Demand for a Jury Trial and the Selection of Cases for Trial

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ABSTRACT

This paper uses a unique data set to examine how parties in civil litigation choose whether to demand a jury trial or to waive this right and whether trial forum influences the probability of trial versus settlement. Plaintiffs are more likely to demand trial by jury when juries are relatively more favorable to plaintiffs in similar cases and jury trials are relatively less costly than bench trials. Cases in which jury trials are demanded are 5.5 percentage points more likely to settle without a trial than cases in which jury trials are waived. This differential settlement rate by potential trial forum suggests that tried cases are not a random sample of the set of legal disputes, so observed similarities between bench and jury verdicts may result from case selection effects.

1. INTRODUCTION

The behavior of juries in civil cases has been a focal concern in the legal reform debate. However, whether a case would even involve a jury trial rather than a trial by a judge depends on decisions made by the parties to the legal dispute. In most civil litigation, either party may demand a jury trial, and this demand cannot be vetoed by the other party. But there has been no economic analysis of this stage of the legal process or of the implications of the choice of trial forum on parties' settlement behavior.

Studying the choice of trial forum is important for two reasons. First,

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an overall objective of an economic analysis of the law is to address the efficiency of the legal environment.[1] This paper examines whether choice of jury trial is consistent with optimizing behavior. Second, a key concern in the economics literature is whether the set of disputes that are litigated rather than settled out of court is a random sample of legal disputes.[2] Nonrandom selection makes it difficult to infer legal standards and the corresponding economic impact of the existing legal structure from the set of trial outcomes. This paper extends the case selection literature by analyzing the influence of trial forum on the settlement decision.[3]

This paper overcomes the key barrier to empirically analyzing trial forum choice and possible selection effects, which has been the lack of data on potential trial forum for cases that settle out of court before trial commences. The Administrative Office of the United States Courts collects data on all cases filed in federal courts. If a case settles before trial, there is no information on whether the case would have had a jury trial if trial had occurred. Without such information, it is not possible to estimate the choice of trial forum or to investigate whether the prospect of a jury trial influences settlement probability differently than the prospect of a bench trial. Fortunately, there is a unique data set that includes information on whether a litigant had demanded a jury trial for about 4,000 jury-eligible cases filed in federal courts. I match data in this sample to case information on terminated federal civil court cases available in the Administrative Office of the United States Courts data set (Federal Judicial Center 1996).

Underlying my empirical analysis is an economic model of litigation behavior in which parties make a sequence of decisions to maximize their net expected payoffs. Litigants choose trial forum by comparing expected outcomes and costs if they select a jury trial with expected outcomes and costs if they opt for a bench trial. Given the choice of trial forum, I examine the influence of trial forum choice on the difference in the probability that a case will continue to trial.[4] Whether trials are more or less likely to occur when a jury trial is demanded rather than

1. Economic analysis of the litigation process began with the work of Landes (1971) and Posner (1973).

2. The seminal work on nonrandom selection of cases for trial is by Priest and Klein (1984).

3. Selection effects may be considerable, as Perloff, Rubinfeld, and Ruud (1996) find that demanding a jury trial increases the probability of settlement by 81 percent among antitrust cases.

4. As in Waldfogel (1995) and others, the term "trial" refers to any case not settled. See footnote 18.

waived depends on a comparison of the variability of jury decisions to bench decisions and costs of jury trials relative to bench trials.

The empirical results show that the decision to demand a jury trial is influenced by a comparison of jury to bench characteristics for cases of the same type. Jury trials are more likely to be demanded by plaintiffs when, relative to bench trials of the same case type, juries are more favorable to plaintiffs and awards are more variable. Plaintiffs are more likely to demand jury trials when individual case stakes, measured by damages demanded, are larger and when there are multiple parties to the dispute. Both plaintiffs and defendants are more likely to demand jury trials when jury trials are less costly relative to bench trials.

Furthermore, demanding a jury trial influences the probability of trial. Single-equation estimates indicate that cases in which a jury trial is demanded are 5.5 percentage points less likely to go to trial than cases in which jury trial is waived. Bivariate probit estimates that take into account the possible endogeneity of demand for a jury trial indicate that the single-equation results are not subject to selection bias. Because the trial rate in this sample is 26.6 percent, demanding a jury trial has a considerable effect on the probability of trial. This finding has implications for the widely held concern that tried cases are not representative of the underlying population of filed cases. Because cases in which a jury trial is demanded are more likely to settle, any case selection effects are exacerbated by demands for a jury trial.

2. EMPIRICAL SPECIFICATION

To structure the empirical analysis, this section provides a simple model of choice of trial forum and probability of trial given that choice. Although there is no earlier literature examining the choice of trial forum in civil litigation and the influence of this choice on the probability of trial, there is a substantial empirical literature examining the probability of trial versus settlement and plaintiff win rates. The two primary theoretical frameworks for examining the probability of trial and plaintiff win rates are referred to as "divergent-expectations" models and "asymmetric-information" models.[5] Under both frameworks, trials oc-

5. The seminal paper on divergent expectations is Priest and Klein (1984). In this framework, trials occur because both parties are overly optimistic about their probability of success at trial. Much of the empirical literature in the divergent-expectations framework tests the primary empirical prediction of a 50 percent win rate for both parties as a limiting

cur because parties differ in factors such as expectations of which party would prevail at trial, expected value of any trial award, variance of the trial award, risk preferences, costs of litigating, and allocation of litigation costs. Within both frameworks, it is generally assumed that any differential standards between juries and judges will be taken into account in the decision to settle.

The following structure used to motivate the empirical specification is in the spirit of divergent-expectations models and abstracts from strategic bargaining behavior. Bargaining behavior doubtlessly plays a role in parties' choice of trial forum and settlement strategy, but available data do not include information that would allow estimation of the settlement bargaining process.[6] However, the structure described here does allow for strategic behavior in that parties can exploit differences in relative trial costs by trial forum to improve their settlement position. Furthermore, the empirical results that follow are consistent with this simple framework.

