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AN ANALYSIS OF FEE-SHIFTING BASED ON THE MARGIN OF VICTORY: ON FRIVOLOUS SUITS, MERITORIOUS SUITS, AND THE ROLE OF RULE 11

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ABSTRACT

We show that, when plaintiffs cannot predict the outcome of litigation with certainty, neither the American rule of litigation cost allocation (under which each litigant bears its own expenses) nor the British rule (under which the losing litigant pays the attorneys' fees of the winning litigant) would induce plaintiffs to make optimal decisions to bring suit. In particular, plaintiffs may bring frivolous suits when litigation costs are sufficiently small relative to the amount at stake, and plaintiffs may not bring some meritorious suits when litigation costs are sufficiently large relative to the amount at stake.

We analyze the effect of more general fee-shifting rules that are based not only upon the identity of the winning party but also on how strong the court perceives the case to be at the end of the trial -- that is, the "margin of victory." In particular, we explore how and when one can design such a rule to induce plaintiffs to sue if and only if they believe their cases are sufficiently strong. Our analysis suggests some considerations to guide the interpretation of Federal Rule of Civil Procedure 11.

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I. INTRODUCTION

Under fee-shifting rules a court can require the losing litigant to pay the attorneys' fees of the winning litigant. Although there exists a substantial literature on the economic analysis of such fee-shifting rules, the assumption throughout has been that fee-shifting will depend only upon the identity of the winning party. This paper contributes to that literature by considering the effect of fee-shifting rules that are based not only on which party won the case but also on how strong the court perceives the plaintiff's case to be at the end of the trial -- that is, the "margin of victory." In particular, we analyze how expanding the set of instruments available to courts can provide better incentives for a plaintiff to bring suit. This analysis reveals how and when one can design such a rule to induce plaintiffs to sue only if they believe their cases are sufficiently strong.

This analysis of fee-shifting rules based on the margin of victory is not only of theoretical interest but also of practical significance: as we will discuss in Section VI, courts have interpreted Federal Rule of Civil Procedure 11 as an example of such a rule. In order to deter parties from filing frivolous papers in court, Rule 11 authorizes courts to impose sanctions upon those who file such papers. Typically, a court uses Rule 11 against the plaintiff, when it determines that the plaintiff's claims are so lacking in merit that they are frivolous, and the sanction that courts have imposed most frequently is an order that the plaintiff pay the defendant's attorney's fees. Our analysis will produce conclusions that shed light on the role that Rule 11 can play in improving the plaintiff's incentives to bring suit.

Suppose that society seeks to induce plaintiffs to sue if and only if they believe they are entitled to prevail at trial. (As discussed in Section VII, the analysis of this paper is more general, that is, also allows for other objectives.) This objective implies two goals: that a plaintiff bring a "meritorious" suit -- which we define as a suit that deserves to win on the merits, as the plaintiff views the case -- and that a plaintiff not bring a "frivolous" suit -- which we define as a suit that does not deserve to win on the merits, as the plaintiff views the case. How can fee-shifting rules best serve these goals?[1]

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[1]In recent papers, Polinsky and Rubinfeld (1992; 1993) examine how awards and sanctions can discourage frivolous suits and encourage meritorious suits. They do not, however, consider

One important consideration is the fact that the outcome of a trial is unlikely to be certain to the plaintiff when it decides whether to sue. One source of uncertainty is that the court might lack information available to the plaintiff or can err in its judgment given the information that it can observe. Furthermore, the plaintiff might lack information that a trial would later reveal to the court. As a result, the plaintiff might attach some probability to winning even if it views its case as weak, and it might attach some probability to losing even if it views its case as strong.[2]

Consider first the standard American rule, under which each litigant bears its own expenses. This rule does not induce optimal litigation decisions. First, plaintiffs will not bring all meritorious suits. Even if the plaintiff can count on the court to decide the case as the plaintiff predicts, the plaintiff will not sue if its litigation costs exceed the amount that it expects to recover. Second, if the plaintiff believes that the court's decision might differ from what the plaintiff expects, either because the court might err or because the plaintiff might err, then as we will show, the plaintiff will bring some frivolous suits. If the litigation costs are small enough, the plaintiff will find it worthwhile to gamble -- either because the court might err in the plaintiff's favor or because the case might prove to be better than it first appears.

Consider next the British rule, under which the loser pays the expenses of the winner. If the plaintiff could predict the trial outcome without error, then the plaintiff would not bring a frivolous suit and would never be discouraged by litigation expenses from bringing a meritorious suit, which would guarantee the plaintiff reimbursement of its litigation expenses. If the plaintiff cannot predict the trial outcome with certainty, however, then as we will show, the plaintiff will not always make litigation decisions consistent with the goals suggested above.

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the subject that is the main focus of this paper: how fee-shifting based on the margin of victory can advance these goals. Whereas we focus on the criteria courts might use in deciding whether or not to shift fees, Polinsky and Rubinfeld focus on the magnitudes of awards and sanctions as policy instruments.

[2]Polinsky and Shavell (1989) stressed the important effect of legal uncertainty caused by judicial error upon the incentive to sue. They do not study, however, how fee-shifting based on the margin of victory can address the problem of judicial error (and other reasons for the unpredictability of judgment).

First, if litigation costs are small enough, then the plaintiff will bring some frivolous suits because it might win at trial anyway. Second, if litigation costs are sufficiently large, then the prospect of losing (and bearing the expenses of both litigants) will deter the plaintiff from bringing some meritorious suits because it still might lose at trial.

This paper shows how to design fee-shifting rules so as to induce better litigation decisions. The fee-shifting should depend not only on which party prevails but also on the margin by which they prevailed. That is, the rule should take into account not only who won but also the degree to which they won easily. This information is useful because a plaintiff who loses by a large margin is less likely to have believed ex ante that the case was meritorious than a plaintiff who loses by a small margin. Similarly, a plaintiff who wins by a large margin is less likely to have believed ex ante that the case was frivolous than a plaintiff who wins by a small margin.

Given the distribution of the errors in the plaintiff's prediction of the trial outcome, it is possible to design a fee-shifting rule that would induce better litigation decisions. Because the optimal rule depends on this distribution, a court can implement such a rule as long as it has some sense of how these errors are distributed. This paper examines the structure of such rules and how they affect litigation decisions, then applies our conclusions to Rule 11 as it exists today.

Section II of this paper presents the formal model of litigation that we shall use to analyze the plaintiff's incentives to bring suit. Section III examines those incentives under the classic fee-shifting rules, which allocate litigation costs according to the identity of the losing party. In Section IV, we allow the fee-shifting rule to depend upon the margin of victory as well, and we show how one can thereby provide the plaintiff with better incentives to bring suit. Section V shows that if the court can shift the fees of either litigant in each case, then there exists a whole family of such fee-shifting rules that can present plaintiffs with these improved incentives. Section VI considers the implications of our analysis for the application of Rule 11. Section VII explores some extensions of our model.

II. FRAMEWORK OF ANALYSIS

Consider a potential plaintiff that is deciding whether to bring suit against a potential defendant. Let x be the parameter relevant for determining the merits of the plaintiff's suit (or an index that summarizes all the relevant parameters). Without loss of generality, we can define x such that the plaintiff's case is stronger, and the defendant's case is correspondingly weaker, as x increases. In particular, let $\bar{x}$ represent the threshold value for a victory for the plaintiff: the court will decide in favor of the plaintiff if and only if the court finds that x exceeds $\bar{x}$.

This framework is general enough to describe the situation under a wide variety of rules setting forth the standard of liability. For example, the defendant's liability in a particular tort suit might depend on whether the plaintiff was contributorily negligent, in which case x would represent the amount by which the plaintiff's level of care exceeded the standard for negligence, and $\bar{x}$ would equal 0. Or the case might turn on whether the defendant was negligent, in which case x would represent the amount by which the defendant's actual level of care fell short of the standard of due care (that is, the extent of the defendant's underinvestment in safety precautions), and $\bar{x}$ would equal 0. Or the case might turn on an issue of causation, and x might be a feature that determines whether the court will find proximate cause.

Let x_c denote the value of x observed by the court and thus the value of x upon which the court bases its judgment. An important feature of our model is that the court may not be able to identify x accurately. Specifically, except in Section III.A, we assume that the court errs by a random amount ε, so that $x_c = x+\varepsilon$. The random variable ε is distributed according to a cumulative distribution function $F(\varepsilon)$. For any particular realization of ε, e', the corresponding F(e') will equal the probability ex ante that $\varepsilon \leq e'$. Let ε take on positive and negative values, each with some positive probability, so that $0 < F(0) < 1$. For simplicity, assume that ε only takes on values within the interval $(-e_1, e_2)$, where both e_1 and e_2 are positive, and let $F(\varepsilon)$ be continuous and strictly increasing over this interval.

Let θ_p denote the probability that $\varepsilon > 0$, that is, the likelihood that the court will err in favor of the plaintiff, so that θ_p = 1-F(0). Accordingly, θ_p is the likelihood that a defendant who just barely deserves to win on the merits (that is, a defendant in the marginal case in which $x=\bar{x}$) will nevertheless lose because the court errs in favor of the plaintiff. Let θ_d denote the probability that $\varepsilon \leq 0$, that is, the likelihood that the court will not err in favor of the plaintiff, so that θ_d = F(0). Accordingly, θ_d is the likelihood that the defendant in the marginal case (in which $x=\bar{x}$) will win.

The case in which $\theta_d=\theta_p=½$ will prove to be a useful example. This case is symmetric insofar as the court is as likely to decide the marginal case in favor of the defendant as it is in favor of the plaintiff: the court is as likely to overestimate the strength of the plaintiff's case as it is to underestimate it. Our framework is not limited to the symmetric case, however, and covers also those cases in which the court systematically errs in favor of one side.

Let D denote the amount at stake -- that is, the amount that the court will require the defendant to pay the plaintiff if the court finds the defendant liable, where $D>0$. (For example, in a tort case, D is the amount of damages that the court would award to the plaintiff if the defendant is found liable.) Let C_p and C_d be the litigation costs of the plaintiff and of the defendant, respectively, where $C_p>0$ and $C_d>0$.

Let x_p be the plaintiff's observation of x when deciding whether or not to bring suit. At this stage, we assume that the plaintiff knows the true value of x; that is, $x_p=x$. Therefore, $x_c = x_p+\varepsilon$. Section VI.A explains how the analysis can be extended easily to the case in which the plaintiff is imperfectly informed about x. In particular, the court may have information available at trial that is unavailable to the plaintiff.

Suppose that the social objective is to induce the plaintiff to sue if and only if $x_p>x^*$, where x^* is some threshold. This general statement of the objective is reasonable: we cannot have the plaintiff act on anything but its impression of its case, and presumably if we want to deter suits for a certain value of x_p, we also want to deter suits for any lower values. At this stage, we assume that $x^*=\bar{x}$. That is, the plaintiff should sue if and only if the plaintiff believes that the defendant is liable. Section VI.B shows how the analysis can be adjusted for the case in which x^* does not equal $\bar{x}$.

The court observes x_c before reaching judgment and also knows D, $F(\varepsilon)$, C_p, and C_d when it applies the fee-shifting rule. When the plaintiff decides whether to sue, it knows x_p, D, $F(\varepsilon)$, C_p, C_d, and the fee-shifting rule.[3] The plaintiff is risk neutral and sues if and only if the

[3]For simplicity, we assume that the plaintiff knows the amount that a court will award, D, with certainty. In reality, plaintiffs face uncertainty over D as well as over x_c. The model can be extended to the case of uncertainty if we let D represent the expected award conditional on a finding of liability. If this D is independent of x_c, then much of our analysis will be unchanged. If D is a function of x, then the $D(x_c)$ function is another policy instrument, which

expected value of bringing the suit and going to trial is positive. Thus, to get optimal decisions to bring suit, the expected value of going to trial must be non-positive for any $x_p \leq \bar{x}$ and positive for any $x_p > \bar{x}$.

III. FEE-SHIFTING RULES BASED ON THE WINNER'S IDENTITY

The four classic fee-shifting rules, as described in Shavell (1982), are characterized by the fact that fee-shifting, to the extent that it occurs, depends only on the identity of the winning party -- that is, on how x_c compares with $\bar{x}$. In addition to the "two-sided" fee-shifting rules described above, the American rule and the British rule, Shavell discusses two "one-sided" fee-shifting rules: (1) under the pro-plaintiff rule, each litigant pays its own costs if the plaintiff loses, but the defendant pays the plaintiff's costs if the plaintiff wins, and (2) under the pro-defendant rule, each litigant pays its own costs if the defendant loses, but the plaintiff pays the defendant's costs if the defendant wins. We shall examine the effects of each rule in turn under two alternative assumptions regarding the plaintiff's ability to predict the outcome of a trial. This analysis will lay the foundation for our evaluation of the performance of fee-shifting rules that can depend on the margin of victory, because each of the classic fee-shifting rules provides an important benchmark for comparison.

