ISSN 1045-6333

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Discussion Paper No. 164

7/95

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The Program in Law and Economics is supported by a grant from the John M. Olin Foundation.

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Abstract

A basic question about litigation concerns the frequency of plaintiff victories at trial and how cases that go to trial relate to settled cases. In a stimulating paper, Priest and Klein advanced a model in which there is a tendency for plaintiffs to prevail with probability 50%, regardless of the likelihood with which they would have won the cases that they settled. However, this note demonstrates that in a simple, frequently employed model of litigation, it is possible for the cases that go to trial to result in plaintiff victories with any probability. Moreover, given any probability of plaintiff victory at trial, the probability of plaintiff victory among settled cases may be any other probability. Further, data on the frequency of plaintiff victory does not clearly support the 50% tendency. In consequence, the note concludes that it does not seem appropriate to regard 50% plaintiff victories as a central tendency, either in theory or in fact.

Any Frequency of Plaintiff Victory at Trial is Possible

Steven Shavell*

A basic question about litigation concerns the frequency of plaintiff victory at trial and how cases that go to trial relate to cases that settle. In a stimulating paper, Priest and Klein (1984) advanced a model in which there is, under specified conditions, a tendency for plaintiffs to prevail at trial with probability 50%, regardless of the likelihood with which they would have won the cases that they settled. Priest and Klein also presented actual statistics showing a surprising clustering of plaintiff victory frequencies about 50%. The 50% probability is due in their model to a selection effect: cases that are clearly in favor either of the plaintiff or of the defendant are settled; it is only cases that are relatively unclear that the parties cannot settle, and these are won by each side approximately equally in the Priest-Klein model.[1] Other authors have subsequently considered the Priest-Klein model,[2] and their analysis and data on the frequency of plaintiff victories have

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*I wish to thank Richard Craswell, Theodore Eisenberg, Keith Hylton, and Louis Kaplow for comments and the John M. Olin Center for Law, Economics, and Business at Harvard Law School for financial support.

[1]See Priest and Klein (1984), at pp. 17-22. As Priest and Klein are careful to explain, their result is only a limiting tendency, and is also subject to certain qualifications (notably, the result does not hold if parties' stakes at trial are unequal). See Section 2 on the assumptions under which there is a tendency toward 50% plaintiff victories.

[2]The list includes Eisenberg (1990), Hylton (1993), Waldfogel (1995), and Wittman (1985, 1988).

raised questions about the 50% tendency.[3]

In this note, it is suggested that the theory describing settlement versus trial does not support a tendency toward 50% plaintiff victories. Indeed, the notion that a selection effect should engender a 50% tendency seems outwardly implausible. If, for example, plaintiffs have a greater than 50% probability of prevailing in all cases that are brought, their success rate among the cases that go to trial must exceed 50%; no process of selection among the cases brought could possibly result in only a 50% likelihood of victory at trial.

Section 1 of the note considers a simple, frequently employed model of litigation involving asymmetric information and in which bargaining behavior is explicit.[4] It is possible in this model for the cases that go to trial to result in plaintiff victories with any probability. Moreover, any probability of plaintiff victory at trial may be associated with any other probability of plaintiff victory among settled cases.[5]

Section 2 of the note discusses the Priest-Klein model and

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[3]Wittman (1985) and Hylton (1993) find in the models that they examine that the 50% result does not necessarily hold in theory, and they and Eisenberg (1990) present data on plaintiff victories diverging significantly from 50%; see Section 2 below.

[4]This is essentially the model developed in Bebchuk (1984).

[5]If, for example, the probability of plaintiff victory at trial is 40%, the probability of plaintiff victory among settled cases (that is, the probability of victory had these cases gone to trial) might be any number below 40% or any number above 40%. This result, that the probabilities of plaintiff victory at trial and among settled cases could be any pair of probabilities, is the main contribution of this note to those of Hylton (1993) and Wittman (1985, 1988). Also, here an explicit and now standard model of bargaining about settlement versus trial is employed (Hylton and Wittman do not examine an explicit model of bargaining).

compares it to the simple asymmetric information model. Although there are no errors of logic in the Priest-Klein model, and it is to be praised for its general conclusion that cases that go to trial are unrepresentative of settled cases, the assumptions of the model that lead to the 50% tendency appear to be special and implicitly to rule out a general range of plausible situations.

1. The Frequency of Plaintiff Victory at Trial in a Simple Asymmetric Information Model of Litigation

In a simple asymmetric information model of litigation, one side to disputes has information about the probability of prevailing that the other side does not.[6] The side without information makes a single settlement offer or demand; if the other side rejects the settlement proposal, trial results.