Denote the plaintiff by π, the defendant by δ, jury trials by j, and bench trials by b. Let c_{ik} denote costs of trial for $i = \pi, \delta$ and $k = j, b$, and let s_{ik} denote costs of settlement for $i = \pi, \delta$ and $k = j, b$. The expected award R is equal to the probability that the plaintiff wins times the amount awarded given a plaintiff verdict. Both parties estimate the expected award with error. The sources of error may arise in estimating the probability that the plaintiff will win as well as in estimating the amount of any award.[7]

case among cases that go to trial. See, for example, Kessler, Meites, and Miller (1996); Siegelman and Donohue (1995); and Waldfogel (1995). In asymmetric-information models, one party has better information about the probability of prevailing at trial, which leads to plaintiff win rates at trial that diverge from 50 percent. Asymmetric-information models are largely theoretical and emphasize strategic bargaining behavior. See, for example, Bebchuk (1984) and Spier (1992). See Waldfogel (1998) for a description of these two frameworks and an empirical test that distinguishes between these two dominant models. There is also a substantial empirical literature directly estimating the probability of settlement. See, for example, Farber and White (1991); Fournier and Zuehlke (1989); Perloff, Rubinfeld, and Ruud (1996); and Viscusi (1988).

6. Empirical research on the settlement outcome acknowledges an underlying bargaining process, but studies usually lack data to explicitly estimate the influence of bargaining behavior on outcomes. Sieg (2000) uses a unique data set on medical malpractice disputes that includes information on defendant costs of settlement and of trial, and settlement and trial awards, to estimate the structural parameters of a bargaining model with asymmetric information. In his analysis, if a trial occurs, it will be a jury trial, so the choice of trial forum is not addressed in his bargaining model.

7. In models within the divergent-expectations framework of Priest and Klein (1984), parties estimate case quality with error but estimate the decision standard and expected

The plaintiff's estimates of expected awards are $R_{\pi j} = R + \varepsilon_{\pi j}$ for a jury trial and $R_{\pi b} = R + \varepsilon_{\pi b}$ for a bench trial. The defendant's estimates of expected awards for jury and bench trials are $R_{\delta j} = R + \varepsilon_{\delta j}$ and $R_{\delta b} = R + \varepsilon_{\delta b}$. The term ε_{ik} for $i = \pi, \delta$ and $k = j, b$ represent parties' errors in estimating expected awards in each trial forum. Assume the error terms in estimating bench and jury awards for each party i have a bivariate normal distribution, with expected value $E(\varepsilon_{ik}) = 0$ for $i = \pi, \delta$ and $k = j, b$; covariances $\mathrm{Cov}(\varepsilon_{ib}, \varepsilon_{ij}) = \rho_i$ for $i = \pi, \delta$ and $\mathrm{Cov}(\varepsilon_{\pi k}, \varepsilon_{\delta k}) = 0$ for $k = j, b$; and variances $\mathrm{Var}(\varepsilon_{\pi b}) = \mathrm{Var}(\varepsilon_{\delta b}) = \sigma_\varepsilon^2$ and $\mathrm{Var}(\varepsilon_{\pi j}) = \mathrm{Var}(\varepsilon_{\delta j}) = m^2\sigma_\varepsilon^2$, with $m > 0$, for $i = \pi, \delta$ and $k = j, b$. Note that ρ_i increases with m through the relation $\mathrm{Cov}(\varepsilon_{ib}, \varepsilon_{ij}) = \mathrm{Corr}(\varepsilon_{ib}, \varepsilon_{ij})\,\mathrm{Var}(\varepsilon_{ib})\,\mathrm{Var}(\varepsilon_{ij})$. On average, parties' estimates of expected awards are not biased. The variances of expected awards are the same for both parties within the same trial forum, although they differ by trial forum. Parties' own errors in estimating expected awards by forum type may be correlated, but the defendant's error in estimating the expected award is assumed to be uncorrelated with the plaintiff's error estimate.

The two decisions are choice of trial forum and the settlement decision conditional on trial forum. The probability that the case settles after the choice of trial forum is a component of the payoffs that influence the trial forum decision. Consequently, this discussion starts with the settlement decision. For cases eligible for trial by jury, any party to the action may demand a jury trial, and if no demands are made, the right of jury trial is waived.[8] As the data reported later show, both plaintiffs and defendants demand jury trials, but plaintiffs do so far more frequently. For expositional convenience I treat trial forum as the plaintiff's choice and also assume that jury trials are more costly than bench trials and that trial is more costly than settlement within the same trial forum.

Because trials are costly, both parties have an incentive to settle without trial. The range of potential settlement values is bounded by the

award without error. Wittman (1985, 1988) develops a model in which expected awards are estimated with error.

8. Not all civil cases are eligible for a jury trial. The Seventh Amendment provides the right to jury trial for all cases "at common law" at the time the U.S. Constitution was ratified. Other cases may have a jury trial depending on the statute. Claims solely seeking equitable relief and generally claims with the United States as defendant do not have a right to a jury trial. If eligible for jury trial, a party demanding a jury trial must make this demand in writing, generally within 10 days of the last pleading. For more information on the specific legal status of demands for jury trials, see Federal Rules of Civil Procedure, Rule 38 and Rule 39.

plaintiff's expected net gain from trial and the defendant's expected net loss from trial. If this settlement range is positive, then litigation models assume that parties will find some way of settling, with settlement more likely the larger the settlement range.

Given plaintiff's choice of trial forum k, trial occurs when the plaintiff's minimum demand $R_{\pi k} - c_{\pi k} + s_{\pi k}$ exceeds the defendant's maximum offer $R_{\delta k} + c_{\delta k} - s_{\delta k}$. The condition for a case to go to trial is $R_{\pi k} - c_{\pi k} + s_{\pi k} > R_{\delta k} + c_{\delta k} - s_{\delta k}$ or, equivalently, $\varepsilon_{\pi k} - \varepsilon_{\delta k} > (c_{\pi k} + c_{\delta k}) - (s_{\pi} + s_{\delta})$. For notational convenience, denote total trial costs and total settlement costs for forum k by c_k and s_k. If the plaintiff demands a jury trial, trial occurs if $\varepsilon_{\pi j} - \varepsilon_{\delta j} > c_j - s_j$. The probability that trial occurs is $\Pr[Z > (c_j - s_j)/\sqrt{2m^2\sigma_\varepsilon^2}]$. If the right of jury trial is waived, then the probability that trial occurs is $\Pr[Z > (c_b - s_b)/\sqrt{2\sigma_\varepsilon^2}]$.

