PRETRIAL NEGOTIATION, LITIGATION, AND PROCEDURAL RULES

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We model the civil dispute resolution process as a two-stage game with the parties bargaining to reach a settlement in the first stage and then playing a litigation expenditure game at trial in the second stage. We find that the English rule shifts the settlement away from the interim fair and unbiased settlement in most circumstances. Overall welfare changes are in favor of the party who makes the offer in the pretrial negotiation stage. Lawyers however, always benefit from the English rule, because fee shifting increases the stake of the trial and thus intensifies the use of the legal service. (*JEL* K40)

I. INTRODUCTION

Newt Gingrich, in the *Contract with America* [1994, 145], calls for "common sense legal reforms," including a "so-called loser-pays rule" (in which the unsuccessful party in a suit pays the attorneys' fees of the prevailing party). The "loser-pays rule" (hereafter fee-shifting or English rule), Gingrich argues, "strongly discourages the filing of weak cases as well as encourages the pursuit of strong cases, since claimants can get their court costs reimbursed if they win" [1994, 146]. A voluminous literature, discussed below, supports Gingrich's view. However, by and large, this literature neglects two important considerations in analyzing the English rule.

First, the English rule increases the stake of the litigating parties. Thus, although a switch to the English rule may reduce the number of lawsuits, the lawsuits that get to court should involve higher legal expenses. Consequently, the overall effect on legal expenses is unclear. Second, the literature neglects the fairness of the outcome. Do plaintiffs obtain an award justified by the evidence? We provide some theoretical evidence that the English rule distorts outcomes away from a fair outcome.

The judicial procedural systems in most nations follow the English rule, which allows for some degree of fee shifting, or the rewarding of legal fees to the winner of legal battles.[1] It is an old British doctrine of "the costs follow the event." The United States is a remarkable exception.[2] The American rule developed gradually. In the early days of the colonies, the procedural system inherited the English rule, allowing attorneys to recover fees from the losing party. Gradually, attorneys found it more lucrative to sign private contingency agreements with their clients and paid less attention to redemption from the losing party. The court in the meantime gradually relaxed enforcement of fee shifting and ceased monitoring legal costs, until the

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1. Other names are also used, like the British rule, the Continental rule, and the European rule. In the legal profession, this kind of practice is termed indemnity, or fee shifting. We will use fee shifting most of the time in this article.
2. We have been unable to find an example of another nation that uses the American rule for legal fees. Western European nations do not use the American rule.

ABBREVIATIONS

F-K: Froeb and Kobayashi

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American rule became part of the statutory law.[3]

We develop a model that permits us to address the question of the effects of fee shifting on fairness and expenditure at trial. Since pretrial settlement occurs in a significant portion of legal disputes, pretrial negotiation appears empirically important. In environments with symmetrically informed contestants, costly trials will be avoided by settling, because there are no deviating views as to the outcome of the trial. However many disputes do go to trial. Thus, incomplete information also appears to be empirically significant. We allow for incomplete information about the fundamental facts of the case as well as the costs of prevailing at trial. The actual likelihood of prevailing at trial is itself endogenous.

We also endogenize expenditure at trial, which is obviously necessary to answer any question about the effects of fee shifting on legal expenditures. Orley Ashenfelter and David Bloom [1993] provided empirical evidence that legal expenditures have a prisoner's dilemma nature, thus appearing to be socially wasteful. Since fee shifting works like a subsidy to winning and a tax on losing, one might reasonably expect fee shifting to increase the stake of the trial and thus to encourage greater legal expenditures, than under the U.S. system.

We model a trial as a dispute over a fixed amount of money. This captures a variety of legal contests, including tort liability for injuries and death and private antitrust suits.[4] Our model employs the endogenous legal expenditure model of Luke Froeb and Bruce Kobayashi [1993] (F.K) as a subgame to the analysis. In this model, there is a probability P that any given piece of evidence favors the plaintiff and evidence that does not favor plaintiff favors the defendant. At trial, both the plaintiff and the defendant choose the amount of evidence they collect. It is assumed that neither side presents evidence unfavorable to its cause.[5] Thus, a low value of P means that the plaintiff must expend a large amount of resources to collect relatively little evidence in favor of himself. The decision of the court is stochastic but is more likely to favor the defendant the more the evidence favors the defendant.

We model the dispute resolution process as a simple two-stage extensive form game with the parties bargaining in the first stage and choosing the amount of trial effort in court in the second stage. We consider the case of symmetric information first, to provide a comparison to the more realistic case of asymmetric information. Since the fundamental facts of the case are represented by the probability of sampling a unit of favorable evidence, it is natural to define a fair or unbiased settlement to be the product of the claim and the probability of evidence being favorable to the plaintiff. When this probability is commonly known in the negotiation stage as in the case of symmetric information, not surprisingly we find that both parties prefer a settlement. Under the American rule, the settlement is unbiased, but under the English rule the settlement favors the party that has a higher probability of obtaining favorable evidence, thus tilting the outcome away from a fair allocation.

We then consider the case of asymmetric information, where the equilibrium and the resulting outcome for the two parties depend crucially on who makes the offer in the first stage. To phase out the effect of the first-move advantage, we let each party make a take-it-or-leave-it offer once and then take the average payoff of the two cases.[6] Now that the probability of evidence being favorable to the plaintiff is not observed ex ante,

3. The Supreme Court's first recognition of the American rule was its 1796 ruling on *Arcambel v. Wiseman*. In 1848, the Field Code of Civil Procedure eliminated all provisions regulating the fees of attorneys and left the measure of fee compensation to the client-attorney agreement. See John Leubsdorf [1984], for a detailed account of the history of American rule.

4. The model is perhaps more appropriate for civil cases than criminal cases. It is most applicable to situations where the defendant's behavior is readily observed, but the legality of the behavior is disputed. This situation commonly arises with mergers, predatory pricing, resale price maintenance, and many liability suits.

5. This assumption is a reflection of the adversarial system, a defining feature of the Anglo-American procedure. See F-K for a more detailed discussion. It involves an issue of ethics that is beyond the scope of this article —should lawyers present all the information to the court even though some of the information is not in the interest of their clients? The current governing law requires only that the attorney make accessible all the written documents. Although we do not mean to imply that lawyers are not scrupulous, casual observation indicate that lawyers seldom voluntarily present information that is detrimental to their clients.

the idea of a fair or unbiased settlement is modified to be the expectation of the product of this probability and the claim conditional on the information available. The appropriate terminology in light of Bengt Holmstrom and Roger Myerson [1983] would be the interim fair settlement, where fairness means as fair as possible given all the available information—the signals received by the plaintiff and the defendant. We identify the situations where the parties reach a settlement or go to trial by constructing a unique separating equilibrium. It is only when both sides receive signals that their case is strong that a trial results. The American rule renders an interim fair allocation of the claim except when a trial results. In that case, both parties are worse off than the interim fair allocation, with the difference going toward the attorneys for legal services. With small amount of fee shifting, the legal cost will increase further. When signals for both parties are the same and are indicative of a small P, fee shifting penalizes the plaintiff and benefits the defendant compared with the interim fair allocation. When both signals are indicative of a large P, fee shifting does exactly the opposite. Finally, we investigate the overall ex ante welfare changes in the presence of fee shifting for all the parties involved in the lawsuit, the plaintiff, the defendant, and the lawyers. The result much resembles that of the symmetric information case—it tilts toward the party who has a higher probability of obtaining favorable evidence. However, lawyers always benefit from fee shifting, because it increases the stake of the trial and thus intensifies the use of legal representation.

The rest of the article is arranged as follows. Since the literature is voluminous, discussion of the paper's relation to the previous studies is relegated to the next section. Section III presents the model of equilibrium trial effort under symmetric information. Section IV analyzes the bargaining and trial behavior under the asymmetric information. The welfare impact of fee shifting on the three parties is investigated in Section V. The paper is concluded with a brief discussion of the policy implications. All proofs are relegated to the appendix.

II. LITERATURE REVIEW

Litigation and pretrial negotiation has been studied extensively by many authors. The voluminous literature on fee shifting is primarily focused on the effects of fee shifting on the probability of settlement. Existing theoretical results are controversial and depend on how the dispute resolution process is modeled. The early models of William Landes [1971], Richard Posner [1973], and John Gould [1973] (P-L-G model) concluded that the risk attitude of litigants plays the major role in determining settlement. The greater risk associated with the English rule leads risk-averse litigants to settle more cases. However, in a more general version of P-L-G, Steven Shavell [1982] showed that under certain circumstances the English rule leads to fewer out of court settlement. Avery Katz [1987, 1990] further showed that English rule increases litigation expenditure as well. John Hause [1989], on the other hand, found that the English rule is more likely to lead to settlement than the American rule in a model with assumptions inconsistent with rational beliefs.[7] Kathryn Spier [1994] recently found that the direct-revelation mechanism that maximizes the probability of settlement is one that resembles Rule 68 of the Federal Rules of Civil Procedure, a variant of the fee-shift rule. Jennifer Reinganum & Louis wilde [1986] argued that the equilibrium probability of trial is independent of the extent of fee shifting, because the trial probability is only a function of the total litigation costs, which were exogenous in that study. John Donohue [1991, a,b] also predicted that both rules would have identical effects. Applying the "Coase theorem," he argued that the procedural rules are irrelevant as long as the involved parties are free to sign a private contract specifying the Pareto optimal rule applicable to the court.

6. This approach was mentioned in Martin J. Osborne and Ariel Rubinstein [1990]. Although the approach is justified for simplicity, it is quite common that the defendant retains much of the bargaining power in the first stage. As Spier [1992] pointed out, the defendant always prefers to pay as late as possible, and as a result discounting alone does not cause the delay to permit signaling by the defendant. It is likely that the defendant would reject any offer made by the plaintiff, provided that the some offer will be acceptable later.

7. Among other things, Hause [1989] assumed that the defendant believes the plaintiff is less likely to prevail than the plaintiff believes.