A. Judgment Predicted With Certainty

In this section we assume that $x_c = x_p$, so that the plaintiff can predict the judgment with certainty. That is, ε is not a random variable; instead, $\varepsilon = 0$ in each case. Consider the effect of each fee-shifting rule upon the incentives of the plaintiff to bring suit.

1. The American Rule

When the plaintiff can predict the court's judgment with certainty, the American rule would discourage all frivolous suits, but may fail to encourage all meritorious suits. Specifically, under the American rule, the plaintiff will sue if and only if both $x_p > \bar{x}$ and $C_p < D$. A plaintiff will never bring a frivolous suit, because a case with $x_p \leq \bar{x}$ would be bound to lose. Thus, the plaintiff would recover nothing and would be saddled with at least its own litigation

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we consider as an extension of our model in Section VII.C.

costs. A plaintiff might fail to bring a meritorious suit, however, if its litigation costs are sufficiently large. Even a winning suit, with $x_p > \bar{x}$, would not be worthwhile if $C_p > D$, because the plaintiff would not recover enough to pay its litigation costs.

2. The British Rule

When the plaintiff can predict the court's judgment with certainty, the British rule would discourage all frivolous suits and encourage all meritorious suits. Specifically, under the British rule, the plaintiff will sue if and only if $x_p > \bar{x}$. Without uncertainty over the trial outcome, this rule yields the optimal incentives for the plaintiff. A plaintiff will never bring a frivolous suit, because it would be bound to lose. Thus, the plaintiff would recover no damages and bear at least its own litigation costs. A plaintiff will always bring a meritorious suit, because it would be bound to win, and in this case the plaintiff would not have to bear its own litigation costs.

3. The Pro-Defendant Rule

Like the American rule, the pro-defendant rule would discourage all frivolous suits, but may fail to encourage all meritorious suits: under conditions of certainty, the plaintiff will sue if and only if both $x_p > \bar{x}$ and $C_p < D$. The pro-defendant rule is no improvement over the American rule. The pro-defendant rule can penalize plaintiffs that bring losing suits, but under conditions of certainty, plaintiffs will not bring such suits under the American rule anyway.

4. The Pro-Plaintiff Rule

Like the British rule, the pro-plaintiff rule would both discourage all frivolous suits and encourage all meritorious suits: under conditions of certainty, the plaintiff will sue if and only if $x_p > \bar{x}$. The pro-plaintiff rule is an improvement over the American rule. The problem under the American rule is a failure to encourage all meritorious suits, and the pro-plaintiff rule addresses this problem by relieving the winning plaintiff of its litigation costs.

B. Judgment Predicted with Uncertainty

In this section we assume that $x_c = x_p + \varepsilon$, where ε is a random variable. Thus, the plaintiff cannot predict the trial outcome with certainty. As we shall see, none of the classic rules can guarantee that the plaintiff will have optimal incentives in all cases. Under each rule, plaintiffs bring some frivolous suits and fail to bring some meritorious suits.

1. The American Rule

Under the American rule, the plaintiff will sue if and only if:

$$-C_p + \Pr(x_c > \bar{x} \mid x_p)D > 0. \tag{1}$$

Substituting $x_p + \varepsilon$ for x_c in (1), we find this condition is equivalent to:

$$\Pr(\varepsilon > \bar{x} - x_p) > C_p/D. \tag{2}$$

Thus, if $C_p \geq D$, then (2) cannot hold, and the plaintiff will never sue. If $C_p < D$, however, the plaintiff will sue if and only if x_p is greater than some threshold value, which we shall denote as s^*. This s^* is defined by:

$$1 - F(\bar{x} - s^*) = C_p/D,$$

or equivalently:

$$s^* = \bar{x} - F^{-1}[1 - (C_p/D)], \tag{3}$$

where F^{-1}, the inverse function of $F(\varepsilon)$, is defined over the domain (0, 1).

The plaintiff will have optimal incentives if and only if it is just indifferent about bringing the marginal suit (in which $x_p = \bar{x}$), that is, if $s^* = \bar{x}$. Thus, (3) implies that the American rule will lead to optimal incentives for the plaintiff if and only if $1 - F(0) = C_p/D$. For example, if $F(0) = ½$, then the critical value for C_p/D is ½. Recall that $1-F(0)$ equals θ_p, the probability that the court will view the plaintiff's case more favorably than the plaintiff does, which is therefore also the probability that a case with $x_p = \bar{x}$ would succeed.

As in the case of prediction with certainty, this rule might discourage a plaintiff from bringing a meritorious suit if the plaintiff's litigation costs are sufficiently large relative to the amount at stake. The possibility that even a meritorious suit can lose, however, aggravates this problem. Specifically, if $\theta_p < C_p/D$, then too little litigation results. In these cases, either $C_p \geq D$ or $s^* > \bar{x}$, and the plaintiff will be discouraged from bringing some meritorious suits because C_p would be too large relative to D.

Once we allow for prediction with uncertainty, moreover, it is no longer true that this rule would discourage all frivolous suits. The plaintiff might bring a frivolous suit if the plaintiff's litigation costs are sufficiently small relative to the amount at stake, because even a frivolous suit might prevail. Specifically, if $\theta_p > C_p/D$, then too much litigation results. In these cases, $s^* < \bar{x}$ and the plaintiff would bring some frivolous suits, because the likelihood of favorable judgments in these cases would be sufficiently high.

2. The British Rule

Whereas the British rule ensures optimal incentives to sue under conditions of certainty, it no longer does so under conditions of uncertainty. By the same reasoning we applied to the American rule, we can show that under the British rule and conditions of uncertainty, the plaintiff will sue if and only if x_p is greater than some s^*, which is defined by:

$$1-F(\bar{x}-s^*) = (C_p+C_d)/(D+C_p+C_d),$$

or equivalently:

$$s^* = \bar{x} - F^{-1}[1 - (C_p+C_d)/(D+C_p+C_d)]. \tag{4}$$

Thus, this rule will lead to optimal incentives for the plaintiff if and only if $\theta_p = (C_p+C_d)/(D+C_p+C_d)$. Again, once we allow for prediction with uncertainty, this rule no longer ensures that all meritorious suits are encouraged and that all frivolous suits are discouraged.

This rule might discourage a plaintiff from bringing a meritorious suit if the parties' litigation costs are sufficiently large relative to the amount at stake, because even a meritorious suit might lose. Specifically, if $\theta_p < (C_p+C_d)/(D+C_p+C_d)$, then too little litigation results. In these cases, $s^* < \bar{x}$, and the plaintiff will be discouraged from bringing some meritorious suits because the costs that it would bear in the event that the suit loses, C_p+C_d, will be sufficiently large relative to the gain in the event the suit wins, D.

Furthermore, this rule might encourage a plaintiff to bring a frivolous suit if the plaintiff's litigation costs are sufficiently small, because even a frivolous suit might prevail. Specifically, if $\theta_p > (C_p+C_d)/(D+C_p+C_d)$, then too much litigation results. In these cases, $s^* < \bar{x}$ and the plaintiff will bring some frivolous suits, because the likelihood of favorable judgments in these cases would be sufficiently high.

Note that once we allow for prediction with uncertainty, it is no longer clear whether the British rule or the American rule offers the plaintiff the greater incentive to sue. That is, between the British rule and the American rule, it is ambiguous which rule implies the lower threshold s^*. Comparing (3) and (4), we find that the incentive is greater under the British rule if and only if:

$$(C_p+C_d)/(D+C_p+C_d) < C_p/D,$$

or equivalently:

$$C_p/C_d > D/(C_p+C_d). \tag{5}$$

For example, in the case in which the litigation costs of the two parties are equal, $C_p = C_d$, inequality (5) becomes $C_p + C_d > D$. This rule of thumb suggests that when the litigation costs of the parties are similar, the British rule offers the plaintiff greater incentives to sue than the American rule if the total litigation costs exceed the amount at stake, but smaller incentives if the amount at stake exceeds total litigation costs.

3. The Pro-Defendant Rule

By similar reasoning, we can show that under the pro-defendant rule, if $C_p \geq D$, then the plaintiff would never sue. If $C_p < D$ instead, however, then the plaintiff will sue if and only if x_p is greater than some s^*, which is defined by:

$$1\text{-}F(\bar{x}\text{-}s^*) = (C_p + C_d)/(D + C_d),$$

or equivalently:

$$s^* = \bar{x} - F^{-1}[1 - (C_p + C_d)/(D + C_d)]. \tag{6}$$

Thus, this rule will lead to optimal incentives for the plaintiff if and only if $\theta_p = (C_p + C_d)/(D + C_d)$.

Again, as in the case of prediction with certainty, this rule might discourage a plaintiff from bringing a meritorious suit if its litigation costs are sufficiently large. The possibility that even a meritorious suit can lose, however, aggravates this problem. Specifically, if $\theta_p < (C_p + C_d)/(D + C_d)$, then too little litigation results. In these cases, either $C_p \geq D$ or $s^* > \bar{x}$, and plaintiffs will be discouraged from bringing some meritorious suits because the litigation costs that the plaintiff would expect to bear would be too large.

Once we allow for prediction with uncertainty, however, it is no longer true that this rule would discourage all frivolous suits. The plaintiff might bring a frivolous suit because even a frivolous suit might prevail. Specifically, if $\theta_p > (C_p + C_d)/(D + C_d)$, then too much litigation results. In these cases,. $s^* < \bar{x}$ and the plaintiff will bring some frivolous suits, because the likelihood of favorable judgments in these cases would be sufficiently high.

If $C_p < D$, then the pro-defendant rule offers the plaintiff less incentive to sue than either the American rule or the British rule: we can see from (6) that the pro-defendant rule implies a threshold s^* that is strictly larger than those under the American and British rules.[4] In cases in which there are excessive incentives to sue under the American rule and under the British rule, a switch to the pro-defendant rule would reduce this incentive. As we have seen, however, this correction would be crude: the reduction in the plaintiff's incentives would be less than optimal in some cases and excessive in other cases.

4. The Pro-Plaintiff Rule

By similar reasoning, we can show that under the pro-plaintiff rule, the plaintiff will sue if and only if x_p is greater than some s^*, which is defined by:

$$1-F(\bar{x}-s^*) = C_p/(D+C_p),$$

or equivalently:

$$s^* = \bar{x} - F^{-1}[1 - C_p/(D+C_p)]. \tag{7}$$

Thus, this rule will lead to optimal incentives for the plaintiff if and only if $\theta_p = C_p/(D+C_p)$. Once we allow for prediction with uncertainty, this rule no longer ensures that all meritorious suits are encouraged and that all frivolous suits are discouraged.

This rule might discourage a plaintiff from bringing a meritorious suit if the plaintiff's litigation costs are sufficiently large relative to the amount at stake, because even a meritorious suit might lose. Specifically, if $\theta_p < C_p/(D+C_p)$, then too little litigation results. In these cases, $s^* > \bar{x}$, and the plaintiff will be discouraged from bringing some meritorious suits because C_p would be too large relative to D.

Furthermore, this rule might encourage a plaintiff to bring a frivolous suit if the plaintiff's litigation costs are sufficiently small, because even a frivolous suit might prevail. Specifically, if $\theta_p > C_p/(D+C_p)$, then too much litigation results.. In these cases, $s^* < \bar{x}$ and the plaintiff will bring some frivolous suits, because the likelihood of favorable judgments in these cases would be sufficiently high.

The incentive to sue is the greatest under the pro-plaintiff rule insofar as (7) implies that the threshold s^* is the lowest under this rule. That is, the pro-plaintiff rule implies a threshold s^* that is strictly smaller than that under any of the other classic fee-shifting rules. In cases in

[4] If $C_p \geq D$ instead, then the incentive to sue would be equally small under the American rule and under the pro-defendant rule: in this case the plaintiff would never sue under either rule.

which there is too little incentive to sue under the American rule and the British rule, a switch to the pro-plaintiff rule would increase this incentive. Again, such a correction would be crude: the reduction in the plaintiff's incentives would be less than optimal in some cases and excessive in other cases.

Thus, none of the four classic fee-shifting rules can ensure a threshold such that $s^*=\bar{x}$ for all possible combinations of D, θ_p, C_p, and C_d. Under each of these rules, plaintiffs will bring some frivolous suits and fail to bring some meritorious suits. If the courts are restricted to rules that simply turn on the identity of the winning party, they cannot ensure that plaintiffs have the optimal incentives.