Whether trials are more likely to occur when a jury trial is demanded depends on the comparison of $(c_j - s_j)/\sqrt{2m^2\sigma_\varepsilon^2}$ with $(c_b - s_b)/\sqrt{2\sigma_\varepsilon^2}$. Trials are more likely to occur if a jury trial has been demanded instead of waived if $(c_j - s_j)(c_b - s_b)/ < m$. The larger m is, indicating greater variability of jury decisions relative to bench decisions, the more likely it is that trial will occur if a jury trial was demanded. The larger the cost increment between trial and settlement costs in jury trials relative to bench trials, the less likely it is that a case will go to trial if a jury trial has been chosen. If expected jury awards are more variable than expected bench awards, such that $m > 1$, then if the gap between total trial and total settlement costs is the same for both trial forums, or if the gap between trial and settlement costs is less for jury trials, all cases that do not settle result in a jury trial. Empirically, this is not true, which suggests that if expected jury awards are relatively more variable, the gap between trial and settlement costs is greater for jury trials than for bench trials.

Taking into account the probability of trial conditional on forum choice, the plaintiff decides whether to demand a jury trial by comparing the expected gains from trial relative to settlement for each type of trial, conditional on the probability of trial occurring for each type of trial. Denote the probability that trial occurs if a jury trial is demanded by p_j and the probability that trial occurs if the right of jury trial is waived by p_b. Assuming the expected return to trial is nonnegative,[9] the plaintiff will demand a jury trial if $(R_{\pi j} - c_{\pi j})p_j + (R_{\pi j} - s_{\pi j})(1 - p_j) > (R_{\pi b} - c_{\pi b})p_b + (R_{\pi b} - s_{\pi b})(1 - p_b)$ or, equivalently, if $\varepsilon_{\pi j} - \varepsilon_{\pi b} > (c_{\pi j} - s_{\pi j})p_j -$

9. That is, $\max[R_{\pi j} - c_{\pi j}, R_{\pi b} - c_{\pi b}] > 0$.

$(c_{\pi b} - s_{\pi b})p_b + s_{\pi j} - s_{\pi b}$. The plaintiff will waive the right to jury trial if $\varepsilon_{\pi j} - \varepsilon_{\pi b} \leq (c_{\pi j} - s_{\pi j})p_j - (c_{\pi b} - s_{\pi b})p_b + s_{\pi j} - s_{\pi b}$.

The probability that $\varepsilon_{\pi j} - \varepsilon_{\pi b}$ is greater than $(c_{\pi j} - s_{\pi j})p_j - (c_{\pi b} - s_{\pi b})p_b + s_{\pi j} - s_{\pi b}$ equals

$$\Pr\left[Z > \frac{(c_{\pi j} - s_{\pi j})p_j - (c_{\pi b} - s_{\pi b})p_b + s_{\pi j} - s_{\pi b}}{\sqrt{\sigma_\varepsilon^2(m^2 + 1) - 2\rho_\pi}}\right],$$

where Z is a standard normal variable. Plaintiffs are more likely to demand a jury trial when jury trial costs are lower and when the gap between jury trial costs and settlement costs associated with demanding a jury trial is smaller. Similarly, plaintiffs are more likely to demand a jury trial when the costs of a bench trial are higher and when the gap between bench trial costs and settlement costs is greater.

The effect of increased variability in expected jury awards relative to expected bench awards on the probability of demanding a jury trial is theoretically indeterminate. This can be seen by noting not only that m appears in the denominator but also that the probability of trial conditional on trial forum and the covariance in errors of estimating awards depend on m, so the sign of the derivative with respect to m is indeterminate. As one example, note that plaintiffs may be more likely to demand a jury trial when expected jury awards are more variable if they have an advantage over defendants in litigation costs relative to trial costs, because larger values of m increase the probability of trial if a jury trial is demanded. Refer again to the equation indicating whether trials are more or less likely when a jury trial has been demanded. While the gap between total trial and settlement costs is greater for jury trials than for bench trials when $m > 1$, the allocation of these costs will vary between the parties. If the plaintiff's trial costs increase less than the defendant's trial costs if a jury trial is demanded, plaintiffs can raise the probability of settlement, and the settlement amount, by demanding a jury trial. By demanding a jury trial and raising trial costs, the plaintiff alters the structure of payoffs for both parties so that it is more likely that the defendant's maximum offer exceeds the plaintiff's minimum demand. But as trial costs for jury trials are also higher for plaintiffs, jury trials will be demanded only when expected payoffs for plaintiffs are greater than in bench trials, which can happen under certain combinations of trial costs to the plaintiff and higher probability of trial if a jury trial is demanded.

The empirical specification implied by the model is a recursive bivariate probit model of the form

$$J = \mathbf{X}'\boldsymbol{\beta} + \mu, \tag{1}$$

$$T = \alpha J + \mathbf{Z}'\boldsymbol{\gamma} + \eta, \tag{2}$$

where $J = 1$ if a jury trial is demanded, $J = 0$ if a jury trial is waived, $T = 1$ if trial occurs, $T = 0$ if the case does not reach trial, $\boldsymbol{\beta}$ and $\boldsymbol{\gamma}$ are vectors of coefficients, α is the coefficient for the difference in probability of trial given choice of trial forum, and μ and η are bivariate normal error terms with zero means, unit variances, and covariance ρ.

The vector $\boldsymbol{X}$ denotes characteristics that measure the difference between expected jury and bench trial outcomes and costs, such as the difference in probability that the plaintiff prevails and the difference in variability of awards, as well as any individual case characteristics common to both trial forums. The vector $\boldsymbol{Z}$ denotes characteristics that influence the probability of trial, such as parties' costs of trial relative to settlement and variability of expected trial awards. The vector $\boldsymbol{Z}$ also controls for damages demanded as a case-specific indicator of the stakes involved. Increased stakes have opposing effects on the probability of settling. Increased stakes increase optimism and thereby increase the frequency of trials, but they also increase litigation effort, which increases costs, thereby encouraging settlement. In addition, increased stakes increase risk, making trials less attractive to risk-averse disputants.