Defendants possess private information. Consider first the version of the model where defendants possess information that is unavailable to plaintiffs about the likelihood of prevailing. Here plaintiffs make a single settlement demand, the level of which is chosen to maximize their expected return (parties are assumed to be risk neutral). Trial results when a defendant finds the plaintiff's demand excessive, which is to say, when his chance of defeating the plaintiff is relatively high. Thus, the cases that proceed to trial are the ones where plaintiffs have a

[6] I consider asymmetry of information about the probability of prevailing rather than about the magnitude of the judgment because it is obvious that the latter kind of uncertainty cannot explain the 50% tendency. For example, if plaintiffs and defendants both knew that the plaintiff would prevail for sure (suppose that liability were strict) but disagreed about the amount at stake, the 50% tendency could not be true: some cases would go to trial because of disagreement about the judgment amount, and all such cases would be won by plaintiffs.

lower chance of winning than they would among cases that settle. The probability of plaintiff victory at trial depends on the underlying distribution of probabilities in all cases; it could be equal to any level; and the probability of prevailing among settled cases could be equal to any higher level.

To be specific, suppose that p is the likelihood of a plaintiff prevailing, given the information available to a defendant, and that p is distributed on an interval $[a,b]$ (contained in $[0,1]$) according to density $f(p)$. A defendant for whom the likelihood of prevailing is p will be called a defendant of type p. Suppose that c_π is a plaintiff's trial cost and c_δ is a defendant's trial cost, that d is the damage amount at stake (the parties agree about d), and that $ad > c_\pi$, so that a plaintiff would be willing to go to trial against any type of defendant who refused his settlement demand. Let x denote a plaintiff's settlement demand. A defendant of type p will lose $pd + c_\delta$ if he goes to trial, so he will accept a demand x if and only if $x < pd + c_\delta$ or, equivalently, if and only if $p > (x - c_\delta)/d$; when $p \leq (x - c_\delta)/d$, defendants will reject x, and plaintiffs will go to trial and obtain an expected return of $pd - c_\pi$.[7] Hence, plaintiffs will choose x to maximize

$$(1) \qquad \int_a^{(x-c_\delta)/d} (pd - c_\pi) f(p)\,dp + [1 - F((x - c_\delta)/d)]x.$$

[7] I adopt the convention that when $p = (x - c_\delta)/d$ and the defendant is indifferent between accepting and rejecting x, he rejects.

If the choice of x, denoted x*, is interior to [a,b],[8] it is determined by the first-order condition

(2) $1 - F((x - c_\delta)/d) = [f((x - c_\delta)/d)(c_\pi + c_\delta)]/d.$

The frequency of plaintiff victories among those who go to trial is

$$(3)\quad P_t = \frac{\int_a^{(x^*-c_\delta)/d} pf(p)dp,}{F((x^* - c_\delta)/d)}$$

namely, the conditional mean of p among the defendants with p below the threshold $(x^* - c_\delta)/d$. Among those who settle, the frequency of plaintiff victories (were there trial) is the conditional mean of p among the defendants with p above the threshold,

$$(4)\quad P_s = \frac{\int_{(x^*-c_\delta)/d}^{b} pf(p)dp.}{[1 - F((x^* - c_\delta)/d)]}$$

It is clear that $P_t < P_s$; those plaintiffs who go to trial win less frequently than those who settle would have. This is because defendants go to trial when plaintiffs' demand exceeds defendants' expected loss, which is when plaintiffs are relatively unlikely to prevail.[9]

I now show that P_t can be any number in [0,1) and that P_s can be any number greater than P_t (this is not obvious from (3) and (4)). It is sufficient to demonstrate this for a discrete case,

[8]It might be optimal for the plaintiff to demand only $ad + c_\delta$ and settle with all defendants. (A necessary condition for this is $1 - f(a)(c_\pi + c_\delta)/d < 0$.)

