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Jury Demands and Trials

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Abstract

The behavior of juries in civil cases has been a focal concern in the legal reform debate. Whether a case would have a jury trial rather than a bench trial 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. This paper provides the first economic analysis of demand for jury trial and the implications of this choice on parties' settlement behavior. The empirical exploration of these issues uses a unique data set of almost 4,000 federal cases. The results are consistent with an economic model of the litigation process. Plaintiffs are more likely to demand trial by jury when juries are relatively more favorable to plaintiffs in similar cases, jury awards are more variable relative to bench awards, and the disparity in trial costs is smaller. Cases demanding jury trial are 5.5 percentage points more likely to settle without trial.

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Jury Demands and Trials

Joni Hersch

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The behavior of juries in civil cases has been a focal concern in the legal reform debate. However, whether a case would even have 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, nor 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, an overall objective of 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 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

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

² The seminal work on non-random 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.

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. Lacking 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.

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 for a jury trial to expected outcomes and costs for a bench trial. Given the choice of trial forum, I examine the influence of trial forum 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 waived depends on a comparison of the variability and costs of jury decisions to bench decisions.

The empirical results show that the decision to demand 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

⁴ As in Waldfogel (1995) and others, the term trial refers to any case not settled. See footnote 20 below.

demanded, are larger. Both plaintiffs and defendants are more likely to demand jury trial when the disparity in costs by trial forum is smaller.

Furthermore, demanding a jury trial influences the probability of trial. Single equation estimates indicate that cases in which a jury demand is made are 5.5 percentage points less likely to go to trial than among cases in which jury demand is waived. Bivariate probit estimates that take into account possible endogeneity of jury demand 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 demanding jury trial are more likely to settle, any selection effects are exacerbated by jury trial demands. I discuss the policy implications of such selection effects in the conclusion.

I. 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

⁵ The seminal paper on divergent expectations is by 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

frameworks, trials occur 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 who bears the 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 that is 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 and defendant by δ , and 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

literature in the divergent expectations framework tests the primary empirical prediction of a 50 percent win rate for both parties as a limiting 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, leading 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, which 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.

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

The plaintiff's estimate 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 terms 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 are distributed bivariate normal, with expected values $E(\varepsilon_{ik}) = 0$ for $i = \pi, \delta$ and $k = j, b$, covariances $Cov(\varepsilon_{ib}, \varepsilon_{ij}) = \rho_i$ for $i = \pi, \delta$ and $Cov(\varepsilon_{\pi k}, \varepsilon_{\delta k}) = 0$ for $k = j, b$, and variances $Var(\varepsilon_{\pi b}) = Var(\varepsilon_{\delta b}) = \sigma_\varepsilon^2$ and $Var(\varepsilon_{\pi j}) = Var(\varepsilon_{\delta j}) = m^2 \sigma_\varepsilon^2$, with $m > 0$, for $i = \pi, \delta$ and $k = j, b$. 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 defendant's error in estimating the expected award is assumed to be uncorrelated with plaintiff's error estimate.

The first decision is the choice of trial forum.⁸ For cases eligible for trial by jury, any party to the action may demand jury trial, and if no demands are made, the right of

⁷ In models within the divergent expectations framework of Priest-Klein (1984), parties estimate case quality with error, but estimate the decision standard and expected 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 jury trial must make this demand in writing, generally within 10 days of the last pleading. For more information on

jury trial is waived. 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 for expositional convenience assume jury trials are more costly than bench trials. The plaintiff decides whether to demand a jury trial by comparing the expected award to cost for each type of trial. Assuming the expected return to trial is nonnegative,⁹ the plaintiff will demand a jury trial if

$R_{\pi j} - c_{\pi j} > R_{\pi b} - c_{\pi b}$, or, equivalently, if $\varepsilon_{\pi j} - \varepsilon_{\pi b} > c_{\pi j} - c_{\pi b}$. The plaintiff will waive the right to jury trial if $\varepsilon_{\pi j} - \varepsilon_{\pi b} \leq c_{\pi j} - c_{\pi b}$.