Both equations (1) and (2) are of interest and will be estimated separately. Because the system is recursive, any correlation between μ and η can be ignored in estimating equation (1). If μ and η are correlated, then the estimate of α in equation (2) is biased in single-equation estimates. If the correlation is positive, such that unobservable characteristics that lead parties to demand a jury trial are also more likely to lead parties to persist to trial, then the estimate of α in single-equation estimates will be biased toward zero. If the correlation is negative, the estimated value of α will be larger in absolute value. Bivariate probit estimates allowing for a possible correlation between μ and η are discussed following the single-equation estimates.

3. DATA DESCRIPTION

To estimate the choice of trial forum and the effect of trial forum on the probability of trial, I use data on civil court cases terminated in federal courts from two sources. The Administrative Office of the United States Courts collects data on all cases filed in U.S. federal courts. These data are compiled in a standardized form and made available in the data set entitled Federal Court Cases: Integrated Data Base (hereafter, AO data set; Federal Judicial Center 1996). This data set includes information on nature of suit (three-digit code), amount of monetary damages demanded and awarded, procedural progress at termination, disposition of the case (for example, remanded, dismissed, judgment), parties' names, prevailing party if judgment is entered, and filing and termination dates.

The AO data set reports whether a filed case results in verdict by jury or by the court and also reports whether the case was terminated during or after trial by jury or by the court. However, if a case settles before trial or receives judgment for reasons such as motion before trial, there is no information on whether the case would have been heard by a jury if trial had occurred. A second data set, Federal District Court Civil Decisions, 1981–1987: Detroit, Houston, and Kansas City (hereafter, DHK data set; Rowland 1990), provides information on whether a jury trial was demanded for a random sample of 7,995 federal court cases filed and terminated in the three named federal district courts in the calendar years 1981–87. Although more recent data would be desirable, information on whether a litigant demanded a jury trial for a wide range of case types seems to be uniquely available in the DHK data set.[10]

The empirical specification of Section 1 identifies factors that influence the probabilities of demanding a jury trial and of trial occurring. These factors include the probability of the plaintiff prevailing, expected awards, variation in expected awards, trial costs, and case-specific characteristics. The model predicts a negative relation between demand for a jury trial and cost of jury trials relative to bench trials. As a component of expected awards, demands for a jury trial are also more likely when the plaintiff win rate and expected awards are higher relative to bench values. Demand for a jury trial will also depend on the variability of expected jury awards relative to bench awards, although the direction

10. The Georgetown University Antitrust data set used in Perloff, Rubinfeld, and Ruud (1996) also includes information about whether a jury trial was demanded.

of the effect is theoretically indeterminate. Assuming that litigants form expectations based on average characteristics of trial outcomes,[11] I construct average values of plaintiff win rates, expected awards, standard deviations of awards, and proxies for costs of trial, using data on all civil terminations reported in the AO data in statistical years (SYs) 1979–88 for the 5th, 6th, and 8th Circuits.[12] These average values are calculated by trial forum, three-digit nature of suit, and circuit.

After removing all remanded or transferred cases, there are 672,087 cases in the AO sample. Only 5.4 percent of these cases were decided by completed jury or bench trial.[13] I use this subset of 36,608 completed trials to calculate average characteristics for jury or bench verdicts. Plaintiff win rates are calculated by dividing the number of cases resulting in judgment for the plaintiff by the number of cases with judgment for either the plaintiff or the defendant.[14] Expected awards are calculated as the plaintiff win rate times the average monetary awards among those cases with positive awards.[15] The standard deviation of awards is calculated among observations with positive awards. I use the coefficient of variation, defined as the standard deviation of the award divided by the mean award, as the measure of variability in awards. The coefficient of variation standardizes the variability in awards by accounting for the average level of awards, which differs by forum. Data on litigation costs for each party are not available in the AO data or from any other source.

11. Fournier and Zuehlke (1989) likewise make this assumption in their analysis of settlement versus trial.

12. Until 1992, the statistical year ran from July through June, so the first half of SY 1988 provides information on cases in the DHK data set terminated in calendar year 1987. Houston is in the 5th Circuit, Detroit in the 6th Circuit, and Kansas City in the 8th Circuit. Because few cases result in completed trials, the sample of trial outcomes within only the relevant office or district court yields few trial verdicts. It is not possible to use data from earlier years because the data set does not record whether a verdict had been made by a jury or judge.

13. Fewer than .3 percent of the cases are disposed of by directed verdict; directed verdicts are excluded from calculations of average values by trial forum.

14. For those that were disposed of by judgment, the outcome was missing for 4 percent, and an additional 3 percent reported judgment for both parties. The denominator for plaintiff win rate excludes those with missing outcomes or judgment for both parties.

15. All monetary values used in the analysis are in 1982–84 dollars, standardized using the Consumer Price Index for All Urban Consumers. The AO data set top codes the amount received at $9,999,000. Amounts less than $1,000 are coded as zero and cannot be included in the averages, as they cannot be distinguished from true zeros. Overall, 2.5 percent of positive awards are at the top code. Among those receiving a trial verdict, 1.4 percent of jury awards and .7 percent of bench awards are at the top code. A common adjustment used in the labor economics literature for top-coded earnings is multiplying top-coded values by 1.5. Making this adjustment for top-coded awards did not affect the results.

Although far from an ideal measure, I use number of days from filing to disposition by jury or bench verdict as a proxy for expected trial costs.

The information on individual case characteristics is derived by matching each observation in the DHK data set to its individual counterpart in the AO data set, using information on court, docket number, and three-digit nature of suit. I merge the individual observations with the average values for completed jury and bench trials by the three-digit nature-of-suit code and circuit. I eliminate cases that were transferred, remanded, reinstated, or reopened. On the basis of parties' names recorded in the AO data set, I assign to each case an indicator variable equal to one if the parties names included "et al." to denote that there were multiple plaintiffs and/or defendants. As any party to litigation can demand a jury trial, having more litigants may increase the probability that at least one party demands a jury trial or that a case persists to trial. The individual case-specific information used in the analyses is information on whether a jury trial was demanded, case disposition, whether there were multiple plaintiffs and/or defendants, and monetary damages demanded by the plaintiff. Information on whether a jury trial was demanded and which party made the demand is provided in the DHK data set. The remaining information is derived from the AO data set.