Thomas Rowe [1984] and Ronald Braeutigam, Ball Owen, and John Panzar [1984] argued that it is impossible to predict in general whether more or fewer claims would be settled under the English rule as opposed to the American rule. In a literature review on the subject matter, Robert Cooter and Daniel Rubinfeld [1989] wrote that the overall effect of different rules cannot be determined from theory alone.

Empirical studies have not reached a consensus on the effects of fee shifting on the probability of settlement. Gary Fournier and Thomas Zuehlke [1989] provided evidence that as the stakes in a trial are increased because of fee shifting, parties intensify their efforts to reach a settlement and are more likely to succeed. But Edward Snyder and James Hughes [1990] found empirical support for the prediction that fee shifting encourages parties to litigate rather than settle their claims. Finally, it might be worthwhile to point out that among lawyers it is commonly believed that fewer lawsuits will occur when the loser pays more of the legal costs, although this belief has never been rigorously addressed at a theoretical level (Cooter and Rubinfeld [1989]).

Different theoretical opinions about the effects of pretrial negotiation arise from different models employed by distinct authors.[8] Extant theory can be usefully classified into two categories. The first category involves models with disagreement over the likelihood of prevailing at trial. The second category improves on the first by employing private information to create disagreements, thus allowing for rational beliefs.

The P-L-G model and Shavell [1982] explained costly litigation as the result of deviating views on the likelihood of prevailing at trial. Under this framework, if the plaintiff's expected gain in court is smaller than the defendant's expected loss, there must exist a value in between that the two parties can agree on for settlement. If the plaintiff perceives the probability of winning at trial to be sufficiently greater than the defendant's belief about the same probability, then the plaintiff's expected gain could well be higher than the defendant's expected loss. In this case, settlement terms would not exist that both parties were willing to accept, and they would end up in court. This type of model has been criticized for suffering from two drawbacks. First, the trial expenditure should be an important choice variable instead of being treated as fixed, and the parties' probabilities of prevailing in court ought to be a function of these trial expenditures. Both parties to the dispute typically know much more than the court about the facts, and collecting supporting evidence and transmitting the information to the court is costly. In other words, the trial stage is like a war of attrition, because the parties have different beliefs about prevailing in court and hence fail to reach an agreement in the negotiation stage. Recognizing this problem, Braeutigam, Owen, and Panzar [1984], Charles Plott [1987], Cooter and Rubinfeld [1989], and, more recently, Froeb and Kobayashi [1993] improved on P-L-G model by incorporating the equilibrium level of trial expenditures, should a trial take place.

The second drawback of the model of deviating views, which none of the above studies addressed, is the unrealistic assumption that the probabilities of prevailing at trial are both different and common knowledge. At most, one of the parties has correct beliefs. Common knowledge of the beliefs should lead to agreement. Rationally deviating assessments should be attributed to parties holding private information on the merits of the case, prescribing the setting of the model to be a game of incomplete information where strategic interaction, including transmission of private information, is taken into account.

The second category of litigation models employs private information to create disagreements, allowing for rational beliefs. Members of this class include I.P.L. P'Ng [1983] Lucian Bebchuk [1984], Reinganum and Wilde [1986], Barry Nalebuff [1987], Urs Schweizer [1989], and, more recently, Kathryn Spier [1992, 1994]. All but Schweizer

8. The entire litigation process is very complex, involving many decisions made by the parties to the dispute at several stages. Much of the litigation efforts and expenses are incurred in the pretrial discovery phase where relevant information about facts is discovered and expert consultants are deposed. The parties can still exchange offers for a settlement along the way. An exact model of this process would be extraordinarily complex. Therefore, we will follow the framework of the previous studies all of which assume that the negotiation only takes place before any litigation expenses are incurred, i.e., before the discovery process. Nalebuff [1987] suggested that prediscovery negotiation would be a better terminology.

[1989] and Spier [1994] modeled the pretrial negotiation stage as a standard bargaining game with one-sided private information. The one-sided private information studies may be further distinguished according to whether the informed party moves first to allow for transmitting of private information and according to the features of the environment that is privately observed.[9] However, these studies do not endogenize expenditures at trial and thus are silent on issues concerning effects of any parameters on the cost of trials.

Another feature that distinguishes our work from the existing literature is the way we model private information. Previous studies usually treat the parties' probability estimates of prevailing at trial as private information, conditional on whether the defendant is guilty or not. In reality, civil lawsuits such as product liability, patent infringement, contract dispute, antitrust lawsuit, and defamation cases are usually very complex and often even the defendant does not know whether he has done anything illegal. Rarely can the jury identify an action on the part of the defendant that proves liability, nor can it rule out all actions that will exonerate him. Consider a private antitrust suit brought to block a proposed merger. The law is concerned with the "likely" harm to competition of the merger, which is hardly a precisely formulated standard. Consequently, both plaintiff and defendant can offer evidence, none of which is disputative, and about which reasonable people might disagree.

Similarly, the standard in liability cases concerns reasonable use of the product, and this standard has not even been constant over time (see Andrew Daughety and Jennifer Reinganum [1993, 1995]). But this uncertainty does not imply that the two parties possess no information at all about their respective strength in court. What determines whether the party is likely to win in court is the probability that the fundamental facts or evidence turn out to favor his side. The population of the potential evidence is partly the consequence of the defendant's action. Hence, the probability distribution of evidence ought to be conditional on his action, giving the defendant some information about the potential sample of evidence. On the other hand, the plaintiff, after having used the product and incurred the damage, should also have information as to the likely outcome of evidence collection. In light of the above considerations, we let the private information be signals the two parties have received before the negotiation, and these signals are correlated with the fundamental facts of the case, which are not observed until trial. Note the subtle difference between our treatment of private information with Schweizer's [1989]. In his model, the private signals are correlated with the parties' estimates of the likelihood of prevailing at trial, while our privates signals are correlated with the probability that a random sample evidence from the fundamental facts will turn out to be in one party's favor. Thus, in the present study, private information is actually about the costs of prevailing at trial, and the probability of prevailing is endogenous.

III. THE CASE OF SYMMETRIC INFORMATION

In this section, we consider the case of symmetric information, where the facts of the suit represented by the probability of obtaining favorable evidence are common knowledge. To capture the impact of fee shifting, we suppose that the prevailing party can recover a certain percentage $\alpha \in [0,1)$ of his own litigation costs from the losing party. Under the American rule, $\alpha = 0$, and under the English rule, $\alpha > 0$. For practical purposes, we may think of α as quite small. One may question whether a small α represents the true English rule. Werner Pfennigstorf [1984] implies that a pure form of the English rule is a rarity on the books for the following reasons. In Europe, not all litigation costs are reimbursable and even the reimbursable costs are limited and regulated. For example in England and Canada, the costs to be reimbursed are defined as includ-

9. P'Ng, Reinganum and Wilde, and Nalebuff had the informed party move first. Bebchuck had the informed party move last. Reinganum & Wilde's private information is the plaintiff's amount of damage. Bebchuck and Nalebuff treated the defendant's probability assessment of prevailing at trial as private information. P'Ng has the defendant's knowledge of whether he has violated the law or not as private information. Schweizer's private information is the parties' signals that link stochastically to the probabilities of prevailing at trial, and thus is closest to our model.

ing only "necessary and proper" costs. In practice, the court officials, called taxing masters, decide the amount, and it is usually absurdly small compared with the total amount charged by the attorney.[10]

Suppose that the plaintiff claims that the plaintiff has incurred a loss and demands a compensation of a certain amount. Without loss of generality, the damage is assumed to be one dollar. Let P denote the probability that a randomly sampled unit of evidence is favorable to the plaintiff. Since the defendant has contrary interest against the plaintiff, the probability that evidence is favorable to the defendant is $1 - P$.[11] Both the defendant and the plaintiff pay the litigation cost c for each unit of evidence obtained. The litigation costs can be thought of as the costs of investigating the case, deposing witnesses, hiring experts, and attorney fees.

Because the proportion of evidence favoring the plaintiff is P, we define a fair settlement to be a payment to the plaintiff of P. There are two justifications for this assumption. One may think of the evidence collected as implying that plaintiffs in identical circumstances were actually injured with probability P, so the defendant's average liability was P. Alternatively, one could consider P to be the proportion of the claimed damage that the plaintiff actually suffered.

As the standard approach of analyzing a two-stage extensive form game, we first look at the subgame of litigation expenditures at trial. The subgame is essentially a reduced form of Froeb and Kobayashi's [1993] (F-K) game of the search for evidence, which models trial expenditures behavior in an economical and tractable manner. Both plaintiff and defendant are risk neutral. The choice variable for both parties is the amount of evidence to collect. Since P is known when the two parties enter into the trial and the parties only display to the judge the evidence favorable to themselves, it is equivalent to letting the amount of the favorable evidence be the choice variable, which is denoted by E_p for the plaintiff and E_d for the defendant. The costs of collecting E_p and E_d will be cE_p/P and $cE_p/(1 - P)$, on average.

Each party's probability assessment of the likelihood of prevailing at trial should be an increasing function of the favorable evidence presented by himself and a decreasing function of the unfavorable evidence presented by his opponent. We follow F-K and assume the judge or the jury uses a simple rule based entirely on presented evidence by both parties to decide the case, such that the probability of ith party's prevailing at trial is $E_i/(E_i + E_j), i \neq j,\ i, j = p, d$.[12] When both terms in the quotient are zero, we assume the probability to be $1/2$, although $E_i = 0$ is not equilibrium behavior for at least one party regardless of the posited probability.[13] Given the environment, the parties face the following objective functions in the subgame

(1)

$$\pi_p^*(\alpha) \equiv \max_{E_p} \frac{E_p}{E_p + E_d} - c\frac{E_p}{P}\left(1 - \alpha\frac{E_p}{E_p + E_d}\right) - \alpha c \frac{E_d}{1 - P}\frac{E_d}{E_p + E_d}$$

$$\pi_d^*(\alpha) \equiv \min_{E_d} \frac{E_p}{E_p + E_d} + c\frac{E_d}{1 - P}\left(1 - \alpha\frac{E_d}{E_p + E_d}\right) + \alpha c \frac{E_p}{P}\frac{E_p}{E_p + E_d}$$

The first equation in (1) is the plaintiff's expected gain from the trial. It is the ex-

10. See Kritzer [1984]. McAfee had a personal corroboration in Canda. Litigation costs expressly exclude contingent fees. There is substantial agreement in Europe that contingent fee agreements between the attorney and the client are unethical. Regarding the fact that contingent fee practice is so widely accepted and involves a substantial amount of money in the United States, it is reasonable to expect that only a small portion of the litigation costs would be recovered by the prevailing party had the English rule been written into the American judicial procedural statutes.

