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TOWARD A TAXONOMY OF DISPUTES: NEW EVIDENCE THROUGH THE PRISM OF THE PRIEST/KLEIN MODEL

PETER SIEGELMAN and JOEL WALDFOGEL*

ABSTRACT

The Priest/Klein model predicts both trial rates and plaintiff win rates as functions of three structural parameters: the decision standard, parties' uncertainty in estimating case quality, and the degree of stake asymmetry across parties. Previous tests of the model are unsatisfactory because most have concentrated on its prediction of a 50 percent win rate, which only obtains as a limiting case. We gather independent evidence that describes the model's three parameters and compare it with estimates from a structural model that simultaneously estimates both trial and win rates. The model fits the data for four of our six case types. A four-parameter model, in which plaintiffs face greater uncertainty than defendants, can explain the two anomalous case types.

I. INTRODUCTION

TRIAL rates and plaintiff win rates at trial vary substantially across types of cases. This fact stands in apparent contrast to the prediction of George Priest and Benjamin Klein, whose well-known model yields a 50 percent plaintiff win rate at trial, regardless of the fraction of plaintiff winners in the pool of filed cases.¹ Some observers have taken the variation in plaintiff win rates across case types as evidence against the Priest/Klein model. Properly understood, however, the model predicts 50 percent plaintiff win rates at trial only as a *limiting implication*. Furthermore, the model predicts not only plaintiff win rates at trial (*P*) but also trial rates (*T*). In fact, *P*

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¹ See George Priest & Benjamin Klein, *The Selection of Disputes for Litigation*, 13 J. Legal Stud. 1 (1984).

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and T are joint functions of (at least three) characteristics of the litigation environment: (1) the fraction of filed cases that would yield plaintiff wins if tried (the decision standard, D), (2) parties' ability to estimate the quality of their cases (the uncertainty parameter, σ), and (3), the degree of stake asymmetry across parties (α).²

As a logical matter, one can predict T and P for each case type as a function of the three underlying parameters (D , σ , α), or, given some identifying assumptions, one can infer the parameters for each case type from observations of T and P . While interesting, such an exercise provides no information about the validity of the Priest/Klein model, since there is always a parameter vector (D , σ , α) that will rationalize any observed (T , P). Instead, it would be better to test the model by collecting *independent* information about the underlying parameters for different types of cases and then examining whether the (D , σ , α) estimated from the trial and win-rate data are consistent with the independent measures of these parameters. This article attempts such an exercise. We collect independent information related to the determinants of litigation that the Priest/Klein model deems relevant. We also structurally estimate the Priest/Klein model, inferring (D , σ , α) from data on T and P for six types of federal cases. We then assess whether the structural estimates are consistent with the independent evidence.

The Priest/Klein model makes predictions for T and P on the basis of unobservable characteristics of cases. In the absence of information on the true Priest/Klein parameters associated with different types of cases, the model is difficult to support and impossible to falsify. Hence, an important motivation of our study is that we attempt to subject the model to a test it can fail. We emphasize at the outset that this is an inherently difficult exercise. It is not easy to find evidence about the degree of uncertainty or stake asymmetry associated with various types of litigation, and it is especially hard to uncover the decision standard associated with different types of filed cases. We view our effort as a first step toward collecting information about the determinants of litigation and settlement behavior that can be useful not only for testing the Priest/Klein model but also for assessing alternative theories.

² The more general formulation of the model, then, is not that plaintiffs should always win 50 percent of tried cases but, rather, that the win rate should *approach* 50 percent as the pool of tried cases becomes more and more selected (less and less like the pool of filed cases). Peter Siegelman & John J. Donohue III, The Selection of Employment Discrimination Disputes for Litigation: Using Business Cycle Effects to Test the Priest/Klein Hypothesis, 24 J. Legal Stud. 427 (1995), confirm this prediction using time-series data on employment discrimination cases; and Joel Waldfogel, The Selection Hypothesis and the Relationship between Trial and Plaintiff Victory, 103 J. Pol. Econ. 229 (1995), presents evidence based on comparisons across judges.

In some ways, this article is in the spirit of recent work by Daniel Kessler, Thomas Meites, and Geoffrey Miller and Theodore Eisenberg and Henry Farber.³ These papers go beyond simply testing whether win rates are equal to 50 percent across case types.⁴ Instead, they model or describe various factors that could lead to differences from 50 percent win rates and then posit a distribution of these factors across case types or parties. For example, Kessler, Meites, and Miller argue, as do Priest and Klein, that asymmetric stakes in favor of defendants will lower plaintiff win rates. On the basis of conventional wisdom, they then assign a dummy variable (equal to one if defendants have higher stakes than plaintiffs) to each of 105 narrow case types and regress win rates on this and several other similarly constructed dummies (covering, for example, whether defendants are better informed than plaintiffs). Eisenberg and Farber posit that individuals have a higher variance in litigation costs than do corporations and derive the testable implication that case types with more corporate plaintiffs should have higher plaintiff win rates. Our work extends these recent papers in two ways. First, rather than relying on conventional wisdom or intuitions, we attempt to construct empirical measures of variables such as stake asymmetry that determine win rates and trial rates. Second, we compare these data to estimates from a structural model that predicts *both* the trial rate and the plaintiff win rate, exploiting the relationship between the two that is implicit in the Priest/Klein model and that is largely ignored by other researchers.

The Priest/Klein model was one of the first to suggest that litigated cases are not just a random sample of all filed cases or all potential suit-generating incidents. It is now widely acknowledged that the process of winnowing disputes for litigation by selective settlement systematically screens out some disputes and allows others to go forward. While the exact nature of the selection mechanism has not been resolved, few now question that selection of some sort does occur. The real debate, then, is about what kind of selection is taking place and why. To resolve it, one must ultimately compare the Priest/Klein model against other kinds of selection models, especially those based on asymmetric information.⁵ Ideally, such a comparison would be empirical: the best approach would be to identify different

³ See Daniel Kessler, Thomas Meites, & Geoffrey Miller, Explaining Deviations from the Fifty Percent Rule: A Multimodal Approach to the Selection of Cases for Litigation, 25 J. Legal Stud. 233 (1996); and Theodore Eisenberg & Henry Farber, The Litigious Plaintiff Hypothesis, 28 Rand J. Econ. S92 (1997).

⁴ See Theodore Eisenberg, Testing the Selection Effect: A New Theoretical Framework with Empirical Tests, 19 J. Legal Stud. 337 (1990).

⁵ An important example of work in this tradition is Lucian Bebchuk, Litigation and Settlement under Imperfect Information, 15 Rand J. Econ. 404 (1984).

predictions implied by the two models and see which of them best conforms with reality.⁶ By collecting independent information relevant to litigation outcomes according to a variety of models, this article is a first step in that direction.⁷

The article proceeds as follows. Section II first describes the outcome and settlement data and sets out the important facts about litigation outcomes—differences in P and T across case types—to be explained. We discuss the independent data on case-type characteristics that we gathered in Section III.⁸ Sections IV and V briefly review the workings of the Priest/Klein model and structurally estimate the model for six composite case types. Section VI examines whether the pattern of structural parameter estimates is consistent with our independent measures across case types. Section VII concludes.

II. OUTCOME DATA

There are two sets of facts relevant to this exercise: first, the outcomes that are the focus of the Priest/Klein model's predictions, the adjudication rate and plaintiff win rate, T and P ; and second, the characteristics of case types that—according to the Priest/Klein model—predict these outcomes. Here we focus on the outcomes. We discuss case-type characteristics in the next section and then explore the relationships between characteristics and outcomes in the remainder of the article.

A. Outcome Data

This article uses data on federal district court cases compiled by the Administrative Office (AO) of the U.S. courts. We focus on cases initiated in

⁶ For an attempt to distinguish between asymmetric information and divergent expectations models by examining outcomes of cases that are disposed of at different stages of the litigation process, see Joel Waldfogel, *Reconciling Asymmetric Information and Divergent Expectations Theories of Litigation*, 41 J. Law & Econ. 451 (1998).