The probability that $\varepsilon_{\pi j} - \varepsilon_{\pi b}$ is greater than $c_{\pi j} - c_{\pi b}$ equals

$\Pr\left(Z > \frac{c_{\pi j} - c_{\pi b}}{\sqrt{\sigma_{\varepsilon}^2(m^2 + 1) - 2\rho_{\pi}}}\right)$ where Z a standard normal variable. The probability of

demanding a jury trial is positively related to the value of m , which indexes the relative scale of the variances. This means that greater variability in estimating jury expected awards relative to bench expected awards increases the probability that the plaintiff will demand a jury trial for any given disparity in jury-bench trial costs. Plaintiffs are also more likely to demand jury trial when the disparity between costs of jury and bench trials are smaller, as smaller gaps between errors in estimating expected awards in bench and jury trials make jury trials optimal. Jury trials are less likely to be demanded when errors in estimating awards in jury and bench trials are more highly correlated, because there is a smaller additional expected benefit from relatively more variable jury awards.

the specific legal status of demands for jury trials, see Federal Rules of Civil Procedure, Rule 38 and Rule 39.

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

The second issue is the effect of choice of trial forum on the probability of trial. Because trials are costly, both parties have an incentive to settle without trial. The range of potential settlement values is bounded by the 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.

Whether trial is more or less likely to occur when a jury trial has been demanded is theoretically indeterminate. To see the source of indeterminacy, consider the condition for trial to occur in each trial forum. Given plaintiff's choice of trial forum k , trial occurs when plaintiff's minimum demand $R_{\pi k} - c_{\pi k} + s_{\pi k}$ exceeds 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, $\varepsilon_{\pi k} - \varepsilon_{\delta k} > (c_{\pi k} + c_{\delta k}) - (s_{\pi} + s_{\delta})$.

The effect of choice of trial forum on the difference in the probability of trial is derived by comparing the probability of trial in each forum. For notational convenience, denote total trial costs and total settlement costs for forum k by c_k and s_k . If the plaintiff demands jury trial, trial occurs if $\varepsilon_{\pi j} - \varepsilon_{\delta j} > c_j - s_j$. The probability that trial occurs is

$$\Pr\left(Z > \frac{c_j - s_j}{\sqrt{2m^2\sigma_\varepsilon^2}}\right).$$

If the right of jury trial is waived, then the probability that trial

$$\text{occurs is } \Pr\left(Z > \frac{c_b - s_b}{\sqrt{2\sigma_\varepsilon^2}}\right).$$

Whether trials are more likely to occur when jury trial is

demanded therefore depends on the comparison of $\frac{c_j - s_j}{\sqrt{2m^2\sigma_\varepsilon^2}}$ to $\frac{c_b - s_b}{\sqrt{2\sigma_\varepsilon^2}}$. Trials are more

likely to occur if jury trial has been demanded instead of waived if $\frac{c_j - s_j}{c_b - s_b} < m$. The

larger is m , indicating greater variability of jury decisions relative to bench decisions, the more likely it is that trial will occur if 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 jury trial has been chosen.

These equations indicate that if there is greater uncertainty in estimating jury expected awards relative to bench awards, the probability of trial increases if jury trial had been demanded rather than waived. But if total trial costs increase more relative to total settlement costs for jury trials than for bench trials, the gap between trial and settlement costs will be greater if jury trial had been demanded, making settlement more likely. If expected jury awards are more variable than expected bench awards, so 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, suggesting 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.

Note that if the plaintiff's trial costs increase less than do the defendant's trial costs if a jury trial is demanded, plaintiffs can raise the probability of settlement, and the settlement amount, by demanding jury trial. The key point is that by demanding jury trial and raising trial costs, the plaintiff alters the structure of payoffs for both parties so that it is more likely that defendant's maximum offer exceeds 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.

The empirical analysis of trial probability also controls for damages demanded as a case-specific indicator of the stakes involved. Increased stakes has opposing effects on the probability of settling. Increased stakes increase optimism and thereby increases the frequency of trials. But it also increases litigation effort, which increases costs, thereby encouraging settlement. In addition, increased stakes increases risk, making trials less attractive to risk averse disputants.

