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Experiments on the Effects of Cost Shifting, Court Costs, and Discovery on the Efficient Settlement of Tort Claims

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EXPERIMENTS ON THE EFFECTS OF COST-SHIFTING, COURT COSTS, AND DISCOVERY ON THE EFFICIENT SETTLEMENT OF TORT CLAIMS

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I. INTRODUCTION

Imagine a world in which the effects of a policy change could be tested in advance. Unintended consequences could be accounted for, mistakes corrected, and new proposals evaluated—all without the tremendous costs of a real-world trial. Experimental economics, pioneered by 2002 Nobel Laureate Vernon Smith, provides researchers with innovative techniques for determining the effects of policy changes *ex ante*. Through the use of mechanisms designed to capture the incentive structures of real-world environments, experimenters can reproduce and analyze decisionmaking contexts. In addition, benchmark comparisons can be made, and controlled replication becomes possible. Experiments cannot perfectly represent the real world, of course, but they allow researchers to test the “what ifs” of public policy at a fraction of the cost of real-world trials. As such, they provide a valuable tool for evaluating potential reforms.

This Article uses experimental economics to consider the effects of various tort reform proposals. Concerns about abuse of the American tort system have generated many calls for reform in recent years, as

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tort costs have rapidly escalated.¹ A recent Tillinghast–Towers Perrin study placed the total costs of tort litigation at \$233 billion in 2002, more than two percent of U.S. GDP.² This represents a 13.3% increase from the previous year alone.³ Litigation costs have been growing at an average rate of 9.8% per year since 1951.⁴ Only 46% of this total cost goes to victims in the form of economic and non-economic damages.⁵ The Congressional Budget Office conjectures that “even leaving aside the largely unknown indirect costs, the current tort system seems to be an inefficient way to compensate victims.”⁶

Legal scholars debate whether these large numbers truly indicate inefficiency,⁷ but it seems difficult to resolve this question with field data. Much relevant information, such as pretrial settlement offers and details of those cases that do not advance to trial, is generally unavailable to researchers. By allowing estimation of these and other variables that are inherently difficult to measure in the field, experimental economics provides an important complement to field research.

Through an experimental study involving 128 subjects, we compare pretrial settlement rates under a two-way cost-shifting rule with those under a baseline rule of no cost-shifting.⁸ We also examine the impact of court costs and discovery on settlement rates and the efficient use of the courts. We find no difference in settlement rates

1. See, e.g., AM. TORT REFORM ASS'N, TORT REFORM RECORD (2005), http://www.atra.org/files.cgi/7927_Record7-05.pdf; Maria Newman, *Bush Pushes Legislation to Limit 'Frivolous Lawsuits'*, NYTIMES.COM, Dec. 15, 2004, <http://www.nytimes.com/2004/12/15/politics/15cnd-bush.html?ex=1137387600&en=138068e8b1476197&ei=5070>.

2. TILLINGHAST–TOWERS PERRIN, U.S. TORT COSTS: 2003 UPDATE 1 (2003), http://www.towersperrin.com/tillinghast/publications/reports/2003_Tort_Costs_Update/Tort_Costs_Trends_2003_Update.pdf.

3. *Id.* at 2.

4. *Id.* at 1.

5. *Id.* at 17.

6. CONG. BUDGET OFFICE, THE ECONOMICS OF U.S. TORT LIABILITY: A PRIMER 21 (2003).

7. According to the law-and-economics literature, it is efficient to use the court system only when the costs of using that system are less than the cost of using private methods of resource allocation. See, e.g., RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW 567 (6th ed. 2003).

8. For purposes of this study, the term “cost” may be defined as “[t]he expenses of litigation, prosecution, or other legal transaction, esp. those allowed in favor of one party against the other.” BLACK’S LAW DICTIONARY 371 (8th ed. 2004). “Costs” shall not include attorneys’ fees.

“Cost-shifting” refers to the practice of assigning the prevailing party’s litigation costs to the losing party. “Two-way cost-shifting” describes a situation in which either party might become responsible for the other’s expenses, depending on the court’s decision. “One-way cost-shifting,” discussed *infra* Part II.A, describes a situation in which only one party faces this risk of having to pay the other’s expenses if the court decides against him. The “baseline condition” in this study describes a situation of no cost-shifting, in which both parties are strictly responsible for their own expenses, regardless of the court’s decision.

between cost allocation rules; however, the increased court costs significantly improve pretrial settlement rates. Liberal discovery rules, which promote the availability of full information, also improve settlement rates under specific conditions, though they can impede settlement in other situations. These results shed light on previous theoretical work and suggest avenues for further research.

II. LEGAL BACKGROUND

A. *Cost-Shifting*

Cost-shifting regimes come in two varieties: one-way and two-way. Both are intended to promote efficiency by encouraging settlements and keeping inefficient cases out of court. However, previous research indicates that one-way cost-shifting rules are less effective in promoting efficiency than two-way rules because of their asymmetrical impact. This study examines the settlement-inducing potential of two-way cost-shifting rules.

Rule 68 of the Federal Rules of Civil Procedure provides an example of one-way cost-shifting. Rule 68 allows the defendant in a tort action to send the plaintiff a special settlement offer known as an offer of judgment. If the plaintiff rejects this offer but fails to obtain a more favorable award, he or she must pay the defendant's legal costs from the time the offer was submitted.⁹ The Supreme Court has explained that this rule was designed to "encourage settlement and avoid litigation," as it "prompts both parties to a suit to evaluate the risks and costs of litigation, and to balance them against the likelihood of success upon trial on the merits."¹⁰ Nonetheless, the current implementation of Rule 68 is fundamentally asymmetrical: only the

9. FED. R. CIV. P. 68. The text of the entire rule reads:

At any time more than 10 days before the trial begins, a party defending against a claim may serve upon the adverse party an offer to allow judgment to be taken against the defending party for the money or property or to the effect specified in the offer, with costs then accrued. If within 10 days after the service of the offer the adverse party serves written notice that the offer is accepted, either party may then file the offer and notice of acceptance together with proof of service thereof and thereupon the clerk shall enter judgment. An offer not accepted shall be deemed withdrawn and evidence thereof is not admissible except in a proceeding to determine costs. If the judgment finally obtained by the offeree is not more favorable than the offer, the offeree must pay the costs incurred after the making of the offer. The fact that an offer is made but not accepted does not preclude a subsequent offer. When the liability of one party to another has been determined by verdict or order or judgment, but the amount or extent of the liability remains to be determined by further proceedings, the party adjudged liable may make an offer of judgment, which shall have the same effect as an offer made before trial if it is served within a reasonable time not less than 10 days prior to the commencement of hearings to determine the amount or extent of liability.

Id.

10. *Marek v. Chesny*, 473 U.S. 1, 5 (1985).

defendant has the option of serving an offer of judgment. Scholars have suggested that Rule 68 would promote settlements more effectively if it were symmetrical, that is, if both sides could be penalized for rejecting favorable offers.¹¹

Section 998 of the California Code of Civil Procedure provides an example of two-way cost-shifting. Section 998 allows either party to submit an offer of judgment. If one party rejects the offer but fails to obtain a more favorable award from the court, he or she must pay the legal costs of the party that made the offer.¹² The California Supreme Court has explained that the purpose of section 998 is "to encourage both the making and the acceptance of reasonable settlement offers."¹³

There is a significant amount of theoretical research on cost-shifting but relatively little empirical research. In one of the few empirical studies, Coursey and Stanley used a set of experiments to simulate the process of bargaining under the threat of trial.¹⁴ Their experiments were designed to simulate three cost-allocation rules: the American Rule (both parties bear their own legal costs), Federal Rule 68 and California Section 998 (party who rejects a pretrial offer must pay costs if award is less favorable than the pretrial offer), and

11. Proposed Court Rules, 102 F.R.D. 407, 423-24 (1984) (recommending Rule 68 should be modified so that all parties, including claimants, be allowed to make offers of settlement under Rule 68); Geoffrey P. Miller, *An Economic Analysis of Rule 68*, 15 J. LEGAL STUD. 93, 123-25 (1986) (arguing that a mutual offer of judgment cost-shifting rule (which includes attorneys' fees as costs) would provide greater benefits at less cost than the current Rule 68).

