that the expected judgment is 100, but suppose now that each party's total litigation costs are 300. In this case, even if the litigation had two equal-cost stages, the plaintiff would not have a credible threat to proceed. For even if the parties somehow passed the first stage, the plaintiff would not have a credible threat to proceed. Proceeding into the second stage would cost him 150 and would provide an expected judgment of only 100. Thus, if the parties reached the second stage, the plaintiff would not be able to

extract a settlement offer. Anticipating this, the plaintiff will not have a credible threat prior to the first stage of litigation. Thus, in the two-stage case of this example, the plaintiff will not be able to extract any settlement offer.

Suppose, however, that the litigation is expected to be divided into not two but 10 equal-cost stages and that bargaining can take place prior to each stage. In this case, the plaintiff may have a credible threat and may be able to extract a settlement offer.

To see this, let us suppose that both sides have equal bargaining power and let us pursue the analysis by backward induction. What would the parties do at the last round of the bargaining (just prior to the tenth litigation stage) if they reached this point? The plaintiff would have, at this round, a credible threat to proceed to judgment through the last stage. At this round, the cost of proceeding to judgment is 30 (the other 270 are already sunk), and the expected judgment is 100. Given that the plaintiff has a credible threat, and that settlement can save each party a cost of 30, the settlement range is between 70 and 130. Thus, parties with equal bargaining power can be expected to settle prior to the tenth litigation stage for (the midpoint amount of) 100.

Now, let us go one stage back in time. What would the parties do at the bargaining round just prior to the ninth litigation stage, assuming they reached this point? Here, again, the plaintiff has a credible threat to proceed to the next stage. Proceeding to the next stage would cost him only 30 (the cost of one stage of litigation), and—in light of the analysis above—proceeding can be expected to result in a settlement of 100 at the tenth round. Thus, given that the plaintiff has a credible threat at the ninth round, we can calculate the expected settlement amount at this round. A settlement at the ninth round can save each party 30, whereas failing to settle in this round will result in a settlement of 100 at the tenth round. Thus, assuming that the parties reach the ninth round, and assuming that they have equal bargaining power, the parties can be expected to settle in this round for 100.

We can now proceed one stage backwards, to the eighth round, and so forth. Conducting the analysis in this way, we find that, prior to each stage, the plaintiff would have a credible threat to proceed to the next stage and therefore would be able to extract a settlement. And the fact that he would be able to extract this settlement provides credibility to the plaintiff's threat one stage earlier in time.

Specifically, in this example, the plaintiff will have a credible threat to proceed at the outset—prior to the first stage of litigation—and the parties can be expected to settle immediately. The expected settlement

amount will be 100, a reflection of the assumption that the parties have equal litigation costs and equal bargaining power.

D. Not All Threats to Sue Are Credible

We have illustrated how the divisibility of the litigation process can expand the set of circumstances in which a plaintiff with an NEV suit has a credible threat and can therefore extract a settlement. Before proceeding with the article's general analysis, it is important to emphasize that divisibility will not always provide a credible threat. There are cases of NEV suits in which, no matter how finely the litigation process is divided, the plaintiff does not have a credible threat and cannot extract a settlement offer.

Reconsider the example examined above, in which the expected judgment is 100 and the parties have equal bargaining power. Let us change the parties' litigation costs: assume that the plaintiff's litigation costs are 500 and the defendant's litigation costs are 100. Even assuming a very fine division of the litigation process (into, say, 100 equal-cost rounds), the plaintiff will not have a credible threat to sue.

To see this, let us start by considering the situation of the parties if they were to reach the last, 100th stage. At this stage, the plaintiff will have a credible threat to proceed to judgment; for the expected judgment is 100 and the remaining costs at this point are only 5. Given that the plaintiff has a credible threat, if the parties were to reach the 100th round (which, we will see, does not happen), a settlement will take place. But what is important to notice is the expected settlement amount. Since a settlement at the 100th round saves the plaintiff 5 in litigation costs and the defendant only 1, the settlement range is between 95 and 101. Assuming that the parties have equal bargaining power, the expected settlement at the 100th round is 98, 2 below the expected judgment in the case.

Now, let us go one stage back in time, to the bargaining round before the 99th stage. At this round, the parties will recognize that proceeding one more stage will cost the plaintiff 5 and the defendant 1 and will produce an expected settlement of 98 at the 100th round. Thus, the settlement range at the 99th round is between 93 and 99, and the expected settlement is 96, 4 below the expected judgment in the case.