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

$$(1) \quad J = X' \beta + \mu$$

and $(2) \quad T = \alpha J + Z' \gamma + \eta,$

where $J = 1$ if jury trial is demanded, $J = 0$ if jury trial is waived, and $T = 1$ if trial occurs, $T = 0$ if the case does not reach trial. X is a vector of 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 Z denotes characteristics that influence the probability of trial, such as parties' relative costs of trial to settlement and variability of expected trial awards. β and γ 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 .

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, so that unobservable characteristics that lead parties to demand 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 possible correlation between μ and η are discussed following the single equation estimates.

II. 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).¹⁰ This data set includes information on nature of suit (3-digit code), amount of monetary damages demanded and awarded, procedural progress at termination, disposition of the case (e.g., remanded, dismissed, judgment), 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 jury if trial had occurred. A second data set, the Federal District Court Civil

¹⁰ Federal Judicial Center. Federal Court Cases: Integrated Data Base, 1970-1991 [Computer file]. Conducted by the Federal Judicial Center. 6th ICPSR ed. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [producer and distributor], 1996.

Decisions, 1981-1987: Detroit, Houston, and Kansas City (hereafter DHK), provides information on whether 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 calendar years 1981- 87.¹¹ Although more recent data would be desirable, information on whether a litigant demanded jury trial for a wide range of case types seems to be uniquely available in the DHK data set.¹²

The empirical specification of Section I identifies factors that influence the probability of demanding jury trial and of trial occurring. These factors include the probability of plaintiff prevailing, expected awards, variation in expected awards, trial costs, and case specific characteristics. The model predicts a positive relation between jury trial demand and variability of jury awards relative to bench awards, and a negative relation between jury demand and cost of jury trials relative to bench trials. As a component of expected awards, jury demands are also more likely when the plaintiff win rate and expected awards are higher relative to bench values. Assuming that litigants form expectations based on average characteristics of trial outcomes,¹³ 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 1979 – 1988 for the 5th, 6th, and 8th Circuits.¹⁴ These average values are calculated by trial forum, 3-digit nature of suit, and circuit.

¹¹ Rowland, C.K. Federal District Court Civil Decisions, 1981-1987: Detroit, Houston, And Kansas City [Computer file]. Kansas City, MO: C.K. Rowland, University of Kansas [producer], 1990. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 1990.

¹² The Georgetown University Antitrust data set used in Perloff, Rubinfeld and Ruud (1996) also includes jury demand information.

¹³ Fournier and Zuehlke (1989) likewise make this assumption in their analysis of settlement versus trial.

¹⁴ 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 trial outcomes,

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.¹⁵ I use this subset of 36,608 completed jury or bench trials to calculate average characteristics for jury and bench verdicts. Plaintiff win rates are calculated by dividing the number of cases resulting in judgment for plaintiff by the number of cases with judgment for either plaintiff or defendant.¹⁶ Expected awards are calculated as plaintiff win rate times average monetary awards among those cases with positive awards.¹⁷ The standard deviation of awards is calculated among observations with positive awards. I use the coefficient of variation, defined as standard deviation of award divided by 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. 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 to its individual counterpart in the AO data set, using information on court, docket number, and 3-digit nature of suit. I merge the individual

the sample of trial outcomes within only the relevant office or district court results in 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.

¹⁵ Fewer than 0.3 percent of the cases are disposed of by directed verdict; directed verdicts are excluded from calculations of average values by trial forum.

¹⁶ 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 as well as judgment for both parties.

¹⁷ All monetary values used in the analysis are in 1982 – 84 dollars, standardized using the CPI – all urban consumers index. The AO data set topcodes amount received at \$9,999,000. Amounts received less than \$1000 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 topcode. Among those receiving trial verdict, 1.4 percent of jury awards and 0.7 percent of bench awards are at the topcode. A common adjustment used in the labor literature for topcoded earnings is multiplying topcoded values by 1.5. Making this adjustment for topcoded awards did not affect the results.

observations with the average values for completed jury and bench trials by 3-digit nature of suit code and circuit. I eliminate cases that were transferred, remanded, reinstated, or reopened. The individual case-specific information used in the analyses is jury trial demand information, case disposition, and monetary damages demanded by plaintiff. Information on whether 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 receive a verdict as a result of completed trial, a larger share of cases receives judgment.¹⁸ Failure to receive judgment does not necessarily imply settlement, but until statistical year 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 5 categories, including categories for cases that were dismissed because of settlement.¹⁹ I classify as trials those cases that are terminated by judgment of any kind,²⁰ 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

¹⁸ 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.”