Although few cases result in a verdict as a result of completed trial, a larger share of cases receive judgment.[16] Failure to receive judgment does not necessarily imply settlement, but until SY 1987, the AO data did not distinguish between cases that settled before trial from cases that were dismissed for any reason other than want of prosecution. It is therefore not possible to use data from those years to identify cases that settled before trial. Beginning in SY 1987, dismissals were reported in five categories, including categories for cases that were dismissed because of settlement.[17] I classify as trials those cases that are terminated by

16. Cases receiving disposition by judgment are categorized as judgment on default, consent, motion before trial, jury verdict, directed verdict, court trial, or other judgment. An additional category of judgment on award of arbitrator was added in SY 1987. Until SY 1987, one category was used to report cases that were "dismissed, discontinued, settled, withdrawn, etc."

17. The five categories are cases that are dismissed for want of prosecution, dismissed for lack of jurisdiction, dismissed voluntarily, settled, and other. The primary consequence of additional categories is to distinguish cases dismissed for lack of jurisdiction from other dismissals. In the empirical analysis, I classify as settled those cases that are dismissed voluntarily, settled, and other.

judgment of any kind[18] and examine the distinction between settlement and other dismissals using the more recent data.

Because not all civil cases are eligible for trial by jury, the sample is further restricted to case types eligible for jury trial. The remaining sample includes civil rights,[19] labor, contracts, property rights, personal injury, product liability, and miscellaneous cases in which a jury trial is permitted. The resulting sample size is 3,797, although missing data on standard deviations of awards for some case types further reduce the number of observations used in the regressions.[20]

Tables 1, 2, and 3 present descriptive statistics for variables used in the analysis. Table 1 summarizes characteristics of individual cases. A jury trial was demanded in 25.9 percent of the cases. Overall, plaintiffs are 4.5 times as likely as defendants to demand a jury trial. Trial rates, damages demanded, and whether there are multiple parties differ substantially on the basis of whether a jury trial was demanded by a party. The trial rate over all cases is 27 percent, with cases in which a jury trial was demanded 10 percentage points less likely to go to trial than cases in which a jury trial was waived. Among cases with positive values, average monetary damages demanded are 50 percent higher in cases in which a jury trial was demanded.[21] Eighteen percent of the cases in which

18. This is the conventional definition of trial throughout the empirical literature on litigation. See, for example, Fournier and Zuehlke (1989) and Waldfogel (1995, 1998). Cases that do not receive judgment are generally assumed to be settled (see Waldfogel 1998, p. 457).

19. Not all civil rights cases allow jury trials. However, the nature-of-suit code is too broad to identify whether a specific case is eligible for jury trial. The results excluding civil rights cases are extremely similar to results including these cases, and therefore civil rights cases are included in the reported results.

20. Removing transferred, remanded, reinstated, or reopened cases reduces the sample to 7,257 observations. The DHK data use six case-type codes for employment discrimination cases filed in Kansas City that are not used in the AO data. I consider these cases matched if the AO data also recorded an employment discrimination or civil rights code. The sample with matching case type, amended this way, was 6,949. Case types generally not eligible for a jury trial include prisoner petitions, forfeiture of property, social security, federal recovery of money from individuals (student loans, overpayment of veterans' benefits), ERISA suits, other unspecified statutory actions, and those with the U.S. government as defendant. Excluding these case types as well case types with no jury verdicts or bench verdicts results in a sample size of 3,824; eliminating 27 observations with missing data on demand for a jury trial or on which litigant demanded a jury trial yields a sample of 3,797 observations.

21. Damages demanded are top coded at $9,999,000, and demands under $1,000 are coded as $1,000. There are 14 top-coded observations and 43 observations coded at $1,000.

Table 1. Descriptive Statistics (by Percentage or Mean) for Jury-Eligible Cases: Individual Case Characteristics

	All Cases	Jury Trial Demanded	Jury Trial Not Demanded
Jury trial demanded (%)	25.92		
Plaintiff demanded jury trial (%)	21.17		
Defendant demanded jury trial (%)	4.74		
Trial (%)	26.60	19.21	29.19
Monetary damages demanded (1982–84 $1,000s) if > 0	434.30	553.61	365.91
	(1,319.97)	(1,384.41)	(1,277.49)
Log(damages demanded)	10.94	11.48	10.64
	(2.03)	(2.06)	(1.95)
Damages demand missing (%)	68.55	55.79	73.02
Multiple plaintiffs and/or defendants (%)	15.67	18.19	14.79
N	3,797	984	2,813

Source. Author's calculations using data from Rowland (1990) and Federal Judicial Center (1996).
Note. Standard deviations are in parentheses.

a jury trial is demanded have multiple plaintiffs and/or defendants, in contrast to fewer than 15 percent of the cases waiving jury trial.[22]

Table 2 reports average values calculated from the AO data set. Because all cases within the same circuit and three-digit nature of suit are assigned the same average values, these averages are implicitly weighted by the frequency of that case type and circuit within the DHK-AO sample. The average plaintiff win rate in jury verdicts is 2 percentage points higher than the average plaintiff win rate in bench verdicts. On average, jury awards are both larger and more variable than bench awards. However, the coefficient of variation is smaller on average in jury awards than in bench awards, which demonstrates that the jury awards are less variable than bench awards relative to their means. The elapsed time from filing to disposition by trial verdict is about 2 years for both types of trials and is longer for bench trials than for jury trials, which suggests

22. These differences are statistically significant, with *t*-values of 6.13 for the difference in trial rates, 2.37 for the difference in damages demanded, and 2.53 for differences in the proportion with multiple parties.