Continuing backwards in time in similar fashion, we will find that, at any given round, if the parties were to reach this round, it can be calculated that the expected settlement will be lower than the expected settlement that the parties would agree on if they were to reach the next round. In particular, if the parties were to reach the 53rd round, it can

be calculated that the expected settlement will be only 4. But this implies that the plaintiff will not have a credible threat to proceed at the 52nd round. For at this point, proceeding through another stage would cost the plaintiff 5 and would produce an expected settlement of only 4. Thus, given that the plaintiff will not have a credible threat to proceed at the 52nd round, the plaintiff will not be able to extract any positive amount from the defendant. And this implies that the plaintiff will not have a credible threat to proceed also at the 51st round, or at any other earlier round.

Hence, divisibility can bolster the plaintiff's strategic position but cannot guarantee that the plaintiff will always have a credible threat. Whether the plaintiff has a credible threat or not depends, as the analysis below will demonstrate, on the relationship between the following parameters: the expected judgment, the plaintiff's litigation costs, the defendant's litigation costs, and the way in which the parties' costs are spread throughout the litigation process. Indeed, a principal purpose of the analysis below is to identify the circumstances under which plaintiffs with NEV suits have or do not have credible threats to sue.

III. The Model

A. *Framework of Analysis*

A party, to whom we will refer as the plaintiff, has a potential suit against another party, to whom we will refer as the defendant. If the suit is pursued all the way to judgment, the plaintiff will win an award of J with probability π; thus, the expected judgment is $W = \pi J$.

Litigation imposes costs, and the total costs incurred by the plaintiff and the defendant, if the suit proceeds all the way to judgment, are C_p and C_d, respectively. Initially, it will be assumed that the allocation of litigation costs is governed by the American rule. Under this rule, each party bears his or her own litigation costs regardless of the outcome of the trial. Section V extends the analysis to the case in which the British rule of fee-shifting applies.

It is assumed throughout that the suit is an NEV suit. That is, we assume that $W < C_p$.

A central feature of the model is the structure of the parties' expenditures over time. It is assumed that C_p and C_d are not incurred all at once, but are spread over a number of stages. Specifically, it is assumed that there are $n > 1$ stages between the filing of a suit and the judgment. At each stage $i = 1, 2, \ldots, n$, each party incurs a fraction of his or her total litigation costs. Let c_p^i and c_d^i denote the costs incurred in stage i by the plaintiff and the defendant, respectively. In addition, define

$C_p^i = \Sigma_{j=i}^n c_p^j$ and $C_d^i = \Sigma_{j=i}^n c_d^j$. C_p^i and C_d^i denote the remaining litigation costs once stage i is reached, that is, what each party has to incur from stage i to judgment.

Because the parties' costs are spread over many stages, bargaining can take place after some but not all litigation costs have been incurred. Specifically, it is assumed that the parties may bargain prior to each of the n stages in which costs may be incurred.

At any given bargaining round, if this round is reached, either the plaintiff or the defendant will make a settlement offer; the identity of the party that can make the settlement offer at any given round is assumed to be determined randomly just prior to that, and each party is equally likely to be the offeror.[8] (Section VI will consider the case in which one party has superior bargaining power and is therefore more likely to be the offeror at any given round.) After the offer is made, the other party may either accept it (that is, a settlement is reached) or reject it. In the event that the offer is rejected, the plaintiff will either drop the suit or proceed through the next stage of litigation, in which case the parties incur another fraction of their litigation costs.

It is assumed that the parties have no commitment mechanisms (such as ones grounded in reputation) that would enable them to bind themselves to a particular cause of action. For the credibility of NEV suits to be an interesting problem, this must be the case. For if the plaintiff could credibly commit himself to go to trial in case the defendant refused to settle, then the plaintiff (even though he has an NEV suit) would always be able to extract a settlement offer. Conversely, if the defendant could commit herself credibly not to settle, the plaintiff would always be discouraged from initiating a suit.

For simplicity, both parties are assumed to be risk-neutral. It is also assumed that π, J, $\{c_p^i\}$, and $\{c_d^i\}$ are common knowledge. Finally, the parties are assumed to have identical discount rates. All money values at periods $i > 0$ are expressed in terms of their present value at $i = 0$. In particular, J, $\{c_p^i\}$ and $\{c_d^i\}$ are all expressed in terms of their present value at $i = 0$.