IV. THE OPTIMAL ONE-SIDED FEE-SHIFTING RULE

Until now we have examined rules under which, if there is fee-shifting at all, it can only depend on the identity of the winner, that is, on whether $x_c > \bar{x}$. In this section we drop this constraint on the structure of the fee-shifting rules. We allow the courts to take into account the margin of victory, that is, we allow the fee-shifting rule to be based on the difference between x_c and $\bar{x}$. As we will see, it is possible in many cases to design a rule that performs better than any of the classic fee-shifting rules. Fee-shifting based on the margin of victory gives courts an additional instrument with which to fine-tune the plaintiffs incentives to bring suit.

Let $\bar{y}_p$ be the threshold for x_c beyond which the court will require the defendant to reimburse the plaintiff's litigation costs. That is, if $x_c > \bar{y}_p$, then the court shifts fees in favor of the plaintiff. Let $\bar{y}_d$ be the threshold for x_c below which the court will require the plaintiff to reimburse the defendant's litigation costs. Specifically, if $x_c \leq \bar{y}_d$, then the court shifts fees in favor of the defendant.

In this section, we will limit ourselves to rules under which, for a given D, $F(\varepsilon)$, C_p, and C_d, there may be fee-shifting only in favor of one side, throughout the domain of x_c. That is, either $\bar{y}_p = \infty$ or $\bar{y}_d = -\infty$. We will consider how to design the best one-sided fee-shifting rule. As we will see in the next section, where we will consider two-sided fee-shifting, limiting ourselves to one-sided fee-shifting is not all that costly: the best two-sided rules do not perform any better than the best one-sided rule.

As we will show, to design the best one-sided fee-shifting rule, it is helpful to distinguish between situations in which the American rule provides inadequate incentives to sue and those in which it provides excessive incentives to sue. If $\theta_p < C_p/D$, then this rule leads to too little litigation: $s^* > \bar{x}$ and plaintiffs do not sue often enough. If $C_p/D < \theta_p$, then this rule leads to too much litigation: $s^* < \bar{x}$ and plaintiffs sue too often. The first set of cases call for pro-plaintiff fee-shifting, whereas the second set of cases call for pro-defendant fee-shifting.

A. Insufficient Incentive to Litigate Under the American Rule

If $\theta_p < C_p/D$, then the American rule leads to insufficient incentives to bring suit. Under these circumstances, the American rule discourages all frivolous suits but also discourages some meritorious suits. In this case, pro-plaintiff fee-shifting can improve the plaintiff's incentives to sue:

Proposition 1: If $\theta_p < C_p/D$, then the best one-sided fee-shifting rule would specify that the defendant pays the plaintiff's litigation costs if $x_c > \bar{y}_p$, where:

$$\bar{y}_p = \bar{x} + F^{-1}[1 - (C_p - \theta_p D)/C_p]. \tag{8}$$

This rule would provide optimal results: it would both discourage all frivolous suits and encourage all meritorious suits.

Proof: Under the proposed rule, the plaintiff would sue if and only if:

$$-C_p + \Pr(x_c > \bar{y}_p | x_p)C_p + \Pr(x_c > \bar{x} | x_p)D > 0.$$

Thus, the plaintiff would sue if and only if $x_p > s^*$, where s^* is defined by:

$$-C_p + [1 - F(\bar{y}_p - s^*)]C_p + [1 - F(\bar{x} - s^*)]D = 0. \tag{9}$$

Thus, to ensure that $s^* = \bar{x}$, we must set $\bar{y}_p$ such that:

$$-C_p + [1 - F(\bar{y}_p - \bar{x})]C_p + \theta_p D = 0. \tag{10}$$

Note that the left-hand side of (10) is monotonically decreasing in $\bar{y}_p$ as long as $0 < F(\bar{y}_p - \bar{x}) < 1$. If we let $\bar{y}_p$ approach ∞, then $F(\bar{y}_p - \bar{x})$ goes to 1, so that the left-hand side of (10) must be negative, and plaintiffs would not sue often enough. If we let $\bar{y}_p$ approach $-\infty$, then $F(\bar{y}_p - \bar{x})$ goes to 0, so that the left-hand side of (10) must become positive, so that plaintiffs would sue too often. Thus, there exists a $\bar{y}_p$ that solves (10). Specifically, solving (10) for $\bar{y}_p$ yields the expression for $\bar{y}_p$ given in (8). ■

Remark 1: Under the American rule, a plaintiff with x_p equal to $\bar{x}$ will expect to win $\theta_p D$

from going to trial at a cost of C_p. If $C_p > \theta_p D$, then the plaintiff's suit has negative expected value not only for $x=\bar{x}_p$ but also for some x_p slightly greater than $\bar{x}$. If the plaintiff's litigation costs can be shifted to the defendant with probability close to 1, which we can accomplish with a sufficiently small $\bar{y}_p$, then the plaintiff can obtain positive expected value from bringing the same cases. Because we can vary $\bar{y}_p$ continuously, we can find an intermediate value for $\bar{y}_p$ such that the expected value of bringing suit will be exactly 0 for the case in which $x_p=\bar{x}$.

<u>Remark 2</u>: Let $P(\bar{y}_p)$ represent the probability of reimbursement for the plaintiff given that $x_p=\bar{x}$, so that $P(\bar{y}_p)$ is a decreasing function of $\bar{y}_p$. Specifically, $P(\bar{y}_p) = 1\text{-}F(\bar{y}_p\text{-}\bar{x})$. The solution for the optimal $\bar{y}_p$ ensures that for $x_p=\bar{x}$, the expected costs of litigation, $C_p - P(\bar{y}_p)C_p$, will exactly equal the expected benefits, $\theta_p D$. Thus, $P(\bar{y}_p) = 1 - \theta_p D/C_p$, and if $\theta_p=½$, then $P(\bar{y}_p) = 1 - D/2C_p$.

<u>Remark 3</u>: Note that the plaintiff's expected payoff from bringing the marginal suit, the left-hand side of (10), is strictly increasing in θ_p and D, but does not depend on C_d. Furthermore, as long as $0 < F(\bar{y}_p\text{-}\bar{x}) < 1$, this payoff will strictly decrease in $\bar{y}_p$ and C_p.[5] Thus, as long as the fee-shifting rule sets $\bar{y}_p$ to optimize the plaintiff's incentives to bring suit such that $\bar{x}\text{-}e_1 < \bar{y}_p < \bar{x}+e_2$, the optimal $\bar{y}_p$ will strictly increase in θ_p and D but strictly decrease in C_p.

That is, <u>ceteris paribus</u>, the optimal policy becomes more pro-defendant if either θ_p or D increases, but more pro-plaintiff if C_p increases. If the award that the plaintiff expects to recover increases, then the optimal rule -- to offset the increased incentive to bring suit -- must decrease the probability that the defendant would have to bear the plaintiff's litigation costs. If on the other hand, these litigation costs increase, then the optimal rule -- to offset the reduced incentive to bring suit -- must decrease the probability that the plaintiff would have to bear them.

<u>Remark 4</u>: In one case, the classic pro-plaintiff rule, which imposes the constraint $\bar{y}_p=\bar{x}$, turns out to be the best one-sided rule. As we saw in Section III.B, the classic pro-plaintiff rule is optimal if and only if $\theta_p = C_p/(D+C_p)$. In this section, we see that if $C_p/(D+C_p) < \theta_p <$

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[5]As long as there is some positive probability of $x_c \leq \bar{y}_p$ when $x_p=\bar{x}$, so that the court might leave the burden of C_p on the plaintiff in the marginal suit, then the plaintiff's expected payoff will be strictly decreasing in C_p.

C_p/D, then the best rule sets $\bar{y}_p$ higher than $\bar{x}$. In these cases, the classic pro-plaintiff rule leads to too much litigation. In order to trigger pro-plaintiff fee-shifting under the best rule, the plaintiff must not only win its case but also win by a sufficiently wide margin. If $\theta_p < C_p/(D+C_p)$ instead, then the best rule sets $\bar{y}_p$ lower than $\bar{x}$. In these cases, the classic pro-plaintiff rule leads to too little litigation, and $\bar{y}_p<\bar{x}$ is necessary to increase the plaintiff's incentives. The best fee-shifting rule in these cases is even more pro-plaintiff than the classic pro-plaintiff fee-shifting rule: in some of these cases the proposed rule shifts the plaintiff's fees to the defendant even though the plaintiff loses. The plaintiff wins reimbursement not only when it wins its case, but also when it loses its case by a sufficiently small margin.

Remark 5: Suppose we impose the constraint $\bar{y}_p \geq \bar{x}$, so that the defendant would pay the plaintiff's litigation costs only if the plaintiff prevails. The fee-shifting rule can be no more pro-plaintiff than the classic pro-plaintiff rule. The rule in Proposition 1, however, can offer optimal incentives to the plaintiff consistent with this constraint if and only if $C_p/(C_p+D) \leq \theta_p$. If instead:

$$C_p/(C_p+D) > \theta_p, \tag{11}$$

then the constraint will be costly. The best rule consistent with the constraint would be the classic pro-plaintiff rule, under which a plaintiff would sue if and only if $x_p>s^*$, where s^* is defined by equation (7). If condition (11) holds, then equation (7) implies that $s^*>\bar{x}$: plaintiffs that are not sufficiently confident of victory will not bring some meritorious suits because the risk of losing and paying their own litigation costs will discourage them from bringing suit.

B. Excessive Incentive to Litigate Under the American Rule

If $C_p/D < \theta_p$, then the American rule leads to excessive litigation. The American rule encourages all meritorious suits but also encourages some frivolous suits. In this case, pro-defendant fee-shifting can improve the plaintiff's incentives to sue:

Proposition 2: If $C_p/D < \theta_p$, then the best one-sided fee-shifting rule would provide for pro-defendant fee-shifting. Specifically:

(a) If $\theta_p < (C_p+C_d)/D$, then the best one-sided fee-shifting rule would specify that the plaintiff pays the defendant's litigation costs if $x_c \leq \bar{y}_d$, where:

$$\bar{y}_d = \bar{x} + F^{-1}[1 - (C_p+C_d-\theta_p D)/C_d]. \tag{12}$$

In these cases, this rule would create the optimal incentives for the plaintiff to bring suit.

(b) If $\theta_p \geq (C_p+C_d)/D$, then the best one-sided fee-shifting rule would specify that the plaintiff pays the defendant's litigation costs if $x_c \leq \bar{y}_d$, where $\bar{y}_d \geq \bar{x}+e_2$. This rule would fall short of producing optimal results only insofar as it will fail to discourage all frivolous suits.

Proof: Under the proposed rule, the plaintiff would sue if and only if:

$$-(C_p+C_d) + \Pr(x_c>\bar{y}_d|x_p)C_d + \Pr(x_c>\bar{x}|x_p)D > 0.$$

Thus, the plaintiff will sue if and only if $x_p>s^*$, where s^* is defined by:

$$-(C_p+C_d) + [1-F(\bar{y}_d-s^*)]C_d + [1-F(\bar{x}-s^*)]D = 0. \tag{13}$$

Thus, to ensure that $s^*=\bar{x}$, we must set $\bar{y}_d$ such that:

$$-(C_p+C_d) + [1-F(\bar{y}_d-\bar{x})]C_d + \theta_p D = 0. \tag{14}$$

Note that the left-hand side of (14) is monotonically decreasing in $\bar{y}_d$ as long as $0 < F(\bar{y}_d-\bar{x}) < 1$. If we let $\bar{y}_d$ approach $-\infty$, then $F(\bar{y}_d-\bar{x})$ goes to 0, so that the left-hand side of (14) must be positive, and plaintiffs would sue too often. If we let $\bar{y}_d$ approach ∞, then $F(\bar{y}_d-\bar{x})$ goes to 1. In this case, the left-hand side of (14) becomes non-positive if and only if the following inequality also holds:

$$\theta_p D \leq C_p+C_d. \tag{15}$$

Thus, there exists a $\bar{y}_d$ that solves (14) if and only if (15) holds; otherwise, there would always be too much litigation. Assuming such a $\bar{y}_d$ exists, solving (14) for $\bar{y}_d$ yields the expression for $\bar{y}_d$ given in (12). ∎

Remark 1: Note that if litigation costs are sufficiently small relative to the amount at stake, so that (15) fails to hold, then no fee-shifting rule can provide optimal incentives for the plaintiff. In this case, even in the marginal case (in which $x_p=\bar{x}$), the plaintiff's expected payoff from trial would exceed the litigation costs of both parties. Even if the plaintiff were certain that it would have to pay the fees of both parties, these costs would not deter the plaintiff from bringing such a suit. In such cases, fee-shifting is an inadequate sanction to deter all frivolous suits.