¹⁹ The five categories are want of prosecution, lack of jurisdiction, voluntarily, settled, 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.

²⁰ 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 (e.g., see Waldfogel (1998, p. 457.)

rights,²¹ labor, contracts, property rights, personal injury, product liability, and miscellaneous cases in which jury trial is permitted. The resulting sample size is 3,797, although missing data on standard deviations of awards for some case types further reduces the number of observations used in the regressions.²²

Table 1 presents descriptive statistics for variables used in the analysis. Panel A summarizes characteristics of individual cases. Jury trial was demanded in 25.9 percent of the cases. Overall, plaintiffs are 4.5 times as likely as defendants to demand jury trial, with jury trial demanded by 21.2 percent of plaintiffs and 4.7 percent of defendants. Trials occur in slightly more than a quarter of the observations. The average monetary damages demanded is \$434,300 among cases reporting positive damages demanded, although this value is missing for 69 percent of cases.²³ Trial rates and damages demanded differ substantially based on whether jury trial was demanded by a party. The trial rate over all cases is 27 percent, with cases in which jury trial was demanded 10 percentage points less likely to go to trial than cases in which jury trial was waived. Among cases with positive values, average monetary damages demanded are 50 percent

²¹ 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.

²² Removing transferred, remanded, reinstated or reopened cases reduce the sample to 7,257 observations. The DHK used 6 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 jury trial include prisoner petitions, forfeiture of property, social security, and federal government recovering money from individuals (student loans, overpayment of veterans' benefits), ERISA suits, other unspecified statutory actions, and those with 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 jury demand or on which litigant made the jury demand yields the sample of 3,797 observations.

²³ Damages demanded are topcoded at \$9,999,000, and demands under \$1000 are coded as \$1000. There are 14 topcoded observations and 43 observations coded at \$1000.

higher in cases demanding jury trial, with average damages demands of \$534,000 in cases demanding jury trial, and \$366,000 in cases waiving jury trial.²⁴

Panel B of Table 1 reports average values calculated from the AO data set. Since all cases within the same circuit and 3-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 51.6 percent, two percentage points higher than the average plaintiff win rate in bench verdicts of 49.5 percent. On average, jury awards are both larger and more variable than bench awards. Expected awards average \$283,000 in jury verdicts resulting in a monetary award, and \$233,000 in bench verdicts. The average standard deviation of jury awards is \$1,517,000 and \$1,410,900 for bench awards. However, the coefficient of variation is smaller on average in jury awards than in bench awards, demonstrating 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, suggesting that elapsed time from filing to disposition within this data set may be a weak proxy for trial costs.²⁵

²⁴ These differences are statistically significant, with t-values of 6.13 for the difference in trial rates, and 2.37 for the difference in damages demanded.

²⁵ There seems to be no data on relative costs of jury trials to bench trials, although it is often assumed that jury trials are more costly. See for example Perloff, Rubinfeld and Ruud (1996, p. 408) who note 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, 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 available on request.)

Panel C of Table 1 addresses the impact of combining settlements with dismissals using data from SY 1987-88, which separately identifies settlements and dismissals.²⁶ Exactly the same share of cases – one-third – is dismissed among cases demanding jury trial and waiving jury trial. The disparity in trial rates by jury demand persists, with settlement rates 15 percentage points higher among cases demanding jury trial.²⁷

III. Demands for Trial by Jury

Table 2 reports probit estimates of demand for jury trial, with estimates for plaintiff demand in columns 1 and 2, and defendant demand in columns 3 and 4. I control for the log of monetary damages demanded by plaintiff, when available, as a partial control for case-specific characteristics.²⁸ To control for litigants comparison of average jury outcomes to average bench outcomes in forming expectations about the prospects for their case, I estimate the equations defining relative jury to bench outcomes 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.

²⁶ Cases in Houston are not included, 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.

²⁷ Excluding dismissed cases, the t-value for the test of differences in trial rates is 5.5.