⁷ For a perceptive discussion of these issues from a theorist's perspective, see Robert Gertner, *Asymmetric Information, Uncertainty, and Selection Bias in Litigation*, 1993 U. Chi. L. Sch. Roundtable 75. Gertner points out some theoretical weaknesses in both asymmetrical information models and the Priest/Klein model and proposes a simple two-sided asymmetric information litigation model that overcomes many of these problems. However, whether any of these models are empirically distinguishable from each other is still an open question. See Keith N. Hylton, *Asymmetric Information and the Selection of Disputes for Litigation*, 22 J. Legal Stud. 187 (1993), for an analytically rich model that incorporates both (one-sided) asymmetric information and endogenous compliance decisions by tortfeasors. Hylton's model makes many of the same predictions as the other selection models, however, making it difficult to distinguish empirically.

⁸ An appendix, available from us on request, describes the data collection efforts, presents summary statistics, and provides summaries for samples of the cases from each case type.

the Southern District of New York after 1979 and resolved by 1989. The AO data have been widely used in empirical work on civil procedure and will not be described here in detail.⁹ In addition to the standard information, our data set also identifies the judge to whom the case was assigned. (This was coded by hand from court docket sheets.) While the AO defines roughly 100 different narrow three-digit case types (aggregated into 11 larger categories), we concentrate on those that have enough cases to allow for meaningful analysis and that are relatively homogenous.¹⁰ For example, the broad-level AO suit type “contracts” includes contract disputes among private individuals along with suits brought by the U.S. government for recovery of overpayment of veteran’s benefits or student loans.¹¹ For some purposes—described below—we deal with individual (three-digit) case types as our unit of analysis. The structural estimation, however, requires large numbers of cases per judge, forcing us to aggregate the three-digit case types to form composite suit types. Our grouping of similar case types results in six broad categories of suits, which we list in Table 1, along with the nature of suit codes included in each.

B. Adjudication and Win Rates across Case Types

Table 1 also shows the adjudication rates and plaintiff win rates in adjudicated cases by case type, while Figure 1 plots these same data by six

⁹ See, for example, Eisenberg, *supra* note 4; Stewart Schwab & Theodore Eisenberg, What Shapes Perceptions of the Federal Court System? 56 U. Chi. L. Rev. 708 (1989); Eisenberg & Farber, *supra* note 3; and Waldfogel, *supra* note 2. An important drawback of the data is that they were designed for administrative purposes and hence contain very little descriptive material on each case. The bulk of the information (including the case type assigned to each case) comes from the cover sheet that is filed by plaintiffs’ attorneys in conjunction with the initial complaint. Supplementary information (especially concerning the disposition of the case) is entered by the court clerks, who have considerable discretion in determining which party is coded as having prevailed. Moreover, it is possible that the plaintiff may “win” by establishing liability but be allowed only minimal damages. The data do not allow for meaningful distinctions of this kind. Neither do our data keep track of which cases were appealed, although, since so few cases are appealed, we do not believe this to be a serious problem. Although the data set does contain amounts awarded to prevailing plaintiffs in some cases, the amounts are only rarely available and are coded with considerable inaccuracy. (For an analysis of errors in the coding of the “amount awarded” field in the AO data, see John J. Donohue III & Peter Siegelman, Law and Macroeconomics: Employment Discrimination Litigation over the Business Cycle, 66 S. Cal. L. Rev. 709 n.98 (1993).)

¹⁰ Most of the excluded case types had too few observations to make it feasible to include them in the structural estimations, or were otherwise problematic. The included case types cover roughly half of all filed cases.

¹¹ An impressionistic sample suggests that most of the excluded contracts cases were student loan and veterans benefit default suits brought by the government. We could have included these cases under a separate case type but not in the structural estimates; in part, our decision not to include them was also made because they simply did not seem substantively interesting, since defendants always lost.

TABLE 1
ADJUDICATION AND PLAINTIFF WIN RATES FOR CASE CATEGORIES

Our Categories for Administrative Office Names	Nature of Suit Code	<i>N</i>	Adjudication Rate (%)	Plaintiff Win Rate (%)
Contract:				
Other contracts	190	9,175	28.84	72.82
Tort:				
Airplane	310	146	13.7	30.0
Airplane product liability	315	26	19.2	.0
Marine	340	2,920	11.0	38.0
Marine product liability	345	19	10.5	50.0
Motor vehicle	350	917	9.2	38.1
Motor vehicle product liability	355	39	10.3	25.0
Other personal injury	360	1,212	24.8	17.1
Product liability	365	318	20.4	16.9
Civil rights:				
Other civil rights	440	1,648	49.5	10.8
Employment civil rights	442	1,346	37.3	8.6
Prisoner:				
Habeas corpus	530	2,837	78.8	6.2
Prisoner civil rights	550	3,170	66.8	2.6
Labor:				
Labor-Management Relations Act	720	988	32.6	66.2
Labor-Management Reporting and Disclosure Act	730	113	31.9	30.5
Intellectual property:				
Copyright	820	1,722	33.3	742
Patent	830	398	32.2	66.4
Trademark	840	2,188	44.5	79.9

broad case types and judge. Both suggest some underlying commonalities and differences across case types. Roughly speaking, torts, prisoner, and civil rights/employment discrimination cases all have low plaintiff win rates (across almost all of the judges) and varying (but generally low) adjudication rates. Prisoner cases are a partial exception, with low win rates but higher adjudication rates.¹² Labor, contract, and intellectual property cases have higher plaintiff win rates, again with varying adjudication rates across

¹² The reason, as we will show later, is that prisoner cases are disproportionately resolved on early pretrial motions in favor of the defendant. This counts as a "trial" in our definition. One might be tempted to conclude that prisoner cases are so aberrant that they should not be included in our estimates, but after careful consideration, we thought it better to include them. It is likely that prisoner cases have high adjudication rates in part because prisoners get consumption value from filing lawsuits, even when the suits are summarily dismissed. But this fact should not by itself contradict the Priest/Klein model, which can incorporate such behavioral characteristics through suitable changes in the underlying parameters. Pre-

FIGURE 1.—Plaintiff win rate and adjudication rate by case type and judge, Southern District, New York.

judges. Again, there are some exceptions: plaintiffs in Labor-Management Relations Act (LMRA) cases (AO code 720) have substantially higher win rates than those in Labor-Management Reporting and Disclosure Act (LMRDA) cases (AO code 730), for example. The strongest regularity that emerges from the table and figure is simply that torts, prisoner, and civil rights cases have lower win rates while contracts, intellectual property, and labor cases (at least those brought under the LMRA) cluster together with higher win rates among adjudicated cases.

C. What Is a Trial?

Because the Priest/Klein model offers predictions about trial and settlement rates and the relationship between them, it is important to be specific in defining what constitutes a tried case (as opposed to a settlement). We define a “tried” case as one that is resolved by any final judgment of the court. Formally, this means that we count any case that terminates in a judgment for one or both of the parties (that is, a case for which the AO codes JUFOR [judgment for] = 1, 2, or 3) as adjudicated. While this is

cisely because they offer extreme examples of some or all of D , σ , and α , the prisoner cases can provide a good test of the theory’s explanatory power.

different from the legal definition of a trial, it is the correct notion for our exercise. Conceptually, a “trial” occurs when the parties are unable to settle their dispute without third-party intervention (adjudication). This means that “trials” include cases disposed of by summary judgment or other motions, as well as those resolved only after a full-blown jury trial. Cases resolved other than by judgments are considered settlements.¹³ To avoid confusion with the Perry Mason definition of “trial,” we refer to the adjudication rate throughout this article. Our adjudication rates are therefore substantially higher than conventional measures of the trial rate based only on full-blown trials.¹⁴

III. INDEPENDENT EVIDENCE OF CASE-TYPE CHARACTERISTICS

The Priest/Klein model predicts litigation outcomes for each case type as a function of three parameters: the decision standard, the amount of uncertainty, and the degree of stake asymmetry. This section introduces our independent measures of case-type characteristics that are intended to serve as proxies for the unobservable parameters. After discussing the rationale for and construction of these measures and defending their plausibility, we present some regression results designed to summarize the relationship between our independent measures and the litigation outcomes (P and T) they are supposed to determine.