Remark 2: If condition (15) does not hold, then the best one-sided fee-shifting rule would ensure that the plaintiff with the marginal case (or any worse case) would always bear the defendant's litigation costs. To guarantee pro-defendant fee-shifting in all cases in which $x_p \leq \bar{x}$, the court must set $\bar{y}_d$ at least as high as $\bar{x}+e_2$. This rule would be the best one-sided fee-shifting rule in that it maximizes the achievement of each objective: this rule would encourage all meritorious suits and discourage as many frivolous suits as possible.

Remark 3: Note that the plaintiff's expected payoff from bringing the marginal suit, the left-hand side of (14), is strictly increasing in θ_p and D, but strictly decreasing in C_p. Furthermore, as long as $0 < F(\bar{y}_d-\bar{x}) < 1$, this payoff will strictly decrease in $\bar{y}_d$ and C_d.[6] Thus, as long as the fee-shifting rule sets $\bar{y}_d$ to optimize the plaintiff's incentives to bring suit such that $\bar{x}-e_1 < \bar{y}_d < \bar{x}+e_2$, the optimal $\bar{y}_d$ will strictly increase in θ_p and D but strictly decrease in C_p and C_d.

That is, ceteris paribus, the optimal policy becomes more pro-defendant if either θ_p or D increases, but more pro-plaintiff if C_p or C_d increases. If the award that the plaintiff expects to recover increases, then the optimal rule -- to offset the increased incentive to bring suit -- must increase the probability that the plaintiff would have to bear the defendant's litigation costs. If on the other hand, either the plaintiff's or the defendant's litigation costs increase, then the optimal rule -- to offset the reduced incentive to bring suit -- must decrease the probability that the plaintiff would have to bear the defendant's litigation costs.

Remark 4: In one case, the classic pro-defendant rule, which imposes the constraint $\bar{y}_d=\bar{x}$, turns out to be the best one-sided rule. As we saw in Section III.B, the classic pro-defendant rule is optimal if and only if $\theta_p = (C_p+C_d)/(D+C_d)$. In this section, we see that if $C_p/D < \theta_p < (C_p+C_d)/(D+C_d)$, then the best rule sets $\bar{y}_d$ lower than $\bar{x}$. In these cases, the classic pro-defendant rule leads to too little litigation. In order to trigger pro-defendant fee-shifting under the best rule, the defendant must not only win its case but also win by a sufficiently wide margin. If $(C_p+C_d)/(D+C_d) < \theta_p$ instead, then the best rule sets $\bar{y}_d$ higher than $\bar{x}$. In these cases, the classic pro-defendant rule leads to too much litigation, and $\bar{y}_d>\bar{x}$ is necessary to reduce the plaintiff's incentives. The best fee-shifting rule in these cases is even more pro-defendant than the classic pro-defendant fee-shifting rule: in some of these cases the

[6]As long as there is some positive probability that $x_c \leq \bar{y}_d$ when $x_p=\bar{x}$, so that the court might place the burden of C_d on the plaintiff in the marginal suit, then the plaintiff's expected payoff will be strictly decreasing in C_d.

proposed rule shifts the defendant's fees to the plaintiff even though the defendant loses. The defendant wins reimbursement not only when it wins its case, but also when it loses its case by a sufficiently small margin.

Remark 5: Suppose we impose the constraint $\bar{y}_d \leq \bar{x}$, so that the plaintiff would pay the defendant's litigation costs only if the defendant prevails. The fee-shifting rule can be no more pro-defendant than the classic pro-defendant rule. The rule in Proposition 2, however, can offer optimal incentives to the plaintiff consistent with this constraint if and only if $C_p/D < \theta_p \leq (C_p+C_d)/(D+C_d)$. If instead:

$$(C_p+C_d)/(D+C_d) < \theta_p, \tag{16}$$

then the constraint $\bar{y}_d \leq \bar{x}$ will be costly. The best rule consistent with the constraint would be the classic pro-defendant rule, under which a plaintiff would sue if and only if $x_p > s^*$, where s^* is defined by equation (6). If condition (16) holds, then equation (6) implies that $s^* < \bar{x}$: plaintiffs that are not sufficiently convinced of defeat will bring some frivolous suits because the possibility of winning and thereby avoiding fee-shifting will encourage them to bring suit.

C. Example with a Uniform Distribution

A simple example provides a useful illustration of our results. Suppose for simplicity that ε is uniformly distributed in the interval (-e, e), for some $e > 0$. In this special case,

$$F(\varepsilon) = \tfrac{1}{2}(1 + \varepsilon/e), \tag{17}$$

and $\theta_p = \tfrac{1}{2}$. Solving (17) for the inverse function, we find:

$$F^{-1}(p) = (2p-1)e \tag{18}$$

for p in the interval (0, 1). Using this particular inverse function in (8) and (12), we can derive the optimal fee-shifting rules.

Proposition 2(a) implies that if $C_p/D < \tfrac{1}{2} < (C_p+C_d)/D$, then the optimal rule specifies that the plaintiff pays the defendant's litigation costs if $x_c \leq \bar{y}_d$, where:

$$\bar{y}_d = \bar{x} + (D-2C_p-C_d)e/C_d. \tag{19}$$

This rule operates only against losing plaintiffs (that is, $\bar{y}_d \leq \bar{x}$) if and only if $D \leq 2C_p+C_d$. Note that $\bar{y}_d$ is increasing in D but decreasing in C_p and C_d. Proposition 2(b) implies that if $(C_p+C_d)/D < \tfrac{1}{2}$ instead, then $\bar{y}_d \geq \bar{x}+e$. Finally, Proposition 1 implies that if $\tfrac{1}{2} < C_p/D$ instead, then the optimal rule would specify that the defendant pays the plaintiff's litigation costs if $x_c < \bar{y}_p$, where:

$$\bar{y}_p = \bar{x} + (D-C_p)e/C_p. \tag{20}$$

This rule operates only against losing defendants (that is, $\bar{y}_p \geq \bar{x}$) if and only if $C_p \leq D$. Note that $\bar{y}_p$ is increasing in D but decreasing in C_p.

Note also this example reveals another comparative statics result: the effect of greater uncertainty over the trial outcome is ambiguous. If the thresholds are set so as to create the optimal incentives for the plaintiff to bring suit, then an increase in e could cause each threshold, $\bar{y}_d$ in (19) and $\bar{y}_p$ in (20), to either rise or fall, depending upon whether that threshold was greater or less than $\bar{x}$. Each threshold would have to adjust along with e so as to maintain both the same probability of pro-defendant fee-shifting and the same probability of pro-plaintiff fee-shifting in the marginal case.

V. THE FAMILY OF OPTIMAL FEE-SHIFTING RULES

In this section, we examine the possibility of fee-shifting rules under which, even for a given D, $F(\varepsilon)$, C_p, and C_d, the court may require either side to reimburse the other for its litigation costs. That is, we do not require either $\bar{y}_p = \infty$ or $\bar{y}_d = -\infty$ to hold; instead, we can allow both $\bar{y}_p$ and $\bar{y}_d$ to be finite for the same set of cases. We will consider how to design the best two-sided fee-shifting rule. We analyze the best two-sided rule to see if it performs any better than the best one-sided rule, and as we will see, it does not. We also study two-sided fee-shifting rules because Rule 11 is an example of such a rule. Our analysis of how best to design such a rule will shed light on the use of fee-shifting under Rule 11.

It will be helpful in this analysis to distinguish between the case in which $\theta_p < (C_p+C_d)/D$ and the case in which $\theta_p \geq (C_p+C_d)/D$. In the first case, fee-shifting can produce the optimal incentives for plaintiffs to bring suit. In the second case, we will see that it cannot.

A. The Case in Which Fee-Shifting Can Produce Optimal Results

Let us look first at the case in which condition (15) holds: $\theta_p \leq (C_p+C_d)/D$. In this case, if the plaintiff must always bear the litigation costs of both sides, then all frivolous suits would be discouraged. The probability of error in favor of the plaintiff would not be sufficient to induce the plaintiff to bear these costs. Thus, in this case one could conceive of a fee-shifting rule that would deter all frivolous suits. In fact, we find that there exists a whole family of two-sided fee-shifting rules that can ensure that the plaintiff brings suit if and only if the case is sufficiently strong:

Proposition 3: If $\theta_p \leq (C_p+C_d)/D$, then there exist a family of two-sided fee-shifting rules that would create the optimal incentives for the plaintiff to bring suit. Each such rule would specify that the defendant pays the plaintiff's expenses if $x_c > \bar{y}_p$ and that the plaintiff pays the defendant's expenses if $x_c \leq \bar{y}_d$, where:

$$-C_p + [1-F(\bar{y}_p-\bar{x})]C_p - F(\bar{y}_d-\bar{x})C_d + \theta_p D = 0. \tag{21}$$

All of these rules would discourage all frivolous suits and encourage all meritorious suits.

Proof: Under the proposed rule, the plaintiff would sue if and only if:

$$-C_p + \Pr(x_c > \bar{y}_p | x_p)C_p - \Pr(x_c \leq \bar{y}_d | x_p)C_d + \Pr(x_c > \bar{x} | x_p)D > 0.$$

Thus, the plaintiff will sue if and only if $x_p > s^*$, where s^* is defined by:

$$-C_p + [1-F(\bar{y}_p-s^*)]C_p - F(\bar{y}_d-s^*)C_d + [1-F(\bar{x}-s^*)]D = 0. \tag{22}$$

Thus, to ensure that $s^* = \bar{x}$, we must set $\bar{y}_d$ and $\bar{y}_p$ such that (21) holds. Note that the left-hand side of (21) is monotonically decreasing in $\bar{y}_d$ as long as $0 < F(\bar{y}_d-\bar{x}) < 1$ and in $\bar{y}_p$ as long as $0 < F(\bar{y}_p-\bar{x}) < 1$.

If we let both $\bar{y}_d$ and $\bar{y}_p$ approach ∞, then both $F(\bar{y}_d-\bar{x})$ and $F(\bar{y}_p-\bar{x})$ go to 1, so that the left-hand side of (21) must become non-positive, if and only if (15) holds. If we let both $\bar{y}_d$ and $\bar{y}_p$ approach $-\infty$, then both $F(\bar{y}_d-\bar{x})$ and $F(\bar{y}_p-\bar{x})$ go to 0. In this case, the left-hand side of (21) must become positive, and plaintiffs would sue too often. Thus, there exists a pair $(\bar{y}_d, \bar{y}_p)$ that solves (21) if (15) holds. If (15) does not hold, then there would always be too much litigation.

If such a solution exists, then there exists a whole family of solutions $(\bar{y}_d, \bar{y}_p)$. We can solve (21) for either $\bar{y}_d$ or $\bar{y}_p$. The solution for $\bar{y}_d$ may be expressed as a monotonically decreasing function of $\bar{y}_p$:

$$\bar{y}_d(\bar{y}_p) = \bar{x} + F^{-1}\{1 - [C_p + C_d - \theta_p D - [1-F(\bar{y}_p-\bar{x})]C_p]/C_d\}. \tag{23}$$

Similarly, the solution for $\bar{y}_p$ may be expressed as a monotonically decreasing function of $\bar{y}_d$:

$$\bar{y}_p(\bar{y}_d) = \bar{x} + F^{-1}\{1 - [C_p + C_d - \theta_p D - [1-F(\bar{y}_d-\bar{x})]C_d]/C_p\}. \tag{24}$$

Thus, as long as both $0 < F(\bar{y}_d-\bar{x}) < 1$ and $0 < F(\bar{y}_p-\bar{x}) < 1$, increases in either $\bar{y}_d$ or $\bar{y}_p$ would substitute for increases in the other. ■

Remark 1: As long as condition (15) holds, there is a one-sided fee-shifting rule that would produce optimal incentives for plaintiffs to bring suit. The best two-sided fee-shifting rule can produce no better results, and as Proposition 3 shows, it produces no worse results. We can design a two-sided fee-shifting rule, indeed a whole family of such rules, that would produce optimal results.

Remark 2: The optimal two-sided fee-shifting rule, like the optimal one-sided fee-shifting rule, ensures that the expected value of going to trial is negative for $x_p < \bar{x}$, zero for the marginal suit in which $x_p = \bar{x}$, and positive for $x_p > \bar{x}$. Without fee-shifting, the expected value of the marginal suit would be $-C_p + \theta_p D$. Fee-shifting adds the second and third terms to the expression for the expected value of the marginal suit on the left-hand side of equation (21). Equation (21) sets the expected value of the marginal suit, including the expected net gain (or loss) from fee-shifting, equal to 0.

