Advantage Defendant: Why Sinking Litigation Costs Makes Negative Expected Value Defenses, but not Negative Expected Value Suits Credible

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February 16, 2007

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Abstract: We revisit Bebchuk's (1996) claim that plaintiff's can use the sequential nature of litigation to extract a positive settlement from a negative expected value suit. We make three claims. First, this result is heavily dependent on the specific bargaining game he uses. Second, in an alternating offer bargaining game, the outside option principle demonstrates that this cost sinking strategy will not allow a negative expected value plaintiff to extract a positive settlement offer. Third, this cost sinking strategy, however, can be effective for a defendant using a negative expected value defense.

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I. Introduction

In an influential article Lucian Bebchuk (1996) contends that a plaintiff with a claim which, at its inception, has negative expected value (NEV) can secure a profitable settlement if litigation costs are incurred in stages, rather than all at once. The essence of the Bebchuk analysis is that, after a sufficient amount of plaintiff's litigation costs for a NEV claim are sunk, her anticipated future costs will be less than the expected value of her recovery. If you will, a claim which, at its inception is NEV is transformed to one with positive expected value (PEV). As a result, plaintiff's threat to litigate the case to a conclusion becomes credible and induces defendant to pay a positive amount to settle the case.

The Bebchuk contention is, perhaps, one of the most important influential theories for how a plaintiff can profitably file a NEV suit (Bebchuk 1998, Rasmussen 1998). A large subset of these cases are labeled "frivolous". Although this term has never been defined, the clear implication of the pejorative term is that it is socially undesirable that plaintiffs are able to earn a profit by bringing and settling such cases. Virtually no attention has, however, been paid to the possibility that defendants can employ NEV defenses that reduce the amount they must pay in settlement, often so materially that a plaintiff will be deterred from suing. In this article we challenge the conclusion that the cost sinking strategy can be profitably pursued by a plaintiff while still contending that the strategy can be profitably employed by a defendant.[1]

The basis of our rejection of the Bebchuk contention is that it rests on assumptions with respect to settlement bargaining which are at variance with the reality of how such bargaining is, in fact, conducted. Bebchuk assumes that each party is equally likely to make a take it or leave it offer after each stage of litigation costs are spent. The assumption of take it or leave it offers is crucial to his conclusion that the cost sinking strategy will be profitable. If, as is really the case, the parties were free to make any offer or counter-offer at any time, defendant can render plaintiff's cost sinking strategy ineffective by responding to any offer the plaintiff makes with a counter-offer that exceeds the difference between the expected value of plaintiff's claim and her anticipated litigation costs. Plaintiff will be better off accepting such an offer than continuing with the litigation and defendant will have no reason to offer more. Consequently, the inevitable making and accepting of such an offer renders incredible any threat by plaintiff to decline the offer and proceed with the litigation. Since the threat is not credible, defendant has no reason to include in her settlement offer any part of the savings she realizes by settling rather than litigating. If plaintiff cannot capture a portion of the costs defendant would incur if obliged to litigate, the cost sinking strategy cannot be profitably employed.

Our second contribution is to demonstrate that the cost sinking strategy can be profitably employed by a defendant. This is so because when a defendant sinks a cost of proving a defense

[1] That said we do not address specifically address here other arguments for why a plaintiff may be able to extract a positive settlement from a NEV suit. Katz (1990) and Bebchuk (1988) have both argued that when the plaintiff has private information about the value of its claim that a defendant might give a positive settlement offer to a plaintiff with a NEV suit because the defendant believes it is possible the plaintiff's claim is PEV. Rosenberg and Shavell (1985 and 2006) have argued that the order of litigation expenses may, in some circumstances, enable a plaintiff to obtain a positive settlement offer from a NEV suit. See Schwartz (2003) for a criticism of some of some of these models. Grundfest and Huang (2006) argue that when the parties will learn information about a suit's value in the future, a NEV suit may have option value sufficient to induce a defendant to pay a positive settlement. Of course, to

she not only reduces her anticipated litigation costs so that the originally NEV defense comes to be a PEV defense but also reduces the expected value of the plaintiff's claim by the possibility that the defense will succeed. Since defendant's threat to litigate the initially NEV defense is now credible (because much of the cost is sunk), this reduces the amount the defendant must offer the plaintiff (down to the plaintiff's new net expected payoff from the litigation) to deter the plaintiff from proceeding with the litigation.

The conclusions we draw with respect to NEV claims and defenses have very general implications for the correct analysis of settlement bargaining. We find a systematic advantage in settlement bargaining enjoyed by defendants. This advantage results from the essential nature of litigation. At bottom our analysis rests on a simple but, we think, powerful, insight which has been absent from the literature.