Before proceeding with the analysis, let us consider what would have happened if n were equal to 1, that is, if litigation costs were all incurred in a lump-sum fashion. In this case, the plaintiff's having an NEV suit implies that the plaintiff would not be able to extract a positive settlement from the defendant. There would be only one possible bargaining point—

[8] In modeling a multiperiod bargaining, it is conventional to assume that in every period each party is equally likely to be the offeror. The alternative conventional formulation, in which the two parties alternate roles, would produce similar results.

just before the single stage of litigation. And, at this point, the defendant would neither propose, nor agree to accept, any positive settlement amount. The defendant will recognize that pursuing the suit would yield a negative payoff for the plaintiff. Therefore, if a settlement is not reached, the plaintiff will drop the suit rather than pursue it. This is true regardless of the relative magnitude of the defendant's costs. In this case, the plaintiff's threat to proceed to trial and to impose litigation costs on the defendant is simply not credible, and this threat therefore cannot extract a settlement. Thus, when litigation costs are indivisible, NEV suits cannot succeed. As we will now examine, however, when litigation costs are divisible, the set of credible threats—and, thus, of the NEV suits that succeed in extracting a settlement—is expanded.

B. The Bargaining

As explained, to analyze the considered game we should reason by backward induction, beginning with the last round of the bargaining. Suppose that the parties reach round n. Regardless of the identity of the party making an offer at this round, the defendant will agree to pay a positive settlement amount only if the plaintiff has a credible threat to proceed to the terminal stage—judgment—in the absence of a settlement. The plaintiff's threat to proceed to judgment will be credible if and only if[9]

$$W \geq c_p^n. \tag{1}$$

This condition can be satisfied for an NEV suit if the fraction of the costs borne in the nth stage is small enough, that is, if the costs are sufficiently divisible.

If the plaintiff's threat to proceed is credible, then the defendant will agree to settle, and we should examine the expected value of the settlement. When the plaintiff makes the settlement offer, his offer, denoted by S_p^n, will equal the highest value that the defendant will be willing to accept:

$$S_p^n = W + c_d^n. \tag{2a}$$

However, if the defendant is the one who makes the offer, her offer, denoted by S_d^n, will equal the lowest value acceptable to the plaintiff:

$$S_d^n = W - c_p^n. \tag{2b}$$

[9] It is assumed throughout that in the event of indifference between proceeding and not proceeding, the plaintiff will proceed.

Since each party is equally likely to be making the offer at round n, the expected value of the settlement, conditional on the parties reaching round n, will be

$$S^n = \tfrac{1}{2}(S_p^n + S_d^n) = W + \tfrac{1}{2}(c_d^n - c_p^n). \tag{3}$$

This settlement will be reached prior to the parties' spending their stage n expenditures.

Now consider rounds prior to the last round. At each such round, the plaintiff's threat to proceed through the following stage of litigation will be credible if and only if the cost he must incur in *the following stage* is lower than the expected settlement amount that he can expect to obtain at the next bargaining round. Thus, if any round $i < n$ is reached, the plaintiff's threat to proceed through the following litigation stage will be credible if and only if

$$S^{i+1} \geq c_p^i. \tag{4}$$

If the plaintiff's threat is not credible, the defendant will not agree to any positive settlement amount, and S^i will be equal to 0. If the plaintiff's threat is credible, the settlement offer depends on whether the plaintiff or the defendant makes the offer, and it will be either

$$S_p^i = S^{i+1} + c_d^i \tag{5a}$$

or

$$S_d^i = S^{i+1} + c_p^i. \tag{5b}$$

The expected value of period i's settlement is thus

$$S^i = S^{i+1} + \tfrac{1}{2}(c_d^i - c_p^i), \tag{6}$$

which yields

$$S^i = W + \tfrac{1}{2}(C_d^i - C_p^i). \tag{7}$$

Notice that expression (7) is the expected settlement *conditional* on the plaintiff's round i threat being credible, which itself depends on the plaintiff's threat being credible in all future periods. Expression (7) says that in any given round, if the plaintiff can credibly threaten to proceed, the parties can be expected to settle in the midpoint of the settlement range. The settlement range for a given round reflects the costs of litigating this stage, as well as the expected settlement in the next round. And since the values of the expected settlements in the next and later rounds are determined in a similar way, it turns out that the settlement range at

any given round reflects the expected judgment and the litigation costs that remain.

C. *The Outcome*

The above backward induction analysis is complete once we reach the first round of the bargaining. The following Proposition summarizes the outcome of the bargaining:

PROPOSITION. (*a*) An NEV suit will be settled if and only if the plaintiff has, before each stage of the litigation process, a credible threat to proceed to the next stage, which is the case if and only if

$$c_p^i \leq W + \tfrac{1}{2}(C_d^{i+1} - C_p^{i+1}) \quad \text{for every } i = 1, 2, \ldots, n. \tag{8}$$

b) If an NEV suit is settled, the settlement will take place at $i = 1$, and its expected value will be

$$S^* = W + \tfrac{1}{2}(C_d - C_p). \tag{9}$$

REMARKS. (*a*) *The Credibility of Threats.* While the bargaining game is resolved instantly, it will end with a positive settlement only if the plaintiff has a credible threat to proceed in all subsequent rounds. If the plaintiff does not have a credible threat in some round j, then the defendant will refuse to settle in this round, at which point the plaintiff will drop the suit rather than proceed. The anticipation that this will occur undermines the credibility of the plaintiff's threats in all previous rounds. Consequently, the defendant will not be willing to settle for any positive sum. Therefore, the conditions stated by the Proposition for an NEV suit to succeed are those ensuring that the plaintiff's threats are credible in all rounds.

b) *The Early Resolution.* As one would expect in a bargaining game with perfect information, a settlement, if reached, will occur in the first round of negotiations. This result is reached because there is no asymmetric information in the game and, therefore, the outcome of the game can be anticipated by both parties. Since delay imposes costs, the outcome would not be a settlement in later rounds. For if the parties expected such a settlement, they would be able to structure a settlement in the first round that would make both of them better off.[10]

[10] To account for the possibility of long, costly, pretrial negotiations that produce a settlement in later rounds, asymmetric information must be introduced. In a model with asymmetric information, parties' uncertainty about each other's costs, the expected judgment at trial, or even the length of the game, may delay their reaching a settlement. See Kathryn E. Spier, The Dynamics of Pretrial Negotiation, 59 Rev. Econ. Stud. 93 (1992). For a general discussion of bargaining models with incomplete information, see Martin J. Osborne & Ariel Rubinstein, Bargaining and Markets 91–106 (1990); A. E. Roth, Game Theoretic Models of Bargaining (1985).

c) Divisibility Might Enable NEV Suits to Succeed. The Proposition implies that the divisibility of litigation costs might provide the plaintiff with a credible threat, even though the plaintiff has an NEV suit. There are clearly cases in which, even though $C_p > W$, the conditions for credibility specified in the Proposition are satisfied. The next section will explore the circumstances under which this will happen.

d) Greater Divisibility Can Only Bolster Credibility. The fact that divisibility is the feature that bolsters credibility can be highlighted by examining the effect of increased divisibility. If we take any stage k and break it into two, such that the cost in that stage, c_p^k, is now divided between the two substages, with a bargaining round taking place in between, credibility can only be bolstered. If the plaintiff had a credible threat in round k, he would continue to have such a threat in each of the two subrounds that now exist. If the plaintiff did not have a credible threat in round k, however, the split into two subrounds might produce a credible threat. The cost of pursuing each of the two substages is now just a fraction of the cost of stage k. Consequently, the plaintiff might have prior to each of the two substages a credible threat to proceed even though he did not have a credible threat before the division.[11]

e) The Division of Settlement Gains. Finally, let us comment on the expected settlement amount in those cases in which the divisibility of the litigation process provides the NEV plaintiff with a credible threat. In these cases, the surplus produced by avoiding a trial, that is, the saving of litigation costs, is divided equally between the two parties. This equal division is to be expected, since the model is one of symmetry in the parties' bargaining power: the plaintiff and the defendant have equal opportunities to make offers. This equal division thus would not occur in a case in which the parties have unequal bargaining power, a case that will be examined in Section VI.

IV. Exploring the Conditions for a Credible Threat

The analysis thus far enables us to determine in general whether an NEV suit is credible, and if so, what settlement it can extract. This section takes a closer look at the conditions identified above to explore further how the credibility of the threat depends on the various parameters involved. To explore this question, we shall consider different cases concerning the way in which litigation costs are divided over time.

[11] A formal demonstration that greater divisibility can only bolster credibility is provided in a companion, more technical piece. See Lucian A. Bebchuk, Of Divisibility and Credibility: An Analysis of Negative-Expected-Value Suits (mimeographed, Harvard University 1995).

A. *The Case of Equal-Cost Stages*

We begin by focusing on a simple case in which the parties' costs are distributed uniformly across the litigation stages. That is, there are n equal-cost stages, with $c_p^i = C_p/n$ and $c_d^i = C_d/n$. Later, we will extend the analysis to include patterns in which the costs are spread unevenly over time.

1. The Conditions for Credibility

COROLLARY 1. In the case of equal-cost stages, the plaintiff's threat is credible and an NEV suit will succeed if

(i) $W \geq C_p/n$,

and

(ii) $W + \frac{n-1}{2n}(C_d - C_p) \geq C_p/n$.