Remark 3: We can vary $\bar{y}_p$ and $\bar{y}_d$ in the optimal two-sided fee-shifting rule, but to maintain optimal incentives, the sum of the second and third terms in equation (21) must remain constant. Thus, as long as $\bar{y}_d > \bar{x}-e_1$, so that pro-defendant fee-shifting is possible in the marginal case, and $\bar{y}_p < \bar{x}+e_2$, so that pro-plaintiff fee-shifting is also possible in the marginal case, then changes in $\bar{y}_p$ must be offset by an opposing change in $\bar{y}_d$. That is, $\bar{y}_d(\bar{y}_p)$ will be strictly decreasing in $\bar{y}_p$, and $\bar{y}_p(\bar{y}_d)$ will be strictly decreasing in $\bar{y}_d$. If we increase the expected cost to the plaintiff from pro-defendant fee-shifting, then we must also increase the expected benefit to the plaintiff from pro-plaintiff fee-shifting.

Remark 4: In designing a two-sided fee-shifting rule, there would never be any reason to set $\bar{y}_d < \bar{x}-e_1$ or to set $\bar{y}_p > \bar{x}+e_2$. Consider a rule with $\bar{y}_d < \bar{x}-e_1$: there would be no reason not to increase $\bar{y}_d$ to $\bar{x}-e_1$, because this change would only increase the expected costs of frivolous suits; it would not affect meritorious suits. Similarly, if we are considering a rule with $\bar{y}_p > \bar{x}+e_2$, then there is no reason not to lower $\bar{y}_p$ to $\bar{x}+e_2$, because this change would only reduce the expected costs of meritorious suits; it would not affect frivolous suits. Neither of these effects would be undesirable. Of course, if the other threshold is set optimally, then making either of these changes would be unnecessary, because the rule would already discourage all frivolous suits and encourage all meritorious suits. If the other threshold is not set optimally, however, then these changes might be desirable.

Remark 5: Suppose $C_p > \theta_p D$, so that there is an insufficient incentive for the plaintiff to bring suit under the American rule. In this case, the optimal one-sided fee-shifting rule provided for pro-plaintiff fee-shifting and ruled out any pro-defendant fee-shifting. That is, it set $\bar{y}_d = -\infty$, and in terms of equation (24), it set $\bar{y}_p = \bar{y}_p(-\infty)$. Note that with the optimal two-sided fee-shifting rule, as long as $\bar{y}_d > \bar{x}\text{-}e_1$, so that there is some probability of pro-defendant fee-shifting in the marginal case, we must increase the probability of pro-plaintiff fee-shifting above what it would be under the optimal one-sided fee-shifting rule: that is, $\bar{y}_p(\bar{y}_d) < \bar{y}_p(-\infty)$.

Note also that the sum of the second and third terms in equation (21) must equal C_p - $\theta_p D$. Thus, if $C_p > \theta_p D$, then this sum must be positive. If we suppose further that $C_p = C_d$, then 1-$F(\bar{y}_p\text{-}\bar{x})$ must exceed $F(\bar{y}_d\text{-}\bar{x})$. Therefore, under these assumptions, we must set the fee-shifting thresholds such that the probability of pro-plaintiff fee-shifting must exceed the probability of pro-defendant fee-shifting. For example, if $\bar{y}_d < \bar{x} < \bar{y}_p$ under our rule, and the distribution of ε is symmetric about 0, then $\bar{y}_p$ must be closer to $\bar{x}$ than $\bar{y}_d$ is.

Remark 6: Suppose $C_p < \theta_p D$, so that there is an excessive incentive for the plaintiff to bring suit under the American rule. In this case, the optimal one-sided fee-shifting rule provided for pro-defendant fee-shifting and ruled out any pro-plaintiff fee-shifting. That is, it set $\bar{y}_p = \infty$, and in terms of equation (23), it set $\bar{y}_d = \bar{y}_d(\infty)$. Note that with the optimal two-sided fee-shifting rule, as long as $\bar{y}_p < \bar{x}+e_2$, so that there is some probability of pro-plaintiff fee-shifting in the marginal case, we must increase the probability of pro-defendant fee-shifting above what it would be under the optimal one-sided fee-shifting rule: that is, $\bar{y}_d(\bar{y}_p) > \bar{y}_d(\infty)$.

Note also that if $C_p < \theta_p D$, then the sum of the second and third terms in equation (21) must be positive. If we suppose further that $C_p = C_d$, then $F(\bar{y}_d\text{-}\bar{x})$ must exceed 1-$F(\bar{y}_p\text{-}\bar{x})$. Therefore, under these assumptions, we must set the fee-shifting thresholds such that the probability of pro-defendant fee-shifting must exceed the probability of pro-plaintiff fee-shifting. For example, if $\bar{y}_d < \bar{x} < \bar{y}_p$ under our rule, and the distribution of ε is symmetric about 0, then $\bar{y}_d$ must be closer to $\bar{x}$ than $\bar{y}_p$ is.

Remark 7: Note that the plaintiff's expected payoff from bringing the marginal suit, the left-hand side of (21), is monotonically increasing in θ_p and D. Furthermore, as long as both

$0 < F(\bar{y}_d - \bar{x}) < 1$ and $0 < F(\bar{y}_p - \bar{x}) < 1$, this payoff will strictly decrease in $\bar{y}_d$, $\bar{y}_p$, C_d, and C_p.[7] Thus, if the fee-shifting rule sets both thesholds, $\bar{y}_d$ and $\bar{y}_p$, to optimize the plaintiff's incentives to bring suit such that $\bar{x}-e_1 < \bar{y}_d < \bar{x}+e_2$ and $\bar{x}-e_1 < \bar{y}_p < \bar{x}+e_2$, then each threshold -- holding the other constant -- will increase in θ_p and D but decrease in C_d and C_p.

That is, ceteris paribus, the optimal policy becomes more pro-defendant if either θ_p or D increases, but more pro-plaintiff if either C_d or C_p increases. If the award that the plaintiff expects to recover increases, then the optimal rule -- to offset the increased incentive to bring suit -- must increase the probability that the plaintiff would have to bear the parties' litigation costs. If on the other hand, these litigation costs increase, then the optimal rule -- to offset the reduced incentive to bring suit -- must decrease the probability that the plaintiff would have to bear them.

B. The Case in Which Fee-Shifting Cannot Produce Optimal Results

Consider the case in which condition (15) does not hold. If $\theta_p > (C_p+C_d)/D$, then we cannot discourage all frivolous suits, even if the plaintiff must always bear the litigation costs of both sides. The probability of error in favor of the plaintiff would be sufficient to induce the plaintiff to bear these costs in the marginal case: the plaintiff still anticipates positive expected value from going to trial. Thus, in this case there is no fee-shifting rule that would deter all frivolous suits.

Proposition 4: If $\theta_p > (C_p+C_d)/D$, then the best two-sided fee-shifting rule would specify that the plaintiff pays the defendant's expenses if $x_c \leq \bar{y}_d$ and that the defendant pays the plaintiff's expenses if $x_c > \bar{y}_p$, where $\bar{y}_d \geq \bar{x}+e_2$ and $\bar{y}_p \geq \bar{x}+e_2$. Under this rule, however, the plaintiff would still have excessive incentives to bring suit.

Remark: If condition (15) does not hold, then the best one-sided fee-shifting rule would

[7]As long as the court threatens to impose both C_d and C_p on the plaintiff in the marginal suit, its payoff will decrease in both parameters. In particular, if there is some positive probability of $x_c \leq \bar{y}_d$ when $x_p = \bar{x}$, then this payoff will be strictly decreasing in C_d. Similarly, if there is some positive probability of $x_c \leq \bar{y}_p$ when $x_p = \bar{x}$, then this payoff will be strictly decreasing in C_p also.

set $\bar{y}_d$ to ensure that the plaintiff with the marginal case (or any worse case) would always bear the defendant's litigation costs. The best two-sided fee-shifting rule does the same, and also sets $\bar{y}_p$ such that the defendant would never have to pay the plaintiff's litigation costs in a marginal case (or in any worse case). This rule would be the best two-sided fee-shifting rule in that it maximizes the achievement of each objective: this rule would encourage all meritorious suits and discourage as many frivolous suits as possible. This rule would fall short of producing optimal results insofar as it will fail to discourage all frivolous suits.

C. Fee-Shifting Subject to Constraints on $\bar{y}_p$ and $\bar{y}_d$

Each of the classic fee-shifting rules is a special restricted case of the more general two-sided fee-shifting rule, with $(\bar{y}_d, \bar{y}_p)$ constrained to take on a particular pair of values: $(-\infty, \infty)$ for the American rule; $(\bar{x}, \bar{x})$ for the British rule; $(-\infty, \bar{x})$ for the pro-plaintiff rule; and $(\bar{x}, \infty)$ for the pro-defendant rule. As we have seen, these constrained rules provide optimal incentives only in very special circumstances. Similarly, constraints such as $\bar{y}_d \leq \bar{x}$ or $\bar{y}_p \geq \bar{x}$ would also restrict the circumstances under which the two-sided fee-shifting rule could provide optimal incentives. These restrictions, however, prove to be less severe than those imposed by the classic fee-shifting rules.

The constraint $\bar{y}_p \geq \bar{x}$, for example, would imply that the fee-shifting rule can be no more pro-plaintiff than the classic pro-plaintiff rule. Recall that even the classic pro-plaintiff rule leads to too little litigation if and only if condition (11) holds. Thus, fee-shifting subject to the constraint $\bar{y}_p \geq \bar{x}$ can provide optimal incentives if and only if the opposite condition holds, which we can express as:

$$C_p\theta_d \leq \theta_p D. \tag{25}$$

Condition (25) states that in the marginal case, the plaintiff's expected gain from adjudication must at least equal its expected liability for its litigation costs under the pro-plaintiff rule.

If the plaintiff's litigation costs are too great relative to the amount at stake, then (11) rather than (25) holds. Then even under the pro-plaintiff rule, plaintiffs sue if and only if $x_p > s^*$, where s^* is defined by equation (7). As discussed in Section IV.A, condition (11) implies $s^* > \bar{x}$, so that plaintiffs fail to bring some meritorious cases because they are sufficiently close cases and the risk of losing is too great.

Similarly, the constraint $\bar{y}_d \leq \bar{x}$ would imply that the fee-shifting rule can be no more pro-defendant than the classic pro-defendant rule. Recall that even the classic pro-defendant rule leads to too much litigation if and only if condition (16) holds. Thus, fee-shifting subject to the constraint $\bar{y}_d \leq \bar{x}$ can provide optimal incentives if and only if the opposite condition holds, which we can express as:

$$\theta_p D \leq C_p + C_d \theta_d. \tag{26}$$

Condition (26) states that in the marginal case, the plaintiff's expected gain from adjudication cannot exceed its expected liability for litigation costs under the pro-defendant rule.

If litigation costs are too small relative to the amount at stake, then (16) rather than (26) holds. Then as discussed in Section IV.B, condition (16) implies that the s^* defined by equation (6) is greater than $\bar{x}$. Thus, even under the pro-defendant rule, plaintiffs bring some frivolous suits where $x_p > s^*$, because they are sufficiently close cases and the possibility of winning is great enough to make the effort worthwhile.

D. Example with a Uniform Distribution

Suppose again for simplicity that ε is uniformly distributed in the interval (-e, e). If (15) holds, then we can use the $F(\varepsilon)$ in (17) to derive the family of optimal rules for this example. After rearranging terms, we find that Proposition 3 and (17) together imply that if $\frac{1}{2} \leq (C_p+C_d)/D$, then the optimal rule ensures that:

$$\bar{y}_p C_p + \bar{y}_d C_d = (D-C_p-C_d)e + (C_p+C_d)\bar{x}, \tag{27}$$

where $\bar{y}_p$ and $\bar{y}_d$ both lie in the interval $(\bar{x}-e, \bar{x}+e)$.[8] Solving (27) for $\bar{y}_p$ yields:

$$\bar{y}_p = \bar{x} + [(D-C_p-C_d)e - (\bar{y}_d-\bar{x})C_d]/C_p, \tag{28}$$

and solving (27) for $\bar{y}_d$ yields:

$$\bar{y}_d = \bar{x} + [(D-C_p-C_d)e - (\bar{y}_p-\bar{x})C_p]/C_d. \tag{29}$$

Note that this example reveals a comparative statics result analogous to that found under one-sided fee shifting: the effect of an increase in the uncertainty of the trial outcome has an ambiguous effect on the $(\bar{y}_d, \bar{y}_p)$ locus. An increase in e may move the locus to higher values of $\bar{y}_p$ and $\bar{y}_d$ or to lower values, depending on whether D is greater or less than C_p+C_d.