¹³ Note that our definitions of trial and settlement imply that a case that is dropped by the plaintiff before any judicial involvement is just a “settlement” with zero payment to the plaintiff. Using a data set with substantial case-specific information on medical malpractice claims in Florida, Edward Snyder & James Hughes, *The English Rule for Allocating Costs* 6 J. L. Econ. & Org. 345 (1990), conclude that dropped cases are empirically different from those that settle. The inability to distinguish dropped from settled cases is a weakness of the AO data.

¹⁴ The conceptual definitions of settlement and “trial” or adjudication do not map cleanly into the AO’s classifications of case outcomes. Under our definition, adjudicated cases include those disposed of by summary judgment under Rule 56 of the Federal Rules of Civil Procedure, as well as those disposed of on other pretrial motions under Rule 12(b)1-7. (When the court rules, for example, that the plaintiff has not stated a claim on which relief may be granted, this is clearly a victory for the defendant, and it makes little sense to call this a settlement; we therefore classify the case as “adjudicated,” even though it was not formally tried). Our “adjudicated” category also includes a small number of default judgments for plaintiffs, almost all of which are found in the “other contracts” case type. While these cases were not formally adjudicated, they were obviously not settled, either.

Cases in which there are multiple outcomes at different stages of litigation—for example, the plaintiff survives the defendant’s motion for summary judgment only to lose at trial—are not a problem for our definition of adjudication. The AO manual instructs clerks *not* to code a win on, for example, a temporary injunction or preliminary motion that is followed by a loss on the merits as a win for the plaintiff. Clerks are supposed to go back and reenter the outcome as each new round of adjudication occurs; the party who prevailed on the final resolution of the case is the one listed as the “winner.”

A. *Stake Asymmetry*

If all that matters in a dispute is the amount of damages to be paid by the defendant to the plaintiff, the two parties will have an identical stake in the outcome—the defendant's loss is exactly equal to the plaintiff's gain. When one or the other of the parties derives some additional cost or benefit from the outcome of the case, however, there will by definition be an asymmetry in stakes. We suggest that stake asymmetry is likely to depend on the tendency of parties to be repeat players in litigation. Following Marc Galanter and others, it seems plausible that individual plaintiffs are likely to be "one-shotters" who have virtually no chance of ever appearing again in litigation.¹⁵ Paradigmatic examples might be an ex-employee suing her employer for violating employment discrimination laws or a victim of an airplane crash bringing a tort action against the airline or airplane manufacturer. Institutional defendants, by contrast, presumably face a greater likelihood of repeat play. This would tend to make them more sensitive to reputational and precedential concerns, giving them a larger stake in litigation than a one-shot plaintiff. We operationalize this idea in several ways.

1. *Institutional Party Ratio.* Using random samples of roughly 100 observations from each case type, we coded party type from the plaintiff and defendant names on the AO data tape.¹⁶ We take the ratio of institutional (i.e., nonindividual) plaintiffs to institutional defendants, for each case type, which we term the "institutional party ratio." A value greater than 1.0 means that plaintiffs are more likely to be institutions than are defendants, which suggests a stake asymmetry favoring plaintiffs.

Column 3 of Table 2 reveals that this ratio varies substantially across case types, from a high of 1.12 for contract to a low of zero for prisoner cases. Tort, prisoner, and civil rights cases (including employment discrimination) all have very low values of the institutional party ratio (defendants are more likely to be institutions than are plaintiffs), while contract, intellectual property, and labor cases have high values.

2. *Repeat Play Ratio.* Another possible indicator of stake asymmetry is the importance of repeat players among parties in a case type. Again, the more likely plaintiffs are to be repeat players (relative to defendants), the

¹⁵ See Marc Galanter, *Why the "Haves" Come out Ahead: Speculations on the Limits of Legal Change*, 9 *Law & Soc'y Rev.* 95 (1974).

¹⁶ The types of parties were firms (including nonprofit entities), individuals, labor unions, governmental entities, and foreign countries, with a residual code for those parties we could not identify. This is clearly an imperfect measure. For example, we found that many prisoner suits listed the defendant as an individual: in subsequent Lexis searches, this invariably turned out to be a warden, guard, police official, or prosecutor, and it was clear that the "real" defendant was some sort of governmental entity. We thus ignored the AO data for the two prisoner categories.

TABLE 2
EMPIRICAL MEASURES OF STAKE ASYMMETRY, BY COMPOSITE CASE TYPE

Case Type	Percent Institutional Plaintiff (1)	Percent Institutional Defendant (2)	Institutional Party Ratio (3)	Suits per Unique Plaintiff (4)	Suits per Unique Defendant (5)	Relative Repeat Play (6)
Contract	80.2	71.4	1.12	1.08	1.17	.92
Tort	3.7	72.6	.05	1.00	1.91	.52
Civil rights	6.9	76.1	.10	1.00	1.69	.59
Other	10.2	64.3	.16	1.00	1.76	.57
Employment discrimination	2.8	90.6	.03	1.00	1.60	.63
Prisoner	.0	100.0	.00	1.00	6.00	.23
Habeas corpus	.0	100.0	.00	1.00	2.59	.39
Civil rights	.0	100.0	.00	1.00	8.57	.12
Labor	72.4	86.7	.84	2.01	1.42	1.41
Intellectual property	77.5	85.2	.91	1.66	1.15	1.44

higher relative stakes we would expect them to have. To determine the degree of repeat play, we sorted the entire body of cases for each case type by plaintiff and defendant name and then simply coded how often each party appeared.¹⁷ An extremely simple measure of the degree of repeat play is the average number of suits per unique plaintiff or defendant. There is considerable variation in this ratio across case types, along the lines one might expect (see cols. 4–6 of Table 2). Prisoner cases have very few suits per plaintiff and between 2.5 and 8.6 suits per defendant, reflecting the concentration of litigation against a relatively small number of governmental entities. By contrast, intellectual property suits have a higher proportion of repeat players among plaintiffs than among defendants: for instance, Luis Vuitton, Cross Pens, and Jordache together accounted for more than 8 percent of all trademark suits filed in the Southern District of New York, while the same firm rarely appears more than once as a defendant.

B. Uncertainty

This section examines variables that might be used to measure variation in uncertainty across case types.¹⁸ We focus first on uncertainty that is symmetric across parties to a dispute but differs across types of cases. This is the sort of uncertainty incorporated in the original Priest/Klein model (as well as our parameterization). We then discuss measures related to uncertainty that may be asymmetrical across parties.¹⁹

¹⁷ There were a few exceptions: one was contracts, for which, because it was so numerous, we only coded about one-sixth of the total of 8,900 cases. We also did not code plaintiff identities for the case types with a strong prevalence of individual plaintiffs (torts, prisoner, and civil rights cases) on the assumption that, even if we matched plaintiff names, we would have no confidence that the two plaintiffs really were the same individual rather than two different individuals with the same last name. Party names are not standardized or checked for spelling, so that General Motors may sometimes be listed as “GM,” “Gen. Mot.,” “Grenrl [sic] Mtrs.,” and so on. This means that party names cannot be matched solely by computer; human judgment must be used to determine what constitutes a match. While we were not able to carry out the elaborate matching procedures of Terence Dunworth & Joel Rogers, *Corporations in Court: Big Business Litigation in U.S. Federal Courts, 1971–1991*, 21 *Law & Soc. Inquiry* 497 (1996), we are fairly confident that we have caught all but a handful of mismatches.

¹⁸ Using various measures (including the average age of cited cases), William M. Landes & Richard A. Posner, *Legal Precedent: A Theoretical and Empirical Analysis*, 19 *J. Law & Econ.* 249 (1976), conclude that civil rights precedents have dramatically higher depreciation rates than precedents in other areas of federal law. If higher depreciation rates are associated with greater legal uncertainty, as seems plausible, then the Landes/Posner measures suggest high uncertainty for civil rights cases and low uncertainty for torts and contracts disputes. Our findings are similar.