12. CAL. CIV. PROC. CODE § 998 (West 2002). Section 998 reads in relevant part: Not less than 10 days prior to commencement of trial or arbitration . . . any party may serve an offer in writing upon any other party to the action to allow judgment to be taken or an award to be entered in accordance with the terms and conditions stated at that time.

....
 . . . If an offer made by a defendant is not accepted and the plaintiff fails to obtain a more favorable judgment or award, the plaintiff shall not recover his or her postoffer costs and shall pay the defendant's costs from the time of the offer.

....
 . . . If an offer made by a plaintiff is not accepted and the defendant fails to obtain a more favorable judgment or award in any action or proceeding other than an eminent domain action, the court or arbitrator, in its discretion, may require the defendant to pay a reasonable sum to cover costs of the services of expert witnesses, who are not regular employees of any party, actually incurred and reasonably necessary in either, or both, preparation for trial or arbitration, or during trial or arbitration, of the case by the plaintiff, in addition to plaintiff's costs.

Id. § 998(b), (c)(1), (d).

13. Scott Co. of Cal. v. Blount, Inc., 979 P.2d 974 (Cal. 1999).

14. Don L. Coursey & Linda R. Stanley, *Pretrial Bargaining Behavior Within the Shadow of the Law: Theory and Experimental Evidence*, 8 INT'L REV. L. & ECON. 161, 162 (1988).

the English Rule (loser pays the legal costs).¹⁵ They found that subjects settled most frequently under Federal Rule 68, second most under the English Rule, and least of all under the American Rule of cost allocation.¹⁶ Coursey and Stanley also reported, however, that Rule 68 redistributes wealth from plaintiffs to defendants by creating incentives for plaintiffs to accept lower settlement offers than they otherwise would have.¹⁷ They suggested that adoption of a symmetric cost-shifting rule, such as section 998, California Code of Civil Procedure, might promote settlements while curbing Rule 68's redistributive tendencies, but they did not test such a rule.¹⁸

Anderson and Rowe also conducted empirical research on rules meant to promote settlement.¹⁹ They created an experiment that used computers to present participants (law students and attorneys) with a theoretical tort case.²⁰ The computer provided information about claims and verdicts in similar cases and then asked the participants to give estimates of the percentage likelihood of verdicts above several levels and a single best estimate of a likely jury award.²¹ Anderson and Rowe concluded that a modified version of Rule 68, which would include two-way attorney fee-shifting, increases the likelihood of settlement because the attorney fee-shifting increased the maximum amount a defendant would be willing to pay to settle and decreased the amount a plaintiff would be willing to accept to settle.²²

A third empirical study was conducted by the Federal Judicial Center.²³ To assist the Advisory Committee on Civil Rules of the Judicial Conference of the United States in considering possible amendments to Rule 68, the Federal Judicial Center sent surveys to a random sample of 1951 attorneys who had been involved in cases in the federal courts.²⁴ The survey asked the attorneys the following questions: What were the costs of the litigation in which they were involved? What proportion of cases that went to trial could have set-

15. *Id.* at 161.

16. *Id.* at 170. Coursey and Stanley do not distinguish between attorneys' fees and other litigation costs for purposes of their study. *Id.* at 177 n.6. They define "costs" to include attorneys' fees, despite the fact that, in the real world, attorneys' fees are generally not considered to be recoverable costs under Rule 68. *Id.* Coursey and Stanley indicate that, if they did distinguish between attorneys' fees and other costs, the English Rule might produce higher settlement rates than Rule 68. *Id.*

17. *Id.* at 176.

18. *Id.*

19. David A. Anderson & Thomas D. Rowe, Jr., *Empirical Evidence on Settlement Devices: Does Rule 68 Encourage Settlement?*, 71 CHI.-KENT L. REV. 519 (1995).

20. *Id.* at 525-26.

21. *Id.* at 527.

22. *Id.* at 541-42.

23. JOHN E. SHAPARD, FED. JUDICIAL CTR., LIKELY CONSEQUENCES OF AMENDMENTS TO RULE 68, FEDERAL RULES OF CIVIL PROCEDURE (1995).

24. *Id.* at 3.

tled? What proportion of settled cases could have settled earlier? What proportion of litigation expenses might have been saved whether or not cases settled? Whether an offer-of-judgment rule hurt the risk-averse litigant? What were the attorneys' views about offer-of-judgment rules?²⁵ The author concluded:

In spite of the dominance of opinion supporting an amendment to strengthen Rule 68 by allowing any party to make an offer of judgment and allowing the offeror to recover at least some portion of its post-offer attorneys' fees, it is important to recognize that attorneys have strong opinions on both sides of the issue. The majority believe strongly that a strengthened Rule 68 would enhance access to the courts, increase fairness, and reduce litigation expenses and delay. A minority believe just as strongly, however, that such a rule would penalize those seeking access to the courts; produce unfair results; and increase the costs, delay, and complexity of litigation.

The objective results, however, suggest that a strengthened Rule 68 may produce more fairness and achieve a sizable reduction in litigation expenses that are unnecessary, abusive, or at least avoidable by encouraging settlement of cases instead of trial or by encouraging earlier settlements. Such a rule could also expedite disposition for settled cases that could have settled earlier and for tried cases that could reasonably settle rather than go to trial. A strengthened Rule 68 that precludes an award of expenses in excess of the amount of a plaintiff's judgment would most likely increase the incidence of risk aversion only slightly while encouraging litigation of small but strong claims and discouraging pursuit of weak but high-stakes cases.²⁶

This Article tests the recommendations of those who advocate a two-way cost-shifting rule by examining the settlement-inducing potential of such a rule. We compare settlement rates and efficiency levels obtained under section 998 with those obtained under a baseline condition, in which no cost-shifting occurs.

B. Court Costs

The word "costs" as used in Rule 68 and Section 998 is a term of art and only refers to the shifting of certain costs. In *Marek v. Chesny*, the Supreme Court found that "the term 'costs' in Rule 68 was intended to refer to all costs properly awardable under the relevant substantive statute or other authority. In other words, all costs properly awardable in an action are to be considered within the scope of Rule 68 costs."²⁷ Generally, this means that recoverable costs are

25. *Id.* at 5-6.

26. *Id.* at 3.

27. 473 U.S. 1, 9 (1985).

limited to things like filing fees,²⁸ copying fees,²⁹ and the costs for witnesses.³⁰ In most instances, attorneys' fees, by far the most significant trial expenditure, are not recoverable under Rule 68.³¹ However, the Supreme Court has stated that "where the underlying statute defines 'costs' to include attorney's fees, we are satisfied such fees are to be included as costs for purposes of Rule 68."³²

Section 998 does not expressly provide for the recovery of attorneys' fees. However, the California Code of Civil Procedure states elsewhere that attorneys' fees are to be included as recoverable costs when provided by statute or contract. Otherwise, the matter may be left to the discretion of the court.³³

In this Article we examine two different cost environments, one in which court costs are low relative to suit value and the other in which they are high. The study is agnostic as to the means by which the court costs are varied. In practice, this could be accomplished by changing filing fees or court recorder fees. Another method of varying court costs would be to change the definition of "costs" to include attorneys' fees. In such a case, a party who must pay his or her opponent's costs under Rule 68 or section 998 would now be responsible for the opponent's attorneys' fees as well. This last method of increasing court costs bears particular significance because scholars disagree about whether including attorneys' fees as costs would increase the likelihood of settlement.³⁴ Avery Wiener Katz explains:

28. See 28 U.S.C. §§ 1920(1), 1923 (2000); see also *Gorelangton v. City of Reno*, 638 F. Supp. 1426, 1433 (D. Nev. 1986) (allowing the recovery of filing fees); *Raio v. American Airlines, Inc.*, 102 F.R.D. 608, 611 (E.D. Pa. 1984) (holding that recoverable costs include the filing fee).

29. See 28 U.S.C. § 1920(4) (2000); see also *Radol v. Thomas*, 113 F.R.D. 172, 175 (S.D. Ohio 1986) (allowing recovery for the costs of copying for documents which were used and admitted into evidence as well as for the cost of jury books); *Gorelangton*, 638 F. Supp. at 1434 (permitting the recovery of some photocopying costs).