[8]Proposition 4 implies that if $(C_p+C_d)/D < \frac{1}{2}$ instead, then $\bar{y}_d \geq \bar{x}+e$ and $\bar{y}_p \geq \bar{x}+e$.

VI. IMPLICATIONS FOR RULE 11

The authors of Federal Rule of Civil Procedure 11 intended their rule to deter frivolous suits, and accordingly one can interpret Rule 11 as an example of the type of fee-shifting rule analyzed in this paper. Rule 11 requires an attorney (or a party not represented by an attorney) to sign pleadings, motions, and other papers before filing them in court, thereby certifying that to the best of that person's knowledge after a reasonable inquiry the paper has not been presented for "for any improper purpose, such as to harass or to cause unnecessary delay or needless increase in the cost of litigation," is "warranted by existing law or by a nonfrivolous argument for the extension, modification, or reversal of existing law," and is well grounded in fact.[9] If a court determines that an attorney or party has violated this rule, the court, upon motion or upon its own initiative, shall impose upon that person "an appropriate sanction," which may include an order to pay to the other party or parties the amount of the expenses incurred as a result of the violation, including reasonable attorney's fees.

For example, if the plaintiff's case is so frivolous that the court finds that the plaintiff's attorney should have known the suit was without merit when filed, the rule allows the court to shift the burden of the defendant's fees to the plaintiff. In enforcing Rule 11, courts have often focused on the merits of claims and defenses in this way.[10] Furthermore, in the overwhelming majority of cases imposing sanctions under Rule 11, courts have punished the party filing the "frivolous" paper by awarding costs and fees to the opposing party. See Nelken (1986, p. 1333). Thus, the Court of Appeals for the Seventh Circuit has stated that "Rule 11 is a fee-

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[9]Recent amendments to Rule 11 changed the language of the text, including a change from "warranted by existing law or <u>a good faith</u> argument for the extension, modification, or reversal of existing law" to "warranted by existing law or <u>by a nonfrivolous</u> argument for the extension, modification, or reversal of existing law." Amendments to the Federal Rules of Civil Procedure and Forms (transmitted to Congress on Apr. 22, 1993) (emphasis added), <u>reprinted in</u> 61 U.S.L.W. 4365, 4269 (Apr. 27, 1993). These amendments take effect on December 1, 1993.

[10]Schwarzer (1988), however, argues that courts should shift their scrutiny in Rule 11 cases from the merits of the case to the adequacy of the attorney's prefiling inquiry. Because it is difficult to predict whether a court will find a particular paper "frivolous," see Levinson (1986), Schwarzer argues that such a shift from the merits to the attorney's conduct would promote more predictable and less costly enforcement of Rule 11. As we have seen, however, attorneys do not need to predict sanctions with certainty for Rule 11 to exert the desired deterrent effect.

shifting statute." Hays v. Sony Corp., 847 F.2d 412, 419 (7th Cir. 1988).

Critics of this interpretation of Rule 11, however, warn against routine use of expense-shifting as a sanction. Burbank (1989), for example, argues that courts should exercise greater discretion in selecting a sanction sufficient to deter in the particular circumstances of the case. Similarly, the authors of the 1993 amendments to Rule 11 concluded that the rule had "too rarely been enforced through nonmonetary sanctions" and "cost-shifting ... has too frequently been selected as the sanction."[11] Consequently, the authors sought to emphasize deterrence as the goal of Rule 11 and to discourage reliance on monetary sanctions, especially fee-shifting. Rule 11(c)(2) now states that the court may order payment of "some or all of the reasonable attorneys' fees and other expenses incurred as a direct result of the violation" if such cost-shifting is "warranted for effective deterrence." The Advisory Committee on Civil Rules conceded that "cost-shifting may be needed for effective deterrence" in some situations, but sought "to emphasize that cost-shifting awards should be the exception, rather than the norm, for sanctions."[12]

The model in this paper, however, indicates that tailoring the deterrent effect of Rule 11 sanctions is more complicated given the existence of uncertainty over trial outcomes. If courts cannot observe x_p, then they cannot know how likely the plaintiff thought its suit was to succeed at trial. Given this uncertainty, a court cannot tailor the sanction in any particular case to that level just sufficient to deter that particular plaintiff. The deterrent effect upon any particular plaintiff is also a function of all the other sanctions that the plaintiff considered possible. That

[11] Attachment B to letter from Sam C. Pointer, Jr., Chairman, Advisory Committee on Civil Rules to Robert E. Keeton, Chairman, Standing Committee on Rules of Practice and Procedure 3-4 (May 1, 1992), reprinted in Amendments to the Federal Rules of Civil Procedure and Forms 120-21 (transmitted to Congress on Apr. 22, 1993).

[12] Attachment B to letter from Sam C. Pointer, Jr., Chairman, Advisory Committee on Civil Rules to Robert E. Keeton, Chairman, Standing Committee on Rules of Practice and Procedure 4 (May 1, 1992), reprinted in Amendments to the Federal Rules of Civil Procedure and Forms 121 (transmitted to Congress on Apr. 22, 1993). These amendments provoked a dissenting statement by Justice Scalia, joined by Justice Thomas. Amendments to the Federal Rules of Civil Procedure and Forms 104-07 (transmitted to Congress on Apr. 22, 1993), reprinted in 61 U.S.L.W. 4392-93 (Apr. 27, 1993).

is, this deterrent effect depends not only upon the sanction imposed in any particular case, as the court views the case, but also upon what sanctions the court would impose if it viewed the case differently -- that is, if it observed a different x_c.

Viewed in this light, fee-shifting can be more flexible and more useful "for effective deterrence" than implied by the Advisory Committee. Our analysis suggests how courts can control Rule 11's deterrent effect not only by varying the magnitude of the sanctions, but also by varying the thresholds that will trigger the sanctions.[13] That is, this paper suggests that courts can tailor the deterrent effect to the particular circumstances of the case by choosing the conditions under which sanctions would be imposed, not necessarily by adjusting the severity of the sanctions.[14]

Within our analytical framework, Rule 11 is a two-sided fee-shifting rule, because it allows for the possibility of fee-shifting in either direction in each case. Our analysis sheds light on the question of how the thresholds for fee-shifting should be set. Given particular definitions of frivolous and meritorious suits, we have shown how the optimal thresholds would depend on the size of the litigation costs (C_d and C_p) relative to the amount at stake (D) and on the distribution of the error term (ε).

Given enough information on $F(\varepsilon)$, for example, there may be cases where fee-shifting would obviously be appropriate. Whenever the plaintiff wins by such a large margin that there

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[13]Courts generally have the authority to determine both the magnitude of Rule 11 sanctions and the circumstances that will trigger them. That is, Rule 11 gives courts control over both the policy instruments that we model in this paper and the instruments analyzed by Polinsky and Rubinfeld (1992; 1993), who examine the magnitude of awards and sanctions as control variables.

[14]The Advisory Committee apparently believed that fee-shifting often exceeds what is necessary for effective deterrence. The analysis in this paper indicates that while fee-shifting may be more than sufficient to deter some frivolous suits, it need not ever lead to excessive deterrence in the sense of discouraging meritorious suits. In fact, the most important shortcoming of reliance on fee-shifting alone is that it would be insufficient for effective deterrence of all frivolous suits. To the extent that courts wish to limit fee-shifting to just that amount sufficient to deter (reducing the plaintiff's expected value of bringing each frivolous suit to exactly zero), they can seek to do so by choosing partial reimbursement of attorneys' fees, as permitted by Rule 11. The extension of our model discussed in Section VII.C would also include this flexibility.

is no chance that the plaintiff has brought a frivolous suit but won through judicial error, then the defendant should pay the plaintiff's litigation costs. This fee-shifting policy might encourage meritorious suits that would not otherwise be brought, and it would not encourage any frivolous suits. Similarly, whenever the defendant wins by such a large margin that there is no chance that the plaintiff has brought a meritorious suit but lost through judicial error, then the plaintiff should pay the defendant's litigation costs. This fee-shifting policy might discourage such frivolous suits, and it would not discourage any meritorious suits.

We have seen, however, that it may well be desirable to shift fees in a larger set of cases. In particular, a court might inquire whether there is, in the absence of such fee-shifting, either insufficient or excessive incentives for the plaintiff to bring suit. To this end, the court would need to determine the expected value for the plaintiff of going to trial with the marginal case. This expected value depends on the plaintiff's litigation costs, the amount at stake, and the likelihood of judicial error on the merits in either direction.[15] If this expected value is negative, then the plaintiff has insufficient incentives to sue; if this expected value is positive, then the plaintiff has excessive incentives to sue.

If there is an insufficient incentive to sue in the absence of fee-shifting, then the ideal fee-shifting rule would offer the plaintiff a net expected gain in the marginal case. That is, the thresholds should be set in such a way that the expected pro-plaintiff fee-shifting would exceed the expected pro-defendant fee-shifting. If the plaintiff's and defendant's litigation costs are similar, then the thresholds should imply that the likelihood of pro-plaintiff fee-shifting exceeds the likelihood of pro-defendant fee-shifting. Thus, the thresholds should be set so as to favor the plaintiff: if errors are distributed symmetrically about 0 and litigation costs are similar, then

[15]To set precisely the best thresholds for fee-shifting requires more information than courts are likely to have in reality. Nevertheless, our analysis suggest at least some crude rules of thumb. Although courts would not be able to implement perfectly the best fee-shifting rule, they should be able to achieve roughly the desired effect on plaintiffs' incentives. They may shift fees in some cases in which the best rule would not, and fail to shift fees in some cases in which the best rule would call for it. Unless one type of departure from the best rule predominates, however, the two types of error in fee-shifting decisions would tend to offset one another. Such random errors -- without systematic bias -- would have little net effect on the plaintiff's expected value from bringing suit.

the threshold for pro-plaintiff fee-shifting should be closer to the standard for liability than the threshold for pro-defendant fee-shifting is.

In constrast, if there is an excessive incentive to sue in the absence of fee-shifting, then the ideal fee-shifting rule would impose a net expected cost on the plaintiff in the marginal case. That is, the thresholds should be set in such a way that the expected pro-defendant fee-shifting would exceed the expected pro-plaintiff fee-shifting. If the plaintiff's and defendant's litigation costs are similar, then the thresholds should imply that the likelihood of pro-defendant fee-shifting exceeds the likelihood of pro-plaintiff fee-shifting.[16]

In any case, the comparative statics results in Section V.A offer some further guidance for courts exercising the discretion that they enjoy under Rule 11. Courts should give Rule 11 an interpretation more generous to plaintiffs in cases in which the litigation costs are larger relative to the amount at stake. As Section V.A indicates, this interpretation may mean that courts use Rule 11 more sparingly against plaintiffs, or that they use it more aggressively against defendants, or both. Conversely, if the amount at stake is larger relative to the litigation costs, then courts should invoke Rule 11 more readily against plaintiffs and less frequently against defendants.

As the examples in Sections IV.C and V.C indicate, an increase in the plaintiff's uncertainty over the trial outcome has an ambiguous effect on the optimal fee-shifting rule: it can militate in favor of either a more pro-plaintiff or a more pro-defendant rule. We have assumed, however, that the plaintiff is risk neutral. Given a risk-averse plaintiff, an increase in risk would magnify the deterrent effect of any given fee-shifting rule. This effect suggests that courts should give Rule 11 a more pro-plaintiff interpretation in the face of greater legal uncertainty or when dealing with particularly risk-averse plaintiffs. Thus, it may be appropriate for courts to afford more favorable treatment under Rule 11 to plaintiffs that bring suit in

[16]Thus, the thresholds should be set so as to favor the defendant: if errors are distributed symmetrically about 0 and litigation costs are similar, then the threshold for pro-defendant fee-shifting should be closer to the standard for liability than the threshold for pro-plaintiff fee-shifting is.

unsettled areas of the law or those with lower levels of wealth.[17]

Our analysis, however, suggests two limitations on the ability of courts to create optimal incentives through the use of Rule 11 as a two-sided fee-shifting device. One limitation flows from the inherent limits on the usefulness of fee-shifting rules in reducing excessive incentives to sue. If the amount at stake is sufficiently large relative to litigation costs, then condition (15) fails: given the probability of judicial error, even the prospect of always paying the litigation costs of both sides would not discourage all frivolous suits.