¹⁹ As noted below, uncertainty and trial costs are observationally equivalent in these models, so asymmetries in uncertainty can also be thought of as asymmetries in costs between the parties.

1. *Jury versus Judge Trials.* Although the Seventh Amendment guarantees the right to a jury trial in most civil cases, some case types do not allow for jury trials or do so only in limited circumstances.²⁰ For example, plaintiffs in employment discrimination cases under Title VII of the 1964 Civil Rights Act did not have a right to a jury trial through the period of our data.²¹ Similarly, some claims brought under the Labor-Management Relations Act and the Labor-Management Reporting and Disclosure Act do not have the right to a jury trial, although others do.²²

It seems plausible that cases tried to a jury are subject to more uncertainty than those tried to a judge. Thus, one measure of the degree of legal uncertainty across case types is the fraction of all fully adjudicated cases of each type that are tried to a jury.²³ If for some case types—for example, prisoner habeas corpus cases—plaintiffs have no right to a jury trial, we would predict that this case type should exhibit lower uncertainty than others in which plaintiffs do have this right under some circumstances.

Table 3, column 1, reports the ratio of jury trials to all trials for each case type.²⁴ More than 80 percent of tried tort cases are tried to a jury; by contrast, less than one-fourth of tried employment discrimination cases are tried

²⁰ For an exploration of the issues involved in choosing a jury trial, see Kevin M. Claremont & Theodore Eisenberg, *Trial by Jury or Judge: Transcending Empiricism*, 77 *Cornell L. Rev.* 1124 (1992); and Samuel R. Gross, *Settling for a Judge: A Comment on Clermont and Eisenberg*, 77 *Cornell L. Rev.* 1178 (1992).

²¹ Title VII actions were technically held to be “equitable” in nature and hence could be excluded from the general right to a jury trial. See, for example, *Shah v. Mt. Zion Hosp. and Medical Center*, 642 F.2d 268 (9th Cir. 1981). The 1991 Civil Rights Act changed this designation for cases involving money damages, although it still applies for cases seeking purely equitable relief.

²² The right to a jury trial depends on the kind of remedy the plaintiff is asking for. “Equitable” remedies (such as injunctions and certain kinds of back-pay damages) do not entitle the plaintiff to a jury trial, while “legal” remedies do. See, for example, *Wooddell v. International Brotherhood of Electrical Workers, Local 71*, 502 U.S. 93 (1990) (finding a right to a jury trial in LMRDA suits for money damages); *Stewart v. KHD Deutz of America Corporation*, 75 F.3d 1522 (11th Cir. 1994) (finding a right to a jury trial in LMRA suits for breaches of contract); *Golden v. Kelsey-Hayes Company*, 73 F.3d 648 (6th Cir. 1994) (holding that plaintiffs seeking to stop a firm from breaching a collective bargaining agreement under LMRA are asking for an equitable remedy and have no right to a jury trial).

²³ We recognize that this not a fully exogenous variable: there may be some case types in which parties cannot request a jury (or can do so only in some circumstances) as a matter of law, but there are many more in which they can, at least under some circumstances. If jury trials are less common for some types of cases than for others, it is thus partly because of endogenous decisions by the parties involved. Nevertheless, there are substantial differences in the proportion of jury trials between, for example, contracts and torts cases, and we claim that these differences reflect, at least in part, an exogenous difference in the degree of legal uncertainty facing the parties.

²⁴ Here, we use “trial” in the Perry Mason sense. The measure is thus the number of cases tried to a jury divided by (the number tried to a jury plus the number tried to a judge).

TABLE 3
EMPIRICAL MEASURES OF UNCERTAINTY, BY COMPOSITE CASE TYPE

	Jury Trials per Fully Tried Case (1)	Published Opinions per Adjudicated Case (2)	Percent of Plaintiffs with No Attorney (Pro Se) (3)	Percent of Adjudicated Cases Adjudicated Early (4)
Contract	.33	.38	.0	57.3
Tort	.82	.77	5.9	17.6
Civil rights	.47	.53	21.1	41.7
Other civil rights	.67	.52	16.0	55.2
Employment	.24	.56	27.3	25.2
Prisoner	.28	.36	64.4	75.5
Habeas corpus	.00	.45	83.8	82.9
Civil rights	.53	.28	47.0	68.8
Labor	.33	.44	5.0	59.1
Intellectual property	.17	.27	.0	53.5

to a jury,²⁵ and there were no jury trials at all among prisoner habeas corpus cases.

2. *Publication Rate.* Other things being equal, one might imagine that judges would be more likely to publish an opinion in those areas of that law that are relatively unsettled. The publication rate in adjudicated cases might thus be taken as one measure of legal uncertainty for a given case type.²⁶ We report the publication rate (for adjudicated cases) in Table 3, column 2. Again, tort cases have the highest publication rate (at over 75 percent), while intellectual property cases have the lowest ratio of published opinions to adjudicated cases.

C. *Asymmetric Uncertainty*

In the original Priest/Klein model, both sides form their estimate of the probability that the plaintiff will win by estimating the difference between the defendant's true fault level and the decision standard. Thus, whether the

²⁵ Which is not surprising, since until the passage of the 1991 Civil Rights Act, there was no right to a jury trial in Title VII cases that constitute the bulk of federal employment discrimination claims.

²⁶ Note that it is the publication rate for adjudicated cases that matters. If most cases settle without requiring any judicial action, judges will have no opportunity to write opinions. The publication rate was calculated as follows. We first searched in Lexis for a published opinion for each case. The number of published opinions was divided by the number of cases searched for to give the publication rate. This ratio was then divided by the adjudication rate from Table 1 to give the rate of published opinions per adjudicated case.

uncertainty concerns the decision standard (the law governing the case—"Is *X* illegal?") or the defendant's fault level (the facts—"Did defendant do *X*?") is irrelevant in the context of the model. It is only the difference between the fault level and the decision standard that matters.

There are plausible a priori reasons to believe that legal and factual uncertainty will play out differently across case types, however. On the one hand, for a given case type, we might expect that the amount of *legal* uncertainty should be the same for both parties. Especially if both are represented by lawyers, whatever uncertainty there is in the law *itself* is unlikely to differ between plaintiffs and defendants, since both sides have (roughly) the same access to the same set of written decisions, commentaries, experts, and so on. Case types with new or evolving law might have more uncertainty than those in which the law is settled, but within a case type, this kind of uncertainty should be identical for both parties in a dispute.²⁷ This kind of uncertainty has been the focus of our discussion until now.

On the other hand, parties may systematically tend to have different information about the *facts* of a dispute, in ways that vary across case types. For example, it is commonly argued (although without much empirical evidence) that tort defendants know the amount of care they took, while plaintiffs do not—at least not until discovery occurs.²⁸ This kind of informational asymmetry makes less sense in a contracts, trademark, or labor case, however, since the relevant actions by the defendant are typically observed by both parties.²⁹ Thus, we might expect to find differences across case types in the extent of informational asymmetry about the facts. We have two measures that are potentially relevant to uncertainty that is asymmetric across parties.

1. *Pro Se Plaintiffs.* Lawyers are obviously an important source of information about the legal system for their clients, and it seems unlikely that pro se plaintiffs will be as fully informed about the law as would a lawyer taking on the identical case. This suggests that the proportion of cases in which plaintiffs are representing themselves should be positively related to the amount of uncertainty that plaintiffs face. We display the pro se ratio in Table 3, column 3. Unsurprisingly, prisoner cases have the highest incidence of pro se representation, while no plaintiffs represent themselves in contracts and intellectual property cases.

²⁷ See, for example, George L. Priest, *Measuring Legal Change*, 3 J. L. Econ. & Org. 193 (1987).

²⁸ This is a paradigmatic assumption made, among others by Bebchuk, *supra* note 5.

²⁹ Another important fact, however, may not be symmetrically known to both parties: the size of the plaintiff's damages.