What motivates defendant to pay to settle the case is plaintiff's threat to continue to litigate the case and expose defendant to the risks of incurring additional costs and plaintiff securing a favorable judgment. Defendant can eliminate this threat by offering plaintiff an amount that exceeds the expected value of recovery less anticipated litigation costs. Crucially, in such a settlement, plaintiff captures none of the savings in litigation costs defendants achieves by settlement.

By contrast, a defendant loses nothing by prolonging the bargaining. As a result, introducing a NEV defense, and sinking some of the costs required to establish the defense, permits defendant to capture a portion of the savings plaintiff realizes by settling the case. This is because, it is credible for defendant to decline an offer which is less than the sum of her

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the extent that these arguments suggest that NEV suits are possible, they should also suggest NEV defenses are anticipated costs and the expected value of her liability, in the hope of doing even better by capturing some portion of plaintiff's anticipated litigation costs.

Our analysis has a generality which extends to all bargaining. As one of us has demonstrated in a prior article (Wickelgren 2007), the distinction between an inside option, (here, defendant's prolonging the bargaining), and an outside option, (here plaintiff's threat to continue the litigation), though well established in the economic literature, has frequently been ignored by law and economics scholars. An understanding of this difference reveals a fundamental advantage in bargaining to settle litigation enjoyed by defendants.

We proceed as follows: In the next section we analyze Bebchuk's example and demonstrate that its prediction that an initially NEV claim can be profitably pursued if litigation costs are incurred in stages rests on erroneous assumptions concerning the process of bargaining to settle litigation. We then show how the strategy proposed by Bebchuk can be profitably employed by defendants. In Section III we show how this analysis extends to Bebchuk's more general model. Section IV shows that the basic analysis is robust to using the British rule for allocating litigation costs. In the final section we discuss the policy implications of our analysis.

II. Bebchuk's Example

A. Sinking Costs in a NEV Suit

Bebchuk begins his 1996 paper with an illustrative example. In this example the plaintiff (he) has a suit with an expected judgment of 100 and each party has litigation costs of 140. So, this is

possible as well.

a NEV suit for the plaintiff. As Bebchuk notes, if the litigation costs are incurred all at once, the plaintiff does not have a credible threat to sue. As a result, the defendant (she) will not be willing to give the plaintiff any positive settlement. The only factor that drives the defendant to settle is the threat that if the she does not settle, the plaintiff will sue her. But, in this case, clearly the plaintiff will not sue since the costs are greater than the benefits. So, the defendant has no reason to pay any positive settlement to the plaintiff.

Bebchuk then changes the example so that litigation costs are incurred in two equal-cost stages. That is, he is considering a game with the following structure:

Period 1/2—P and D bargain over a settlement. If they reach an agreement on S_1, then the game ends with D paying P S_1. Otherwise they proceed to Period 1.

Period 1—P decides whether or not to proceed with the litigation. If P decides to proceed with the litigation, then P and D spend 70 and move to period 1 ½. Otherwise, P drops the case and each side gets zero.

Period 1 ½-- P and D bargain over a settlement. If they reach an agreement on S_2, then the game ends with D paying P S_2. Otherwise they proceed to Period 2.

Period 2—P decides to continue the litigation or drop it. If P continues, then P and D spend 70 more and P gets an expected judgment of 100. Otherwise, P drops the case and each side gets zero (net payoff of -70).

Since this is a game of complete information, it can be analyzed via backward induction. That is, we start with the last period and work backwards to the beginning. If the parties are in Period 2, then P will continue the suit since this costs him 70 but gives him an expected judgment of 100, for an expected gross payoff of 30 (gross of the 70 litigation costs that are already sunk). If P drops the case, he gets a gross payoff of 0.

In period 1 ½, D now has an incentive to give P a positive settlement. D knows that if she does not settle with P, then P will go through with the suit. The expected value of defendant's liability and anticipated litigation costs is 170. Because P expects to get 30 if there is no settlement (again, gross of sunk costs), the settlement range is between 30 and 170 at this point; $S_2 \in [30,170]$. Where S_2 is in this range is going to be critical to the analysis. We defer this issue until later.

In period 1, then P will decide to sue if and only if $S_2 > 70$. If this inequality is satisfied, then P's expected settlement in period 1 ½ is greater than the cost of going forward with the litigation. So, he will do so. Otherwise, P prefers to drop the case than to spend 70 to obtain a settlement in period 1½ that is less than 70.

Going back to period ½, we can again see that whether or not $S_2 > 70$ is critical. If this inequality holds, then D knows that P will not drop the case if they do not reach a settlement. In this case, D is willing to settle for S_2+70 since this is what she expects to pay if they do not reach a settlement. P is willing to settle for S_2-70, since this is his expected payoff if no settlement is reached in period ½. On the other hand, if $S_2 \leq 70$, then D will not settle in period ½ since she expects P to drop the case in period 1. Thus, we have $S_1=0$ if $S_2 \leq 70$ and $S_1 \in [S_2-70, S_2+70]$ if

$S_2 > 70$.