11. This is without loss of generality, for if a fraction θ of the evidence favors neither side, we may adjust the cost to be the cost of obtaining relevant evidence by dividing by $1 - \theta$.

12. U.S judges typically instruct juries to consider only the evidence presented at trial.This jury technology is a special form used by Plott [1987].

13. The nature of the trial can be broadened to cases where the jury may choose the reward $E_p/(E_p + E_d)$ for the plaintiff, because of the posited risk neutrality.

pected award by the jury minus his own litigation costs, plus the recovery of a percentage of it if he wins, and minus a percentage of the expected litigation costs spent by his opponent if he loses. The second equation represents the expected payment by the defendant. We assume that the two parties play the unique pure strategy Nash equilibrium to this game. The appendix shows that the solution to (1) is

Proposition 1: The Nash equilibrium of the litigation expenditure game has a unique solution that

(2)
$$E_p^* = \frac{1}{2c} P(1-P) \times \frac{\sqrt{\beta} - (1 - 2\alpha P)}{\alpha(2P-1)\sqrt{\beta}}$$

$$E_d^* = \frac{1}{2c} P(1-P) \times \frac{1 - 2\alpha(1-P) - \sqrt{\beta}}{\alpha(2P-1)\sqrt{\beta}},$$

where

$$\beta = 1 - (2-\alpha)4\alpha P(1-P) > 0.$$

Several observations immediately follow. First it is obvious from (1) that the defendant's equilibrium expected payment always exceeds the plaintiff's expected gain, resulting in the existence of the cooperative surplus to be distributed between the two parties. Therefore, a settlement is always preferred to a trial. How the surplus is split is also straightforward. Since both parties are symmetrically informed about P, no strategic action is possible. Under this context, no form of bargaining is more natural than the Nash bargaining concept, evenly dividing gains from settlement (for a justification, see Ariel Rubinstein [1982]). Cooter and Rubinfeld's (1989) model of symmetric information also uses the Nash bargaining concept.

It can be verified from (2) that in the special case of $\alpha = 0$,

$$\text{(3)} \qquad E_p^* = \frac{P^2(1-P)}{c}$$

$$E_d^* = \frac{P(1-P)^2}{c}$$

$$\text{(4)} \qquad \pi_p^* = P^2 \quad \pi_d^* = 2P - P^2,$$

while in the limiting case of $\alpha \to 1$, they depend on whether P is less, equal or greater than $1/2$:

$$\text{(5)} \quad E_p^* = \begin{cases} 0, \text{ if } P < 1/2 \\ 1/8c(1-a), \text{ if } P = 1/2 \\ P(1-P)/c(2P-1), \\ \quad \text{if } P > 1/2 \end{cases}$$

$$E_d^* = \begin{cases} P(1-P)/c(1-2P), \\ \quad \text{if } P < 1/2 \\ 1/8c(1-\alpha), \text{ if } P = 1/2 \\ 0, \text{ if } P = 1/2 \end{cases}$$

$$\text{(6)} \quad \pi_p^* = \begin{cases} -P/(1-2P), \text{ if } P < 1/2 \\ (1-2\alpha)/4(1-\alpha), \\ \quad \text{if } P = 1/2 \\ \quad 1, \text{ if } P > 1/2 \end{cases}$$

$$\pi_d^* = \begin{cases} 0, \text{ if } P < 1/2 \\ (3-2\alpha)/4(1-\alpha), \\ \quad \text{if } P = 1/2 \\ P/(2P-1), \text{ if } P > 1/2 \end{cases}$$

Thus, under the American rule where $\alpha = 0$, the expected award by the jury, $E_p/(E_p + E_d)$ is exactly P, the probability that evidence turns out to be favorable to the plaintiff. When $\alpha \to 1$, which is an extreme case of the English rule, the award goes to 0, $1/2$, or 1, depending on whether P is less than, equal to or greater than $1/2$.

Note that the Nash bargaining result under $\alpha = 0$ also yields a settlement of the amount P, which is an unbiased and fair allocation of the claim. Hence, we conclude that under symmetric information the American rule generates the fair settlement. Also note that if the parties do go to trial, under the American rule the plaintiff wins the trial with probability P and receives an average compensation of P from the defendant. The simple jury technology specified thus delivers a fair allocation of the claim under the American rule, a result proved by F-K. In the case of symmetric information, costly court battles can be avoided by resorting to mutually beneficial negotiations. Trials, however, have the prisoner's dilemma nature suggested by Ashenfelter and Bloom [1993], in that parties expend resources to obtain the commonly known fair division.

Now consider the impact of switching toward the English rule. Denote the Nash bargaining settlement as a function of α by $S(\alpha) = [\pi_p^*(\alpha) + \pi_d^*(\alpha)]/2$. First observe that when $P < 1/2$, in the limiting case of $\alpha \to 1$, $S(\alpha) = -P/2(1-2P)$ is negative. In general, for α large enough, a plaintiff with a weak case will encounter negative gains from the pretrial negotiation, which will certainly prevent him from initiating the lawsuit in the first place.[14] As a result, in the full-information case, fee shifting tends to discourage frivolous lawsuits, supporting Newt Gingrich's claim.

Whether a settlement favors the plaintiff or defendant is determined by the sign of $S'(\alpha)$. If it is positive, then the settlement is said to favor the plaintiff. If it is negative, the settlement favors the defendant. First, we establish a lemma. It says that, as α increases, the party that spends more on attorney fees (cE_p/P and $cE_d/[1-P]$), depends on whether P is greater or less than 1/2. When P is greater than 1/2, meaning that the plaintiff has a stronger case, his legal expenditure will exceed that of the defendant. When P is less than 1/2, the opposite is true. Furthermore, the gap is an increasing function of α.

(7) ***Lemma 1***:

$$\frac{\partial}{\partial\alpha}\left(\frac{E_p^*}{P} - \frac{E_d^*}{1-P}\right) = \begin{cases} > 0, \text{ if } P > 1/2 \\ = 0, \text{ if } P = 1/2 \\ < 0, \text{ if } P < 1/2 \end{cases}$$

14. For sufficiently small P, $S'(\alpha)$ is negative if and only if $\alpha > 2/3$. That is $\partial S(\alpha)/\partial P|_{P=0} = (2-3\alpha)/2$.

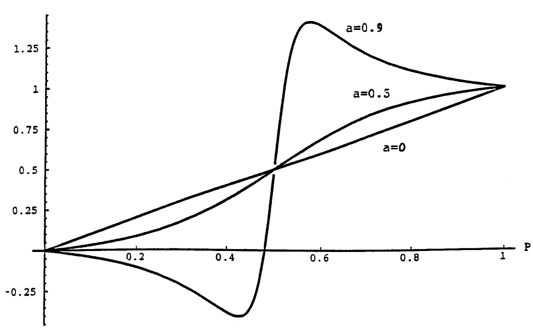
Now consider the sign of $S'(\alpha)$. Upon differentiating with respect to α and using lemma 2, we show in the appendix that

$$S'(\alpha) = \begin{cases} > 0, \text{ if } P > 1/2 \\ = 0, \text{ if } P = 1/2 \\ < 0, \text{ if } P < 1/2 \end{cases} \qquad (8)$$

Thus, as α deviates away from zero, the amount of the settlement increases if the probability of the randomly sampled evidence being favorable to the plaintiff is higher than being favorable to the defendant. Figure 1 plots $S(\alpha)$ against P for several values of α. As α increases, $S(\alpha)$ shifts downward for P less than 1/2 but upward for P greater than 1/2. In other words, as the American rule switches toward the English rule, the settlement rewards more the party who has a higher probability of obtaining favorable facts supporting the case or, equivalently, a lower cost of presenting a stronger case. We summarize the main results of this section in the following proposition.

Proposition 2: In the case of symmetric information, the parties to the dispute always prefer the settlement to the trial. Under the American rule, the Nash bargaining solution generates the fair settlement. As the procedural rule switches toward the English rule, the settlement rewards the party with a

FIGURE 1
Equilibrium Settlement with Symmetric Information



higher probability of obtaining supportive evidence.

Proposition 2 is very intuitive. When the facts of the case are clear to the plaintiff and the defendant, and they play equilibrium strategies of trial expenditures, they should have the same probability assessment of the compensation payment ordered by the judge. As α increases, the relative gain to winning increases and parties increase expenditures at trial, with the side more likely to win in equilibrium more heavily subsidized. At the bargaining table before the trial, the party less likely to win has a disadvantage because his opponent knows he is going to pay a large amount at trial. Therefore, as α increases, the settlement favors more the party who has an advantage in terms of finding supportive evidence. This point can be readily enforced by the previous observation that when $\alpha \to 1$, the jury award goes to 0, $1/2$, or 1, depending on whether P is less than, equal to, or greater than $1/2$, suggesting that when $P < 1/2$, the plaintiff's share falls and when $P > 1/2$, the plaintiff's share rises.

The symmetric case where settlement is always successful is unrealistic, because no trials occur. Difference of beliefs about prevailing at trial can prevent the parties from reaching a settlement. If they do not differ on assessments of prevailing at trial as in the case of symmetric information, they should reach an agreement easily. To model the failure of pretrial negotiation, we now consider asymmetries of information.