2. “*Early Adjudication*” Rate. Not all adjudicated cases are the same. The AO data allow for a distinction among adjudicated cases on the basis of their “procedural progress” at the time of termination. For example, one might consider only those cases that terminate after a complaint is filed but before the complaint is answered. Unfortunately, this category does not map perfectly into any analytical category of civil procedure. It includes some cases resolved on summary judgment (for either party) but also includes other kinds of dispositions as well.

For a given case type, the fraction of all adjudications that are resolved “early” is obviously not a pure measure of uncertainty, since it also depends on the quality of cases filed by plaintiffs. Suppose, however, that we find a high rate of early adjudication in some types of cases. Why are plaintiffs bringing cases that are such obvious losers rather than dropping or settling them? Alternatively, why are defendants refusing to settle when faced with obviously strong cases? One plausible reason is that parties do not realize that they are going to lose because they are uncertain about what the law is.³⁰ High early adjudication rates in favor of defendants thus suggest that plaintiffs are relatively uncertain about the law, while high rates favoring plaintiffs suggest the opposite.³¹ The last column in Table 3 gives the early adjudication rate by case type.³² Tort cases look to be the most uncertain, with prisoner habeas corpus cases the least.

D. *The Decision Standard*

The decision standard of greatest theoretical interest is that dividing legal from illegal behavior. This is not the decision standard referred to in the Priest/Klein model, however. The parameter *D* instead divides *filed* cases into winners and losers at trial. To the extent that potential plaintiffs with low-value cases fail to file (or losing defendants settle prior to filing), filed cases will themselves be selected, in much the same manner that adjudicated cases are a selected sample of filed cases.³³

³⁰ Or perhaps they are unduly optimistic about the quality of their own cases, as in George Lowenstein *et al.*, Self-Serving Assessments of Fairness and Pretrial Bargaining, 22 J. Legal Stud. 135 (1993).

³¹ If early adjudications are numerous but do not favor either party, it would suggest that *both* parties are uncertain about the law.

³² We define early adjudication as cases that end on a motion after the complaint is filed but before it is answered. As Waldfogel, *supra* note 6, demonstrates, the later the average adjudication date for a case type is, the more closely its plaintiff win rates at trial approach 50 percent.

³³ See William L. F. Felstiner *et al.*, The Emergence and Transformation of Disputes: Naming, Blaming and Claiming, 15 Law & Soc’y Rev. 675 (1982), for a perceptive empirical discussion of the ontology of disputes before they reach court.

If the Priest/Klein decision standard is thus largely an artifact of filing behavior, it is important to consider the motivation for filing to understand the distribution of quality of filed cases about the decision standard. Suppose that filing suit has some fixed cost F . The expected value of the suit to the plaintiff is the product of the size of the judgment (J), the plaintiff's estimate of his probability of victory at trial, and the degree of stake asymmetry, or αJP_p . If the decision rule for filing is that $\alpha JP_p > F$, then plaintiffs will file worse cases the larger α is and the higher the plaintiff's estimate of his probability of victory at trial, P_p , is. As discussed below, the plaintiff's estimate of his probability of victory, P_p , is the portion of the upper tail of a distribution that lies to the right of the decision standard. Assuming (reasonably) that the decision standard lies to the right of the mean of the distribution of underlying disputes that might generate filings,³⁴ an increase in the plaintiff's uncertainty, σ , will raise the probability that $\alpha JP_p > F$. The parameter D is therefore not a primitive of the model; instead, it is derived from parameters α and σ . Thus, we have no independent measures of D .

E. Summarizing the Relationship between the Case-Type Characteristics and Outcomes

We can parsimoniously examine the relationships between our independent measures and the litigation outcomes by computing correlations among the variables, as well as regressions of the litigation outcomes on the independent measures. Table 4 reports the correlations among the eight variables (two litigation outcomes and six independent measures) across 17 suit types.

The first column shows the correlations with the adjudication rate. Of the four variables hypothesized to affect adjudication rates, two (the early adjudication rate and the pro se rate) are highly and positively correlated with the adjudication rate. In contrast with our hypotheses, the publication rate and, to an even greater degree, the jury trial rate are negatively correlated with the adjudication rate. The second column of Table 4 demonstrates that, as hypothesized, the institutional party ratio and the repeat play ratio are both strongly positively correlated with the plaintiff win rate.

Although interesting by themselves, the correlations only illustrate the relationships among pairs of variables, without holding the others constant.

³⁴ Recall that here we are discussing not the distribution of filed cases but, rather, the distribution of cases that would result if all underlying events that could lead to litigation were actually filed. Clearly, the decision standard is located far to the right of this distribution, which includes presumptively lawful acts such as walking down the street or typing this sentence.

TABLE 4
CORRELATION MATRIX (N = 17)

	Adjudication Rate (1)	Plaintiff Win Rate (2)	Institutional Party Ratio (3)	Repeat Play Ratio (4)	Early Adjudication Rate (5)	Publication Rate (6)	Pro Se Rate (7)	Jury Trial Rate (8)
Adjudication rate	1.000							
Plaintiff win rate	-.168	1.000						
Institutional party ratio	-.038	.637	1.000					
Repeat play ratio	-.166	.740	.729	1.000				
Early adjudication rate	.795	-.015	.333	.109	1.000			
Publication rate	-.352	-.336	-.336	-.248	-.450	1.000		
Pro se rate	.813	-.538	-.410	-.523	.549	-.035	1.000	
Jury trial rate	-.670	-.316	-.308	-.267	-.557	.122	-.443	1.000

Table 5 reports two sets of regression results that surmount this problem. Columns 1 and 2 show results of regressions of trial and win rates on all six independent measures. Columns 3 and 4 include only those explanatory variables that we hypothesized should affect the trial and win rates. The regressions are weighted least squares, using the numbers of cases in each suit category as weights. It is important to recognize, given the small numbers of observations, that our goal here is parsimonious description of data rather than a realistic model of litigation outcomes.³⁵

Including all variables, we find that only the early adjudication rate has the predicted relationship with the adjudication rate. In contrast to our prediction (but consistent with the correlations reported above), the jury trial rate is significantly negatively related to the adjudication rate. Including only the *a priori* relevant variables, two of four variables are significantly related to the adjudication rate, the early adjudication rate and the *pro se* rate. Of the six independent measures, only the institutional party ratio is related to the plaintiff win rate. This pattern remains when only the ratios of institutional parties and repeat play are included. That both are not significantly related to the plaintiff win rate is perhaps not surprising given the high correlation between the ratios reported in Table 4 (0.73).

IV. THEORY: THE PRIEST/KLEIN MODEL

A. *The Relationship between Trial Rates and Plaintiff Victory with Symmetric Stakes*

The Priest/Klein model describes the selection of suits for trial and, given this selection, the probability of plaintiff victory at trial.³⁶ Filed cases

³⁵ While it would be attractive in principle to estimate these equations on case-level data, this is difficult for both conceptual and practical reasons. First, three of our six independent measures are not conceptually meaningful at the case level. We propose rates of jury trial, publication, and early adjudication as measures of uncertainty relevant to whether cases are adjudicated. At the case level, a particular outcome for each of these measures maps directly into whether the case was adjudicated. For example, a case that is adjudicated early is necessarily adjudicated. Hence, these three variables are only meaningful in the aggregate (at the case-type level). The remaining three variables are conceptually meaningful at the case level, but they are not available as data in machine-readable form. For example, whether the parties are institutions or individuals is available in the AO data only since 1986 and, among case types included in our study, only for tort and contract cases. Party names are available in the data, so calculation of measures of repeat play at the case level is possible, although it requires a great deal of work, as Dunworth and Rogers's studies (for example, see note 17 *supra*) suggest. Finally, whether a plaintiff is *pro se* is not available in the AO data and must be obtained elsewhere. The difficulty of determining these variables at the case level is what motivates our sampling strategy described earlier.

³⁶ For a complete description of the model, see Priest & Klein, *supra* note 1; or Waldfogel, *supra* note 2.