Bebchuk's Bargaining Game

Whether the plaintiff can use the threat of a NEV suit to extract a positive settlement depends crucially on how much of the surplus from settlement he can expect to extract in the second period. This, in turn, depends on how one models the bargaining game. In Bebchuk's analysis, he models the bargaining game by supposing that one player will get to make a take it or leave it offer in each period. He further assumes each player has an equal chance of being the offeror in each period. Because the offeror in a take it or leave it bargaining game obtains all the surplus from settlement, in Bebchuk's model, in expectation each party obtains half the surplus from settlement (half the time a party gets all the surplus and half the time it gets nothing). Thus, in his example, the expected value of S_2 is 100 (half the time P makes a take it or leave it offer of 170 and D accepts; half the time D makes a take it or leave it offer of 30 and P accepts). So, because $S_2 > 70$, the plaintiff can extract a positive settlement offer from his NEV suit.

This way of modeling the bargaining is clearly an abstraction. Settlement bargaining is never a take it or leave it affair. Of course, all models must simplify reality in order to be tractable. The key question is whether or not the results from the model are driven by the simplifying assumptions in a way that is at odds with what is likely to happen in a more realistic bargaining setting. This would clearly be the case had he assumed that the plaintiff always got to make a take it or leave it offer. But, Bechuk's model is more balanced than that. Because he assumes both sides have an equal probability of having all the bargaining power, his result appears to be based on an assumption of equal bargaining power.

To determine whether this assumption holds in the context of settlement bargaining, it is necessary to consider what creates bargaining power in settlement bargaining. The plaintiff's bargaining power comes from the threat to proceed with the litigation if bargaining breaks down. That is, the only reason the defendant would ever give any money to the plaintiff is to prevent the plaintiff from proceeding with the litigation. Once the defendant no longer has to fear the threat of the plaintiff proceeding with the litigation, it has no reason to offer the plaintiff more money. Because the plaintiff cannot pre-commit to go to trial at any given time in the future if he does not receive any given settlement amount, the defendant only needs to make sure that the plaintiff always has the option of a settlement that gives the plaintiff at least as much as he can get from trial to deter the plaintiff from actually proceeding with the litigation.

A More General Bargaining Game

This fact is critical when one considers a more general bargaining game in which both sides can make offers in any period of bargaining. It is hard to imagine settlement bargaining in which both sides cannot make an offer. Anytime the plaintiff makes an offer, for example, he must wait for a response from the defendant; otherwise there is no point in making the offer in the first place. The plaintiff cannot condition its decision to wait for a response based on the nature of the response, since the response comes after the plaintiff has waited. Once the plaintiff has waited for an answer, it must hear that answer no matter what it is. Thus, anytime the plaintiff makes an offer, the defendant has an opportunity to respond before the plaintiff proceeds with the litigation. Just as the defendant can choose to respond "yes" or "no", she can also respond with "30". If the plaintiff is waiting to hear "yes" or "no", he must also hear "30" if the defendant makes this response.

This means that in period 1 ½, anytime the plaintiff makes an offer, the defendant can respond with “30”. If she responds with “30”, then the plaintiff must decide whether or not to accept, reject (and maybe counter-offer), or litigate. It is clear that the plaintiff will never litigate since that will net him 30 as well, and he could obtain the same payoff by accepting (to eliminate the indifference problem, the defendant could respond with “31”).

Thus, by always responding to the plaintiff’s offers with “30”, the defendant has effectively eliminated the plaintiff’s threat to proceed with the litigation. But, this is the only bargaining leverage that the plaintiff has. The defendant has no reason to ever offer more than this nor to accept any larger offer from the plaintiff, because my making this response, the defendant has removed the only threat that forced her to bargain in the first place.

One can more formally model the bargaining game as an alternating-offer bargaining game in which the plaintiff has the outside option to continue the litigation (thereby ending the bargaining). In such a game, it is a straightforward corollary of the well-known result in the economics of bargaining literature that the unique subgame perfect equilibrium is for the defendant to pay the plaintiff 30 in period 1 ½.[2]

But, one need not rely on the formal mechanics of the alternating-offer bargaining game to obtain this result. As the discussion above indicates, in any plausible bargaining game the defendant must have the opportunity to respond to the plaintiff’s offer with at least one word. Since the plaintiff can’t control that word, the defendant can always respond with a number that both eliminates the credibility of the plaintiff’s threat to go to court and provides the plaintiff with just its reservation value. This is not based on giving the defendant the last offer. The plaintiff can always respond the defendant's "30" with a counter-offer. But, once again, the plaintiff has to listen to the defendant's response, which can again be "30". At which point the plaintiff again has no credible threat to proceed with the litigation.