VI. THE CASE OF ASYMMETRIC INFORMATION

Asymmetries of information may cause the parties to go to trial rather than settle. We examine the simplest model with two-sided asymmetric information. In this model, the likelihood that evidence favors the plaintiff, P, is known to neither party and is viewed ex ante as a uniform draw from [0,1]. Both parties privately and independently observe a single draw from the evidence. Evidence favors the plaintiff with probability P, and we denote this outcome by 1 and evidence favoring the defendant by 0. The Bernoulli random variables for the plaintiff and defendant are denoted by X and Y, respectively.[15] The environment is common knowledge to the parties, who are only uncertain about their opponent's information. From the plaintiff's perspective, 1 is a strong signal because it brings the good news that a higher P is likely, whereas 0 is a weak signal. For the defendant, 1 signals a weak case because a higher P is bad news to the defendant, whereas 0 signals a strong case.

The pretrial negotiation game can take different extensive forms. In our case, the equilibrium depends on who makes the offer in the negotiation stage. We first assume that the defendant makes a take-it-or-leave-it offer and, if the plaintiff rejects, a trial results.[16] The case where the plaintiff makes the offer is similar in nature. It is quite common that the defendant retains much of the bargaining power in the first stage.

The timing of negotiation is as follows. Both parties receive their private signals first and then negotiate. Should the parties fail to settle, legal expenses will be incurred as both parties prepare for trial. In the process, P is revealed, and thus the trial outcome corresponds to the full-information case modeled in the previous section. This model has the advantage of simplicity and the disadvantage that parties would actually prefer to settle once P is revealed. We consider that our model captures many of the salient aspects of the legal system, including the endogenous legal expenditure and interim disagreements about the likelihood of prevailing at trial, in an internally consistent framework. The model fails to capture the effect of litigants learning about the likelihood of pre-

15. This model is closely related to that of Schweizer [1989], although Schweizer's model did not endogenize effort at trial. It would obviously be desirable to endogenize the prenegotiation evidence collection, although the resulting complexity is daunting.

16. Hause [1989] criticized the idea of one party making a take-it-or-leave-it offer, arguing that it is inconsistent with general rule that settlements can be offered or accepted at any point in the negotiation process. However, as Spier [1992] pointed out, the defendant always prefers to pay as late as possible, and as a result discounting alone does not cause the delay to permit signaling by the defendant. That is, the defendant would reject any offer made by the plaintiff, provided that the same offer will be acceptable later. Therefore cases are likely to be settled in the last minute on the courthouse steps (the "deadline effect"). In fact, Williams [1983] found than 70% of all civil cases in Arizona are settled in the last 30 days before the trial, and 13% were settled on the day of the trial.

vailing at trial through the course of evidence collection, an effect ruled out by positing the common knowledge of P at trial. The significance of such learning is left for future research.

When the party decides what offer to make and similarly when the other party decides whether to accept or reject the offer, they must consider the expected equilibrium outcome in the trial subgame. It is straightforward to compute the expected equilibrium outcome for the two parties under different signal configurations when α is close to or equal to 0.[17] These values are presented in Table I.

We first consider the equilibrium under the American rule. The payoff under the American rule corresponds to the payoff in the above table by setting $\alpha = 0$. Because P is assumed to be uniform, the posterior probability of a party that the opponent has a different signal is $1/3$ and the probability of same signal is $2/3$. We now consider the equilibrium of this two-stage game. The natural equilibrium concept for games with incomplete information is David Kreps and Robert Wilson's (1982) notion of sequential equilibrium. In the more realistic scenario where the defendant makes the offer, the sequential equilibrium is a set of strategies and beliefs such that, at the beginning of the first stage of the game, the defendant's offer is optimal and, at the beginning of the second stage, the plaintiff reacts optimally given the beliefs of the defendant's signal type, and the beliefs are obtained from equilibrium strategies and the observed offer using Bayes' rule. In other words, the defendant's offer takes into account the effect of his offer on the plaintiff's belief and action, and the plaintiff's decision whether to accept is also optimal given his signal and the posterior belief about the defendant's signal type. We restrict attention to pure strategy equilibria.

With only two types of private information, pure strategy sequential equilibria will be either fully separating or pooling. A separating equilibrium is an equilibrium in which the two types of the defendant choose two different offers in the negotiation stage. In a pooling equilibrium, the defendant's offer will be the same regardless of the signal. The pooling equilibrium is rather simple. Since the defendant's offer does not transmit any information, it turns out that the pooling equilibrium is for the defendant to offer $1/2$, and the plaintiff always accepts this offer.[18] We will concentrate on the separating equilibrium where the case will end up in court with positive probability, which better accounts for actual trial experience.

In a separating equilibrium, for each value y of the two possible signals, the defendant makes an offer $S_d(y)$. Several authors have shown that in a bargaining game of two-sided information, the receiver of the offer uses a cut-off strategy (see, for example, Peter Cramton [1984]). If his cut-off value exceeds the offer, he will accept it and reject it if otherwise. In the context of our model, the plaintiff adopts this cut-off strategy $S_p(x, S_d)$, which maps his private signal and the offer

17. To derive the payoffs when $\alpha \neq 0$, it is reasonable to approximate those payoffs using the first-order Taylor expansion $E(\pi_i^*(\alpha)|x, y) = E(\pi_i^*(\alpha = 0)|x, y) + \alpha\{\frac{d}{d\alpha}[E(\pi_i{}^*(\alpha)|x, y)]|_{\alpha=0}\}$. Using Mathematica, it can then be shown that $d\pi_p^*(\alpha)/d\alpha|_{\alpha=0} = -P(1-P)(1+3P-6P^2)$ and $d\pi_d^*(\alpha)/d\alpha|_{\alpha=0} = -P(1-P)(2-9P+6P^2)$. It is straightforward to compute the payoffs using the appropriate conditional density functions of P. Note that the conditional density functions of P are $f(P|0,0) = 3(1-P)^2$, $f(P|0,1) = 6P(1-P)$ and $f(P|1,1) = 3P^2$.

18. Such an equilibrium where the parties can always reach an agreement is called the "efficient equilibrium" by Schweizer [1989]. He further showed that the efficient pooling equilibrium does not survive Jeffrey Banks and Joel Sobel's [1987] "universal divinity" refinement concept. Reinganum and Wilde [1986] ruled out the pooling equilibrium in their model using the same concept.

TABLE I
Equilibrium Outcome When α Is Small

X	Y	$E(\pi_p^*(\alpha)\|x, y)$	$E(\pi_d^*(\alpha)\|x, y)$
0	0	$1/10 - 6\alpha/35$	$2/5 + 3\alpha/140$
0	1	$3/10 - 11\alpha/70$	$7/10 + 11\alpha/70$
1	0	$3/10 - 11\alpha/70$	$7/10 + 11\alpha/70$
1	1	$3/5 - 3\alpha/140$	$9/10 + 6\alpha/35$

by the defendant to [0,1]. Because of the first order stochastic dominance property of P and the incentive compatibility constraint, we show in the appendix that both parties' strategies are strictly increasing in their received signals in a separating equilibrium:

Lemma 2: In a separating equilibrium, $S_p(1, S_d(y)) > S_p(0, s_d(y))$, $y = 0,1$, and $S_d(1) > S_d(0)$.

Lemma 2 is helpful with constructing the separating equilibrium. Since there are only two types for the defendant, his signal is fully revealed to the plaintiff. Thus, the Bayesian update for the plaintiff is trivial. The plaintiff's cut-off value will be the expected payoff at trial conditional on his signal and the defendant's signal. In the model, the plaintiff's belief after observing an offer is that any offer higher than the equilibrium offer from a strong defendant reveals that the defendant is weak. We will show later that such belief is consistent with the plaintiff's optimal strategy. Having observed that, we state the following proposition.

Proposition 3: Under the American rule and when the defendant makes the offer, the separating equilibrium is for the defendant to offer a tough settlement of $1/10$ when he receives a strong signal and offer a generous settlement of $3/5$ when he receives a weak signal. Seeing a tough offer from the defendant, the plaintiff accepts it if he receives a weak signal, and goes to trial if he also receives a strong signal. Seeing a generous offer, the plaintiff always accepts the settlement regardless of the signals. Furthermore, the separating equilibrium is unique.

Proposition 3 is quite intuitive. In order for the defendant to separate on type, the offer from the strong defendant, which is lower, must be rejected by the strong plaintiff. Thus, the strong defendant makes the minimal offer acceptable to the weak plaintiff. The weak defendant, in contrast, makes an offer just acceptable to the strong plaintiff so that it is always accepted. When the plaintiff makes the offer, the equilibrium has the same flavor:

Proposition 4: Under the American rule and when the plaintiff makes the offer, the separating equilibrium is for the plaintiff to demand a large settlement of $9/10$ when he receives a strong signal and demand a small settlement of $2/5$ when he receives a weak signal. Seeing a large demand from the plaintiff, the defendant accepts it if he receives a weak signal, and goes to trial if he also receives a strong signal. Seeing a small offer, the defendant always accepts the settlement regardless of the signals. Furthermore, the separating equilibrium is unique.

Next we consider the equilibrium under the switch toward the English rule. Here we will resort to exact numerical computations in our investigation. The difficulty that arises is that the conditional expectation of the equilibrium payoff at trial when $\alpha > 0$ is a complicated function of α (see eq. [2]).

Applying the same logic used in the proof of proposition (3), it is shown in the appendix that the separating equilibrium of proposition (3) is entirely robust to the perturbation of the equilibrium payoff at trial caused by the switch toward the English rule. The maximal level of fee shifting that supports the separating equilibrium is $\alpha = 0.82$, a substantial amount of indemnity that is typically unrealistic under most judiciary systems. For α exceeding 0.82, the weak plaintiff will find it unprofitable to initiate the lawsuit. The separating equilibrium is without surprise similar to the case under American rule we have shown in that it is only when the both sides feel they have a strong case that a trial results.

Proposition 4 is also robust to large α close to 1, when the procedural rule moves toward the English rule. In fact, it is more robust than the case when the defendant makes the offer, because we do not even have to consider the rationality constraint that the plaintiff is willing to file a lawsuit. The nature of fee shifting is that it amplifies the first move advantage, so as long as the plaintiff is willing to sue for $\alpha = 0$, which is obviously true, he will file a lawsuit for all α. We document the results under the English rule in the next proposition.