²⁸ Monetary damages demanded may be missing either because it simply wasn't reported or because monetary damages were not requested for the case. Plaintiffs also file suits for non-monetary reasons such as for injunction, foreclosure, and so forth, and cases not requesting monetary damages may be less likely to demand jury trial. The greater missing damages rate for cases in which jury trial is waived suggests some such behavior. Estimates of the jury demand and trial equations restricted to cases reporting monetary damages demanded are consistent with those reported in Tables 2 – 4.

As the results reported in Table 2 indicate, jury trials are demanded by litigants based on a comparison of average jury to bench outcomes in a manner consistent with the implications of the structure in Section I. Plaintiffs are more likely to demand 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 demand indicates that both parties are more likely to demand jury trial when jury awards are more variable relative to bench awards, although this effect is significant at conventional levels only for plaintiffs. The relative time from filing to disposition matters to both parties, who are less likely to demand jury trial when jury verdicts are slower relative to bench verdicts. As for case-specific characteristics, plaintiffs claiming larger monetary damages are more likely to demand jury trial. Location matters, with plaintiffs in Detroit and in Houston less likely to demand jury trial relative to 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 parentheses. As an example of interpreting magnitudes, the results in column 1 indicate that a 1 percent in the difference between plaintiff win rate in jury and bench verdicts on average increases the probability that plaintiffs demand jury trial by 38 percent. An increase of 1 percent in monetary damages demanded increases the probability the plaintiff demands a jury trial by 3.4 percent. Relative to Kansas City, plaintiffs in Detroit are 18 percentage points less likely to demand a jury trial and plaintiffs in Houston are 9 percentage points less likely.

IV. Trials

The results in Table 2 confirm that litigants demand 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 jury demands 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 relative variability of awards and relative costs of trial forum likely have opposing effects on the probability of trial.

As reported in Table 1, on average, cases in which jury trial was demanded are less likely than cases without a jury demand to receive trial judgment, suggesting that greater costs of jury trials dominates 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 jury trial was demanded by one of the parties.²⁹ 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 3 to examine sensitivity of the results to controlling for available characteristics. In column 1, I control only for jury demand. Log of damages demanded 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 based on all judgments for each nature of suit and circuit, and not simply verdicts from completed trials as in the jury demand equations.

²⁹ This section presents single-equation probit estimates of the trial equation. Bivariate probit results are reported in the next section.

The estimates in Table 3 demonstrate that, consistent with the simple averages reported in Table 1, cases in which jury trial was demanded are less likely to go to trial. In the context of the model, this inverse relation indicates that the negative effect on trial probability of relatively more costly jury trial outweighs the positive effect of greater uncertainty associated with party's expectations of their probability of success. The marginal effect of jury demand 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 jury demand to 9.2 percent. These equations also indicate that trials are less likely in cases with larger monetary damages demanded. This inverse relation between damages demanded and trial may reflect risk aversion, which leads to settlement rather than trial for cases with higher stakes.³⁰ Controlling for additional factors in column 3 reduces the trial disparity by jury demand 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 in which time from filing to disposition is shorter.

The estimates in Table 3 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 demanding jury trial 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 jury trial was demanded and cases in

³⁰ For an analysis of the effect of risk aversion on the probability of settlement, see Perloff, Rubinfeld and Ruud (1996) and Viscusi (1988).

which jury trial demand was waived suggests that cases demanding jury trial are not systematically weaker. To examine directly the effect of jury demand on the probability of trial relative to settlement, Table 4 estimates the specifications of Table 3, eliminating dismissed cases using the later years of data. Not surprisingly, given the identical dismissal rate, the results in Table 4 indicate that cases in which jury trial was demanded are more likely to settle, with the effect of jury demand ranging from 22 percent with no controls, to 10 percent controlling for all variables.

V. Bivariate Probit Estimates of Jury Demand and Trials

To test for the possibility that single-equation probit estimates of probability of trial are biased due to correlation between error terms in the jury demand and trial equations, I estimate bivariate probit equations. For this analysis, I concentrate on the trial equation reported in column 3 of Table 3, which controls for the fullest set of variables. Instead of separate equations for plaintiff and defendant demands for jury trial as in Table 2, I use a single equation for the probability of jury demand regardless of which party demanded jury trial.