30. See 28 U.S.C. §§ 1821(b), 1920(3) (2000); see also *Quy v. Air America, Inc.*, 667 F.2d 1059, 1065 (D.C. Cir. 1981) (holding that witness costs are taxable under 28 U.S.C. § 1821 even if the witness is not used at trial as long as the witness was called on counsel's good faith and reasonable judgment); *Roberts v. S.S. Kyriakoula D. Lemos*, 651 F.2d 201, 203 (3d Cir. 1981) (holding that travel costs of witnesses are recoverable when witnesses appear pursuant to a court order, even if the travel is from a foreign nation).

31. See, e.g., *Agola v. Hagner*, 678 F. Supp. 988, 995 (E.D.N.Y. 1987); Avery Wiener Katz, *Indemnity of Legal Fees*, in 5 *ENCYCLOPEDIA OF LAW AND ECONOMICS: THE ECONOMICS OF CRIME AND LITIGATION* 63, 78 (Boudewijn Bouckaert & Gerrit De Geest eds., 2000).

32. *Marek*, 473 U.S. at 9.

33. See CAL. CIV. PROC. CODE §§ 1021-1038 (West 2005).

34. Some scholars argue that fee-shifting (including attorneys' fees as recoverable costs) increases the likelihood of settlement. See, e.g., Joshua P. Davis, *Toward a Jurisprudence of Trial and Settlement: Allocating Attorney's Fees by Amending Federal Rule of Civil Procedure 68*, 48 ALA. L. REV. 65, 65-69 (1996). Others argue that fee-shifting decreases the likelihood of settlement. See, e.g., Steven Shavell, *Suit, Settlement, and Trial: A Theoretical Analysis Under Alternative Methods for the Allocation of Legal Costs*, 11 J. LEGAL STUD. 55 (1982); Anna Aven Sumner, Note, *Is the Gummy Rule of Today Truly Bet-*

[T]he current state of economic knowledge does not enable us reliably to predict whether a move to fuller indemnification would raise or lower the total costs of litigation, let alone whether it would better align those costs with any social benefits they might generate.

The reason for this agnostic conclusion is straightforward. Legal costs influence all aspects of the litigation process, from the decision to file suit to the choice between settlement and trial to the question whether to take precautions against a dispute in the first place The combination of all these external effects are too complicated to be remedied by a simple rule of "loser pays." Instead, indemnity of legal fees remedies some externalities while failing to address and even exacerbating others.³⁵

It should be emphasized, however, that this study only examines the effects of increased court fees, not the means by which the court fees are increased.

C. Discovery

In this Article we also look at the impact of discovery on settlement rates and efficiency. We interpret the federal rules that relate to discovery as affecting the information available to the parties.³⁶ In our experiment, this is captured by comparing behavior under symmetric and asymmetric information. We examine how pretrial negotiations and settlements are affected by these informational differences.

Some scholars have argued that surprise in litigation is a good thing and an integral part of the adversarial legal system.³⁷ Others, such as Justice Murphy, have argued that "[m]utual knowledge of all the relevant facts gathered by both parties is essential to proper litigation."³⁸ Edson Sunderland, the drafter of what became Rules 26 to 37,³⁹ wrote:

It is probable that no procedural process offers greater opportunities for increasing the efficiency of the administration of justice than that of discovery before trial. Much of the delay in the preparation of a case, most of the lost effort in the course of the trial,

ter Than the Toothy Rule of Tomorrow? How Federal Rule 68 Should Be Modified, 52 DUKE L.J. 1055 (2003).

35. Katz, *supra* note 31, at 64-65.

36. That is, we do not examine any one rule specifically, such as Rule 26. Rather we view the discovery process broadly as a means of increasing the information available to both parties.

37. See, e.g., Kenneth B. Hawkins, *Discovery and Rule 34: What's So Wrong About Surprise?*, 39 A.B.A. J. 1075 (1953).

38. *Hickman v. Taylor*, 329 U.S. 495, 507 (1947).

39. Stephen N. Subrin, *Fishing Expeditions Allowed: The Historical Background of the 1938 Federal Discovery Rules*, 39 B.C. L. REV. 691, 698 (1998).

and a large part of the uncertainty in the outcome, result from the want of information on the part of litigants and their counsel as to the real nature of the respective claims and the facts upon which they rest.⁴⁰

Another legal scholar has explained that discovery's proponents believed that discovery would lead to a more efficient administration of justice:

Besides converting trials and pretrial negotiations into more sober and more orderly searches for the truth, discovery was expected to reduce the number of trials and thus relieve the burden on the courts. If the full truth would soon be revealed, fewer sham suits would be filed. If the adversaries and the court knew the facts before trial, the court could render more summary judgments. If both sides knew the full truth and each other's strengths and weaknesses, they would settle the case and avoid the costs and uncertainties of trial. If both sides knew all the facts, lawyers and clients would be more satisfied with the settlement terms and would carry out the agreement willingly.⁴¹

In essence, with discovery, "[e]ach party may in effect be called upon by his adversary or by the judge to lay all his cards upon the table, the important consideration being who has the stronger hand, not who can play the cleverer game."⁴²

Some researchers have studied the effect of informational symmetry on settlement rates. For example, Linda Babcock and Claudia Landeo studied pretrial bargaining in a state of asymmetric information.⁴³ Their study also examined the effect of a newly proposed litigation institution called a settlement escrow.⁴⁴ Babcock and Landeo examined subjects' behavior as they bargained with and without certainty,⁴⁵ and with and without escrow.⁴⁶ They found that escrow only affected settlements when bargaining was conducted under uncer-

40. Edson R. Sunderland, *Foreword* to GEORGE RAGLAND, JR., *DISCOVERY BEFORE TRIAL*, at iii (1932).

41. WILLIAM A. GLASER, *PRETRIAL DISCOVERY AND THE ADVERSARY SYSTEM* 11-12 (1968).

42. Edson R. Sunderland, *Discovery Before Trial Under the New Federal Rules*, 15 *TENN. L. REV.* 737, 739 (1939).

43. Linda Babcock & Claudia M. Landeo, *Settlement Escrows: An Experimental Study of a Bilateral Bargaining Game*, 53 *J. ECON. BEHAV. & ORG.* 401 (2004).

44. They describe a settlement escrow as a new litigation institution whereby:

[A] neutral agent receives settlement offers from both parties in a lawsuit. If the defendant offers more than the plaintiff demands, the court imposes a settlement at the midpoint of the offers. If the offers do not overlap in this way, the offers remain secret and litigants proceed to pre-trial bargaining.

Id. at 402.

45. Babcock and Landeo defined certainty as "where the plaintiff and defendant know the true level of damages, and uncertainty, where the plaintiff knows the damage level but the defendant is uncertain about the damages caused to the plaintiff." *Id.* at 406.

46. *Id.* at 406.

tainty.⁴⁷ They also found that “when uncertainty was present . . . settlement rates were positively and significantly influenced by the escrow bargaining institution.”⁴⁸ And lastly, they found that settlement rates are negatively, but not significantly, influenced by uncertainty.⁴⁹

This Article considers the effects of full and partial information on settlement rates and efficiency.

III. EXPERIMENTAL DESIGN

This study modeled a lawsuit as a bargaining game between subjects interacting anonymously in the roles of plaintiff and defendant. The plaintiff initiated the suit by sending a compensation request to the defendant. The parties were then given a fixed period of time in which to negotiate a settlement. If they failed to reach an agreement within that time, the court imposed a decision and both parties were required to pay court costs.

A. *The Economic Environment*

Information about the potential court decision was communicated to the parties at the beginning of the settlement negotiations. This information was conveyed by the following equation:

$$Min = Max \times C.$$

The parties were informed that if they failed to agree on a settlement, the court would impose a decision between *Min* and *Max*. All values in this range were equally likely.

Max, the upper boundary for a court decision, was an equiprobable random number between 0 and 1000.⁵⁰ The average, or expected value, of *Max* is therefore 500. *Min*, the lower boundary for a court decision, was calculated by multiplying *Max* and *C*, a random number between 0 and 1 that represented the strength of the plaintiff's claim. The expected values for *C* and *Min* are 0.5 and 250, respectively.

This study considered the results of sixteen experiments. A single experiment consisted of twenty-four suits. These suits were divided into six periods of four suits each. The value for *Max* stayed constant for all suits within one period. However, the value for *C* (and therefore *Min*) changed with every suit.