Table 2. Descriptive Statistics for Jury-Eligible Cases: Average Values for Cases Tried to Verdict in the AO Sample

	Jury Verdicts	Bench Verdicts
Plaintiff win rate	51.55	49.46
Expected awards (1982–84 $1,000s)	283.05	233.28
Standard deviation of awards	1,517.20	1,410.95
Coefficient of variation	2.77	3.18
Years to disposition	1.90	2.09

Source. Author's calculations using data from Federal Judicial Center (1996).
Note. AO = Administrative Office of the United States Courts.

that elapsed time from filing to disposition within this data set may be a weak proxy for trial costs.[23]

Table 3 addresses the impact of combining settlements with dismissals using data from SY 1987–88, which separately identify settlements and dismissals.[24] Exactly the same share of cases—one-third—is dismissed among cases in which a jury trial is demanded and those in which a jury trial is waived. The disparity in trial rates by jury trial demand persists, with settlement rates 15 percentage points higher among cases in which jury trial is demanded.[25]

4. DEMANDS FOR TRIAL BY JURY

Table 4 reports probit estimates of demand for jury trial. I control for the log of monetary damages demanded by plaintiff, when available, as

23. There seem to be no data on costs of jury trials relative to bench trials, although it is often assumed that jury trials are more costly. See, for example, Perloff, Rubinfeld, and Ruud (1996, p. 408), which notes that jury trials tend to be more costly than bench trials. As for using trial time as a proxy for trial costs, there is limited information on trial duration by forum. The time from filing to disposition by forum can be calculated from two sources, the AO data used here and the Civil Justice Survey of State Courts (DeFrances and Litras 1996), which provides information on tort, contract, and real property cases tried to verdict in 45 state courts in 1996. The perception that jury trials generally take longer is supported by the state court data, with time from filing to disposition of 2.40 years for jury verdicts and 1.82 years for bench verdicts. (Calculations are available on request.)

24. Cases in Houston are excluded, as Houston apparently did not adopt the new coding until SY 1998. Other courts in the 5th Circuit adopted the new coding in SY 1987.

25. Excluding dismissed cases, the *t*-value for the test of differences in trial rates is 5.33.

Table 3. Descriptive Statistics for Jury-Eligible Cases: Percentage of Cases Dismissed, Settled, or Tried in 1987–88

	All Cases	Jury Trial Demanded	Jury Trial Not Demanded
Dismissed	33.33	33.33	33.33
Settled	41.37	52.17	37.22
Trial	25.30	14.49	29.44
N	996	276	720

Source. Author's calculations using data from Rowland (1990) and Federal Judicial Center (1996).
Note. Cases in Houston are excluded, as Houston did not use new settlement codes until 1988.

well as whether there are multiple litigants, as partial controls for case-specific characteristics.[26] To control for litigants' comparison of average jury outcomes with average bench outcomes in forming expectations about the prospects for their cases, I estimate the equations by defining relative jury to bench outcomes in two ways. In columns 1 and 3, I use as explanatory variables the difference between average jury values and average bench values of plaintiff win rate, expected awards, coefficient of variation, and years to disposition for cases with the same nature of suit and circuit. In columns 2 and 4, I use the ratios of these values. I also include indicator variables for two district courts, Detroit and Houston, to capture local differences in factors such as possible jury composition. Kansas City is the omitted district court.

As the results reported in Table 4 indicate, jury trials are demanded by litigants on the basis of a comparison of average jury to bench outcomes in a manner consistent with the implications of the structure in Section 1. Plaintiffs are more likely to demand a jury trial when the plaintiff win rate is greater in jury trials relative to bench trials. The positive effect of coefficient of variation on jury trial demand indicates that both parties are more likely to demand a jury trial when jury awards are more variable relative to bench awards, although this effect is sig-

26. Information regarding monetary damages demanded may be missing either because it simply was not reported or because monetary damages were not requested for the case. Plaintiffs also file suits for nonmonetary reasons such as injunction, foreclosure, and so forth, and parties in cases not requesting monetary damages may be less likely to demand a jury trial. The greater missing damages rate for cases in which a jury trial is waived suggests some such behavior. Estimates of the jury trial demand and trial equations restricted to cases reporting monetary damages demanded are consistent with those reported in Tables 4–6.

Table 4. Demand for Jury Trial

	Plaintiff Demanded Jury Trial		Defendant Demanded Jury Trial	
	Jury − Bench (1)	Jury/Bench (2)	Jury − Bench (3)	Jury/Bench (4)
Log(damages demanded)	.124**	.123**	.011	.012
	(.020)	(.020)	(.032)	(.032)
	[.035]	[.035]	[.001]	[.001]
Damages demand missing	1.072**	1.025**	−.120	−.085
	(.227)	(.227)	(.356)	(.359)
	[.254]	[.246]	[−.012]	[−.008]
Multiple plaintiffs and/or defendants	.133*	.131*	.048	.030
	(.067)	(.067)	(.106)	(.107)
	[.039]	[.038]	[.005]	[.003]
Plaintiff win rate	1.389**	.396**	.496	−.154
	(.236)	(.083)	(.374)	(.134)
	[.389]	[.112]	[.046]	[−.014]
Expected awards	.047	−.003	−.334	−.026
	(.112)	(.016)	(.176)	(.026)
	[.013]	[−.001]	[.031]	[−.002]
Coefficient of variation	.117**	.178**	.054	.100
	(.026)	(.055)	(.037)	(.070)
	[.033]	[.050]	[.005]	[.009]
Years to disposition	−.443**	−.841**	−.439**	−1.297**
	(.086)	(.198)	(.121)	(.278)
	[−.124]	[−.237]	[−.041]	[−.120]
Detroit indicator	−.628**	−.632**	.204*	.168
	(.065)	(.067)	(.102)	(.107)
	[−.173]	[−.176]	[.019]	[.016]
Houston indicator	−.372**	−.441**	−.108	−.080
	(.067)	(.067)	(.113)	(.113)
	[−.097]	[−.114]	[−.010]	[−.007]
Constant	−1.705**	−1.406**	−1.814**	−.451
	(.228)	(.317)	(.364)	(.450)
Log likelihood	−1,696.13	−1,701.84	−668.92	−665.56

Source. Author's calculations using data from Rowland (1990) and Federal Judicial Center (1996).

Note. Vaues are estimated by probit equations. The dependent variable equals one if the party indicated by the column heading demanded a jury trial and zero if the right to jury trial was waived. Standard errors are reported in parentheses, and marginal effects are in brackets. Marginal effects are calculated for an infinitesimal change at sample means for continuous variables and for a discrete change from zero to one for indicator variables. $N = 3{,}549$. In columns 1 and 3, the values of plaintiff win rates, expected awards, coefficient of variation, and years to disposition are equal to differences between average jury and bench verdicts for nature of suit and circuit, and are equal to ratios of average jury to bench verdict values for nature of suit and circuit in columns 2 and 4. Coefficients on expected awards in columns 1 and 3 are multiplied by 1,000.