Proposition 5: Under the English rule where the extent of fee shifting is less than 82% and when the defendant makes the offer, the separating equilibrium is for the defendant to offer a tough settlement of $E(\pi_p^*(\alpha)\,|\,0,0)$, when he receives a strong signal and offer a generous settlement of $E(\pi_p^*(\alpha)\,|\,1,1)$ when he receives a weak signal. Seeing a tough offer from the defendant, the plaintiff accepts it if he receives a weak signal and goes to trial if he also receives a strong signal. Seeing a generous offer, the plaintiff always accepts the settlement regardless of the signals. When the plaintiff makes the offer, the separating equilibrium is for the plaintiff to demand a large settlement of $E(\pi_d^*(\alpha)\,|1,1)$, when he receives a strong signal and demand a small settlement of $E(\pi_d^*(\alpha)\,|0,0)$ when he receives a weak signal. Seeing a large demand from the plaintiff, the defendant accepts it if he receives a weak signal and goes to trial if he also receives a strong signal. Seeing a small demand, the defendant always accepts the settlement regardless of the signals. Furthermore the separating equilibrium in each case is unique.

V. WELFARE EFFECT OF FEE SHIFTING

Based on the results in the previous section, we are now able to investigate the impact of the fee shifting on the pattern of the settlement. We compare the results under the English rule with a small extent of fee shifting to the fair allocation in the following tables. The outcome in the following tables are based on who makes the offer and are interim, meaning that the expectation of the payoffs should be taken conditional on the known signals they received respectively. A strong signal received by the plaintiff is one represented by 1, while a strong signal received by the defendant is one represented by 0. The last row of each table represents the ex ante expectation, prior to the realization of the signals. Table IV takes the average of the results in Table II and Table III, with the interpretation that half of the time the defendant makes the offer and half of the time the plaintiff makes the offer.

In terms of the pattern of the settlement, we can see from Table IV that under the American rule where $\alpha = 0$, both parties get a fair payoff for all signal configurations except when both parties receive signals in-

TABLE II
Interim Equilibrium Outcome When the Defendant Makes the Offer

x	y	Fair P	Plaintiff's Earning	Defendant's Payment	Legal Costs
0	0	1/4	$1/10 - 6\alpha/35$	$1/10 - 6\alpha/35$	0
0	1	1/2	$3/5 - 3\alpha/140$	$3/5 - 3\alpha/140$	0
1	0	1/2	$3/10 - 11\alpha/70$	$7/10 + 11\alpha/70$	$2/5 + 11\alpha/35$
1	1	3/4	$3/5 - 3\alpha/140$	$3/5 - 3\alpha/140$	0
Average		1/2	$23/60 - 79\alpha/840$	$9/20 - \alpha/24$	$1/15 + 11\alpha/210$

TABLE III
Interim Equilibrium Outcome When the Plaintiff Makes the Offer

x	y	Fair P	Plaintiff's Earning	Defendant's Payment	Legal Costs
0	0	1/4	$2/5 + 3\alpha/140$	$2/5 + 3\alpha/140$	0
0	1	1/2	$2/5 + 3\alpha/140$	$2/5 + 3\alpha/140$	0
1	0	1/2	$3/10 - 11\alpha/70$	$7/10 + 11\alpha/70$	$2/5 + 11\alpha/35$
1	1	3/4	$9/10 + 6\alpha/35$	$9/10 + 6\alpha/35$	0
Average		1/2	$11/20 + \alpha/24$	$37/60 + 79\alpha/840$	$1/15 + 11\alpha/210$

TABLE IV
Average Interim Equilibrium Outcome

x	y	Fair P	Plaintiff's Earning	Defendant's Payment	Legal Costs
0	0	$1/4$	$1/4 - 3\alpha/40$	$1/4 - 3\alpha/40$	0
0	1	$1/2$	$1/2$	$1/2$	0
1	0	$1/2$	$3/10 - 11\alpha/70$	$7/10 + 11\alpha/70$	$2/5 + 11\alpha/35$
1	1	$3/4$	$3/4 + 3\alpha/40$	$3/4 + 3\alpha/40$	0
Average		$1/2$	$7/15 - 11\alpha/420$	$8/15 + 11\alpha/420$	$1/15 + 11\alpha/210$

dicative of a strong case, in which instance they go to trial. The impact of the fee shifting is much like that in the symmetric information case—it tends to shift each party's welfare away from the fair allocation while increasing the legal cost. In two cases where the parties receive the same signals, the English rule shifts the settlement away from the fair allocation. When these same signals all indicate that a small P is likely, fee shifting further penalizes the plaintiff and favors the defendant. The opposite is true when both signals indicate otherwise. In one instance where both parties receive strong signals and go to trial, the English rule results in an unambiguous increase in legal fees, further moving both parties' welfare in court away from the fair allocation. This is summarized in the next proposition.

> *Proposition 6:* The American rule renders an interim fair allocation except when a trial results. When both parties' signals favor the defendant, the infinitesimal move toward the English rule further shifts the settlement away from the interim fair allocation in favor of the defendant. When both parties' signals favor the plaintiff, the switch toward the English rule shifts the settlement away from the interim fair allocation in favor of the plaintiff. When both parties receive strong signals in which case they go to trial, the infinitesimal move toward the English rule increases the legal fees.

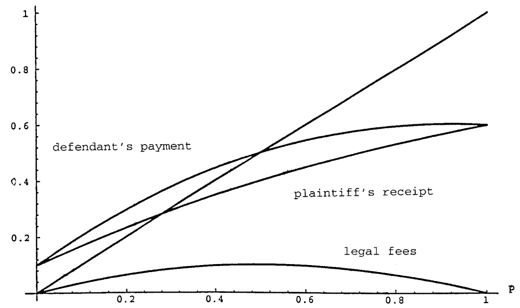
The likelihood of both litigants obtaining 0 is $1/3$, similarly for both obtaining 1, while either a (0, 1) or (1, 0) combination has a probability of $1/6$. This allows us to compute an overall average, presented in the final row of each table. The assignment of the bargaining power to the defendant as in Table II, in the form of a take-it-or-leave-it offer, results in an advantage, in that, for $\alpha = 0$, the defendant on average pays less than the fair allocation. However, when averaging over the two cases where each one has a chance to make the offer, both parties are worse off than the interim fair allocation, because they have to pay for legal services for all signal configuration. The difference between the two outcomes is split between the attorneys representing each party.

Suppose that plaintiffs face a fixed cost (which varies across plaintiffs) of initiating a lawsuit. This fixed cost is paid after the plaintiff learns his signal but before the defendant learns his signal. A small increase in α, starting at the American rule, benefits strong $(X = 1)$ plaintiffs. Thus, we would expect more lawsuits to be brought by plaintiffs with strong cases. In addition, the expected payoff for weak plaintiffs, which is $1/3 - \alpha/20$, is decreasing in α. Thus, we find support for Gingrich's [1994] claim that the loser-pays system will discourage frivolous lawsuits while encouraging serious ones.

Next we consider the overall ex ante welfare impact of fee-shifting on all the relevant parties in a lawsuit, the plaintiff, the defendant and the representing attorneys. Again we first consider the case where the defendant makes the offer. Figure 2 is a plot of the ex ante payoff to the plaintiff $U_p(\alpha, P)$, the ex ante payoff to the defendant $U_d(\alpha, P)$, and expenditures at trial against P when $\alpha = 0$. $U_p(\alpha, P)$ and $U_d(\alpha, P)$ are computed conditional on P but averaged over the signals that can arise, using the correct probability (e.g. $\text{Prob}(X = 1) = P$).[19]

19. Conditional on P, $U_p(\alpha, p) = (1 - P)^2 S_d(0) + P(1 - P)S_d(1) + P(1 - P)E(\pi_p^*(\alpha)|0, 1) + P^2 S_d(1)$, and $U_d(\alpha, P) = (1 - P)^2 S_d(0) + P(1 - P)S_d(1) + P(1 - P)E(\pi_d^*(\alpha)|0, 1) + p^2 S_d(1)$.

FIGURE 2
Equilibrium with Asymmetric Information (Defendent Makes Offer)



In Figure 2, the two top curves represent $U_p(0, P)$ and $U_d(0, P)$ respectively. Naturally, $U_d(0, P)$ is above $U_p(0, P)$. The difference between them is the legal costs, which are represented by the lower parabola. The difference is widest as P gets close to $1/2$. This is the best scenario for lawyers as a group, since no party has a dominant case and both sides spend heavily on legal service. As P approaches 0 or 1, the two curves of the litigating parties intersect, indicating the limiting situation of settlement. The reason is straightforward. When P approaches 0, the probability that the plaintiff receives a strong signal goes to 0. So it is almost sure that the plaintiff will accept the settlement. When P approaches 1, the probability that the defendant receives a strong signal goes to 0. Then it is almost sure that the defendant will always offer a sufficiently high offer to secure a settlement. Recall that the ex ante fair allocation of the claim should be P, represented by the 45° line in Figure 2. Roughly speaking, the plaintiff gets more than he should when P is small but less than he deserves when P is large. Similarly, the defendant pays more than he should for small P but less than he should for large P. In addition, the interval of P in which the plaintiff enjoys a surplus over the fair allocation is substantially smaller than that of P in which the defendant enjoys a surplus. Therefore, without fee shifting, the defendant is in a relatively advantageous position. The advantage stems from the fact that the defendant is assumed to be the first mover in offering a settlement in the negotiation stage.

As a function of P, our computation shows that fee shifting benefits the defendant most of the time and increases legal fees while always hurting the plaintiff. As argued above, since the defendant makes the offer, he is in an advantageous position in the absence of fee-shifting. When fee-shifting is introduced, it essentially amplifies this effect, making the plaintiff even worse off with the surplus split between the defendant and the plaintiff attorneys. Figure 3 plots the equilibrium outcome changes as α increases to 0.1. Figure 3 also presents the effect of fee shifting on the total litigation costs, which increases as α increases. Provided that α is not increased beyond 0.82 (at which point the separating equilibrium breaks down), a move toward the English rule increases legal expenditures. Within the context of the model, there is no change in the probability of a trial, given the assumed discrete nature of information available to the parties.