47. *Id.* at 410.

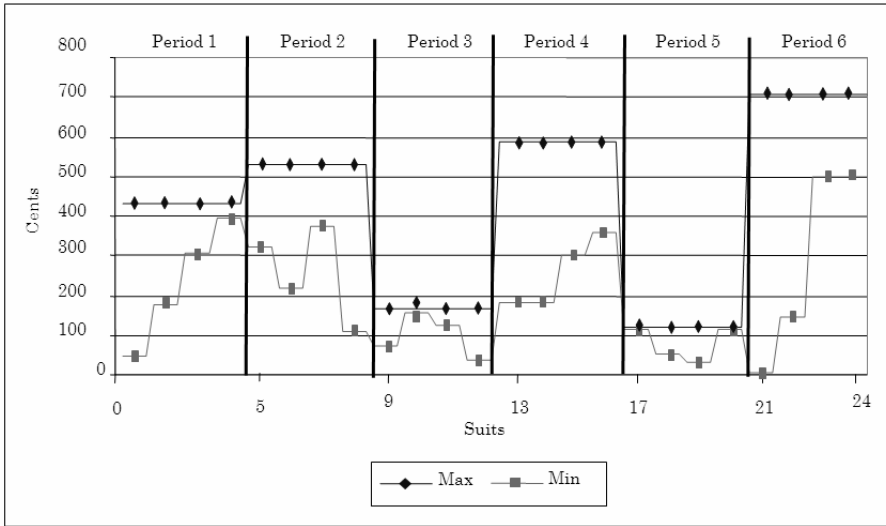
48. *Id.* at 409.

49. *Id.* at 410.

50. All lawsuits in this experiment were negotiated in U.S. cents. Thus, values of *Min* and *Max*, settlement offers, and court costs were expressed in cents. So if *Min* = 300 and *Max* = 600, the court would award damages between \$3.00 and \$6.00.

Figure 1 shows the sequence of *Min* and *Max* values used in each experimental session. For example, in the first suit of Period 1, the maximum possible court decision was 431, while the minimum decision was 43.1. In the second suit of Period 1, the maximum court decision was still 431, but the *C* had changed, resulting in a minimum decision of 172.4. Not until the next period did the maximum decision change.

FIGURE 1
ECONOMIC ENVIRONMENT



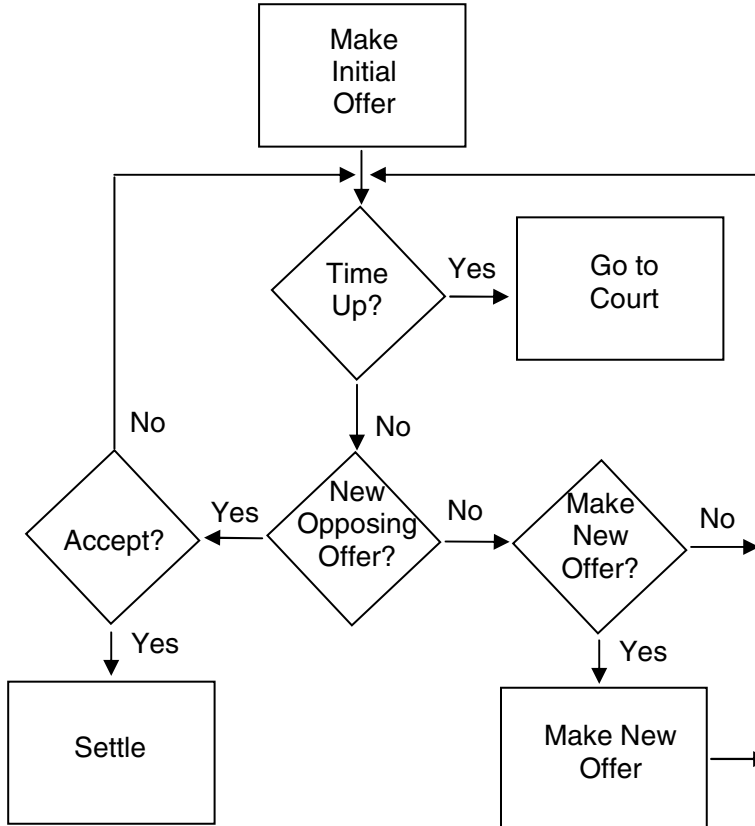
Each experiment involved eight subjects, divided into four plaintiff-defendant pairs. Each pair experienced the same set of twenty-four suits, giving us a total of ninety-six suits in each of our sixteen experiments.

B. The Legal Process

At the beginning of each suit, the plaintiff and defendant were each given information about some or all of *Min*, *Max*, and *C*, to enable them to form their bargaining strategies in light of the potential court outcome.

The plaintiff initiated the suit by paying a fee and submitting a compensation request to the defendant. The plaintiff was required to initiate every suit. The parties then entered the negotiation period, which is depicted in Figure 2.

FIGURE 2
THE LEGAL PROCESS



Bargaining continued until a predetermined amount of time had elapsed. If no settlement had been reached within this time, the parties were required to pay an additional fee to have the court settle the dispute. The court was modeled as a random decision between *Min* and *Max*. Parties were informed that all values over this range were equally likely. On the other hand, if either party accepted the current opposing offer before the time ran out, then the suit settled out of court, and neither side had to pay any court fees.

C. Experimental Treatments

This study consists of three treatments arranged in a $2 \times 2 \times 2$ design (see Table 1). The primary goals of this design were (1) to test the effectiveness of a two-way cost-shifting rule, such as section 998, in promoting efficient out-of-court settlements, (2) to examine the effect of court costs on settlement decisions and efficiency, and (3) to test the effects of information asymmetries produced by disclosure rules.

The first treatment studied cost-shifting by comparing section 998 to a simple baseline condition of no cost-shifting. In the case of section 998, any party who turned down a settlement offer that would have been better for him than the court's ultimate decision must pay the legal costs of both sides. In the case of the baseline condition, each party is strictly responsible for his own expenses. Eight experiments were conducted using section 998 and eight using the baseline condition.

A second treatment studied the effects of changing the information available to the parties. For half of each experiment (three periods), information given to the parties was both symmetric and complete. Both the plaintiff's attorney and the defense attorney knew the upper and lower boundary for every court decision as well as the merits of the claim. For the other half of each experiment, however, information was incomplete and asymmetric. In this treatment, the defendant only knew the upper bound of the court decision (*Max*), while the plaintiff only knew merits of the claim (*C*). Neither party knew the lower bound (*Min*). In eight of the experiments, symmetric information was presented first; while in the other eight, asymmetric information was presented first.

The third treatment varied the cost of taking a case to trial. Within each cost-shifting condition, four experiments had 50-cent court fees, and four experiments had 150-cent court fees. In the case of section 998, this translates to increasing the penalty for rejecting favorable settlement offers. (An offer is deemed favorable if it is better for the party in question than the court-awarded decision.) Thus, under the low-fee version of section 998, rejection of a favorable offer resulted in a penalty of 100 cents; under the high-fee condition, however, this penalty increased to 300 cents. The high-fee condition captures the inclusion of attorneys' fees as recoverable costs under section 998.⁵¹

The treatment matrix (Table 1) is also divided according to the values of *Max* and *C*. For half of each experiment (3 periods), potential court awards were large ($Max \geq 500$); in the other three periods, *Max* was below 500. Similarly, in each experiment, half of the suits had high merit ($C \geq 0.5$), while the other half had low merit. There are a total of forty-eight suits in every cell of Table 1.