Proof. Condition (i) is clearly necessary, as it must hold for the threat to be credible at $i = n$. When (i) is satisfied, condition (ii) (that the threat at $i = 1$ is credible) turns out to be sufficient. Together, the two conditions guarantee that there is no intermediate round in which the threat is not credible. To verify this, note that for all i, $C_p/n \leq S^{i+1}$ holds if

$$W + \frac{n-i}{2n}(C_d - C_p) \geq C_p/n.$$

If $C_p \leq C_d$, then condition (i) is sufficient to make this inequality satisfied for all i. If $C_p > C_d$, then the left-hand side increases with i, so condition (ii) guarantees that the inequality is satisfied. Q.E.D.

Corollary 1 states that, in the considered case of equal-cost stages, it is sufficient to have credible threats in the first and last rounds. This is not because the other rounds are irrelevant but rather because credibility in these intermediate rounds is implied by the two "boundary" conditions of credibility at $i = 1$ and $i = n$.

The conditions specified in Corollary 1 illustrate well how greater divisibility bolsters credibility. Observe that, as costs become more divisible, that is, as n grows larger, the two conditions in Corollary 1 are more likely to hold. In particular, when n becomes very large, these two conditions collapse into the condition specified in the following Corollary.

COROLLARY 2. When the litigation process has a sufficiently large number of equal-cost stages, the condition for the plaintiff's threat to be credible and for the NEV to succeed can be approximated by

$$W + \tfrac{1}{2}(C_d - C_p) > 0. \tag{10}$$

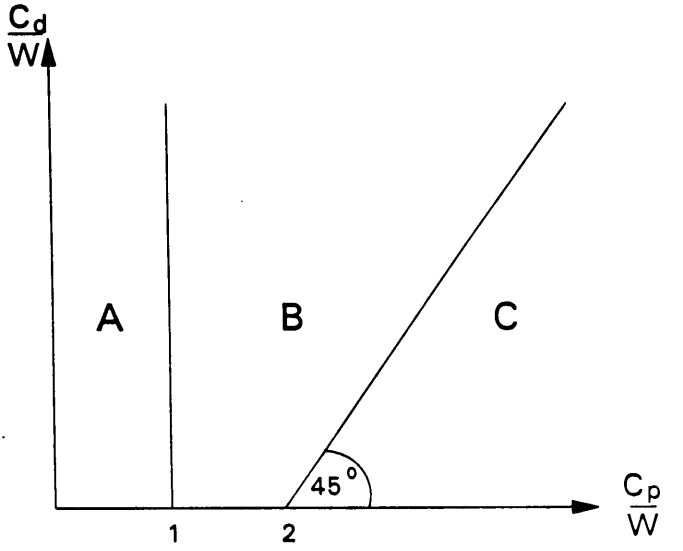

FIGURE 1

The analysis to follow examines condition (10) to draw conclusions about how the success of an NEV suit depends on the parameters of the case.

2. The Relative Magnitude of C_p and W

A suit is an NEV suit if $C_p/W > 1$. Condition (10) implies that the plaintiff's threat is credible and an NEV suit will therefore succeed if

$$\frac{C_p}{W} < 2 + \frac{C_d}{W}. \tag{11}$$

This condition can be illustrated in Figure 1, which partitions the universe of cases into three areas. Area A contains all the suits that have a positive expected value ($C_p < W$). All the suits in areas B and C are NEV suits. Area B contains all the NEV suits in which the plaintiff can succeed in obtaining a positive settlement amount. Area C contains the NEV suits in which the plaintiff does not have a credible threat to proceed and therefore will not succeed in extracting a settlement.

Finally, it is worth noting that, regardless of the size of C_d, an NEV suit will succeed as long as $C_p < 2W$. In particular, even if the defendant has no litigation costs (that is, $C_d = 0$), a settlement will take place whenever the plaintiff's litigation costs are no more than twice the expected judgment.

3. The Relative Magnitude of C_p and C_d

Condition (10) indicates that an NEV suit will succeed if

$$\frac{C_p}{C_d} < 1 + 2\frac{W}{C_d}. \tag{12}$$

That is, no matter how small the stakes are, the plaintiff will be able to extract a positive settlement offer as long as his litigation costs are lower than the defendant's ($C_p/C_d < 1$). This result fits our intuition. When $C_p < C_d$, the defendant has "more to lose" from litigation than the plaintiff. This helps the plaintiff's position and enables him to extract a settlement.