In the case where the plaintiff makes the offer, similar graphs can be drawn. Figure 4 is a plot of the ex ante payoffs for the three parties under American rule. Figure 5 records the changes as a result of fee shifting of $\alpha = 0.1$. This time the plaintiff gains most of the time, and the defendant incurs loss. The combined legal fees still increase, paid mostly by the defendant.

FIGURE 3
Equilibrium Changes When $\alpha = 0.1$ (Defendent Makes Offer)

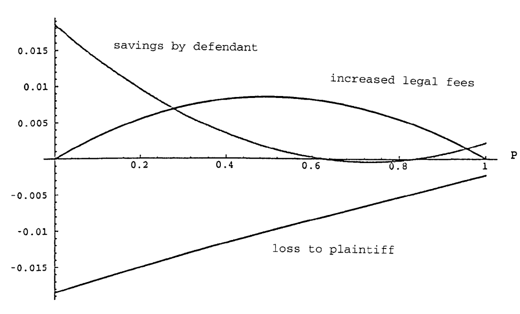


FIGURE 4
Equilibrium with Asymmetric Information (Plaintiff Makes Offer)

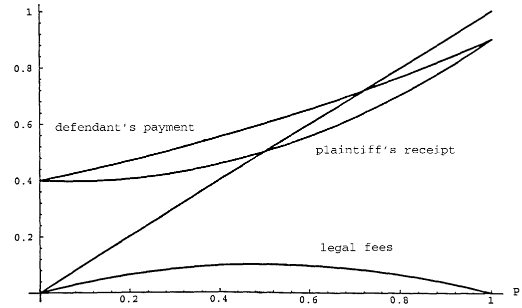
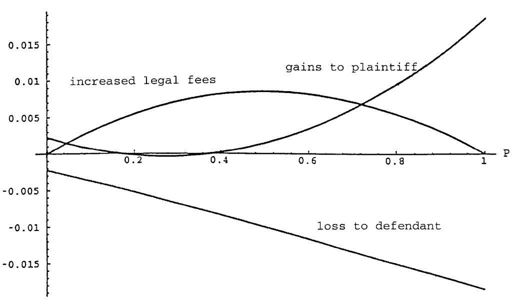


FIGURE 5
Equilibrium Changes When $\alpha = 0.1$ (Plantiff Makes Offer)



Finally, we take the average ex ante outcome when half of the time the defendant makes the offer and half of the time the plaintiff makes the offer. Figure 6 gives the outcome for each party as a function of P. Figure 7 represents the change when α moves to 0.1. Clearly, the defendant gains for small P, and the plaintiff gains for large P. However, there exists an interval of P in which both the litigating parties incur loss. Attorneys, on the other hand, enjoy a win-win situation. The total legal cost will increase as a result of fee shifting. If plaintiffs also faced a fixed cost of bringing suit that varied across plaintiffs, then an increase in fee shifting would reduce the number of suits, while increasing average legal expenditures on the suits that were brought, resulting in an overall ambiguous effect on the total expenditures on legal services and the demand for attorneys. To summarize, we have

FIGURE 6
Equilibrium When Plaintiff or Defendant Makes Offer Half of the Time

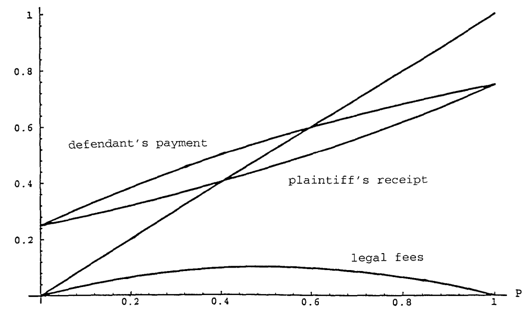
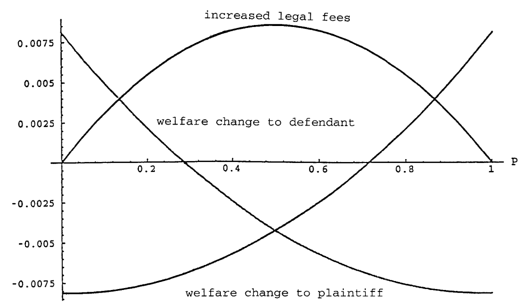


FIGURE 7
Equilibrium Changes When $\alpha = 0.1$ (Each Makes Offer Half of the Time)



Proposition 7: A small increase in fee shifting reduces the plaintiffs' ex ante earnings for small P, increases the defendants' expected payment for large P, and increases the total legal fees for all P.

VI. CONCLUDING REMARKS

We investigated the effects of charging losers at trial with a portion of the winner's legal costs, or fee shifting, on the pattern of settlement, in a model with endogenous expenditure at trial. In particular, we compared the American rule, where parties pay their own legal costs, to the English rule, where the loser pays a portion of the winner's cost. Unlike much of the large literature on this topic, we are concerned with the fairness of the outcome and the expenditures employed to achieve that outcome.

Under complete information, the adversarial system without fee shifting produces a reasonable outcome in the following sense. The fair award exceeds the amount that the plaintiff receives from trial but is less than the amount that the defendant pays. Moreover, the outcome is such that Nash bargaining with trial as a threat produces exactly the fair allocation. Consequently, the pattern of settlements under complete information and without fee shifting is as good as it can possibly be. It is no surprise, then, that fee shifting distorts the outcome away from the fair outcome, and that fee shifting favors the party with the strong case, that is, the party with the lower cost of providing evidence to the court. Not surprisingly, when the facts of the case are the most uncertain, both parties expend the greatest resources at trial, and these expenditures are increased by fee shifting.

Many authors have noted that complete information appears to be inconsistent with the fact that many lawsuits are actually settled in court. Because trials are costly, if there is agreement about the underlying facts of the case, there should always be a mutually advantageous settlement. Consequently, asymmetries of information appear to play a significant role in legal disputes, with the result that pretrial negotiation does not invariably lead to settlement.

Asymmetries of information tend to favor the party with the weak case so that the plaintiff receives more than the fair allocation when randomly selected evidence favors the defendant and less when randomly selected evidence favors the plaintiff. Thus, the remarkable virtue of the American rule in promoting a fair outcome under complete information is lost when the adversaries are asymmetrically informed. In this circumstance, fee shifting can either enhance or detract from the fairness of the allocation, although on balance it makes the party who makes offers better off at the expense of his opponent. By amplifying the stake of the trial and thus the payoff of the litigating parties, fee shifting helps the offerer. However, legal expenditures rise with fee shifting, at least until the fee shifting becomes so extreme that the parties settle rather than risk ruinous legal expenditures at trial. Our numerical computation with a uniform distribution shows such event only occurs when $\alpha > 0.82$, a rare level of fee shifting in reality. To balance the first mover advantage, we take the average payoff of the two cases where each party has a chance to make the offer. In that case, fee shifting functions much like under the symmetric information —it penalizes the party with a weak case and subsidizes the party with a strong case. However, the difference lies in the fact that, for border-line cases where P is around 0.5, both parties lose with the increased cost of litigation.

The model has two undesirable features. First, the information available to the parties at the time that settlement is discussed should be endogenous. That the information available prior to trial is not endogenous is defensible on the grounds that discovery is an expensive process and that legal costs are already sunk at the point that the parties begin to collect information. However, the assumption of two signals is clearly inadequate to answer questions about the likelihood of settlement, as a separating equilibrium will generally entail going to court when both parties perceive themselves to have strong cases. Further refinement of the signal space would permit an analysis of the effect of fee shifting on the likelihood of settlement.

The second undesirable feature of the model is the take-it-or-leave-it offer made by the litigating parties, although a justification of this assumption is provided by Spier [1992]. It would be preferable to have a more complicated model in which standing offers are made by plaintiff and defendant as a function of the information they have discovered to date. The complexity of such a model is daunting, and it would be reasonable, perhaps, to ignore the endogeneity of legal expenditures in a first attempt to solve such a model, which is inconsistent with our goal of characterizing the effect of fee shifting on the pattern of settlement but of interest in its own right.

APPENDIX

Proof of Proposition (**1**). The first-order condition under (1) yields that the pair of equilibrium trial efforts is governed by the following system of equations

(A1)
$$\frac{E_d}{(E_p+E_d)^2}-\frac{c}{P}+\alpha c\left[\frac{1}{P}-\left(\frac{E_d}{E_p+E_d}\right)^2\left(\frac{1}{P}-\frac{1}{1-P}\right)\right]=0$$
$$\times\frac{E_p}{(E_p+E_d)^2}-\frac{c}{1-P}+\alpha c\left[\frac{1}{1-P}-\left(\frac{E_p}{E_p+E_d}\right)^2\left(\frac{1}{1-P}-\frac{1}{P}\right)\right]=0.$$

A few manipulations should solve the above system. First, adding up the two equations and multiplying both sided by $E_p + E_d$, we get

$$1-(1-\alpha)c\left(\frac{1}{P}+\frac{1}{1-P}\right)(E_p+E_d)+\alpha c\left(\frac{1}{P}-\frac{1}{1-P}\right)(E_p-E_d)=0.$$

Multiplying both sides by $\frac{1}{c}P(1-P)$ and arranging terms, we have one linear equation

(A2) $$[1-2\alpha(1-P)]E_p+(1-2\alpha P)E_d=\frac{1}{c}P(1-P).$$

Moving second terms of the two equations in (A1) to the right-hand side and then dividing the first equation of (A1) by the second one, we have

$$\left[E_d+\alpha c\frac{1}{P}(E_p+E_d)^2-\alpha cE_d^2\left(\frac{1}{P}-\frac{1}{1-P}\right)\right]\div\left[E_p+\alpha c\frac{1}{1-P}(E_p+E_d)^2-\alpha cE_p^2\left(\frac{1}{1-P}-\frac{1}{P}\right)\right]=\frac{1-P}{P}.$$

Arranging terms gives

(A3)
$$\frac{1}{c}P(1-P)[PE_d-(1-P)E_p]=\alpha(1-2P)\left[P(E_d)^2+(1-P)(E_p)^2\right].$$

Plugging (A2) into (A3) yields

(A4) $$(1-\alpha)(1-P)(E_p)^2-(1-\alpha)P(E_d)^2-(2P-1)E_pE_d=0.$$

Solving for the positive E_p in terms of E_d in (A4) gives another linear equation

(A5) $$E_p=\frac{(2P-1)+\sqrt{\beta}}{2(1-\alpha)(1-P)}E_d,$$
$$\text{where } \beta=1-8\alpha P(1-P)+4\alpha^2P(1-P).$$

Now (A2) and (A5) constitute a linear system of two equations in two unknowns. Using the usual method of substitution yields (2).