* Significant at the 5% level, two-sided tests.

** Significant at the 1% level, two-sided tests.

nificant at conventional levels only for plaintiffs. The relative time from filing to disposition matters to both parties, who are less likely to demand a jury trial when jury verdicts are slower relative to bench verdicts. As for case-specific characteristics, cases having plaintiffs claiming larger monetary damages and having multiple litigants are more likely to demand a jury trial. Location matters, with plaintiffs in Detroit and in Houston less likely to demand a jury trial than plaintiffs in Kansas City, while defendants in Detroit are more likely to demand a jury trial. The findings with respect to Detroit suggest that location-specific factors that make jury trials less attractive to plaintiffs make jury trials more attractive to defendants.

The marginal effects of changes in the explanatory variables are reported in brackets. As an example of interpreting magnitudes, the results in column 1 indicate that a 1-percent increase in the difference between plaintiff win rate in jury and bench verdicts on average increases the probability that the plaintiff demands a jury trial by 39 percent. A 1-percent increase in monetary damages demanded increases the probability that the plaintiff demands a jury trial by 3.5 percent. Relative to Kansas City, plaintiffs in Detroit are 17 percentage points less likely to demand a jury trial and plaintiffs in Houston are 10 percentage points less likely.

5. TRIALS

The results in Table 4 confirm that litigants demand a jury trial in a manner consistent with economic principles. Litigants compare expected outcomes in jury and bench trials and demand jury trials when such trials are expected to be relatively more favorable. Turning now to the question of the effect of demands for a jury trial on the probability of trial, it is indeterminate a priori whether cases that would have been tried by jury if trial occurred are more or less likely to settle, as the relative variability of awards and relative costs of trial forum likely have opposing effects on the probability of trial.

As reported in Tables 1 and 3, on average, cases in which a jury trial was demanded are less likely to receive trial judgment, which suggests that greater costs of jury trials dominate the effect of uncertainty on the probability of trial. To examine whether this effect persists when controlling for other factors that influence trial probability, I estimate probit equations of probability of trial, controlling for whether a jury trial was

demanded by one of the parties. Ideally, this equation would also control for variables that individually affect each party's costs of trial relative to settlement, but no such measures are available. I present estimates of three equations in Table 5 to examine sensitivity of the results to controlling for available characteristics. In column 1, I control only for jury trial demand. Log of damages demanded, the multiple-litigants indicator, and district court indicators are added to the equation reported in column 2. Column 3 adds average values of plaintiff win rate, expected awards, coefficient of variation, and time to disposition, where the average values are calculated on the basis of all judgments for each nature of suit and circuit and not simply verdicts from completed trials as in the jury trial demand equations.

The estimates in Table 5 demonstrate that, consistent with the simple averages reported in Table 1, cases in which a jury trial was demanded are less likely to go to trial. The marginal effect of demanding a jury trial reported in column 1 reproduces the 10-percentage-point gap in trial rates observed in the simple means. Inclusion of additional case-specific control variables in column 2 slightly reduces the marginal impact of demanding a jury trial to 9.3 percentage points. These equations also indicate that trials are less likely in cases in which larger monetary damages are demanded. This inverse relation between damages demanded and trial may reflect risk aversion with respect to the size of the stakes, which leads to settlement rather than trial for cases with higher stakes.[27] Controlling for additional factors in column 3 reduces the trial disparity of demanding a jury trial to 5.5 percentage points, still statistically significant at the 99 percent level. Damages demanded retains its negative effect on trial but is no longer significant at conventional levels. Trials are more likely for case types in which plaintiffs have a higher success rate and for which time from filing to disposition is shorter.

The estimates in Table 5 strongly indicate that demanding a jury trial reduces the probability of trial. But because these data do not distinguish between dismissals and settlements, we cannot conclude that demanding a jury trial increases the probability of settlement. If cases in which a jury trial is demanded are weaker to the point of being dismissed without trial, as some critics have suggested, then the lower trial rate follows directly. The identical dismissal rate between cases in which a jury trial

27. For an analysis of the effect of risk aversion on the probability of settlement, see Perloff, Rubinfeld, and Ruud (1996) and Viscusi (1988).

Table 5. Probability of Trial

	(1)	(2)	(3)
Jury trial demanded	−.322**	−.298**	−.176**
	(.052)	(.054)	(.056)
	[−.100]	[−.093]	[−.055]
Log(damages demanded)		−.041*	−.033
		(.020)	(.020)
		[−.013]	[−.011]
Damages demand missing		−.382	−.172
		(.219)	(.222)
		[−.129]	[−.057]
Multiple plaintiffs and/or defendants		.092	.089
		(.062)	(.063)
		[.031]	[.029]
Plaintiff win rate[a]			.629**
			(.150)
			[.203]
Expected awards × 1,000[a]			.080
			(.173)
			[.026]
Coefficient of variation[a]			.024
			(.040)
			[.008]
Years to disposition[a]			−.313**
			(.111)
			[−.101]
Detroit indicator		.046	−.005
		(.060)	(.064)
		[.015]	[−.002]
Houston indicator		.179**	.185**
		(.065)	(.069)
		[.060]	[.061]
Constant	−.548**	−.241	−.520
	(.025)	(.221)	(.374)
Log likelihood	−2,179.90	−2,171.77	−2,114.08

Source. Author's calculations using data from Rowland (1990) and Federal Judicial Center (1996).

Note. Values are estimated by probit equations. The dependent variable equals one if a case receives a judgment on default, consent, motion before trial, jury verdict, directed verdict, court trial, award of arbitrator, or other judgment and zero if a case settles or is dismissed. Standard errors are reported in parentheses, and marginal effects are in brackets. Marginal effects are calculated for an infinitesimal change at sample means for continuous variables and for a discrete change from zero to one for indicator variables. $N = 3{,}797$.

[a] Variables are averages calculated by nature of suit and circuit using data on all judgments reported in Federal Judicial Center (1996).

* Significant at the 5% level, two-sided tests.