In these cases, a court would have to impose additional penalties in order to discourage these suits. For example, under Rule 11 courts may impose fines or nonmonetary sanctions as well as fees and costs.[18] Courts may want to use such sanctions in order to achieve adequate deterrence. Our analysis shows that fee-shifting alone would prove inadequate as a sanction in those cases in which the amount at stake is so large relative to the litigation costs that condition (15) fails to hold: the expected gain from bringing the marginal case exceeds the litigation costs. The same analysis suggests how in theory courts might increase its sanctions just enough to reduce the expected value for the plaintiff of bringing the marginal suit down to zero.[19]

There is, however, another limitation, which the authors of Rule 11 have written into the

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[17]To put this suggestion in the language of Rule 11, in unsettled areas of the law, more lawsuits will be "warranted by existing law or by a nonfrivolous argument for the extension, modification, or reversal of existing law." Furthermore, the Advisory Committee identified "cases involving litigants with greatly disparate financial resources" as examples of cases "in which cost-shifting may be needed for effective deterrence." Attachment B to letter from Sam C. Pointer, Jr., Chairman, Advisory Committee on Civil Rules to Robert E. Keeton, Chairman, Standing Committee on Rules of Practice and Procedure 4 (May 1, 1992), reprinted in Amendments to the Federal Rules of Civil Procedure and Forms 121 (transmitted to Congress on Apr. 22, 1993). The committee presumably intended to endorse cost-shifting in favor of the party with fewer resources.

[18]As amended in 1993, Rule 11 explicitly authorizes "directives of a nonmonetary nature" and "an order to pay a penalty into court," although these sanctions were also available under Rule 11 prior to 1993. See Schwarzer (1985, pp. 201-04).

[19]Specifically, sufficiently large sanctions would replace the defendant's costs, C_d, in (14) and (15) with some greater penalty such that (15) holds and a solution for $\bar{y}_d$ in (14) exists. Then this sanction, if applied with the appropriate probability, would ensure that the plaintiff would have neither too much nor too little incentive to bring suit.

rule. Rule 11 reserves all sanctions for parties that lose by wide margins, so that fees cannot be shifted in favor of a losing party. In terms of the model presented in this paper, Rule 11 restricts the thresholds, $\bar{y}_p$ and $\bar{y}_d$, so that $\bar{y}_p < \bar{x} < \bar{y}_d$. We have seen, however, that these constraints may exclude fee-shifting that would improve litigation incentives. Given these constraints, Rule 11 fee-shifting could not ensure that plaintiffs have optimal incentives, even if litigation costs are large enough relative to the amount at stake to ensure condition (15) holds. Fee-shifting under Rule 11 can provide optimal incentives if and only if the inequalities in (25) and (26) both hold strictly, that is, if and only if:

$$C_p\theta_d < \theta_p D < C_p + C_d\theta_d.$$

That is, in the marginal case, the plaintiff's expected gain from adjudication must fall between its expected liability for litigation costs under the classic pro-plaintiff rule and its expected liability under the classic pro-defendant rule. Nevertheless, Rule 11 can provide optimal incentives to the plaintiff over a wider range of cases than either the American rule or the British rule, which subject fee-shifting to still more severe restrictions.

As we have noted, Rule 11 also allows for sanctions other than the award of attorneys' fees, and these other sanctions may supplement the use of fee-shifting. Courts may use these sanctions when litigation costs are too small relative to the amount at stake for inequality (26) to hold. In these cases, the prospect of Rule 11 fee-shifting (subject to the constraint $\bar{y}_d \leq \bar{x}$) would be insufficient to deter all frivolous lawsuits, and additional penalties would be appropriate. That is, if the amount at stake is sufficiently large relative to litigation costs, so that the plaintiff will have excessive incentives to bring suit even under the classic pro-defendant rule, then the court would have to impose a larger sanction on a losing plaintiff than pro-defendant fee-shifting. In such cases, one must supplement or replace C_d under such restricted fee-shifting with some other sanctions for plaintiffs.[20] A sufficiently large sanction could reduce the expected value of the marginal suit to zero, so as to provide optimal incentives for the plaintiff, even if courts can impose sanctions only against losing plaintiffs.

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[20]As with condition (15), if (26) failed to hold, a court could substitute a greater sanction for C_d in (26) such that the inequality in (26) would hold. Because (26) is a stronger condition than (15), a greater sanction would be necessary to satisfy (26) than to satisfy (15).

In other cases, the plaintiff's litigation costs are so great relative to the amount at stake that condition (25) fails to hold, and too little litigation results even under the classic pro-plaintiff rule. The authors of Rule 11, however, did not focus on this problem and do not explicitly provide courts with any instrument to handle these cases. In these cases, our analysis suggests that a court should supplement pro-plaintiff fee-shifting by awarding a winning plaintiff an extra amount. Under Rule 11, a court might characterize such an award as a sanction imposed on the defendant for a frivolous defense against a meritorious claim by the plaintiff.

The authors of the most recent amendments to Rule 11, however, sought to discourage such sanctions. The committee notes explain:

> Since the purpose of Rule 11 sanctions is to deter rather than to compensate, the rule provides that, if a monetary sanction is imposed, it should ordinarily be paid into court as a penalty. However, under unusual circumstances, ... deterrence may be ineffective unless the sanction not only requires the person violating the rule to make a monetary payment, but also directs that some or all of this payment be made to those injured by the violation. Accordingly, the rule authorizes the court ... to award attorney's fees to another party. Any such award to another party, however, should not exceed the expenses and attorneys' fees for the services directly and unavoidably caused by the violation ....

Fed. R. Civ. P. 11 committee notes, reprinted in Amendments to the Federal Rules of Civil Procedure and Forms 184-85 (transmitted to Congress on Apr. 22, 1993). Therefore, it would appear that sanctions paid to the other party under Rule 11 cannot go beyond fee-shifting. Although our analysis would suggest that such sanctions may be useful in inducing plaintiffs to bring meritorious suits, the authors of Rule 11 were instead solely concerned with deterring frivolous papers.

We have drawn these implications for Rule 11 from an analysis based on certain premises regarding the definition of frivolous and meritorious suits. We will consider other possible definitions in the next section, in which we consider how our analysis might be extended.

VII. EXTENSIONS

In this section, we present some extensions of the preceding model. First, we relax the assumption that the plaintiff knows x with certainty. Second, we relax the assumption that the social objective is for plaintiffs to sue if and only if they believe the defendant is liable. Third, we consider the implications of policies other than fee-shifting. Fourth, we consider the possibility that the parties will settle out of court rather than go to trial.

A. Plaintiff Uncertainty Regarding x

An important element in the analysis is the presence of legal uncertainty: the plaintiff may be uncertain about the outcome of a trial. One source of such uncertainty, and the one we have used for concreteness in our model, is the possibility of an erroneous decision by the court: even if the plaintiff can observe the "true merit" of its case, the court might not observe the "true merit" accurately, and the plaintiff cannot completely predict the court's error. A second possible source of uncertainty is the possibility of an erroneous evaluation by the plaintiff: the plaintiff might be uncertain about the "true merit" of its own case.

Until now we have not considered this second possibility: we have assumed that $x_p = x$. We can assume instead that not only the court but also the plaintiff observes x, the "true merit" of the case, with error. Specifically, let $x_p = x+\varepsilon_p$ and $x_c = x+\varepsilon_c$, with both ε_p and ε_c as random variables. In this case, $x_c = x_p+\varepsilon$, as before, where now $\varepsilon = \varepsilon_c-\varepsilon_p$. The model yields the same results as before, with the random variable ε now reinterpreted to represent the difference between the court's error and the plaintiff's error.

As this discussion suggests, in fact, it is not important for our results whether any "true" value of x exists at all. Although we have assumed that there is a "true" value for x, we can also give our framework a interpretation under which there is no "true" x. Instead, there is only what the court will determine x to be, x_c, and the plaintiff's expectation as to what the court's determination will be. In this case, let x_p denote the expected value attached by the plaintiff to x_c. The plaintiff knows only that $x_c = x_p+\varepsilon$, where ε is distributed according to $F(\varepsilon)$, and the analysis proceeds as before.

B. Other Social Objectives

1. Different Thresholds for Desirable Suits

In the preceding analysis, we have assumed that x^*, the threshold that x_p must exceed for a suit to be socially desirable, equals $\bar{x}$. That is, we took the policy goal to be to induce the plaintiff to sue if and only if it observes x_p greater than $\bar{x}$. We can, however, allow for x^* other than $\bar{x}$.

A threshold different from $\bar{x}$ is especially plausible once we consider plaintiffs that observe x only with error. Suppose that $x_p = x+\varepsilon_p$, where ε_p is distributed symmetrically about 0. In this case, setting $x^*=\bar{x}$ implies that plaintiffs should sue if and only if they believe that $x>\bar{x}$ with a 50 percent probability. One can just as easily consider a policy that would require plaintiffs to sue if and only if they have a greater confidence level than 50 percent or a lower confidence level than 50 percent.

For example, courts may identify a class of suits that society would not want to discourage even though the plaintiffs regard their claims as unlikely to succeed. There may be some public good flowing from these suits, even if plaintiffs estimate that their likelihood of success is substantially less than 50 percent. A suit may be unlikely to succeed, for example, because it relies on innovative legal theories. Controversy over Rule 11 focuses on the risk that sanctions will discourage the use of innovative legal theories. See, e.g., Nelken (1986); Note (1987). Courts can respond to these concerns by allowing an attorney greater leeway in making a losing argument when it is a novel "argument for the extension, modification, or reversal of existing law," in the language of Rule 11.[21] In terms of our model, if a suit is likely to fall short of success on this particular ground, courts may set $x^*<\bar{x}$ to encourage such litigation. That is, to the extent that any other social objective militates in favor of plaintiffs bringing some particular types of lawsuits, a more pro-plaintiff policy would be appropriate.

This extension requires only minor modifications in the preceding analysis. Again, we would set $\bar{y}_p$ or $\bar{y}_d$ (or both) so that so that the expected value for the plaintiff of going to trial with the marginal suit is 0, but now we regard the case in which $x_p=x^*$ (rather than $x_p=\bar{x}$) to be the marginal suit. Thus, x^* would replace $\bar{x}$ where appropriate.[22] The plaintiff is still indifferent about bringing the marginal suit, but we have changed the probability of success of

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[21]Wilder (1986) argues that courts have in fact been sensitive to the chilling effect of sanctions and have used Rule 11 cautiously.

[22]For example, one would substitute x^* for $\bar{x}$ in (8), (12), (19), (20), (23), (24), (28), and (29). Note also that $F(\bar{x}-x^*)$ replaces $F(0)$ in the definition of θ_p and θ_d, and $F(\bar{y}_p-x^*)$ replaces $F(\bar{y}_p-\bar{x})$, and $F(\bar{y}_d-x^*)$ replaces $F(\bar{y}_d-\bar{x})$ in the preceding discussion.

the marginal suit. Thus, such an extension would still preserve the general thrust of our results.

A lower x^* implies a lower expected value for the marginal suit in the absence of fee-shifting. If we reduce x^*, then we are more likely to have an inadequate incentive to sue (and less likely to have an excessive incentive to sue) in the absence of fee-shifting. Thus, a reduction in x^* implies that the best fee-shifting rule is more pro-plaintiff: it is more likely to put the burden of litigation costs on the defendant, with a lower $\bar{y}_p$ or $\bar{y}_d$ (or a set of lower $\bar{y}_p$ and $\bar{y}_d$ values).[23]

2. <u>The Choice of the Social Objective</u>

Thus far, we have assumed that we are given a particular definition of good and bad suits, that is, a specific threshold x^* above which suits are sufficiently strong to be socially desirable. Our analysis examined only how to induce the optimal litigation decisions, given this criterion. The criteria for optimal litigation decisions, however, should ultimately be derived in a comprehensive normative analysis rather than taken as given.

Deriving the optimal level of litigation requires a complex analysis that may produce different conclusions in different contexts. Generally, a complete analysis would consider not only the underlying social objectives to be served by the litigation but also the total administrative costs of the legal system. For example, the substantive rights given to the plaintiff may be designed to enhance efficiency by inducing the defendant to behave properly. If litigation were costless, then the optimal level of litigation would simply provide optimal deterrence: it would neither over-deter nor under-deter defendants. The analysis, however, would also have to consider the effect of litigation costs.