TABLE 5
REGRESSIONS OF ADJUDICATION AND PLAINTIFF WIN RATES ON INDEPENDENT MEASURES OF CASE-TYPE CHARACTERISTICS ($N = 17$)

VARIABLE	ADJUDICATION RATE		PLAINTIFF WIN RATE		ADJUDICATION RATE		PLAINTIFF WIN RATE	
	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant	.396	.149	.652	.238	.225	.136	.088	.076
Institutional party ratio	-.337	.128	.456	.204	...	...	.473	.115
Repeat play ratio	-.047	.076	-.019	.120	...	...	.125	.135
Early adjudication rate	.847	.238	-.434	.378	.322	.140	...	...
Publication rate	-.085	.157	-.169	.250	-.184	.179	...	...
Pro se rate	-.193	.310	-.322	.493	.537	.086	...	...
Jury trial rate	-.366	.167	-.267	.267	-.035	.099	...	...
R^2	.943		.934		.903		.809	

NOTE.—See the text for definitions of explanatory variables.

can be ranked along a case-quality dimension that is divided at the decision standard into cases that would yield plaintiff losses or victories if brought to trial, with those to the right of the decision standard (D) generating plaintiff victories if tried. The distribution of the quality of filed cases is standard normal.³⁷

Plaintiffs and defendants form unbiased estimates of case quality, subject to error. In the original version of the model, these errors are drawn from independent normal distributions with the same variance (although the variance is generally not equal to the variance of case quality). If Y' is true case quality, then the plaintiff's estimate of case quality is $Y' + \epsilon_p^Y$, and the defendant's estimate of case quality is $Y' + \epsilon_d^Y$.³⁸ Plaintiffs and defendants estimate case quality with an error that has a standard deviation σ^Y .³⁹

In the original formulation of the model, party error in estimating case quality is equivalent to error in estimating the decision standard (assuming that the error is independent across parties), since it is only the difference between the estimated case quality and the decision standard that matters. That is, suppose that the plaintiff's estimate of the decision standard is $D_p = D + \epsilon_p^D$ (and that the defendant's estimate of the decision standard is defined analogously). The plaintiff's estimate of the probability of plaintiff victory, P_p , is then $F((Y' + \epsilon_p - D)/\sigma)$, where σ is the standard error of $\epsilon_i \equiv \epsilon_i^Y - \epsilon_i^D$ ($i = p, d$), and $F(\cdot)$ is the cumulative normal; and the defendant's estimate of the plaintiff's probability of victory P_d is $F((Y' + \epsilon_d - D)/\sigma)$. Thus, the discussion of party uncertainty below refers to the composite of case quality and decision standard estimation error, and we refer to σ as the uncertainty parameter.⁴⁰

³⁷ Some distributional assumption is required for this analysis. The main implications of the Priest/Klein model will follow from any one-humped distribution.

³⁸ We depart slightly from the notation of Priest and Klein to allow uncertainty to stem from either errors in estimating case quality or the position of the decision standard.

³⁹ Although parties have equal error variances in the original version of the model, it is possible that the degree of case-quality uncertainty differs across parties. Indeed, this possibility is raised by Donald Wittman, *Is the Selection of Cases for Trial Biased?* 14 J. Legal Stud. 185 (1988), among others, and we return to this issue when we discuss anomalies in the results, below.

⁴⁰ As we note later, however, when we allow for the possibility of differential uncertainty among the parties, there may be a useful distinction to be drawn between uncertainty about the decision standard and uncertainty about case quality. If we think of the former as "legal" uncertainty—that is, imprecision about what the law requires—we would expect such uncertainty to be identical for all parties, since both (usually) have roughly equal access to the same sources describing what the law is. At least at the early stages of a dispute (before discovery), however, it seems plausible that the parties may have differential uncertainty about the facts and, hence, about the true quality of the case. For example, theorists commonly assume that tortfeasors observe the level of care they have taken and thus know true case quality exactly, while plaintiffs only observe whether or not they are injured, as in Bebchuk, *supra* note 5. As we discuss at greater length in Section V below, the degree of in-

A case avoids adjudication and is settled if the plaintiff's settlement demand is less than the defendant's offer. The plaintiff's demand is $P_p J - C_p + S_p$, where J is the judgment the plaintiff would receive if he won at trial, and C_p and S_p are the plaintiff's trial and settlement costs. The defendant's offer is $P_d J + C_d - S_d$ (where the d subscript refers to the defendant). If the stakes, and trial and settlement costs, are equal for plaintiff and defendant, then the case will go to trial if the plaintiff's demand exceeds the defendant's offer, or if $P_p - P_d > (C - S)/J$.⁴¹ If cases go to trial, they are decided without error; so, for example, if the true quality of the case Y' exceeds the decision standard D , then the case is a plaintiff victory if tried.

The settlement process acts as a filter on filed cases. Cases go to trial only if the parties disagree substantially over the probability of plaintiff victory. If plaintiff and defendant have little uncertainty about case quality or the decision standard, then only cases with true quality near the decision standard will be tried (because cases with quality far from the decision standard will have clear outcomes and will therefore settle).

Reductions in relative trial costs, or $(C - S)/J$, have an effect similar to that of an increase in the parties' uncertainty: a decrease in $(C - S)/J$ will raise the fraction of cases litigated, and the farther the decision standard above (below) the mean is, the lower (higher) the fraction of plaintiff wins in litigated cases is. Thus, variation in party uncertainty is observationally equivalent to variation in relative trial costs. In the model below, $(C - S)/J$ is formally held constant at 0.33 while σ varies.

With symmetric stakes, the theory generates a relationship between trial rates and plaintiff win rates that depends on the location of the decision standard (D) and the uncertainty parameter (σ). A natural way of representing the model is in adjudication rate–plaintiff win rate, or “ $T - P$,” space. The model predicts two sets of relationship between T and P : one from varying σ holding D constant (iso- D loci), and the other from varying D holding σ constant (iso- σ loci). Because a decision standard of zero generates a plaintiff win rate of 50 percent—whatever the level of the parties' uncertainty or ensuing trial rate—the $D = 0.0$ locus is a horizontal line at $P = 50$ percent. With a decision standard above 0.0, the probability of plaintiff victory at trial is less than 50 percent. As the parties' common uncertainty parameter (σ) increases, the fraction of cases tried increases, and the fraction of cases won by the plaintiff at trial declines toward the fraction

terparty asymmetry in estimating case quality is likely to differ across case types, with important implications for adjudication and win rates.

⁴¹ In Priest & Klein, *supra* note 1, as below, $(C - S)/J$ is set at 0.33 to close the model. They justify this assumption based on lawyers' contingency fees. Total trial costs are $C = C_p + C_d$, and total settlement costs are $S = S_p + S_d$.

of winning plaintiff cases among filed cases. Hence, the iso- D loci with $D > 0$ are downward sloping and always below the 50 percent plaintiff win rate. Analogously, the iso- D loci with $D < 0$ are positively sloped and above the 50 percent plaintiff win rate.⁴²

B. Asymmetric Stakes

Stake asymmetry can be incorporated into this model as different-sized judgments (J) for plaintiff and defendant. Trial occurs if $P_p J_p - P_d J_d > C - S$ (with symmetric trial and settlement costs). Suppose that $J_p = \alpha J_d = \alpha J$. Then the trial condition is rewritten as $\alpha P_p - P_d > (C - S)/J = 1/3$. If plaintiff stakes are 25 percent higher, then $\alpha = 1.25$. Higher plaintiff stakes raise both T and P .