This is the essence of the well-known "outside option" principle in the economics of bargaining. Outside options (options that, if exercised, end the bargaining) cannot enable their holder to obtain any more than the value of that option (or what the option-holder would have gotten without the option). The threat of proceeding with the litigation is an outside option in the Bebchuk model because once exercised, there is no value in bargaining anymore (litigation costs will be spent, eliminating the settlement surplus).

Thus, in accordance with the outside option principle and the analysis above, in a more realistic bargaining game the most reasonable estimate for S_2 is 30 (or, maybe, 31). This means that the threat to sue rather than drop the case in period 1 is not credible, so $S_1=0$. That is, the plaintiff cannot use the fact that litigation costs are spread over two periods to extract a positive settlement from a NEV suit.

We have proved this conclusion just in the Bebchuk's two period example, but it is easy to see that this result generalizes to his n period model as well (we prove this formally in the next section). As long as the threat to continue litigation for one more period is an outside option, as it certainly is, the defendant can respond to any offer with just enough to make the plaintiff prefer to accept this offer than to force continuation of the litigation and the expenditure of one more period of litigation costs.

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2 See Shaked and Sutton (1985) for the formal proof of the unique subgame perfect equilibrium with outside options.

B. The Example for a NEV Defense

We now modify the example to consider the case of a NEV defense. Imagine the plaintiff has a claim with a base expected value of 200. The defendant can choose to introduce a defense that costs both sides 140 and would reduce the value of the expected value of the claim to 100. If this cost must be incurred all at once, then the plaintiff knows the defendant will not make this defense if they do not reach a settlement. So, the plaintiff will not settle for less than 200 (assume, for simplicity, that there are no other litigation costs).

But, if this cost can be broken up into two stages with cost of 70 each, the story changes dramatically. Consider the same sequence as in the Bebchuk example. In period 2, the defendant will spend the final 70 to reduce the expected judgment from 200 to 100. Thus, the plaintiff's gross expected judgment in period 1 ½ is 100 and his remaining costs of obtaining this 100 is 70. So, as of period 1 ½, the plaintiff's expected payoff from the litigation (in absence of a settlement) is 30. Given this, using the same bargaining analysis as in the above example, the defendant can respond "30" to any plaintiff offer and deter the plaintiff from going to court. Since the threat of going to trial is the only leverage the plaintiff has to induce the defendant to pay a positive settlement, the plaintiff cannot hope to receive more than 30 in period 1 ½.

Given this settlement in period 1 ½, the defendant clearly has the incentive to spend 70 in period 1 to reduce the expected settlement from 200 to 30. Because spending this first 70 is credible, the plaintiff's expected net payoff in absence of a settlement in period ½ is 30-70< 0. Hence, the defendant's threat of a NEV defense will induce the plaintiff to drop the case in

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See Wickelgren (2007) for a general discussion of the difference between inside and outside option bargaining period 1. So, in period ½, the defendant will not pay any positive settlement to the plaintiff.

Thus, we have shown how a NEV defense can induce a plaintiff with a PEV claim to not file suit. Of course, the plaintiff not filing suit is not a general result. Had the value of his claim before the NEV defense been 300, the plaintiff would have filed suit and received a settlement in period ½ of 60. Thus, what is general is that if the defendant can break up the costs from an NEV defense into multiple periods with settlement bargaining between each one, then she may be able to use the threat of this NEV defense to reduce the expected settlement.

What drives this asymmetry between NEV suits and NEV defenses in this sunk cost model? It is the fact that the fact that the plaintiff's bargaining leverage is driven entirely by a threat the credibility of which depends on the defendant's bargaining offers. Because the plaintiff cannot commit to proceed with the litigation, the defendant knows he will only do so if the outstanding settlement offer is worse than what he can get from litigation. This means that the amount the defendant must pay the plaintiff to deter trial depends only on the plaintiff's expected payoff from trial not on the defendant's expected cost of trial. So, while a NEV suit imposes costs on the defendant if the case goes to trial, it does not provide the plaintiff with a positive expected trial payoff, so he cannot obtain this payoff through a settlement. A NEV defense, on the other hand, reduces the plaintiff's expected trial payoff, so, as long as it can be made credible, it will reduce the settlement necessary to prevent the plaintiff from going to trial.

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games. For experimental support for this theoretical result, see Binmore, Shaked, and Sutton (1989).