To show the necessary conditions are also sufficient, multiply $\partial\pi_p(\alpha)/\partial E_p$ by a positive term $(E_p+E_d)^2$ to obtain $E_d - c/P(1-\alpha)(E_p+E_d)^2 - \alpha cE_d^2(1/P - 1/1-P)$. This term is obviously decreasing in E_p, and negative if E_p is sufficiently large. Thus, either $(\partial\pi_p(\alpha)/\partial E_p) < 0$ for all E_p where $(\partial\pi_p(\alpha)/\partial E_p)|_{E_p=0} < 0$, or $(\partial\pi_p(\alpha)/\partial E_p) > 0$ at $E_p = 0$, and positive up to some point where it satisfies the first-order condition and after which is negative. Thus, $\partial\pi_p(\alpha)/\partial E_p$ can only change signs from positive to negative, and eventually negative. A similar result holds for E_d. Therefore the solution to the first-order conditions is an equilibrium.

To show it is also the unique equilibrium, we also need to check possible boundary solutions where E_p and E_d might be zero. But first note that from first-order conditions only one of them can be zero. Now suppose $E_p = 0$. From the cost function in (1), we can see that the defendant can spend a minimum amount, say $E_d = \epsilon$, where ϵ is a arbitrarily small positive number. But if $E_d = \epsilon$, $E_p = 0$ can not be an equilibrium strategy. This is because plugging $E_p = 0$ and $E_d = \epsilon$ back into $\partial\pi_p(\alpha)/\partial E_p$ gives $(1/\epsilon) - c((1/P) - \alpha(1/1-P))$, which is always positive if $\alpha \neq 1$, as ϵ is close to 0. Therefore, the plaintiff can increase profits by spending more. So it can not be an equilibrium. The same can be said about $E_d = 0$ and $E_p = \epsilon$. As a result, (2) is the unique equilibrium.

Using $\lim_{\alpha\to 0}(\sqrt{\beta} - 1/\alpha) = -4P(1-P)$, it is straightforward to verify (3) and (4). Since E_d^* can de derived similarly, we only derive E_p^* when $\alpha \to 1$. If $P < 1/2$,

$$\lim_{\alpha\to 1}E_p^*=\frac{P(1-P)}{2c(2P-1)}\frac{1-2P-1+2P}{1-2P}=0.$$

If $P > 1/2$,

$$\lim_{\alpha \to 1} E_p^* = \frac{P(1-P)}{2c(2P-1)} \frac{2P-1-1+2P}{2P-1} = \frac{P(1-P)}{c(2P-1)}.$$

If $P = 1/2$,

$$\begin{aligned}\lim_{P \to 1/2} E_p^* &= \frac{1}{2c} \lim_{P \to 1/2} [P(1-P)(1-\beta^{-1/2} \\ &\quad +2\alpha P\beta^{-1/2})]/\alpha(2P-1) \\ &= \frac{1}{2c} \lim_{P \to 1/2} [(1-2P)(1-\beta^{-1/2} \\ &\quad +2\alpha P\beta^{-1/2}) + P(1-P)(\beta^{-3/2} \\ &\quad -\alpha P\beta^{-3/2})(-4\alpha+2\alpha^2)(1-2P)]/(2\alpha) \\ &\quad + \frac{1}{2c} \lim_{P \to 1/2} \frac{2\alpha P(1-P)\beta^{-1/2}}{2\alpha} \\ &= \frac{1}{2c} \lim_{P \to 1/2} \frac{2\alpha P(1-P)\beta^{-1/2}}{2\alpha} \\ &= \frac{1}{8c(1-\alpha)}.\end{aligned}$$

The second equality above used L'Hôpital rule. E_p^* and E_d^* are derived, (6) follows naturally from (1).

Proof of Lemma (1):

$$\begin{aligned}&\frac{\partial}{\partial \alpha}\left(c\frac{E_p^*}{P} - c\frac{E_d^*}{1-P}\right) \\ &= \frac{c}{2(2P-1)} \\ &\quad \times \frac{\partial}{\partial \alpha}\left[\frac{\sqrt{\beta} - 1 + 4\alpha P(1-P)}{\alpha\sqrt{\beta}}\right] \\ &= \frac{c}{2(2P-1)} \frac{1}{\alpha^2\beta\sqrt{\beta}} \\ &\quad \times \left[\beta - \beta\sqrt{\beta} + \frac{1}{2}\alpha\frac{\partial\beta}{\partial\alpha} - 2\alpha^2 P(1-P)\frac{\partial\beta}{\partial\alpha}\right] \\ &= \frac{c}{2(2P-1)} \frac{1}{\alpha^2\beta\sqrt{\beta}} \\ &\quad \times \{\sqrt{\beta}(\sqrt{\beta} - \beta) - 4\alpha(1-\alpha) \\ &\quad \times P(1-P)[1-4\alpha P(1-P)]\}.\end{aligned}$$

When $P \neq 1/2$, the lemma is true if the last term is not negative. But since $\beta < 1$, and $\sqrt{\beta} \geq 1 - 4\alpha P(1-P)$, we thus have

$$\begin{aligned}&\sqrt{\beta}(\sqrt{\beta} - \beta) - 4\alpha(1-\alpha)P(1-P) \\ &\quad \times [1-4\alpha P(1-P)] \\ &\quad \geq [1-4\alpha P(1-P)][1-4\alpha P(1-P)-\beta] \\ &\qquad - 4\alpha(1-\alpha)P(1-P)[1-4\alpha P(1-P)] \\ &\quad = 0.\end{aligned}$$

When $P = 1/2$, using L'Hôpital's rule, we have

$$\begin{aligned}&\operatorname*{Lim}_{P \to 1/2} c\{\sqrt{\beta}(\sqrt{\beta} - \beta) \\ &\quad -4\alpha(1-\alpha)P(1-P) \\ &\quad \times [1-4\alpha P(1-P)]\} \\ &\div [2(2P-1)\alpha^2\beta\sqrt{\beta}] \\ &\quad = \operatorname*{Lim}_{P \to 1/2} c\left\{\frac{\partial\beta}{\partial P}\left(1 - \frac{3}{2}\sqrt{\beta}\right)\right. \\ &\quad -4\alpha(1-\alpha)[(1-2P) \\ &\quad \left.\times (1-4\alpha P(1-P) - 4\alpha(1-2P)P(1-P))]\right\} \\ &\qquad \div \left\{2\alpha^2\left[2\beta\sqrt{\beta} + 6\alpha(2-\alpha)(2P-1)^2\sqrt{\beta}\right]\right\} \\ &\quad = 0.\end{aligned}$$

Q.E.D.

Proof of Proposition (2): We only to prove (8). By Envelope theorem, $S'(\alpha)$

$$\begin{aligned}&= \frac{1}{2}\left(\frac{d\pi_p^*(\alpha)}{d\alpha} + \frac{d\pi_d^*(\alpha)}{d\alpha}\right) \\ &= \frac{c}{E_p^* + E_d^*}\left[\frac{(E_p^*)^2}{P} - \frac{(E_d^*)^2}{1-P}\right] \\ &\quad + \frac{1}{2}\left[\frac{\partial\pi_p^*(\alpha)}{\partial E_d^*}\frac{\partial E_d^*}{\partial\alpha} + \frac{\partial\pi_d^*(\alpha)}{\partial E_p^*}\frac{\partial E_p^*}{\partial\alpha}\right] \\ &= \frac{c}{E_p^* + E_d^*}\left[\frac{(E_p^*)^2}{P} - \frac{(E_d^*)^2}{1-P}\right] \\ &\quad + \frac{1}{2}\left\{\frac{\partial}{\partial E_d^*}\left[\pi_d^*(\alpha) - \frac{cE_d^*}{1-P} - \frac{cE_p^*}{P}\right]\frac{\partial E_d^*}{\partial\alpha}\right. \\ &\quad + \frac{\partial}{\partial E_p^*}\left[\pi_p^*(\alpha) + \frac{cE_d^*}{1-P} + \frac{cE_p^*}{P}\right]\frac{\partial E_p^*}{\partial\alpha} \\ &= \frac{c}{E_p^* + E_d^*}\left[\frac{(E_p^*)^2}{P} - \frac{(E_d^*)^2}{1-P}\right] \\ &\quad + \frac{1}{2}\left[\frac{c}{P}\frac{\partial E_p^*}{\partial\alpha} - \frac{c}{1-P}\frac{\partial E_d^*}{\partial\alpha}\right].\end{aligned}$$

Now the sign of the second part already depends on P, as shown in Lemma 1. The first part,

$$\frac{c}{E_p^* + E_d^*}\left[\frac{(E_p^*)^2}{P} - \frac{(E_d^*)^2}{1-P}\right]$$

$$= \frac{c}{E_p^* + E_d^*}\left[\frac{1}{2\alpha c(2P-1)\sqrt{\beta}}\right]^2$$

$$\times P(1-P)\Big\{(1-P)[\sqrt{\beta} - (1-2\alpha P)]^2$$

$$-P[1-2\alpha(1-P) - \sqrt{\beta}]^2\Big\}$$

$$= \frac{c}{E_p^* + E_d^*}\left[\frac{1}{2\alpha c(2P-1)\sqrt{\beta}}\right]^2$$

$$\times P(1-P)(1-2P)[\beta - 2\sqrt{\beta} + 1$$

$$-4\alpha^2 P(1-P)].$$

The first four terms of the above product are always positive, but the last term is nonpositive. To see why, substituting the definition of β, it is sufficient to prove

$$1 - 4\alpha P(1-P) \leq \sqrt{1 - 8\alpha P(1-P) + 4\alpha^2 P(1-P)}\,.$$

Since the left side is always positive because $\alpha < 1$, squaring both sides of the inequality gives $4P(1-P) \leq 1$, which certainly holds for all P. Then the sign of $S'(\alpha)$ is decided entirely by $1 - 2P$.