C. A Formal Description of the Model

Formally, the probability that a case goes to trial is the probability that

$$\alpha F\left(\frac{Y' + \epsilon_p - D}{\sigma}\right) - F\left(\frac{Y' + \epsilon_d - D}{\sigma}\right) > 1/3, \quad (1)$$

which is a triple integral of the joint density of $(Y', \epsilon_p, \epsilon_d)$ evaluated over the region defined by (1). The use of 1/3 on the right-hand side of (1) is admittedly somewhat arbitrary.⁴³

If we define the region described by (1) as R , then the probability that a case is adjudicated is

$$T(D, \sigma, \alpha) = \int \int \int_R f(Y', \epsilon_p, \epsilon_d) d\epsilon_p d\epsilon_d dY', \quad (2)$$

⁴² One could also trace an iso- σ locus. To do so, imagine shifting the decision standard from above zero to below zero. The farther the decision standard above zero is, the fewer cases are tried *and* the lower the plaintiff win rate at trial. For $D > 0$, the iso- σ locus has positive slope. If $D < 0$, the farther D is below zero, the lower the trial rate and the higher the plaintiff win rate. Hence, for $D < 0$, an iso- σ locus has negative slope. Overall, iso- σ loci are shaped like backward C's. For a fuller description and graphical exposition of this analysis, see Waldfogel, *supra* note 2.

⁴³ In principle, the model could include another parameter rather than the assumption of the 1/3 threshold. We do not include such a threshold parameter in the model for two reasons. First, adding another parameter complicates estimation because it adds another dimension to the simulations (described below). Second, while the threshold parameter is not linearly dependent on σ , it is closely related. Hence, the threshold parameter would be difficult to meaningfully identify independent of σ .

where $f(Y, \epsilon_p, \epsilon_d)$ is trivariate independent normal with standard error of $Y' = 1$ and standard errors of ϵ_p and $\epsilon_d = \sigma$.

The probability of plaintiff victory, given adjudication, is the probability that both ϵ_p and ϵ_d lie in the region R and that the true case quality Y' exceeds the decision standard D , divided by the trial probability. This is written as

$$P(D, \sigma, \alpha) = \frac{\int_D^\infty \int_R f(Y', \epsilon_p, \epsilon_d) d\epsilon_p d\epsilon_d dY'}{T}. \quad (3)$$

We cannot derive closed-form expressions for these probabilities—or compute them directly—because the regions of integration are defined only implicitly. These probability expressions are discussed further in the Section V.

V. ESTIMATING THE STRUCTURAL MODEL

The selection model generates a precise relationship between model parameters (D, σ, α) and rates of adjudication and plaintiff victory at trial (T and P). We can refer to the probability expressions in Section IV as $P(D, \sigma, \alpha)$ and $T(D, \sigma, \alpha)$. If we index judges by j and case types by c , then the observed trial rates and plaintiff win rates have model analogues: $T_j^c = T(D_j^c, \sigma_j^c, \alpha_j^c)$ and $P_j^c = P(D_j^c, \sigma_j^c, \alpha_j^c)$. For each case type and judge, we have two pieces of data and three unknown parameters and therefore an infeasible estimation problem. However, because stake asymmetry is a characteristic of parties rather than their judges, random assignment of cases to judges allows us to reasonably assume that the degree of stake asymmetry does not vary across judges. By assuming that α varies only across case type while D and σ vary both across case type and judge, we have a feasible estimation problem. The estimation problem is to find stake asymmetry parameters for each case type, and decision standards and uncertainty parameters for each case type and judge, to best fit the model's estimates of P and T to the data.

A. Estimation

Because there is no closed form for the probability expressions used in the model, the estimation approach pursued here is to find functions approximating the model's relationship between P and (D, σ, α) and between T and (D, σ, α) . Given such functions, the estimation procedure can optimize some objective by searching the functions. Our strategy for creating functions relating P and T to (D, σ, α) is to simulate the model for a range of

values of α , D , and σ , then to fit the resulting simulated P and T to fully interacted polynomials in these parameters. We simulate P and T for (D, σ, α) over the following ranges: α runs from 0.625 to 2.00 by increments of 0.125, D runs from -2.50 to 2.50 by 0.25, and σ runs from 0.50 to 3.00 by 0.25. Thus the simulated data have 2,772 observations. To ensure that the estimated probabilities fall between zero and one, we estimate logistic regressions. We simulate P and T based on a large number (10,000) of draws for each parameter combination to make the error stemming from the data small.

By the criterion of R^2 , the third-order logistic regressions of simulated T and P on terms in D , α , and σ fit well.⁴⁴ The R^2 s are 0.99 for P and 0.985 for T . We refer to the fitted probabilities from the third-order approximations as follows:

$$\hat{T} = \frac{e^B}{1 + e^B}, \quad (4)$$

where

$$B = \sum_{i=0}^3 \sum_{j=0}^3 \sum_{k=0}^3 (\alpha)^i (D)^j (\sigma)^k \hat{\tau}_{ijk}, \quad (5)$$

and

$$\hat{P} = \frac{e^A}{1 + e^A}, \quad (6)$$

where

$$A = \sum_{i=0}^3 \sum_{j=0}^3 \sum_{k=0}^3 (\alpha)^i (D)^j (\sigma)^k \hat{\pi}_{ijk}, \quad (7)$$

in which $\{\pi_{ijk}\}$ and $\{\tau_{ijk}\}$ are parameters from the logistic regressions.

We have data on 26 judges and six case types. Although we can estimate judge effects on the decision standard and the uncertainty parameter, we cannot estimate separate judge effects on these parameters for each case type. Hence, the estimation procedure forces the judge effects to be the same across case types. We experimented with various groupings of cases to see whether the constraint of common judge effects had a large effect on the estimates, and it did not. Here we report results based on estimation with all case types included.

⁴⁴ We experimented with estimation based on both second- and third-order approximations and obtained similar results. We report only third-order results. Note that the fully interacted third-order polynomial has 64 terms.

We parameterize the models, in which all parameters vary across case type and the decision standard and the uncertainty parameter vary across judges, as follows:

$$\alpha = \sum_{c=1}^6 \delta^c \alpha^c, \quad (8)$$

$$\sigma = \left(\sum_{i=1}^5 s^i \delta^i + \delta^6 \right) \sum_{j=1}^{26} \delta_j \sigma_j, \quad (9)$$

and

$$D = \sum_{c=1}^6 \delta^c D^c + \sum_{j=2}^{26} \delta_j D_j, \quad (10)$$

where δ^c is a case-type dummy, δ_j is a judge dummy, and superscripts and subscripts refer to case types and judges, respectively. The parameters to be estimated in each model are $\{\alpha^1, \dots, \alpha^6; D^1, \dots, D^6; D_2, \dots, D_{26}; \sigma_1, \dots, \sigma_{26}; s^1, \dots, s^5\}$. The last five parameters, $s^1, \dots, s^5$, are scale parameters showing the average size of the uncertainty parameter for each of the five included case types relative to an excluded case type. We estimate by maximum likelihood.⁴⁵

B. Results

Sparsity of data in some of our six case categories led us to estimate the model on both our narrowly defined case types and the six more-inclusive groupings. Our inclusive groupings correspond to the AO designations of broad suit types. “Contracts” includes all nature of suit codes 110–90; “torts” includes all codes 310–85, and so on. Our narrow grouping with the fewest cases is labor, which includes only about 1,100 cases (an average of fewer than 40 per judge). Including all labor cases gives us 120 cases per judge.

⁴⁵ Waldfogel, *supra* note 2, provides further discussion and demonstrates that the correction for the use of estimated T and P functions is minuscule. Hence, we do not adjust standard errors to account for the use of estimated T and P .

TABLE 6
STRUCTURAL PARAMETER ESTIMATES, BY CASE TYPE

CASE TYPE	UNCERTAINTY, σ		DECISION STANDARD, D		STAKE ASYMMETRY, α	
	Coefficient (1)	SE (2)	Coefficient (3)	SE (4)	Coefficient (5)	SE (6)
A. Narrow sample:						
Civil rights	1.197	.134	1.558	.125	2.486	.048
Contract	.338	.056	-.057	.109	1.325	.027
Intellectual property	.284	.069	.383	.102	1.774	.260
Labor	1.397	.023	3.941	.111	2.717	.018
Prisoner	1.368	.021	2.388	.052	2.914	.010
Tort	.797	.090	.959	.128	1.091	.061
B. Broad sample:						
Civil rights	1.156	.102	1.346	.058	2.372	.051
Contract	.164	.016	.158	.180	1.315	.044
Intellectual property	.137	.050	.434	.026	1.820	.142
Labor	.497	.080	.090	.173	1.417	.066
Prisoner	1.303	.042	2.405	.033	2.882	.007
Tort	.752	.074	.791	.130	1.158	.063

Table 6 reports estimates of the average uncertainty, decision standard, and stake asymmetry parameters (across judges) for each of the six case types.⁴⁶ The top panel gives estimates for the narrow sample, while the bottom panel gives estimates for the more inclusive sample.