III. General Model

A. NEV Suit

A risk-neutral (potential) plaintiff (he) can choose to file a suit against a defendant (she). The gross (of litigation costs) expected value of this suit is W. The total litigation costs required to bring the case to judgment is C_p for the plaintiff and C_d for the defendant. We will assume (at least for this section) that each party bears its own litigation costs (the American rule). Following Bebchuk (1996), we assume that these costs are incurred in $n>1$ stages. Let c_p^i and c_d^i be the litigation costs of the plaintiff and defendant in stage i. Furthermore, let $C_p^i = \Sigma^n_{j=i}\beta^{n-j}c_p^j$ and $C_d^i = \Sigma^n_{j=i}\beta^{n-j}c_d^j$ be the discounted value of the remaining litigation costs for the plaintiff and the defendant once they have reached stage i (where β is the discount factor between stages).[3] All information is common knowledge.

Again, following Bebchuk, we assume that the parties can bargain prior to each of the n stages of litigation. Unlike Bebchuk, who assumes that in each stage one party makes a take it or leave it settlement offer, we will assume (as we did in the more general bargaining game section of the example) that in each bargaining stage the parties engage in an alternating-offer bargaining game (periods with a stage). The bargaining game in each stage ends either when a settlement offer is accepted or when one party decides to terminate the bargaining. If one party terminates the bargaining then either the plaintiff drops the suit or proceeds to the next litigation stage (in which case both sides then spend their litigation costs for that stage). That is, the difference between our game and Bebchuk's is that one side can respond to an offer not only by terminating the bargaining but also by making a counter-offer. Other than that difference, our bargaining game is identical (as in Bebchuk's game, we will assume that each side is equally likely to make the first offer in every stage).

We assume that both parties discount a payoff received one period later by δ. We assume the length of time between the end of one stage and the first offer is such that parties discount payoffs received in the first period of the next stage by β. That is, in stage i, if the defendant is faced with a settlement offer of S, she is indifferent between accepting S and paying a settlement of S/δ in the next bargaining period of the same stage. She is indifferent between accepting S and terminating the bargaining and paying a settlement of $- c_d^i + S/\beta$ in the first period of the next stage. (This reflects the discount due to the delayed settlement and the added litigation costs. Note, to economize on notation, we assume that the litigation costs are incurred at the same time as the first bargaining period of the next stage.)

We analyze this bargaining game using backward induction through the stages. At stage n, if one player terminates the bargaining, then the plaintiff will litigate if and only if $W > c_p^n$. Otherwise, the plaintiff will drop the case, in which case the defendant will not make or accept a positive settlement offer in stage n. If the plaintiff will proceed with the litigation, then in the bargaining game in stage n he has an outside option with value $\beta(W- c_p^n)$ (the present value of his payoff if he terminates bargaining). As we discussed in the example, following the outside option principle of Shaked and Sutton (1985), the unique subgame perfect equilibrium of this bargaining game in stage n is immediate agreement at a settlement of $\beta(W- c_p^n)$, the exact value of the plaintiff's outside option. We discussed the intuition for this at some length in the prior section, so we will only briefly review it here. Because the neither side can make a take it or

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[3] Since we allow for an indefinite bargaining game within each stage, this is actually only the true discounted value

leave it offer, the defendant only needs to make sure the plaintiff expects to get at least as much from the bargaining game as he will get from terminating bargaining. By offering the plaintiff a settlement equal to his outside option, she deters him from pursuing the litigation which is the only threat the plaintiff has that induces the defendant to pay a settlement. Because the defendant can always respond to the plaintiff's offer with a counter-offer of at least $\beta(W - c_p^n)$, the defendant need not worry that rejecting the plaintiff's offer will result in litigation.

Now consider stage *n-1*. The plaintiff again has the outside option to terminate bargaining. If he does so, then he either drops the case, receiving a payoff of zero, or he proceeds and incurs an additional c_p^{n-1} in litigation costs to move to stage *n*. In stage *n*, we have just derived that he will receive a settlement of $\beta(W - c_p^n)$. Thus, the value of the plaintiff's outside option to terminate bargaining in stage *n-1* is $\beta(\beta(W - c_p^n) - c_p^{n-1}) = \beta(\beta W - C_p^{n-1})$. Applying the outside option principle to the stage *n-1* bargaining game, we get that the unique subgame perfect equilibrium is for immediate agreement on a settlement of $Max\{0, \beta(\beta W - C_p^{n-1})\}$.

Since the settlement amount in any stage determines the equilibrium outcome in the prior stage, we can continue this process of backward induction back to stage one. It is easy to see that doing so will result in immediate agreement on a settlement amount of $Max\{0, \beta^n W - \beta C_p^1\}$. That is, the plaintiff will receive a settlement amount exactly equal to the present discount expected value of taking the case to litigation without engaging in any settlement bargaining (terminating the bargaining immediately in each period) provided this is positive. Otherwise, he will drop the case. We summarize this result in the following proposition.