B. On the Case of Nonuniform Division

Subsection *A* explored the conditions for credibility in situations in which costs are distributed uniformly across stages. This subsection considers situations in which some stages are more costly than others. For simplicity, we will consider below only the simple case in which the parties have identical "time profiles"—that is, the distributions of their costs over time have the same form. Thus, my assumption is that $c_p^i/C_p = c_d^i/C_d$ for every i, and let us denote by θ_i the fraction of total costs that is incurred by each side in stage i. The more complex case, in which each party has a different time profile, is analyzed in a companion, more technical paper.[12]

Applying the Proposition established in Section III to this case, we find that for threats to be credible, the following conditions must hold:

$$\theta_i C_p \leq W + \tfrac{1}{2}\left(\sum_{j=i+1}^{n} \theta_j\right)(C_d - C_p) \quad \text{for every } i = 1, 2, \ldots, n. \tag{13}$$

If we assume that the cost in each stage i is sufficiently small, then we can establish, by the reasoning used earlier, the following Corollary:

COROLLARY 3. In the identical time profiles case, if the plaintiff's litigation costs in each stage are sufficiently small, then the condition for the plaintiff's threat to be credible can be approximated by

$$W + \tfrac{1}{2}(C_d - C_p) > 0. \tag{10}$$

[12] See *id.* It is worth noting that the conditions for credibility identified in this companion work for the case of nonidentical time profiles differ from the conditions specified in Corollary 3 below for the case of identical time profiles.

REMARK. The condition for credibility that Corollary 3 identifies is the same as the one that applies to the uniform distribution case. Thus, all the conclusions reached in Subsection *A*, concerning the effects of the different parameters, hold also in the case in which stages have different costs but the parties still have identical time profiles.

V. THE BRITISH RULE

The analysis has thus far assumed that the allocation of litigation costs is governed by the American rule, that is, that each party bears his or her litigation costs regardless of the outcome at trial. We now turn to consider the success of NEV suits under the British rule, which requires the losing party to reimburse the winner's costs.

Under the British rule, the plaintiff incurs no litigation costs if he wins but must bear both parties' litigation costs if he loses.[13] Since the probability of the plaintiff losing is $(1 - \pi)$, his expected litigation costs are $(1 - \pi)(C_p + C_d)$. As before, my focus is on such NEV suits. Under the British rule, a plaintiff's suit has a negative expected value if the expected litigation costs of $(1 - \pi)(C_p + C_d)$ exceed the expected judgment of W, or, equivalently, if

$$C_p + C_d > \frac{W}{1 - \pi}. \tag{14}$$

The analysis of the previous sections can easily be adjusted to the British rule case. Specifically, litigation under the British rule is equivalent to litigation under the American rule with the adjustment that the expected judgment in the British rule case is not W but rather W^*, defined as[14]

$$W^* = W + \pi C_p - (1 - \pi) C_d. \tag{15}$$

Thus, the analysis of whether an NEV suit will succeed can proceed in the same way as in the previous section, with W^* replacing W. As before, for an NEV suit to succeed, the plaintiff must have a credible threat in all rounds. Consequently, the conditions for a credible threat are the n conditions stated in (8), with W^* replacing W.

[13] It is assumed throughout the analysis in this section that reimbursement under the British rule takes place only if the case reaches the judgment stage. In a model of multiround litigation, there is another version of the British rule that may be considered, in which the defendant is entitled to reimbursement if the plaintiff drops the suit after the litigation commenced. The analysis below can be adjusted to apply to this alternative version.

[14] This equivalence was first identified in Bebchuk, *supra* note 3.

In the identical time profiles case, the conditions for credibility reduce to the two conditions stated in Corollary 1, with W^* replacing W. When the litigation costs are sufficiently divisible, these two conditions can be approximated by

$$W + \pi C_p - (1 - \pi) C_d > 0 \tag{16a}$$

and

$$W + (\pi - 1/2)(C_d + C_p) > 0. \tag{16b}$$

A sufficient condition for (16a) and (16b) to be satisfied is that

$$\pi > \frac{C_d}{C_p + C_d} \tag{17a}$$

and

$$\pi > 1/2. \tag{17b}$$

Thus, in the identical time profiles case, if $\pi > 1/2$ and $C_d < C_p$, the plaintiff's threat will be definitely credible. These conditions, it should be emphasized, are sufficient but not necessary for credibility, and the plaintiff might thus have a credible threat even if they are not met.

VI. Extensions and Generalizations

A. *Cost-Free Stages*

The analysis has thus far assumed that in each stage of the bargaining process the plaintiff must incur some (possibly very small) cost. That is, there is no stage in which the defendant incurs some cost whereas the plaintiff incurs no cost. This subsection examines the consequences of having such a "cost-free" stage. The main result is that the existence of a cost-free stage might bolster the credibility of the plaintiff's threat, and it may thus expand the set of cases in which a plaintiff with an NEV suit will be able to extract a settlement offer.