51. See, e.g., SHAPARD, *supra* note 23; Miller, *supra* note 11.

TABLE 1
TREATMENT MATRIX—48 SUITS IN EACH BLOCK

		SYMMETRIC				ASYMMETRIC			
		BASE-LINE	§ 998	BASE-LINE	§ 998	BASE-LINE	§ 998	BASE-LINE	§ 998
High Fee		1	2	3	4	17	18	19	20
		HIGH Max LOW C		HIGH Max HIGH C		HIGH Max LOW C		HIGH Max HIGH C	
Low Fee		5	6	7	8	21	22	23	24
		LOW Max LOW C		LOW Max HIGH C		LOW Max LOW C		LOW Max HIGH C	
High Fee		9	10	11	12	25	26	27	28
		LOW Max LOW C		LOW Max HIGH C		LOW Max LOW C		LOW Max HIGH C	
Low Fee		13	14	15	16	29	30	31	32
		LOW Max LOW C		LOW Max HIGH C		LOW Max LOW C		LOW Max HIGH C	

For example, cell 4 contains 48 suits that were negotiated under section 998, with high court costs and symmetric information. Additionally, the suits in cell 4 had *Max* values greater than 500 and *C* values greater than 0.5. Similarly, cell 31 contains 48 suits that were negotiated under the baseline condition, with low court costs and asymmetric information. Furthermore, the suits in cell 31 had *Max* values below 500 and *C* values greater than 0.5.

D. Experimental Procedures

The subjects for this study were primarily undergraduate students at George Mason University, recruited by e-mail or by flyers distributed on campus. Most had participated in previous behavioral experiments, but all were new to this particular design. They were paid for arriving on time and received earnings based on their performance in the experiment.

The experiments were conducted in the laboratories of the Interdisciplinary Center for Economic Science and the Center for the

Study of Neuroeconomics at George Mason University. The laboratories contained computer terminals for the subjects, separated by partitions to ensure individual privacy. Talking between participants was not allowed.

Upon entering the laboratory, each subject was randomly assigned the role of plaintiff or defendant. He or she continued in this role for the duration of the experiment. The subjects were seated at networked computer terminals and told to read through a set of online instructions. Any questions were answered in the hearing of the whole group before the start of the experiment.

At the beginning of the experiment, each plaintiff was randomly and anonymously matched with a defendant via the computer network. They negotiated together for one period (4 rounds). At the beginning of the next period, all plaintiffs were randomly matched with new defendants. Every experiment involved eight subjects, or four negotiation pairs.

The screen seen by a typical plaintiff is shown in Figure 3. In this example, the case had a C value of 0.80, indicating strong merit, although the upper bound of the court decision was only 100.

FIGURE 3
A TYPICAL PLAINTIFF'S NEGOTIATION SCREEN

Transaction	Min	=	Max	*	C	Your Offer	Counterparts Offer	TimeLeft
1	80		100		0.8	92	83	1:20

You accept an offer by sending back the same offer

To guard against cultural preconceptions, the subjects were not told the legal nature of the experiment. Instead of “defendant” or “plaintiff,” roles were given as “Player D” or “Player T.” Other legal terminology was also excluded: suits were referred to as “rounds,” and the court was introduced as the “computer.”⁵²

The following incentives were provided to the subjects. At the beginning each defendant received a budget for each period, from which

52. It is common practice in behavioral experiments not to reveal the real-world context of the experiments to subjects. Explaining the real-world context can introduce cultural preconceptions and make subjects feel pressured to behave in some “right” way. See, e.g., Ralph Hertwig & Andreas Ortmann, *Experimental Practices in Economics: A Methodological Challenge for Psychologists?*, BEHAV. & BRAIN SCI. 383, 386, 402 n.4 (2001).

to finance the suits brought against him. He was allowed to keep whatever remained of the budget at the end of the experiment. Plaintiffs received half of every settlement obtained for their clients minus all court expenses.⁵³

To reduce the risk of bankruptcy during the experiment, each defendant began the experiment with 2000 cents and received a fresh budget of 1500 cents at the start of every period. After all lawsuits and court fees had been subtracted, the defendant kept the remaining sum as his earnings for the experiment. Each plaintiff began the experiment with 1000 cents. The plaintiff did not receive further endowments but kept half of every settlement or decision, minus the initiation fees and any court fees, as his earnings. Every subject could see his accumulated earnings throughout the experiment. (See the box labeled "Cash" in Figure 3).

As shown in Figure 3, the latest offers were displayed in boxes labeled "Your Offer" and "Counterparts Offer." To accept an offer, a subject simply repeated his counterpart's offer as his offer. The parties were given two minutes in which to bargain. If they reached an agreement within the allotted time, the defendant paid the negotiated amount from his budget, and the plaintiff kept half of this as his settlement. If they did not agree, the computer, acting as the court, imposed a random decision between *Min* and *Max*, and both parties had to pay court fees.

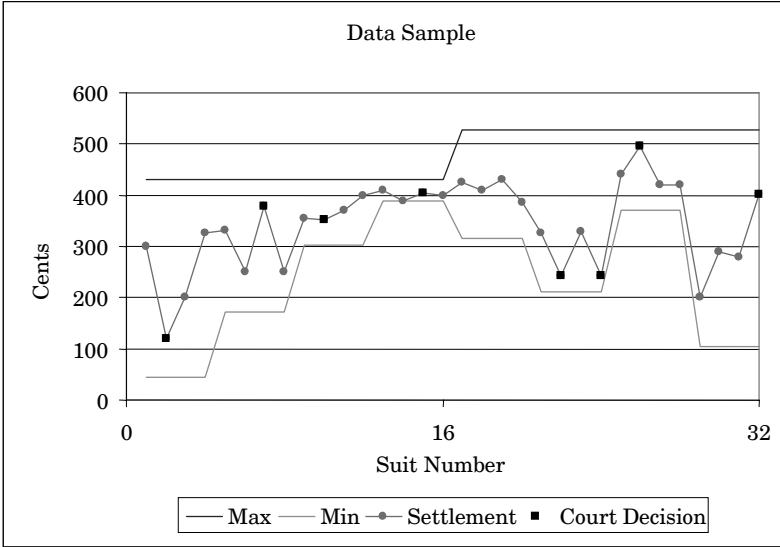
IV. RESULTS

A. *Measurement*

In each experiment, we recorded the series of offers made by each party and whether a settlement was reached. In this Article, we consider the following data: (1) values for *Min* and *Max*; (2) the settlement amount, if applicable; and (3) the court decision, otherwise. Figure 4 shows this data for all four pairs of subjects during the first two periods of one experiment. Solid circles indicate a settlement, while solid squares indicate a court decision.

53. While the agency relationship between client and attorney suggests an interesting avenue for research, we elected not to focus on it in this study. We combined the roles of client and attorney by regarding each subject as the representer of a plaintiff or defense team. In every suit, subjects were incentivized to maximize the total return to their claim, without regard to the division of that return between client and attorney. This allows us to minimize the principal/agent problem and to focus on the adversarial nature of the tort system.

FIGURE 4
DATA SAMPLE (2 PERIODS)



B. Data Analysis

1. Settlements

First we consider the effects of our treatments on subjects' tendency to reach a settlement before trial. Settlement rates for each condition are reported in Table 2. The shaded numbers in every cell correspond to the cell numbers in Table 1.

TABLE 2
SETTLEMENT RATES

		SYMMETRIC				ASYMMETRIC			
		BASE-LINE	§ 998	BASE-LINE	§ 998	BASE-LINE	§ 998	BASE-LINE	§ 998
		1	2	3	4	17	18	19	20
High Costs		85.42	89.58	77.08	85.42	83.33	83.33	81.25	83.33
		21.95	34.88	13.51	12.20	45.00	37.50	15.38	17.50
Low Costs		60.42	58.33	56.25	64.58	79.17	60.42	60.42	58.33
		17.24	35.71	14.81	35.48	15.79	48.28	10.34	25.00
High Costs		81.25	77.08	91.67	87.50	66.67	75.00	50.00	45.83
		48.72	56.76	43.18	50.00	75.00	77.78	41.67	68.18
Low Costs		62.50	66.67	83.33	75.00	47.92	43.75	33.33	29.17
		36.67	59.38	32.50	38.89	69.57	76.19	25.00	50.00

Note: The top entry in each cell of Table 2 gives the percentage of suits in that cell for which the subjects were able to reach a settlement. The bottom entry in each cell of Table 2 gives the percentage of settlements that favored plaintiff (*settlement - midpoint > 0*). Forty-eight suits are in each block. Shaded cell numbers correspond to those in Table 1.

A t-test⁵⁴ was used to make a cell-by-cell comparison ($N = 48$) of settlement rates between the baseline condition and section 998. We find only the comparison of cells 21 (baseline) and 22 (section 998) shows a significant difference at the 0.05 level. This difference goes away when we compare 21 + 29 with 22 + 30. Thus, we are led to conclude that section 998 does not lead to significantly higher pre-trial settlement rates than the baseline condition.