Proposition 1. *If litigation takes place in n stages and in each stage the plaintiff and defendant*

of future litigation costs if bargaining ends immediately in each stage. We show below that this does, in fact, occur.

play an alternating offer bargaining game, then the plaintiff cannot receive a positive settlement from a NEV suit. If the suit is PEV, the plaintiff will settle the case immediately for an amount equal to his net discounted expected value from taking the case to litigation.

Proof. Follows from the backward induction done above.

Proposition 1 simply generalizes the result from the simple example in the last section. Some readers may object that this result is exactly the same result that one would obtain if we assume the defendant got to make a take it or leave it offer to the defendant in every stage of litigation. Thus, the result seems to depend on giving the defendant an excessive amount of bargaining power. While the first part of this objection is true (the result is the same as one would get in this game), the second is not (we do not actually give the defendant this bargaining power). The defendant and the plaintiff are structurally in symmetric positions in the bargaining game. While we do not allow the plaintiff to make a take it or leave it offer, we do not allow the defendant to do so either. Why, then, does the defendant get all the surplus from settlement if the bargaining game is symmetric? The reason is that the bargaining surplus comes solely from avoiding the exercise of the outside option. Unlike typical economic bargaining models, delay itself does not reduce total surplus because the total surplus from an agreement is zero (it is simply a transfer of wealth from the defendant to the plaintiff). Since delay is not costly to the defendant, she does not lose if the plaintiff rejects her offer as long as he does not exercise his outside option and litigate the case to a conclusion. Thus, while the plaintiff is always free to make a counter-offer in response to the defendant's offer, the defendant actually prefers this to acceptance since it delays the settlement. Thus, the only constraint on her offer is the plaintiff's outside option. Because she does not lose from delay while the plaintiff does, the defendant obtains all the surplus above the plaintiff's outside option.

B. NEV Defense

To analyze a NEV defense, we again assume the plaintiff has a claim against the defendant with an expected value of W. In addition to the basic litigation expenses that we assumed above, we now add that the defendant has a choice to introduce a defense that, if litigated through all n stages, will reduce the expected value of the plaintiff's claim by Z, so that the plaintiff's final expected recovery in litigation if the defendant argues this defense would be $W\text{-}Z$. Assume that litigating this defense causes the plaintiff and the defendant to incur costs in each stage $i=1,\ldots,n$ of $k_p^{\,i}$ and $k_d^{\,i}$, respectively. Define $K_p^{\,i}$ and $K_d^{\,i}$ analogously to how $C_p^{\,i}$ and $C_d^{\,i}$ were defined in subsection A. Furthermore, assume that the plaintiff's suit in absence of the defense is PEV, $\beta^n W\text{-}\ \beta C_p^{\,1}>0$.

Again, we use backward induction. If bargaining is terminated in stage n and the plaintiff does not drop the suit, then the defendant will continue with the defense if and only if $Z\text{-}\ k_d^{\,n}>0$. If this holds, then the value of the plaintiff's outside option during the bargaining in stage n is $\beta(W\text{-}Z\text{-}\ c_p^{\,n}\text{-}\ k_p^{\,n})$—if the plaintiff terminates bargaining it will receive an expected judgment of $W\text{-}Z$, but incur legal costs of $c_p^{\,n}+k_p^{\,n}$. Thus, following the outside option principle, the unique subgame perfect equilibrium of the stage n bargaining game is immediate agreement on a settlement of $\beta(W\text{-}Z\text{-}\ c_p^{\,n}\text{-}\ k_p^{\,n})$ provided $Z\text{-}\ k_d^{\,n}>0$.

Turning now to stage $n\text{-}1$, if the plaintiff will not drop the suit if bargaining is terminated, then the defendant will continue with the defense if and only if $\beta(Z+k_p^{\,n})\text{-}\ k_d^{\,n-1}>0$. By continuing with the defense, the defendant reduces the expected settlement payment in stage n by $\beta(Z+k_p^{\,n})$, but must spend $k_d^{\,n-1}$ to do so. If this condition holds, then the value of the plaintiff's outside option in stage $n\text{-}1$ is $\beta^2(W\text{-}Z\text{-}\ c_p^{\ n}\text{-}\ k_p^{\ n})\ \text{-}\ \beta(c_p^{\ n\text{-}1}+\ k_p^{\ n\text{-}1})$—the first term is the stage $n\text{-}1$ value of the stage n settlement and the second term is the stage $n\text{-}1$ discounted value of plaintiff's litigation costs to get to the stage n settlement. Thus, in stage $n\text{-}1$, we get immediate agreement at $\beta^2(W\text{-}Z\text{-}\ c_p^{\ n}\text{-}\ k_p^{\ n})\ \text{-}\ \beta(c_p^{\ n\text{-}1}+\ k_p^{\ n\text{-}1})=\beta(\beta W\text{-}\ C_p^{\ n\text{-}1})\text{-}\ \beta(\beta Z+\ K_p^{\ n\text{-}1})$.