The first column of Table 6 gives the implied uncertainty parameter associated with each case type. Intellectual property and contract cases have low uncertainty parameters, while tort, civil rights, prisoner, and (in the narrow sample) labor cases apparently have the most uncertainty, although labor uncertainty is much lower in the estimates from the broad sample.

The decision standards (col. 3) are standard normal z -values and can be used directly to calculate the implied fraction of filed cases that would yield plaintiff victory if all filed cases were adjudicated. Slightly fewer than half of contract and labor cases would yield plaintiff victory, while much smaller fractions of filed tort, civil rights, and (especially) prisoner cases would be adjudicated in favor of plaintiffs. Using the narrow sample, the estimated labor decision standard is unrealistically high; with the broad sample, it is roughly zero. Although the estimated decision standard parameters indicate the *unconditional* fraction of filed cases that would be adjudicated for the plaintiff while the observed plaintiff win rates indicate the win

⁴⁶ The complete list of estimated parameters, including judge effects, is reported in the appendix, available from us on request.

rates *conditional on adjudication*, the general patterns are similar (compare Table 6 with Table 1).

The last columns of Table 6 report estimated stake asymmetry parameters. With the exception of labor, the pattern of α is similar across estimates from the broad and narrow samples. The estimated stake asymmetry parameter is largest—indicating higher stakes for plaintiffs than for defendants—for prisoner, civil rights, and intellectual property cases. It is lowest for contract, tort, and (from the broad-sample estimates) labor cases. The estimate exceeds unity for all case types.⁴⁷

VI. COMPARING THE INDEPENDENT EVIDENCE WITH THE ESTIMATED PARAMETERS

The independent evidence discussed in the previous sections seems to be picking up some of the variation in T and P across case types, but there are many possible reasons that this might be true. To test the Priest/Klein model, we need to ask how strongly the independent measures are correlated with the parameters estimated from the structural model described in Section IV.

Our independent measures have mixed success in explaining the estimated structural parameters. Figure 2 shows the estimated stake asymmetry parameter (on the horizontal axis) with its candidate independent measures (on the vertical axis). Figure 3 plots the estimated uncertainty parameter and its independent measures. (In both cases, we use the structural parameters estimated from the broad sample.) Excluding two case types, prisoner and civil rights, our independent measures are generally positively correlated with the parameter estimates. Among the four case types, the repeat play ratio is monotonically positively related to α , and the institutional party ratio is positively, although not monotonically, related. The pro se and publication rates are monotonically positively related to estimated σ , as postulated. The jury trial rate is positively but not monotonically related, and the early adjudication rate is, if anything, negatively related to our estimated uncertainty parameter.

The biggest anomalies among the estimated parameters are the large estimated stake asymmetry parameters in prisoner and civil rights cases, which imply that plaintiffs in such cases have substantially higher stakes than defendants, on average. These results are at odds not only with our intuition but also with the evidence of the independent measures: as demonstrated

⁴⁷ The patterns of estimated uncertainty, decision standard, and stake asymmetry estimated here are consistent with the estimates in Waldfogel, *supra* note 2, which included only intellectual property, tort, and contract cases.

FIGURE 2.—Estimated stake asymmetry parameter and independent determinants

FIGURE 3.—Estimated uncertainty parameter and independent determinants

TABLE 7
SIMULATION RESULTS WHEN PARTIES HAVE DIFFERENT UNCERTAINTY PARAMETERS
(Evaluated for Symmetric Stakes, at Three Decision Standards)

	Decision Standard (<i>D</i>)	Plaintiff's Uncertainty (σ_p)	Defendant's Uncertainty (σ_d)	Trial Rate (<i>T</i>)	Plaintiff Win Rate (<i>P</i>)
Symmetric uncertainty	-1.5	.5	.5	.042	.754
Asymmetric uncertainty	-1.5	1	.5	.038	.582
Symmetric uncertainty	0	.5	.5	.111	.514
Asymmetric uncertainty	0	1	.5	.153	.291
Symmetric uncertainty	1.5	.5	.5	.048	.261
Asymmetric uncertainty	1.5	1	.5	.140	.078

NOTE.—Symmetric stakes ($\alpha = 1$) are assumed for all simulations.

above, prisoners and civil rights plaintiffs tend to be one-shot litigants suing repeat players, and so on. Such anomalies call the Priest/Klein model, or at least our parameterization, into question.

Why does the model estimate large degrees of stake asymmetry in favor of plaintiffs for prisoner and civil rights cases? Recall that both of these case types have low plaintiff win rates and (especially for prisoners) high adjudication rates. Since greater stake asymmetry in favor of plaintiffs raises the trial rate, the model can only rationalize the combination of high adjudication rates and low plaintiff win rates with a high estimated α for these case types.

This counterintuitive result leads us to question what relevant feature of litigation may be omitted from our modeling. In our parameterization of the Priest/Klein model, both parties to litigation have the same degree of uncertainty about case quality (and therefore the same litigation costs). The assumption of symmetric uncertainty (costs) violates intuition most obviously for prisoner cases. The case types with the highest proportion of pro se representation by plaintiffs are prisoner and civil rights. Presumably, the opportunity cost of prisoners' time is quite low. These facts suggest higher uncertainty and lower costs for plaintiffs than defendants. The preponderance of individuals litigating against institutional defendants among civil rights and prisoner cases also raises the concern that plaintiffs in these case categories may be less well informed about the law than their opponents. The high rate of early adjudications favoring defendants among prisoner cases reinforces this concern.

We therefore experimented with simulations of the Priest/Klein model incorporating differential uncertainty for the two parties, the results of which are displayed in Table 7. Increasing plaintiff uncertainty, holding all

else constant, tends to raise the adjudication rate and reduce the tendency for plaintiff victory. For example, in simulations based on 10,000 draws, if the decision standard is 1.5, stakes are symmetric, and the uncertainty parameter is 0.5 for each party, then 4.8 percent of cases are adjudicated, and plaintiffs win 26.1 percent of adjudicated cases. If we hold everything else constant but raise the plaintiff's uncertainty parameter to one—giving the plaintiff twice the uncertainty of the defendant—the adjudication rate jumps to 14 percent, and the plaintiff win rate falls to 7.8 percent. Such a pattern of differential uncertainty across case types might therefore explain the litigation outcomes for civil rights and prisoner cases.

VII. CONCLUSION

Unlike much of the other literature in this area, this article subjects the Priest/Klein model to an empirical test that it can fail. We began by collecting independent measures of the structural parameters that determine litigation outcomes according to the Priest/Klein model. We also estimated a structural version of the Priest/Klein model and then asked whether the pattern of structural estimates across case types accords with the independent evidence.

Our conclusions are mixed. While our three-parameter version of the Priest/Klein model fits the pattern of independent evidence for three or four of the case types, the estimates it yields are not consistent for the other two, prisoner and civil rights cases. We attribute this failure to our overly restrictive parameterization of the model. In particular, we have the impression that uncertainty differs significantly across parties in these case types, while our formulation of the Priest/Klein model (as well as the original paper) holds uncertainty equal across parties.

Independent of the Priest/Klein model, we have documented that litigation outcomes (adjudication and plaintiff win rates) vary substantially across case types. In addition we have collected new evidence on factors relevant to litigation, and we have shown that litigation outcomes follow the patterns of the independent factors across case types. We hope that the independent evidence we have unearthed can be useful, not just for testing the Priest/Klein model, but also for understanding litigation more generally.