Next, a t-test was used to make a row-by-row comparison ($N = 192$) of settlement rates between the High Court Costs and Low Court Costs treatments. We find a significant difference at below the

54. A t-test is used to test the null hypothesis that two proportions are equal. The test statistic that we use is given by:

$$t_1 = \frac{\hat{p}_1 - \hat{p}_2}{\sqrt{\frac{\hat{p}_1(1 - \hat{p}_1)}{n_1} + \frac{\hat{p}_2(1 - \hat{p}_2)}{n_2}}}$$

where \hat{p}_1 and \hat{p}_2 are the sample proportions and n_1 and n_2 are the sample sizes. For more information, see MORRIS H. DEGROOT & MARK J. SCHERUISH, *PROBABILITY AND STATISTICS*, ch. 8 (3d ed. 2002) and GEORGE E. P. BOX ET AL., *STATISTICS FOR EXPERIMENTERS: AN INTRODUCTION TO DESIGN, DATA ANALYSIS, AND MODEL BUILDING* (1978).

0.01 level for all 4 comparisons. We are led to conclude that the increase in court fees creates a strong incentive for early settlement.

Finally, a t-test was used to make a row-by-row comparison ($N = 192$) of settlement rates between the symmetric and asymmetric information treatments. We find a significant difference at below the 0.01 level for the Low Max cells in both the High and Low Fee treatments. We find no significant differences in the High Max cells. We are led to conclude that the symmetry of information greatly increases settlement rates, but only when the maximum potential court award (*Max*) is low.

The second entry in each cell of Table 2 indicates the percentage of settlements that were favorable to the plaintiff. A settlement is deemed favorable to the plaintiff if it is greater than the expected court award (the midpoint between *Min* and *Max*).⁵⁵ We observe that plaintiffs often settled below the midpoint; although, in all but two of the comparisons, they did better under section 998 than under the baseline condition. We are led to conclude that section 998 improves outcomes for plaintiffs over the baseline condition of no cost-shifting.

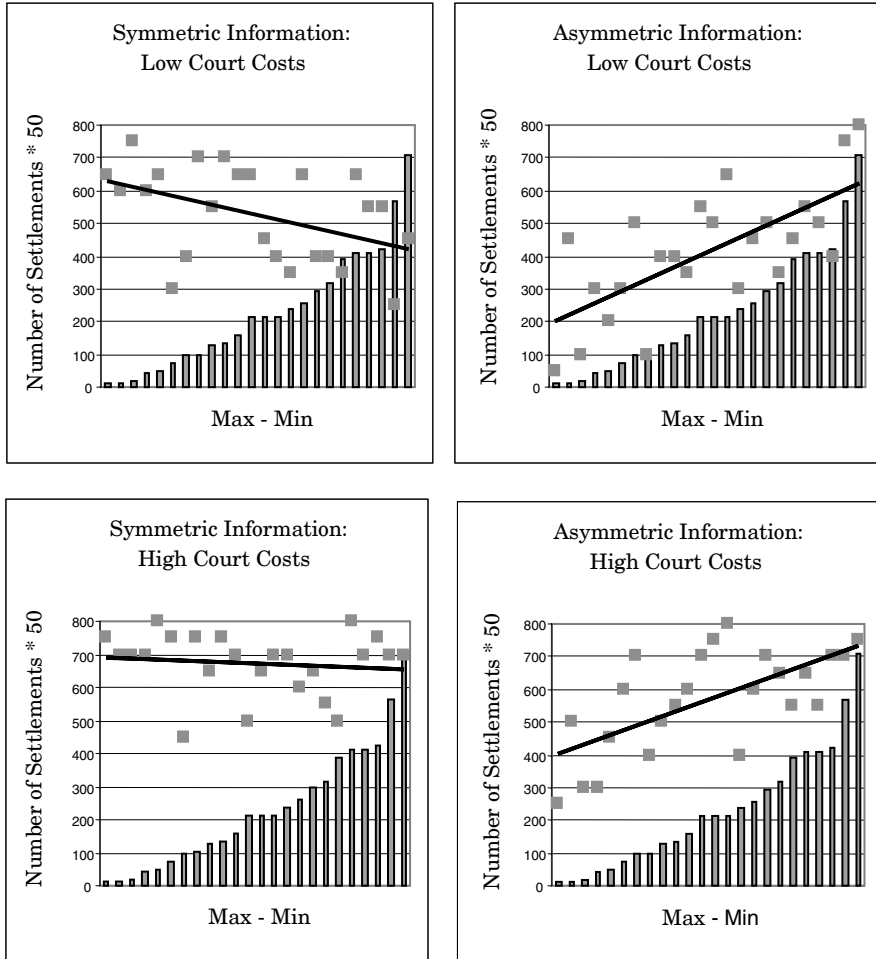
Figure 5 examines how the settlement rates vary with the level of uncertainty about the potential court decision. As *Min* and *Max* move farther apart, the uncertainty level about the court's decision increases, since all values between *Min* and *Max* are equally likely. The columns in Figure 5 depict the uncertainty level ($Max - Min$) for each of the 24 suits. The suits have been sorted from least uncertainty to greatest. The marker above each column indicates the number of settlements that occurred in that suit.⁵⁶ The baseline condition and section 998 treatments have been combined for this analysis, since there are no significant differences in settlement rates between them.

55. In this experiment, no performance measure exists for deciding whether a particular settlement is "fair" to the plaintiff, the defendant, or society as a whole. Instead we determine how favorable or unfavorable the outcome is, in a more limited sense, by comparing settlement outcome to expected court decisions.

56. The number of settlements has been multiplied by fifty for scaling purposes.

FIGURE 5

SETTLEMENT RATES AND UNCERTAINTY IN COURT DECISIONS



The two graphs on the left side of Figure 5 depict cases negotiated under symmetric information—where both parties knew the values of *Min* and *Max*. In these graphs, we observe that subjects settled low-uncertainty cases more frequently than they did high-uncertainty cases. The downward-sloping trend lines indicate that settlement rates declined as the difference between *Min* and *Max* increased. This may be due to the fact that when the difference between *Min* and *Max* is small, both parties have a high degree of certainty about the court outcome. Rational negotiators will therefore settle to avoid the court costs. When *Min* and *Max* are far apart, however, the court's decision is less certain. Parties may have difficulty reaching settlement because they perceive one another as being

greedy in efforts to capture larger portions of the decision range. This downward trend of settlements is evident under both high and low court costs, though the effect is less pronounced when costs are high. This is because the high court costs generate strong incentives to settle, regardless of the uncertainty about the potential court decision.

The graphs on the right side of Figure 5 depict cases negotiated under asymmetric information—where the defendant only knew *Max* and the plaintiff only knew *C*. Here we observe the opposite trend in settlement rates. Settlement rates actually increased as *Min* and *Max* move farther apart. We believe this is due to the fact that neither party knew the range of *Min* and *Max*. The best estimates that the parties could form, based on the information they received, led them to form very different expectations of the potential court decision.

When both parties know *Min* and *Max*, they expect the court decision to be the average of the boundary values as represented by Equation 1 where *EC* represents the expected court decision:

$$EC = (Min + Max) / 2 \quad (\text{Equation 1}).$$

When the parties do not know *Min* and *Max*, however, they have to estimate the expected court decision using the information they are given. For example, the defendant knows *Max* but not *Min*. He also knows that *C* is a random number between 0 and 1, with an expected value of 0.5. Therefore, he can estimate $Min = Max \times 0.5$. We can substitute this estimate of *Min* into Equation 1 to obtain the defendant's best estimate of the likely court outcome (DEC):

$$DEC = (0.5 \times Max + Max) / 2 = 0.75 \times Max \quad (\text{Equation 2}).$$

The plaintiff knows the value of *C*. She also knows that *Max* is a random number between 0 and 1000 with an expected value of 500. She estimates $Max = 500$ and $Min = C \times 500$. We substitute these estimates of *Max* and *Min* into Equation 1 to obtain the plaintiff's best estimate of the court's decision (PEC):

$$PEC = (C \times 500 + 500) / 2 = 250(C + 1) \quad (\text{Equation 3}).$$

In our study, the suits where *Min* and *Max* are close together tend to be those cases where *Max* is low (see Figure 1). The defendant, who sees the true value of *Max*, forms a fairly accurate estimate of the court decision. He therefore sends the plaintiff low settlement offers. The plaintiff, on the other hand, estimates *Max* to be 500, and therefore forms a much higher estimate of the court decision. She will not accept the defendant's low settlement offers because she expects the court to give her a higher award. This is why, under asymmetric information, we observe low settlement rates when *Min* and *Max* are

close together. Where *Min* and *Max* are far apart, however, *Max* tends to be large (see Figure 1), and the defendant's expected court outcome is more likely to be greater than the plaintiff's. This creates a range of values over which settlement is possible. Furthermore, perceptions of greed will be less likely to impede settlement under asymmetric information, because neither party knows the true size of the decision range. Thus, differences in expectations can account for the increase in settlement rates observed under asymmetric information as *Min* and *Max* diverge.