First, the magnitude and the allocation of these costs would affect the defendant's incentives ex ante. For example, fee-shifting rules affect not only the plaintiff's incentive to bring a negligence suit, but also the cost to the defendant of such a lawsuit. Through both these

[23]Conversely, a higher x^* implies a more pro-defendant rule. A higher x^* implies a higher expected value for the marginal suit in the absence of fee-shifting. If we raise x^*, then we are more likely to have an excessive incentive to sue (and less likely to have an inadequate incentive to sue) in the absence of fee-shifting. Thus, an increase in x^* implies that the best fee-shifting rule is less pro-plaintiff: it is more likely to put the burden of litigation costs on the plaintiff, with a higher $\bar{y}_p$ or $\bar{y}_d$ (or a set of higher $\bar{y}_p$ and $\bar{y}_d$ values).

effects, such rules affect a potential defendant's incentive to take care. See P'ng (1987); Hylton (1990). Thus, the optimal fee-shifting rule would depend upon more than just the rule's effects on the plaintiff's incentives to bring suit.

Second, the reduction of total litigation costs would presumably be another social objective in designing an optimal rule. See Polinsky and Rubinfeld (1992; 1993). Ultimately, one would determine the optimal incentives for plaintiffs to bring suit by weighing the social costs of suboptimal primary behavior by defendants ex ante against the social costs of lawsuits ex post, which include the expenditure of resources by both parties and by the court. The social value of some litigation may be so trivial relative to its social costs that we would want to discourage such lawsuits even if they are likely to succeed. On the other hand, as we have already suggested, the social value of other cases may be so great relative to their social costs that we would want to encourage them even if they are unlikely to succeed. The goal of optimal fee-shifting rules would be to align the plaintiff's private incentives to bring a suit with the net social benefits of that suit. See Shavell (1982b).

Finally, fee-shifting itself may entail additional administrative costs. If fee-shifting depends on the determination of x, parties may expend greater resources litigating the issue of x.[24] Furthermore, the issue of fee-shifting depends on the resolution of issues other than the court's determination on the merits. For example, in our framework, a court must determine $F(\varepsilon)$, C_d, and C_p, as well as the margin of victory, and in practice these issues might be costly for the parties and the court to resolve. In fact, critics have often charged that Rule 11 has generated too much costly "satellite litigation." See Higginbotham et al. (1991, p. 167).

If fee-shifting does not flow automatically from the court's determination on the merits,

[24]Braeutigam, Owen, and Panzar (1984) and Hause (1989) both present models in which the probability that the plaintiff prevails at trial is a function of the litigation expenditures of both parties. Each concludes that a switch from the American rule to the British rule would increase the total expenditures on litigation. Not only do higher stakes increase the marginal value of these expenditures, but the prospect of reimbursement also reduces the expected private cost of one's own expenditures. One might expect a similar effect under fee-shifting rules that depend on the margin of victory. In our model, however, we have assumed that litigation costs are fixed exogenously and that the distribution of ε is independent of these litigation costs. Further research is necessary to address the implications of endogenous litigation costs for the analysis in this paper.

as in the classic fee-shifting rules, then a party seeking reimbursement must make the decision whether to petition the court for it, and the cost of litigating the fee-shifting petition itself might discourage potential petitioners. If the administration of fee-shifting rules is itself costly, then this cost and its effects must also enter the analysis. See Polinsky and Rubinfeld (1993). Further research is necessary to address the many issues raised by these more complex social objectives, which fall outside the scope of the preliminary analysis in this paper.

Similar problems arise when the underlying social policy is not the promotion of efficiency. For example, substantive laws may give rights to plaintiffs in order to serve some principle of fairness or of distributive justice. In these contexts, one would evaluate the extent to which a given level of litigation transfers wealth from defendants to plaintiffs in those cases, and only in those cases, in which the underlying principle requires such transfers. Presumably, this analysis would also have to consider the effects of litigation costs. Thus, the optimal level of litigation may well depend on many situation-specific factors, requiring separate analysis for different circumstances.

Nevertheless, it seems plausible that in many cases the conclusion would be such that plaintiffs with sufficiently strong cases should sue whereas plaintiffs with sufficiently weak cases should not. Whether our goals relate to economic efficiency and deterrence, or to fairness and distributive justice, stronger cases would be more likely to contribute to our goals than weaker cases. Therefore, we believe that our framework, which determines how to induce plaintiffs to sue if and only if they believe their cases to be sufficiently strong, is of general interest.

C. Policy Instruments Other Than Fee-Shifting

Thus far, we have assumed that the court can impose only fee-shifting as a sanction. The court simply sets the thresholds that will trigger fee-shifting. More generally, as already suggested, one could also make the size of the sanction a policy variable. That is, one could imagine rules under which the defendant pays the plaintiff S_p if $x_c > \bar{y}_p$ and plaintiff pays the defendant S_d if $x_c \leq \bar{y}_d$. Even more generally, you could have the net transer S from defendant to plaintiff be a non-decreasing function of x_c. In that case, the plaintiff's expected payoff from litigation still increases monotonically in x_p. The basic approach of this paper still applies: the court can set the function $S(x_c)$ such that the plaintiff is just indifferent about bringing the marginal suit, but willing to bring better suits and unwilling to bring worse suits.

Given that the absolute value of $S(x_c)$ can be raised over the level of reimbursement for litigation costs, it should always be possible to induce optimal decisions, even if the court can impose sanctions only on the losing party.[25] For example, in the case discussed in Section V.C in which condition (25) fails to hold, we would have to supplement or replace fee-shifting subject to the constraint $\bar{y}_p \geq \bar{x}$ with other policies in order to induce plaintiffs to bring suit in all appropriate cases. Courts might provide for additional awards in some cases to induce plaintiffs to bring meritorious suits that they would otherwise not bring because of high litigation costs. If courts make the net transfer a function of x_c, rather than a fixed D plus a two-sided fee-shifting rule (as we have assumed), then they have a more general policy instrument that can be particularly useful when fee-shifting rules cannot provide sufficient incentives for the plaintiff to bring suit. Specifically, we can increase the expected value of the plaintiff's suit by shifting the $S(x_c)$ function up.[26]

If Rule 11 were to permit sanctions paid by the defendant to the plaintiff in excess of the plaintiff's attorney's fees, then a court could use this authority to encourage plaintiffs to bring suit. Although Rule 11 explicitly authorizes partial reimbursement of attorneys' fees, the Rule 11 committee notes suggest that transfers should not exceed these fees. There are also other policy instruments, however, that can shift the $S(x_c)$ function. Suppose for example that a court is more likely to award punitive damages in a tort case if it finds that the defendant was grossly negligent. In this case, the expected damages anticipated by the plaintiff will depend on the plaintiff's observed x_p, because the amount awarded upon a finding a liability will be correlated with the court's findings on x. By increasing the punitive damages or awarding them more readily, courts could shift the $S(x_c)$ function up. Or we could provide for treble damages in a

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[25]To the extent that Rule 11 authorize such sanctions, they are at least subject to the constraints that $S(x_c) \geq 0$ for $x_c > \bar{x}$ and $S(x_c) \leq 0$ for $x_c \leq \bar{x}$.

[26]Similarly, if condition (26) fails to hold, then we would have to supplement or replace fee-shifting subject to the constraint $\bar{y}_d \leq \bar{x}$ with other policies in order to discourage plaintiffs from bringing any frivolous suits. Specifically, we can decrease the expected value of the plaintiff's suit by shifting the $S(x_c)$ function down.

particular category of cases to increase the amount recovered, so that condition (25) can hold.[27]

D. Out-of-Court Settlements

The preceding model excludes the possibility of out-of-court settlements. In reality, parties usually settle out of court before going to trial. A question left open for future research is the incorporation of settlement into the model. We have assumed that the plaintiff sues only if the expected value of going to trial is positive. If we introduce the option of settlement, plaintiffs will still bring every suit with positive expected value, but it is no longer the case that they will never bring a suit with negative expected value. Even if litigating to judgment is not worthwhile, plaintiffs may bring such suits solely to extract a settlement offer. See Bebchuk (1988, 1991); Rosenberg and Shavell (1985). Therefore, the possibility of settlements raises the incentives for plaintiffs to sue, compared with a model that excludes settlements.

An analysis of fee-shifting rules and settlements would also have to consider the effect of fee-shifting rules on settlements. That is, the analysis would not only take into account how settlements raise the incentives for plaintiffs to sue, but also how fee-shifting rules affect the bargaining power of the parties in settlement negotiations. For example, fee-shifting rules affect the parties' expected payoffs from adjudication, and thereby influence how the parties divide the surplus gained by avoiding the litigation costs imposed by a failure to settle insofar as that failure leads to trial and judgment. Because fee-shifting rules can set the "threat point" of the settlement bargaining and thereby influence the settlement amount, they can still improve the plaintiff's incentives to bring suit by adjusting that threat point to fit the circumstances of the case.[28]

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[27]Alternatively, in a particular category of cases we could provide for subsidies or less costly procedures to reduce the plaintiff's C_p, or reduce the plaintiff's burden of proof to increase θ_p, to ensure that condition (25) held. Similarly, in other cases in which condition (26) fails to hold, one could raise the plaintiff's burden of proof, in order to reduce θ_p so that condition (26) could hold, and thereby induce plaintiffs to bring suit only in appropriate cases.

[28]To design optimal fee-shifting rules, however, we would also have to consider their effect on the likelihood of settlement and the complex considerations described in Section VII.B.2.

REFERENCES

Bebchuk, Lucian A. (1988), "Suing Solely to Extract a Settlement Offer," Journal of Legal Studies, Vol. 17, 437-450.

Bebchuk, Lucian A. (1991), "The Credibility and Success of Suits Known to be Made Solely to Extract a Settlement Offer," Harvard Law School, mimeo.

Braeutigam, Ronald, Bruce Owen, and John Panzar (1984), "An Economic Analysis of Alternative Fee Shifting Systems," Law and Contemporary Problems, Vol. 47, 173-185.

Burbank, Stephen B. (1989), "The Transformation of American Civil Procedure: The Example of Rule 11," University of Pennsylvania Law Review, Vol. 137, 1925-1967.

Hause, John C. (1989), "Indemnity, Settlement, and Litigation, or, I'll Be Suing You," Journal of Legal Studies, Vol. 18, 157-179.

Higginbotham, A. Leon, Jr. et al. (1991), "Bench-Bar Proposal to Revise Civil Procedure Rule 11," Federal Rules Decisions, Vol. 137, 159-174.

Hylton, Keith N. (1990), "The Influence of Litigation Costs on Deterrence Under Strict Liability and Under Negligence," International Review of Law and Economics, Vol. 10, 161-171.

Levinson, Sanford (1986), "Frivolous Cases: Do Lawyers Really Know Anything at All?" Osgoode Hall Law Journal, Vol. 24, 353-378.

Nelken, Melissa L. (1986), "Sanctions Under Amended Federal Rule 11 -- Some 'Chilling' Problems in the Struggle Between Compensation and Punishment," Georgetown Law Journal, Vol. 74, 1313-1369.

Note (1987), "Plausible Pleadings: Developing Standards for Rule 11 Sanctions," Harvard Law Review, Vol. 100, 630-652.

P'ng, Ivan P.L. (1987), "Litigation, Liability, and Incentives for Care," Journal of Public Economics, Vol. 34, 61-85.

Polinsky, A. Mitchell and Daniel L. Rubinfeld (1992), "Optimal Awards and Penalties When Some Suits Are Frivolous," Stanford Law School, John M. Olin Program in Law and Economics, Working Paper No. 93.

Polinsky, A. Mitchell and Daniel L. Rubinfeld (1993), "Sanctioning Frivolous Suits: An Economic Analysis," Stanford Law School, John M. Olin Program in Law and Economics, Working Paper No. 103.

Polinsky, A. Mitchell and Steven Shavell (1989), "Legal Error, Litigation, and the Incentive to Obey the Law," Journal of Law, Economics, and Organization, Vol. 5, 99-108.

Rosenberg, David and Steven Shavell (1985), "A Model in Which Suits Are Brought for Their Nuisance Value," International Review of Law and Economics, Vol. 5, 3-13.

Schwarzer, William W. (1985), "Sanctions Under the New Federal Rule 11 -- a Closer Look," Federal Rules Decisions, Vol. 104, 181-206.

Schwarzer, William W. (1988), "Rule 11 Revisited," Harvard Law Review, Vol. 101, 1013-1025.

Shavell, Steven (1982a), "Suit, Settlement, and Trial: A Theoretical Analysis Under Alternative Methods for the Allocation of Legal Costs," Journal of Legal Studies, Vol. 11, 55-81.

Shavell, Steven (1982b), "The Social Versus Private Incentive to Bring Suit in a Costly Legal System," Journal of Legal Studies, Vol. 11, 333-339.

Wilder, Nancy H. (1986), "The 1983 Amendments to Rule 11: Answering the Critics' Concern With Judicial Self-Restraint," Notre Dame Law Review, Vol. 61, 798-818.