Q.E.D.

Proof of Lemma (2): The cut-off value for the plaintiff is simply the expected equilibrium payoff at trail conditional on his signal and the plaintiff's signal. So $S_p(1, S_d(y)) = E(\pi_p^*(\alpha = 0)\,|1, y)$, and $S_p(0, S_d(y)) = E(\pi_p^*(\alpha = 0)\,|0, y)$. Then the first part is proved following Table 1.

Let $u_d(y) = (1/3)E(\pi_d^*(\alpha = 0)\,|\,y, x \neq y) + (2/3)E(\pi_d^*(\alpha = 0)\,|\,y, x = y)$ denote the defendant's expected payment at trial conditional on his signal being y. Let $V(*,\bullet)$ denote the defendant's expected payoff when his signal is • and he uses strategy *. Now suppose $S_d(1) < S_p(0)$. Consider a type 0 defendant who uses $S_d(1)$ instead of $S_d(0)$. Then

$$\begin{aligned}
&V(S_d(1), 0)\\
&\quad = [1 - Pr(S_d(1)\text{ rejected})]S_d(1)\\
&\qquad + Pr(S_d(1)\text{ rejected})u_d(0) < S_d(0)\\
&\qquad + [(1/3)Pr(S_d(1)\\
&\quad > S_p(0, S_d(1)) + (2/3)Pr(S_d(1)\\
&\quad > S_p(1, S_d(1))][u_d(0) - S_d(0)] < S_d(0)\\
&\qquad + [(1/3)Pr(S_d(0) > S_p(1, S_d(0))\\
&\quad + (2/3)Pr(S_d(0) > S_p(0, S_d(0))]\\
&\qquad \times [u_d(0) - S_d(0)]\\
&\quad = [1 - Pr(S_d(0)\text{ rejected})]S_d(0)\\
&\qquad + Pr(S_d(0)\text{ rejected})u_d(0)\\
&\quad = V(S_d(0), 0),
\end{aligned}$$

which violates the definition of equilibrium strategy when the defendant's signal is 0. Note that the first inequality follows from hypothesis. The second inequality holds because $S_p(1, S_d(1)) > S_p(0, S_d(1)) = S_p(1, S_d(0)) > S_p(0, S_d(0))$ following the first part of the proof, and $u_d(0) > S_d(0)$, that is, the defendant never offers anything higher than his expected payment at trial. Therefore, the defendant's strategy must be at least weakly increasing. But since we are considering separating equilibrium, it must further be strictly increasing.

Q.E.D.

Proof of Proposition (3) and (4): First consider the defendant's strategy of proposition (2) when his signal is 1. Given the belief of the plaintiff that anything higher than the equilibrium offer from a strong defendant reveals that the defendant is weak, he could either offer $E(\pi_p^*(\alpha = 0)\,|\,0, 0) = 1/10$, which is only going to be accepted by the weak plaintiff, or $E(\pi_p^*(\alpha = 0)\,|1, 1) = 3/5$, which assures a settlement regardless of the plaintiff's signal. Now suppose $1/10$ is offered. It has a $1/3$ probability of being accepted and $2/3$ probability of being rejected, resulting in an expected payment of $(1/3)(1/10) + (2/3)E(\pi_d^*(\alpha = 0)\,|1, 1) = 19/30$, which is greater than $3/5$. Thus, offering $3/5$ to secure a settlement is the only optimal strategy for the defendant when his signal is 1. When the defendant receives 0, he could still offer $E(\pi_p^*(\alpha = 0)\,|0, 0) = 1/10$ or $E(\pi_p^*(\alpha = 0)\,|1,1) = 3/5$. If he offers $1/10$, his expected payment will be $(2/3)(1/10) + (1/3)E(\pi_d^*(\alpha = 0)\,|0, 1) = 3/10$, which is less than $E(\pi_p^*(\alpha = 0)\,|1, 1) = 3/5$, the offer than can always secure a settlement. Therefore, we have verified that $\{S_d(0) = 1/10, S_d(1) = 3/5\}$ is the only optimal strategy for the defendant, given the belief of the plaintiff. When these offers are made, the actual type of the defendant is exactly the plaintiff's belief, showing consistency with his cut-off strategy. The proof of proposition (4.3) where the plaintiff makes the offer is similar, using exactly the same logic.

Q.E.D.

Proof of Proposition (5): According to proposition (3), the separating equilibrium essentially needs to satisfy a series of inequalities. First there are the willingness to offer and accept conditions:

$$S_d(0) \leq E(\pi_d^*(\alpha)\,|0, 0) \tag{A6}$$

$$E(\pi_p^*(\alpha)\,|0, 0) \leq S_d(0) \leq E(\pi_p^*(\alpha)\,|0, 1), \tag{A7}$$

and

$$E(\pi_p^*(\alpha)\,|1, 1) \leq S_d(1) \leq (1/3)E(\pi_d^*(\alpha)\,|0, 1) + (2/3)E(\pi_d^*(\alpha)\,|1,1). \tag{A8}$$

The incentive constraints require that

$$(1/3)S_d(0) + (2/3)E(\pi_d^*(\alpha)\,|\,1, 1) \geq E(\pi_p^*(\alpha)\,|1, 1) \tag{A9}$$

and

$$\text{(A10)} \qquad (2/3)S_d(0) + (1/3)E(\pi_d^*(\alpha)\,|\,0,1) \le E(\pi_p^*(\alpha)\,|1,1).$$

By the nature of the equilibrium, (A6), (A7), and the first part of (A8) automatically hold. Note that the second part of (A8) is implied by (A9), which fortunately holds for all α as Figure 8 shows. Figure 9 is a plot of the right-hand side minus the left-hand side of (A10). It is positive when $\alpha < 0.98$. Finally we need to assure that the plaintiff's expected payoff is positive at least for the weak type so that he is willing to file the lawsuit. That is, $(2/3)S_d(0) + (1/3)S_d(1) \ge 0$. The numerical computation shows that this inequality holds for all α less than 0.82.

The proof of the second half is very similar. Let $S_p(0)$ and $S_p(1)$ denote the plaintiff's offer when he gets signal 0 and 1, respectively. We need to verify the range of α for which the following inequalities hold:

$$\text{(A11)} \qquad S_p(0) \ge E(\pi_p^*(\alpha)\,|1,1),$$

$$\text{(A12)} \quad E(\pi_d^*(\alpha)\,|1,1) \ge S_p(1) \ge E(\pi_d^*(\alpha)\,|0,1),$$

$$\text{(A13)} \quad E(\pi_d^*(\alpha)\,|0,0) \ge S_p(0) \ge (1/3)E(\pi_p^*(\alpha)\,|\,0,1) + (2/3)E(\pi_p^*(\alpha)\,|0,0),$$

$$\text{(A14)} \qquad (1/3)S_p(1) + (2/3)E(\pi_p^*(\alpha)\,|0,0) \le E(\pi_p^*(\alpha)\,|0,0),$$

and

$$\text{(A15)} \qquad (2/3)S_p(1) + (1/3)E(\pi_p^*(\alpha)\,|\,0,1) \ge E(\pi_d^*(\alpha)\,|0,0).$$

(A11), (A12), and the first par of (A13) are straightforward, according to the definition of the equilibrium. Figure 10 plots the right-hand side minus the left-hand side of (A14). Note that (A14) also implies the second part of (A13). A similar plot in Figure 11 shows that (A15) holds for almost all α except when it is very close to 1.

Q.E.D.

FIGURE 8

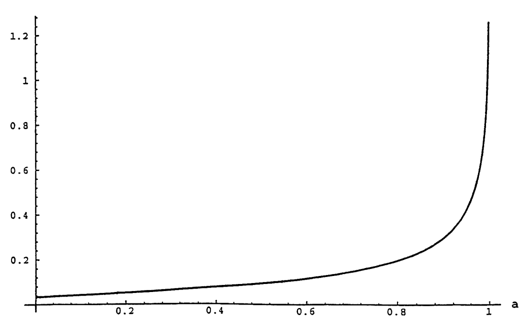


FIGURE 9

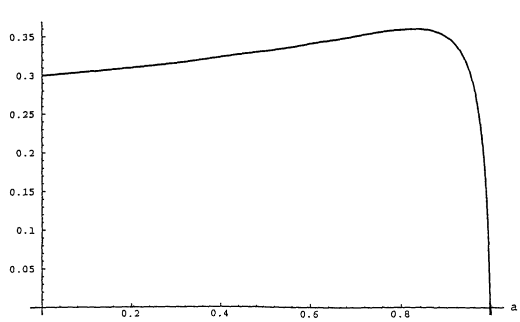


FIGURE 10

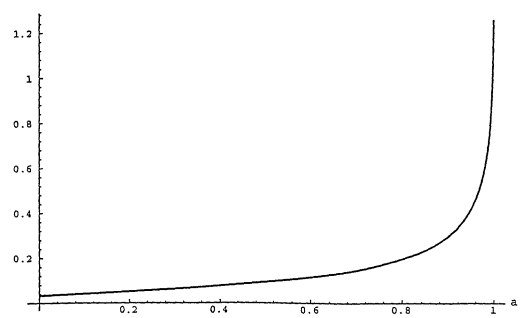
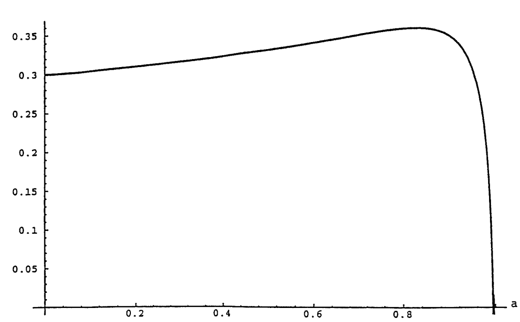


FIGURE 11



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