The primary conclusions that we can draw from Figure 5 are that (1) differences in parties' expectations caused by asymmetric information can impede settlement, especially if the plaintiff's expected court outcome exceeds the defendant's; (2) asymmetric information can promote settlement in other cases by reducing perceptions of greed between negotiators; and (3) high court costs produce more settlements than low court costs, regardless of differences in expectations between negotiators.

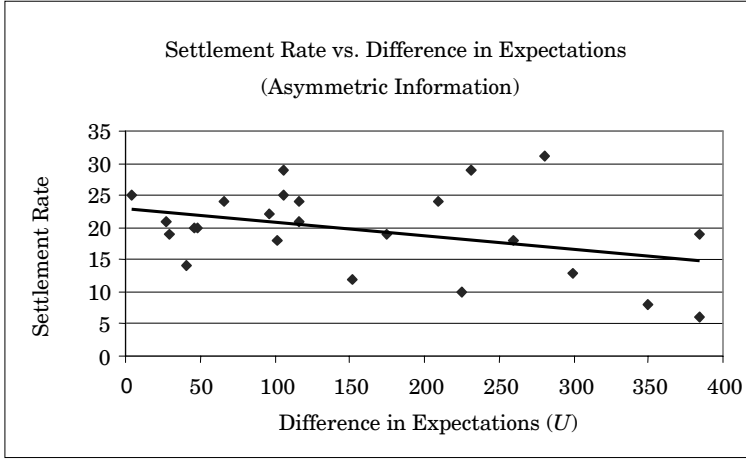
In Figure 6, we continue to examine the effects on settlement rates of differences in expectations produced by asymmetric information. Using Equations 2 and 3, we can measure the uncertainty (*U*) caused by divergent expectations as the unsigned difference between defendant and plaintiff's expected court awards as follows:

$$U = | DEC - PEC |.$$

Informational asymmetries can lead parties to be overly optimistic in their estimates of the court decision, leading them to reject reasonable settlement offers and proceed to trial. Figure 6 shows how settlement rates are affected by differences in expectations (*U*). Notice that settlement rates tend to decline as *U* increases, and for $U > 125$, the variation in number of settlements increases dramatically.

FIGURE 6

DIFFERENCES IN EXPECTATIONS AFFECT SETTLEMENT RATES



Finally, we examine overall settlement rates across experiments. Figure 7 shows the number of subjects who settled a given number of their 24 suits. For example, 27 subjects settled either 17 or 18 of their suits. The number of settlements appears to be negative binomially distributed with a mode of 18 and a mean of 16.25. This indicates that most of the subjects settled most of their disputes out of court, as happens in the real world.

FIGURE 7

INDIVIDUAL PROPENSITY TO SETTLE



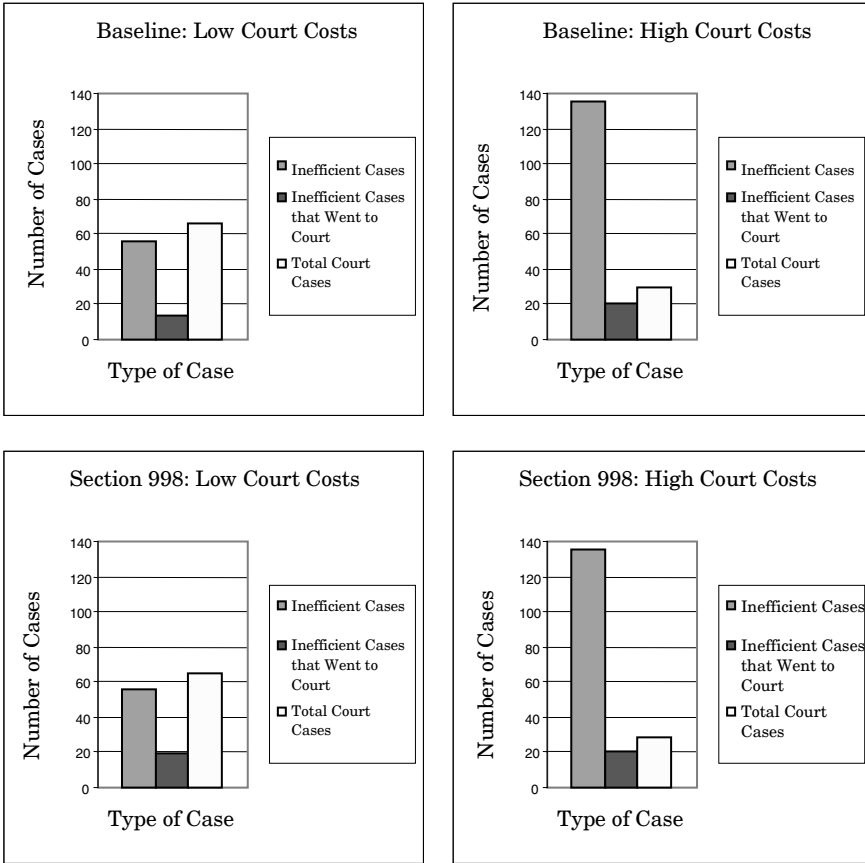
2. *Efficiency*

Now we turn to examine the effects of our three treatment variables (cost-shifting, information, and court fees) on the efficient use of the courts. We will consider two measures of efficiency: *ex ante* efficiency, which examines whether a particular type of suit should ever go court; and *ex post* efficiency, which considers whether individual negotiators minimized costs in their decisions to proceed to trial.

Several lawsuits in each experiment were inefficient by virtue of the experimental environment. A lawsuit is considered to be *ex ante* inefficient if $Max - Min \leq 2 \times Court\ Cost$. These are cases that should never go to court because any possible settlement between *Min* and *Max* would be better for both parties than going to court and having to pay court fees.⁵⁷ Figure 8 shows the number of *ex ante* inefficient cases in each treatment, as well as the number of these that actually went to court. Only suits negotiated under symmetric information are considered, because identifying a suit as *ex ante* inefficient requires knowledge of both *Min* and *Max*, in addition to the court costs.

57. For example, suppose that $Min = 400$, $Max = 430$, and the cost to each party of going to court is 50. If the parties settle for any amount between *Min* and *Max*, the plaintiff will receive a return ranging from \$200 to \$215 and the defendant will incur losses ranging from \$400 to \$430. If they go to court, however, the plaintiff will only receive a return ranging from \$150 to \$165 and the defendant will incur losses ranging from \$450 to \$480. Cost-minimizing subjects would never go to court under such conditions. To do so would be wasteful and inefficient. This type of inefficiency is called *ex ante* because it can be identified before negotiations begin, just from the values of *Min*, *Max*, and *Court Cost*.

FIGURE 8
EX ANTE INEFFICIENCY (SYMMETRIC INFORMATION ONLY)



Notice that by this measure, inefficiency was quite low. Furthermore, high court costs tended to decrease the percentage of inefficient cases that went to court.