** Significant at the 1% level, two-sided tests.

was demanded and cases in which demand for a jury trial was waived, reported in Table 3, suggests that cases in which a jury trial is demanded are not systematically weaker. To examine directly the effect of demand for a jury trial on the probability of trial relative to settlement, Table 6 estimates the specifications of Table 5, eliminating dismissed cases using the later years of data. Not surprisingly, given the identical dismissal rate, the results in Table 6 indicate that cases in which a jury trial was demanded are more likely to settle, with the effect of demand for a jury trial ranging from 22 percentage points with no controls to 10 percentage points controlling for all variables.

To test for the possibility that single-equation probit estimates of probability of trial are biased because of the correlation between error terms in the jury trial demand and trial equations, I estimate bivariate probit equations. For this analysis, I concentrate on the trial equation reported in column 3 of Table 5, which controls for the fullest set of variables. Instead of separate equations for plaintiff and defendant demands for a jury trial as in Table 4, I use a single equation for the probability of demand for a jury trial regardless of which party made the demand. Specifically, the probability-of-trial equation is identical to column 3 of Table 5 and controls for averages across all trials rather than differences between jury and bench trials, while the jury demand equation controls for differences between average jury values and average bench values of plaintiff win, expected awards, coefficient of variation, and years to disposition that are excluded from the probability of trial equation. These bivariate probit estimates (not presented) yield an estimate of the correlation between the error terms (ρ) of $-.07$ ($p = .71$), and so we cannot reject the hypothesis that single-equation estimates are not biased. This analysis lends support to the validity of the single-equation estimates.

6. CONCLUSION

Critics of the U.S. civil justice system have speculated that jury behavior is a weak link in the performance of the judicial system. However, although the limited empirical research comparing jury and judge decisions shows some differences, differences in trial outcomes are not dramatic.[28]

28. All empirical evidence on differences between juries and judges is based on trial verdicts, without taking into account differential settlement probabilities by potential trial forum. With regard to cases receiving trial verdicts, Helland and Tabarrok (2000) control

Table 6. Probability of Trial versus Settlement in Detroit and Kansas City, 1987–88

	(1)	(2)	(3)
Jury trial demanded	−.634**	−.614**	−.284*
	(.118)	(.122)	(.133)
	[−.224]	[−.218]	[−.104]
Log(damages demanded)		−.066	−.068
		(.056)	(.055)
		[−.025]	[−.025]
Damages demand missing		−.515	−.455
		(.584)	(.583)
		[−.199]	[−.175]
Multiple plaintiffs and/or defendants		−.038	.074
		(.204)	(.210)
		[−.014]	[.028]
Plaintiff win rate[a]			.799*
			(.346)
			[.300]
Expected awards × 1000[a]			.785
			(.545)
			[.295]
Coefficient of variation[a]			.084
			(.097)
			[.032]
Years to disposition[a]			−.571*
			(.268)
			[−.215]
Detroit indicator		−.129	−.014
		(.136)	(.144)
		[−.049]	[−.005]
Constant	−.147**	.508	−.151
	(.057)	(.597)	(.948)
Log likelihood	−425.78	−424.24	−401.03

Source. Author's calculations using data from Rowland (1990) and Federal Judicial Center (1996).

Note. Values are estimated by probit equations. The sample is composed of cases receiving judgment or settling in Detroit and Kansas City district courts in 1987–88. Cases that were dismissed are excluded. The dependent variable equals one if a case received judgment and zero if a case settles. Standard errors are reported in parentheses, and marginal effects are in brackets. Marginal effects are calculated for an infinitesimal change at sample means for continuous variables and for a discrete change from zero to one for indicator variables. $N = 664$.

[a] Variables are averages calculated by nature of suit and circuit using data on all judgments reported in Federal Judicial Center (1996).

* Significant at the 5% level, two-sided tests.

** Significant at the 1% level, two-sided tests.

But if cases in which a jury trial is demanded are systematically more likely to settle than cases in which a jury trial is waived, it is difficult to evaluate the performance of civil jury trials relative to bench trials based solely on trial verdicts. This paper examined the decision to demand trial by jury and the effect of such demands on trial and settlement. Litigants demand a jury trial in a manner consistent with economic principles, by comparing expected outcomes and costs by trial forum in similarly situated cases. Plaintiffs are more likely to demand a jury trial when the plaintiff win rate is higher and when stakes as indicated by damages demanded are larger. Both plaintiffs and defendants are less likely to demand a jury trial when the time costs of jury verdicts are greater relative to bench verdicts. Greater observed uncertainty associated with jury decisions relative to bench decisions increases the probability that plaintiffs demand trial by jury.

Furthermore, demanding a jury trial has important consequences on the probability of settlement. Cases in which a jury trial is demanded are more likely to settle, with the probability of settlement 5.5 percentage points lower than if a jury trial is waived. As the trial rate is only 26.6 percent, this settlement difference corresponds to one-fifth of all trials.

The differential settlement rate based on trial forum chosen by parties has important implications for evaluating the performance of the judicial system. The findings of this paper suggest that differences between jury and bench verdicts may be muted by the selection process in which cases that would have a jury trial are more likely to settle than cases that would have a bench trial.

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for selection of type of trial and find that juries make higher damages awards in personal injury cases than do judges, although most of the disparity is explained by case mix. Hersch and Viscusi (2004) find that juries and judges are generally similar in punitive damages awards levels for smaller awards but that juries are more likely to make punitive damages awards, and make larger awards, controlling for case type and selection of type of trial. Furthermore, a disproportionate share of punitive damages awards in excess of $100 million are awarded by juries, which lends support to the notion that the largest awards are the purview of juries. Other evidence suggests that verdicts by judges and juries are similar or that judges are more favorable to plaintiffs. With regard to cases tried to verdict, Clermont and Eisenberg (1992) find disparities in plaintiff win rates by trial forum primarily in product liability and medical malpractice cases, with plaintiffs more likely to win in a bench trial. They attribute disparities in plaintiff win rates by type of trial to persistent misperceptions about jury and judge behavior, with plaintiffs erroneously believing that juries are more proplaintiff than are judges. Moore (2000) finds generally minor jury/judge differences in plaintiff win rates and appellate affirmance rates in patent cases but larger differences in the response to details of the case.

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