To see this, consider a case in which there is a cost-free stage k. Suppose that at some round after k, there is no credible threat to proceed.[15] Without the cost-free stage, the lack of a credible threat in a subsequent

[15] If the threats to proceed to judgment are credible in all rounds subsequent to k, then the existence of the cost-free stage would not have the bolstering effect that is identified below.

round would completely eliminate the plaintiff's ability to extract a settlement at an earlier stage. However, even though there is no credible threat after stage k, in the bargaining just prior to the cost-free stage k the plaintiff will have a credible threat. In this stage, the plaintiff has nothing to lose by proceeding to the next round, even if the expected settlement at the next round, S^{k+1}, is 0 (that is, the suit will be dropped at $k + 1$). Thus, if round k is reached, the defendant will be willing to settle, to avoid her stage k litigation costs (recall, the defendant does incur some costs at stage k). Moving backwards to round $k - 1$, the plaintiff might now be able to make a credible threat even if $c_p^{k-1} > 0$, because S^k is now positive. Thus, the plaintiff will be able to extract a settlement offer if he has a credible threat in all rounds prior to k, that is, if

$$c_p^i \leq \tfrac{1}{2}\left(\sum_{j=i+1}^{k} c_d^j - \sum_{j=i+1}^{k} c_p^j\right) \quad \text{for every } i = 1, 2, \ldots, k-1. \quad (18)$$

Even though threats after stage k are not credible, and the plaintiff cannot threaten to pursue his case all the way to judgment, he might still have prior to stage k credible threats to pursue the case up to the cost-free stage k and drop it then. If condition (18) holds, and the plaintiff's threats have credibility only because of the presence of a cost-free stage, then a settlement will be reached in round 1, and the expected settlement amount will be

$$S^* = \tfrac{1}{2}\left(\sum_{j=1}^{k} c_d^j - \sum_{j=1}^{k} c_p^j\right). \quad (19)$$

Notice that the expected settlement in this case is independent of the expected judgment, W. This occurs because possibility of reaching the judgment stage is never relevant to the parties' considerations. When credibility is gained only because of the presence of a cost-free round, the settlement amount will depend only on the relative sizes of the parties' litigation costs up to that stage.[16] If the defendant's cumulative expenses are expected to exceed the plaintiff's cumulative expenses all the

[16] This result generalizes the analysis of Rosenberg & Shavell, *supra* note 6. Their analysis focusses on the special case in which the very first stage of the process is a cost-free stage for the plaintiff. They conclude that the plaintiff will be able to extract a settlement reflecting the defendant's litigation costs at that initial round.

way up to the cost-free stage, then the plaintiff will have a credible threat in all the rounds preceding the cost-free stage and will be able to extract a positive settlement amount.[17]

B. Different Bargaining Power

The analysis has thus far supposed that the parties have equal bargaining power. This assumption implies that in each round, each party has an equal chance of being the one that makes the take-it-or-leave-it offer.

The model can be adjusted, however, to apply to the case in which the parties might differ in their bargaining power. To cover this general case, suppose that in each round the plaintiff makes the take-it-or-leave-it offer with probability α and the defendant makes the take-it-or-leave-it offer with probability $1 - \alpha$. Since a take-it-or-leave-it offer gives the party offering it a bargaining advantage, the cases in which $\alpha < \frac{1}{2}$ are those in which the defendant has stronger bargaining power, and the cases in which $\alpha > \frac{1}{2}$ are those in which the plaintiff has stronger bargaining power.

With this adjustment, the analysis can proceed as in Sections III–IV. In particular, it can be established that the plaintiff will have a credible threat and will be able to extract a settlement offer if

$$c_p^i \leq W + \alpha C_d^{i+1} - (1 - \alpha) C_p^{i+1} \quad \text{for every } i = 1, 2, \ldots, n. \tag{20}$$

In this case, the expected settlement amount will be

$$S^* = W + \alpha C_d - (1 - \alpha) C_p. \tag{21}$$

In the case of identical time profiles, and with sufficient divisibility, the conditions for credibility can be approximated by the condition

$$W + \alpha C_d - (1 - \alpha) C_p > 0, \tag{22}$$

[17] How would the analysis change under the British rule? If fee-shifting takes place only in the event that judgment is rendered, there will never be fee shifting in this situation, because the plaintiff will not proceed beyond stage k. Therefore, the parties' costs are the same as under the American rule, and the analysis above carries over. However, if the other version of the British rule applies (under which, if the plaintiff drops his case at any point, the plaintiff has to reimburse the defendant for the costs she has already incurred) the outcome is different. Here, even if the plaintiff has a stage in which $c_p^k = 0$, proceeding to the next stage is no longer cost-free for the plaintiff. His real cost of proceeding, given that he expects to drop subsequently the suit, will equal the defendant's cost at that stage. Thus, there are no cost-free stages under this version of the British rule.

or, after rearrangement,

$$\alpha > \frac{C_p - W}{C_p + C_d}. \tag{23}$$

Note that the right-hand side of (23) is always positive and smaller than one, and that its positive value can be very small in the case of some NEV suits. Thus, as long as the plaintiff has some chance of making an offer (α is positive), some NEV suits can succeed. As can be expected, an increase in α (which represents an increase in the plaintiff's power) expands the set of circumstances in which the plaintiff will be able to extract a settlement offer and raises the expected value of the settlement amount. Conversely, a decrease in α contracts the set of circumstances in which an NEV can succeed.