Continuing the backward induction to stage 1, we can see that if the defendant will continue the defense in every stage (a condition we will get to next), there will be immediate agreement in period 1 on a settlement of $Max\{0,\ \beta^n W\text{-}\ \beta C_p^{\ 1}\text{-}\beta^n Z\text{-}\ \beta K_p^{\ 1}\}$. The defendant will continue the defense in every stage i if and only if $\beta^{n\text{-}i}Z+\ \beta K_p^{\ i+1}>\ \beta k_d^{\ i}$ for all $i=1,\ldots,n$. Notice, that the condition for this defense to be NEV is only that $\beta^n Z<\beta K_d^{\ 1}$—the left hand side is the stage 1 discounted expected value of the defense to the defendant if litigated through stage n, while the right hand side is the stage 1 discounted cost of litigating this defense in every stage. Since $\beta^n Z<\beta^{n\text{-}i}Z+\ \beta K_p^{\ i+1}$ and $\beta k_d^{\ i}<\beta K_d^{\ 1}$, the condition for the defendant to pursue a defense can be satisfied even if this defense is NEV. Thus, we have proved the following proposition.

Proposition 2. *If litigation takes place in n stages and in each stage the plaintiff and defendant play an alternating offer bargaining game, then the defendant can use the threat of a NEV defense to reduce the equilibrium settlement she must pay the plaintiff. Furthermore, in some cases the threat of a NEV defense could turn a PEV suit into a NEV suit, thereby depriving the plaintiff of a positive settlement.*

Proof. This follows from the above analysis.

Proposition 2 reveals a fundamental asymmetry in the ability of plaintiffs and defendants to use NEV claims and defenses to influence settlement outcomes. Because of the outside option principle, the defendant can use the threat of a NEV defense to reduce the plaintiff's expected settlement (possibly to zero), but the plaintiff cannot use the threat of a NEV suit to induce the defendant to pay a positive settlement. That is, when settlement bargaining is not take it or leave it but takes place in an alternating offer format, Bebchuk's insight about the importance divisibility of litigation costs applies to the defendant's ability to affect settlement not to the plaintiff's.

IV. The British Rule

Thus far, we have assumed that each party bears its own litigation costs, the American rule. We now re-consider our results under the assumption that the loser bears all the litigation costs, the British Rule. To do so, we now must consider not just the gross expected payoff of the suit, W, but also the probability that the plaintiff will win, which we denote as π. As Bebchuk (1984) has noted, analysis under the British rule is equivalent to analysis under the American rule where the plaintiff's gross expected payoff from the suit is $W^*=W+\pi C_p -(1- \pi)C_d$ (by winning, the plaintiff recovers his own costs and avoids paying the defendant's costs as well). Because of this equivalence, while the definition of a NEV suit changes (a suit is now NEV if and only if $C_p+C_d>W/(1- \pi)$ instead of $C_p >W$), the result that a plaintiff cannot use the divisibility of litigation expenses to extract a positive settlement offer from the defendant in a NEV suit remains unchanged.

The analysis of a NEV defense under the British rule is a little more complicated. Notice that it now matters whether the gross expected benefit of the defense comes by reducing damages or reducing the probability the plaintiff wins (or some combination of the two). To cover the most general case, consider a defense that reduces the plaintiff's probability of winning by q and reduces expected damages in the event the plaintiff wins by X. Then we have the effect on the plaintiff's expected award of the defense is $qW/\pi+(\pi -q)X=Z$. We can define $Z^{*}= Z+ q(C_p+C_d+ K_p + K_d)$. The first term in Z^{*} reflects the expected value of continuing the defense in stage n under the American rule. The second term reflects the expected value of legal costs saved under the British rule from continuing the defense. Because total litigation costs when the defendant uses this defense now include K_p and K_d, we must also alter the definition of the expected judgment to $W^{**}= W+\pi(C_p+ K_p) -(1- \pi)(C_d+ K_d)$. Now, analysis of NEV defenses under the British rule is identical to our analysis above under the American rule with Z replaced by Z^{*} and W replaced by W^{**}. Thus, although the definition of what constitutes a NEV defense is somewhat different, Proposition 2 is robust to the use of the British rule for allocating litigation costs.

V. Policy Implications

The most important policy implication is that if, indeed, it is socially undesirable for a party with a NEV claim or defense to use the threat of litigating the claim or defense to improve the settlement outcome, then this problem exists to a greater extent for NEV defenses than for NEV suits. In a model with symmetric information, a defendant can use the divisibility of litigation costs to make the threat of a NEV defense credible. The same strategy, however, will not work for the plaintiff with a NEV suit in the absence of take it or leave it bargaining.