We now turn to a stricter definition of efficiency. A suit is considered to be *ex post* inefficient if either party failed to cost-minimize in his or her decision to go to court. A defendant failed to cost-minimize if the last offer received from the plaintiff was less than the expected court outcome plus the court cost:

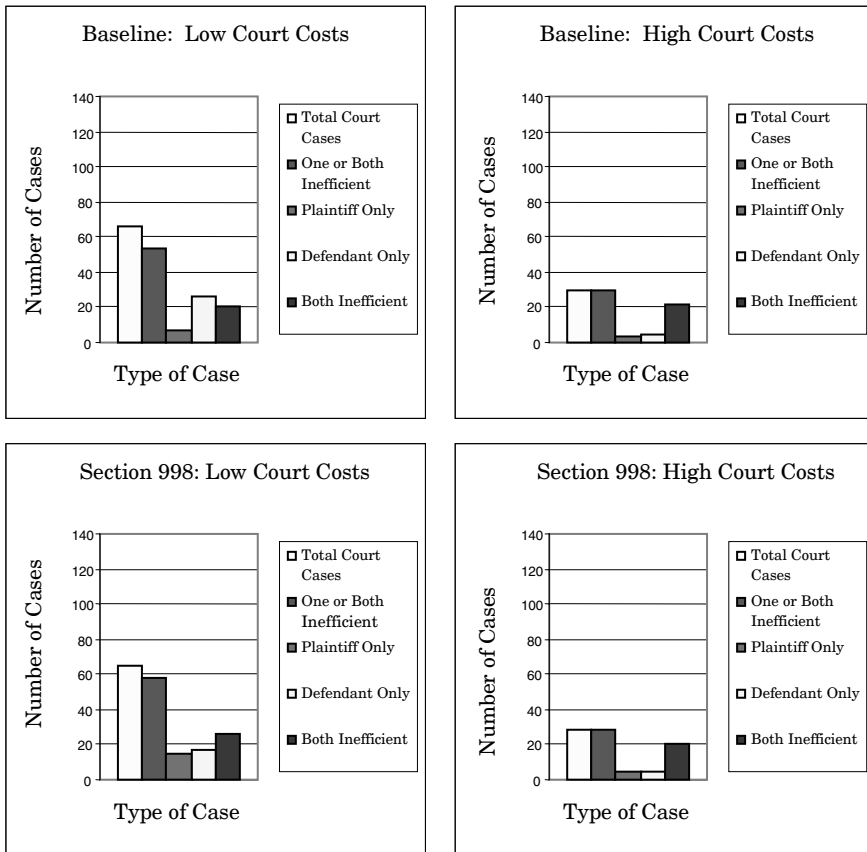
$$\text{Last Offer Received} < (\text{Min} + \text{Max})/2 + \text{Court Cost}.$$

A plaintiff failed to cost-minimize if the last offer received from the defendant was greater than the expected court decision minus the court fee:

$$\text{Last Offer Received} > (1/2(\text{Min} + \text{Max})/2) - \text{Court Cost}.$$

Clearly, if either of these conditions holds, at least one party would have been better off accepting his counterpart's offer instead of going to court.⁵⁸ Since these calculations can only be made at the conclusion of the bargaining process when the last offers are known, we refer to this form of inefficiency as *ex post* inefficiency. Figure 9 compares the number of *ex post* inefficiencies in each treatment with the total number of court cases.

FIGURE 9
EX POST INEFFICIENCY (SYMMETRIC INFORMATION ONLY)



58. For example, suppose $Min = 300$, $Max = 600$, and the cost to each party of going to court is 50. The expected court decision in this case is \$450. Suppose the plaintiff receives a settlement offer of \$410 but rejects it and proceeds to court. The plaintiff has failed to cost-minimize because her expected return from going to court ($\$400 = \$450 - \$50$) is less than her return from accepting the settlement offer (\$410). If the defendant rejects a settlement offer of \$470, he has also failed to cost-minimize, because his expected losses from going to court ($\$500 = \$450 + \$50$) are greater than his losses from accepting the settlement offer (\$470).

Notice that *ex post* inefficiencies are much more likely to occur than *ex ante* inefficiencies. This can be seen from the fact that most of the total court cases (88.9%) exhibit some form of *ex post* inefficiency, while comparatively fewer (38.4%) exhibit *ex ante* inefficiency. Notice also that high court costs tend to exacerbate *ex post* inefficiency. This can be seen from the fact that 98.3% of the total court cases were *ex post* inefficient under the high court costs treatment, compared to 84.7% of the total under low court costs.

3. Penalties Under Section 998

The final analysis focuses exclusively on the effects of section 998 on the distribution of court costs. The first row of each cell in Table 3 gives the number of times a penalty occurred (that is, one party had to pay the court costs of both) compared to the total number of court cases. As can be seen, penalties were applied over 76% of the time. This implies that the majority of the subjects who went to court had rejected advantageous offers at some point during the negotiation process.

The second row of each cell in Table 3 breaks down the frequency of penalties between defendants (D) and plaintiffs (P). We only find a systematic difference in these frequencies in the Low Max condition, where plaintiffs were four times more likely to be penalized than defendants.

TABLE 3
ANALYSIS OF SECTION 998 PENALTIES

	SYM	ASYM	SYM	ASYM
	2	18	4	20
	4 / 5	8 / 8	6 / 7	7 / 8
High Fees	D = 0, P = 4	D = 4, P = 4	D = 6, P = 0	D = 4, P = 3
	6	22	8	24
	18 / 20	12 / 19	14 / 17	13 / 20
Low Fees	D = 7, P = 11	D = 6, P = 6	D = 11, P = 3	D = 9, P = 4
	10	26	12	28
	7 / 11	11 / 12	3 / 5	15 / 26
High Fees	D = 1, P = 6	D = 0, P = 11	D = 2, P = 1	D = 4, P = 11
	14	30	16	32
	16 / 16	25 / 27	6 / 12	24 / 34
Low Fees	D = 5, P = 11	D = 3, P = 22	D = 1, P = 5	D = 5, P = 19

Note: The ratio indicates the number of times a penalty was assigned to the total number of court cases. Forty-eight suits are in each block. Cell numbers correspond to those in Table 1.

V. CONCLUSION

Our experimental results suggest that a two-way cost-shifting rule, such as section 998, California Code of Civil Procedure, does not change litigants' tendency to settle before trial. However, section 998 produces settlement outcomes more favorable to plaintiffs than does the baseline condition. This suggests that section 998 makes defendants more cautious during negotiations than plaintiffs. This interpretation is further substantiated by the fact that defendants were penalized less often for rejecting favorable offers, only 67 times, compared to plaintiffs who were penalized 120 times.

Our subjects tend to behave rationally when confronted with changes in the magnitude of court costs. The overall settlement rate under low costs was 58.7% compared to 77.7% under high costs. High costs increased the number of settlements across all treatment variables. This suggests that high court costs create strong incentives for settlement. One possible application of this result is to increase court costs by including attorneys' fees as recoverable costs in cost-shifting rules, such as Rule 68 and section 998.

The amount of information available to litigants has an indeterminate effect on settlement rates. Under specific conditions, symmet-

ric information, as promoted by liberal discovery rules, increases settlement rates. In particular, symmetric information causes the court to be used less often when *Max* is low and the range of potential court outcomes is small. This is offset by the fact that symmetric information can actually impede settlement when the court's decision range is large. Asymmetric information also has a mixed effect on settlement rates. When parties under asymmetric information form very different expectations regarding the court decision, settlement rates are low, especially if the plaintiff's expected court decision exceeds that of the defendant. This overoptimism can lead plaintiffs to reject reasonable settlement offers and frequently end up in court. On the other hand, when expectations are similar and the range of potential court awards is large, asymmetric information can promote settlement by reducing perceptions of greed that can impede negotiations.

Finally, when we look at efficiency, as measured by whether court should have been avoided, we observe an interesting difference when we compare *ex ante* efficiency with *ex post*. Using an *ex ante* measure of efficiency, we observe that 20% of the cases that should have settled actually ended up in court. While this efficiency is not affected by a switch between the baseline condition and section 998, efficiency measures do improve under higher court costs. This result is consistent with the increase in settlement rates due to higher court costs. However, when we look at *ex post* efficiency, which takes into account the final offers received before going to court, we see a dramatic fall in efficiency, with 67% of the cases that should have settled ending up in court. Furthermore, this type of inefficiency is exacerbated by high court costs. Since *ex ante* efficiency is more likely than *ex post* to be measured in field studies, these results suggest that a more cautious interpretation of field data is required. It may be that rules which encourage the taking of final offers could have a dramatic effect on overall efficiency in use of the courts.