Thus, as long as the plaintiff has any bargaining power ($\alpha > 0$), the important conclusions obtained earlier remain: divisibility of litigation costs continues to play a major role in shaping the outcome of settlement bargaining; NEV suits might consequently succeed; and greater divisibility can only bolster the credibility of the plaintiff's threat and thus make more likely the success of his NEV suit.

VII. Concluding Remarks

A. The Wider Set of Credible-Threat Cases

One contribution of this article is to point out that plaintiffs have credible threats—and can extract settlement offers—in a much wider set of circumstances than has been suggested by the prior economic literature.

The implications of the analysis in this respect are quite substantial because there are numerous cases in which defendants know (or suspect with a high probability) that the plaintiff has an NEV suit in his hands. To start with, in the universe of small-stakes cases, there are numerous instances in which defendants recognize that the small amount at stake is smaller than the litigation costs needed to pursue it. In addition, there are likely to be many high-litigation-costs cases in which the amount at stake is not small but the needed litigation costs would clearly be large enough to exceed it.

Under the prior understanding of the subject, plaintiffs with such NEV suits face great difficulties in getting any amount from the defendant. On this understanding, if the plaintiff cannot bind himself to pursue the suit (which would likely be the case in any one-shot situation), the plaintiff

would lack a credible threat.[18] To be sure, defendants in such cases might still pay plaintiffs because of the defendants' moral convictions or their concern for reputation, but they would have no "economic" reason to pay.

The analysis of this article, however, suggests a very different picture for the numerous cases in which plaintiffs have, and can be recognized to have, an NEV suit. If the litigation process in these cases is sufficiently divisible, this divisibility might by itself provide plaintiffs with a credible threat, and it therefore might provide the defendant with an "economic" reason to pay. Thus, the force of the law in these cases is significantly greater than has been suggested by prior analysis.

B. The Key Role of Divisibility

A key feature of the situation that was analyzed is that litigation costs are incurred not all at once but in stages. Thus, the practical importance of the conclusions depends on whether such divisibility commonly exists. The following observations suggest that this is indeed the case.

One important part of litigation costs is payment for lawyers' time. By definition, lawyers' investment of time is incurred as time goes by. That this might lead to divisibility of litigation costs is especially visible in the common case in which lawyers charge hourly fees. In that case, the plaintiff's litigation costs would go up with each hour that the lawyer works (and would not increase—a cost-free period—in each hour in which the lawyer does not work).

In addition, divisibility may be facilitated by the fact that rules of procedure often separate the litigation process into stages. It is not uncommon for the legal process to involve considerable delays between stages. This enables the parties to engage in extensive bargaining between stages, when some of their costs have yet to be accrued.[19]

[18] According to the prior literature on the subject, this is generally true unless the case falls into the special circumstances identified in the Rosenberg-Shavell analysis (*supra* note 6 and Section I*B*).

[19] It may be worth noting the analysis in the model assumes not only that the litigation process is divided into stages but also that bargaining can take place between these stages. Surely, if the defendant could commit herself not to receive or entertain a settlement offer, she would in fact eliminate the plaintiff's ability to extract a settlement in an NEV suit. However, such a commitment is equivalent to a commitment to reject any settlement offer made by the plaintiff. And the focus of this article (see Section III*A*) is on situations in which mechanisms for such a commitment are unavailable (as are mechanisms that commit the plaintiff to go to trial).

In this connection, it is worthwhile noting that the law does not facilitate the making of commitments to reject settlement offers. In particular, Rule 1.4 of the American Bar Association Model Rules of Professional Conduct requires lawyers to keep their clients reasonably informed, so as to permit the clients to make decisions regarding the representation. The

Divisibility, we have seen, can play a major strategic role in settlement bargaining. This article has sought to highlight and analyze this role. Economic analysis in the field of litigation and settlement should recognize and pay close attention to the strategic importance of divisibility.

official comment to that rule specifies that lawyers must pass any settlement offer that they receive to the side they represent..