[9]This relationship is also true in Hylton's insightful article.

where there are just two types of defendant.[10] Let $p_L < p_H$ be the probabilities of plaintiff victory for the two types of defendant, assume that $p_L d > c_\pi$,[11] and let α be the fraction of L's. A plaintiff will demand one of two amounts: either $p_L d + c_\delta$, which will result in settlements with both types of defendant (the L's will just accept the demand and the H's will gladly accept); or $p_H d + c_\delta$, which will just result in settlements with the H's and in trials with the L's. A plaintiff will demand the higher amount, and trials will result with the L's, when

$$(5)\quad \alpha(p_L d - c_\pi) + (1 - \alpha)(p_H d + c_\delta) > p_L d + c_\delta;$$

note that $p_L d - c_\pi$ is the plaintiff's expected gain when he goes to trial against L's. When (5) holds, the observed frequency of plaintiff victories at trial will be p_L. Condition (5) may be rewritten as

$$(6)\quad (p_H - p_L)d > \frac{\alpha(c_\pi + c_\delta)}{(1 - \alpha)}.$$

It is clear that for any $p_L < 1$, (6) can be satisfied (where also $p_L d > c_\pi$).[12] It is also clear that given any p_L, (6) can be satisfied by any p_H greater than p_L.[13] Thus, as claimed, the probability of plaintiff victory at trial may be any number in

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[10]The discrete case (of interest in its own right) can always be approximated as closely as desired by a continuous density.

[11]This is the condition that $ad > c_\pi$, guaranteeing that plaintiffs will want to go to trial against any type of defendant.

[12]For example, given any $p_L < 1$, choose any $p_H > p_L$ and any $d > 0$. Then select α, c_π, and c_δ sufficiently low that (6) is satisfied. (Also, choose c_π sufficiently low that $p_L d > c_\pi$.)

[13]This is evident from the previous note.

[0,1) and the probability of victory among settled cases may be any higher number.

Plaintiffs possess private information. Now consider the version of the model where the roles of plaintiffs and of defendants are reversed: it is plaintiffs who have private information about winning and defendants who make single settlement offers to them. In this model, analogous arguments to those just given show that defendants choose x to minimize

$$(7)\quad F((x + c_\pi)/d)x \;+\; \int_{(x+c_\pi)/d}^{b} (pd + c_\delta) f(p)dp,$$

that, if it is an interior solution, x* is determined by

$$(8)\quad F((x + c_\pi)/d) = [f((x + c_\pi)/d)(c_\pi + c_\delta)]/d,$$

that

$$(9)\quad P_t = \int_{(x+c_\pi)/d}^{b} pf(p)dp/[1 - F((x + c_\pi)/d)],$$

and

$$(10)\quad P_s = \int_{a}^{(x+c_\pi)/d} pf(p)dp/F((x + c_\pi)/d).$$

Thus, $P_t > P_s$, the opposite of before. This is because the plaintiffs who refuse defendants' offers are those who have a high chance of winning at trial. An argument analogous to that given above involving the discrete distribution demonstrates that P_t may be any probability in (0,1] and, for any P_t, P_s may be any lower probability.

Either plaintiffs or defendants possess private information. Combining the results from the two versions of the model, we see that P_t may be any probability, and that for any P_t, P_s may be any other probability (higher or lower than P_t).[14]

2. The Priest-Klein Model and its Comparison to the Simple Asymmetric Information Model

In the model examined by Priest and Klein, it is assumed that before trial, each party obtains similar information about the trial outcome, from which each formulates a probability of winning at trial.[15] Trial results when the plaintiff's expected judgment exceeds the defendant's by more than the sum of litigation costs.[16]

Plaintiffs win at trial with a frequency tending toward 50% when (1) parties obtain very accurate information about trial outcomes and when (2) the information that each receives is statistically identical.[17] The reasons why these assumptions

[14]I surmise that the conclusion reached here that P_t and P_s may be any pair of probabilities would also hold under many assumptions different from the simple ones I made about bargaining and the structure of information. In a given model, the analyst's freedom to choose the distribution of information and litigation costs should tend to allow him to produce all pairs of P_t and P_s.

[15]Specifically, it is assumed that the plaintiff will prevail if a variable Y that will become apparent at trial and that summarizes the parties' legally relevant behavior (such as the defendant's degree of fault) exceeds a legal decision standard Y* (such as a due care level). Before trial, each party observes an imperfect indicator of Y: the plaintiff observes a variable Y_π equal to Y plus a random error ϵ_π; and the defendant observes Y plus an independent random error ϵ_δ, where ϵ_π and ϵ_δ have equal variance. Each party infers from his observation the likelihood of winning at trial (the likelihood that the as yet unobserved Y exceeds Y*).

[16]Priest and Klein's model of settlement versus litigation is a special case of the disparate beliefs model developed in Gould (1973), Landes (1973), and Posner (1992) at Chapter 21. (It is a version of that model in that it gives a description of the origin of the parties' disparate beliefs.)