The reason for this is that the plaintiff's only threat is to continue the litigation and impose costs on defendant and, eventually, secure a favorable judgment. The defendant can always prevent this threat from being credible by offering an amount in settlement which exceeds the difference between the expected value of the claim and the anticipated remaining litigation costs required to sustain it. Sinking costs does not provide plaintiff with an effective counter-strategy. It is true that if plaintiff sinks a dollar in costs defendant will have to pay a dollar more in settlement because plaintiff's future costs have been reduced by one dollar. But the cost sinking plaintiff is on a never ending treadmill. By sinking a dollar in costs she can realize only an additional dollar through settlement (this follows from Shaked and Sutton's outside option principle). But since she has also incurred an additional dollar in cost, she is no better off than if the additional cost had not been sunk.

A defendant is, however, able to use the cost sinking strategy profitably because, for defendant, sinking costs not only reduces her future costs but also reduces the expected value of plaintiff's claim (reducing his outside option). Defendant loses nothing by prolonging the bargaining and offering an amount which is reduced by the savings in litigation costs plaintiff realizes by settling.

Deriving further policy implications from this analysis is rendered difficult because of the lack of normative criteria for evaluating settlement outcomes. It does seem that underlying the pejorative characterization of a plaintiff's claim as a "nuisance" or "frivolous" suit is the unexpressed notion that a plaintiff's recovery should reflect the strength of her claim rather than the costs defendant would have to incur to defeat it. But, as Shavell (1982) noted long ago, there is no reason to believe that only PEV suits are socially desirable or that that all PEV suits are socially desirable. Certainly, some "meritorious" (from the standpoint of improving social welfare) cases will only be profitable if plaintiff can capture a portion of defendant's anticipated litigation costs. If the reason why this is so is that plaintiff's litigation cost are high relative to the amount she can recover then, perhaps, her capturing a portion of defendant's anticipated litigation costs (if possible) would be socially desirable.

Similarly, some “nuisance” (again, from the standpoint of improving social welfare) suits may only be deterred if the defendant can capture some of the plaintiff’s anticipated litigation costs by threatening a NEV defense. So, we are hesitant to reach final policy implications from what is purely a positive analysis in an area without any well-developed normative criteria.

We conclude then with the suggestion that future work on NEV suits and defenses should focus more on the interaction between the strategic options of the parties and the normative desirability of these strategic options. The search for means by which plaintiffs obtain substantial amounts to settle weak cases is misguided for three reasons. First, there is no normative basis for characterizing suits with “little” (whether that may mean) chance of succeeding as “nuisance” or “frivolous” suits. Second, if each of the parties is well informed about litigation costs and the chances of success, defendants can employ a sunk cost strategy to reduce the amount they must pay to settle the case but plaintiffs cannot employ a sunk cost strategy to increase the amount paid to settle the claim. If successful use of the cost sinking strategy by plaintiffs is socially undesirable then it is likely that use of these strategies by a defendant is also undesirable. Finally, defendants enjoy a systematic advantage in employing them.

References

Bebchuk, Lucian A. “Litigation and Settlement under Imperfect Information.” 15 *Rand J. Econ* 404 (1984).

_____. “Suing Solely to Extract a Settlement Offer.” 17 *J. Legal Stud*. 437 (1988).

_____. “A New Theory Concerning the Credibility and Success of Threats to Sue.” 25 *J. Legal Stud.* 1 (1996).

_____. “Suits with Negative Expected Value.” 3 *The New Palgrave Dictionary of Economics and the Law* 551 (1998).

Grundfest, Joseph and Peter H. Huang. “The Unexpected Value of Litigation.” 58 *Stanford L. Rev.* 1267 (2006).

Katz, Avery. “The Effect of Frivolous Lawsuits on the Settlement of Litigation.” 10 *Int’l Rev. L. & Econ.* 3 (1990).

Rasmussen, Eric. “Nuisance Suits.” 2 *The New Palgrave Dictionary of Economics and the Law* 690 (1998).

Rosenberg, David and Steven Shavell. “A Model in Which Suits are Brought for Their Nuisance Value.” 5 *Int’l Rev. L. & Econ.* 3 (1985).

_____. “A Solution to the Problem of Nuisance Suits: The Option to Have the Court Bar Settlement.” 26 *Int’l Rev. L. & Econ.* 42 (2006).

Schwartz, Warren F. “Can Suits with Negative Expected Value Really be Profitable: Defendants Can Play Games Too.” 9 *Legal Theory* 83 (2003).

Shavell, Steven. “The Social versus the Private Incentive to Bring Suit in a Costly Legal System,” 11 *J. Legal Stud.* 333 (1982).

Wickelgren, Abraham L. “On the Misuse of the Nash Bargaining Solution in Law and Economics.” Working Paper, Northwestern University School of Law (2007).