[17]More precisely, the 50% result is a limiting one and can be proved under certain assumptions. (Essentially these assumptions seem necessary to me; only a sketch of the proof of the 50% result is supplied in the Priest-Klein article.) Suppose that the errors ϵ_π and ϵ_δ are identically distributed,

lead to the 50% tendency need not be reviewed[18] for the purpose of pointing out that the assumptions are special in nature and that they have special implications. The first assumption about accuracy of parties' information implies that virtually all cases are either seen by the parties as leading with very high probability (or with certainty) to a plaintiff victory, or else they are seen as leading with very high probability to a defendant victory; these cases naturally settle. The second assumption implies that the distribution of plaintiff beliefs about victory is essentially the same as the distribution of defendant beliefs about plaintiff victory (they differ from each other by chance in particular instances).[19]

The assumptions rule out all manner of situations, including those in which one or the other party does not usually have very

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independent, symmetric about 0 and have mean 0. Further, consider a family of such error distributions parameterized by β, where as $\beta \to \infty$, the probability mass of the error becomes concentrated about 0 (that is, for any $k < 1$ and any neighborhood N of 0, the likelihood that the error will be in N is at least k for all β sufficiently high). Then it can be demonstrated that as $\beta \to \infty$, the probability of plaintiff victories at trial approaches 50%. Note that when β is high, the error is likely small, so that the parties' information is very accurate.

[18]There are two key steps in the proof. The first (which I note for the record, as it is not supplied in the Priest-Klein article) is that, given any error distribution, for any t, the likelihood of trial is the same for $Y = Y^* - t$ as it is for $Y = Y^* + t$. (This can be shown using the assumption that the error distribution is symmetric.) Consequently, if the density of Y were uniform, the frequency of plaintiff victory would be 50%. But, as β grows, the density of the error becomes concentrated about 0, so that trials can result only in a neighborhood of Y*. And because the density of Y is continuous, it is uniform in the small, and thus in a neighborhood of Y*. This is the second step of the proof (and is essentially the argument given in the Priest-Klein article at p. 21.); it implies that the limiting frequency of plaintiff victory is 50%.

[19]For example, if the distribution of plaintiffs' beliefs were bell shaped with a mean of 42%, this would be exactly the distribution of defendants' beliefs. That the distributions of beliefs are identical follows from the assumption that ϵ_π and ϵ_δ are identically distributed and that each observes Y plus his error term.

accurate information about trial outcomes, and those in which one or the other party has substantially superior knowledge to the other. Thus the Priest-Klein assumptions rule out a situation where, for example, defendants have superior knowledge of trial outcomes (suppose that they have superior knowledge of whether they were negligent) and where defendants' chances of losing at trial range between, say, 60% and 100% (in which case the frequency of plaintiff victories at trial would exceed 60%).[20]

One suspects, however, that litigants' information about trial outcomes is frequently far from accurate, and that it is also often decidedly unequal. Therefore, models allowing for substantial asymmetry of information should be considered by analysts and be employed in empirical work intended to recover information about settlements from trial data.[21] Furthermore, we should expect to observe what we apparently often do, namely, fairly variable actual data on the frequency of plaintiff victories. For example, Eisenberg (1990) reports plaintiff success rates ranging between 52% and 84% for different categories of contract cases, between 12% and 84% for different

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[20]It should also be noted that it is the assumptions just discussed, and not the omission of an explicit model of bargaining, that explains the 50% result. Were the Priest-Klein model modified to allow for, say, the plaintiff to make a demand of the defendant (but to remain unmodified as to what the two parties observe), it seems that the 50% conclusion would still hold because the two steps of the argument of note 18 above appear to remain valid.

[21]The Priest-Klein model can be adjusted to allow for one party to have superior information to the other. If one party's error tends to be smaller (for instance, in its variance) than the other's, the first party might be said to have superior information to the second; Wittman (1988), for example, permits this possibility. (However, such a modification does not reflect the point that the particular level of a party's offer and, thus, the probability and the character of trial outcomes, is the product of rational behavior.)

categories of real property cases, and between 25% and 60% for different categories of personal injury cases.[22]

To conclude, it does not seem appropriate to regard 50% plaintiff victories as a central tendency, either in theory or in fact. Still, as Priest and Klein properly emphasize, trial outcomes are quite distinct from random samples from the universe of underlying cases.

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[22]See Eisenberg (1990) at p. 357; the data discussed in Clermont and Eisenberg (1992), Hylton (1993), and Wittman (1985) also raise questions about the 50% tendency.

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