Identification in the bivariate probit equations requires at least one variable that is correlated with the probability that a jury trial is demanded, but not correlated with the parties' unobserved propensity to continue to trial rather than settle out of court. As the jury demand equation is based on a comparison of jury to bench outcomes, while the probability of trial equation is based on averages across all trials rather than differences between jury and bench trials, four possible instruments are provided by the variables measuring the 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 trial equation. I consider an additional possible instrument that indicates whether there are multiple plaintiffs and/or defendants which I assigned to each case based on parties' names recorded in the AO data set. As any party to litigation can demand jury trial, more litigants should increase the probability that at least one party demands a jury trial. Sixteen percent of the cases in the sample had multiple plaintiffs and/or defendants.

The initial test for the validity of these instruments is that they must be (jointly) significant determinants of jury demand, but not significant determinants of the probability of trial after controlling for other observed factors in single equation estimates. Not surprisingly given the results of Table 2, these 5 variables are indeed jointly significant determinants of jury demand in a single equation probit, with chi-squared = 126.71, p-value=0.0. Furthermore, they are not jointly (or for that matter, individually) significant determinants of the probability of trial in a single equation probit, after controlling for the other variables, with chi-squared = 4.98, p-value=0.42. Although this is not a formal test of the validity of these variables as instruments, this provides a starting point. I began by estimating a bivariate probit system using all 5 of these variables as instruments. Then, because I have five possible instruments but only need one, I perform a series of sensitivity tests by considering subsets of these variables.

The consistent finding throughout this analysis is that, as the estimated correlation between the error terms (ρ) is not significantly different from zero in these bivariate probit estimates, we cannot reject the hypothesis that single equation estimates are not biased. Specifically, the estimate of ρ using all 5 instruments is -0.12 , p-value = 0.53.

Similar analyses using subsets from this set of potential instruments likewise failed to reject the hypothesis of no correlation between the error terms. This analysis lends support to the validity of the single equation estimates.

VI. 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.³¹ But if cases in which jury trial was demanded are systematically more likely to settle than cases waiving jury trial, 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 jury demand on trial and settlement. Litigants demand 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 jury trial when the plaintiff win rate is higher and when stakes as indicated by damages demanded are larger. Both plaintiffs and

³¹ 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. Among cases receiving trial verdicts, Helland and Tabarrok (2000) control for selection of type of trial and find 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 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, lending support to the notion that the largest awards are the purview of juries. Other evidence suggests verdicts by judges and juries are similar, or that judges are more favorable to plaintiffs. Among 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 judge 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 pro-plaintiff 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.

defendants are less likely to demand jury trial when the time costs of jury verdicts are greater than for bench verdicts. Greater observed uncertainty associated with jury decisions relative to bench decisions increases the probability that plaintiffs demand trial by jury. Intuitively, this effect arises because greater variability in jury awards gives plaintiffs a chance to get an unusually high outlier award.

Furthermore, demanding jury trial has important consequences on the probability of settlement. Cases in which a jury demand is made are more likely to settle, with the probability of settlement 5.5 percentage points lower than if jury demand is waived. As the trial rate is only 26.60 percent, this settlement difference corresponds to one-fifth of all trials.

The findings of this paper show no evidence of a jury system run amok. Jury and bench verdicts are not starkly different. Litigants base their decision to demand trial by jury on economic factors, with greater relative variability of jury awards increasing the expected gain from trial. But the second concern is whether the similarity between jury and bench verdicts arises from a selection process in which cases that would have a jury trial are more likely to settle than cases that would have a bench trial. If so, jury and bench verdicts will appear more similar than the underlying population of cases that are filed. This paper provides support for this latter concern.

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Table 1: Descriptive Statistics for Jury-Eligible Cases

Panel A: Individual case characteristics

	Percent or mean (standard deviation)		
	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 rate	26.60	19.21	29.19
Monetary damages demanded in \$1000 if > 0 (1982-84\$)	434.30 (1319.97)	553.61 (1384.41)	365.91 (1277.49)
Log(damages demanded)	10.94 (2.03)	11.48 (2.06)	10.64 (1.95)
Damages demand missing	68.55	55.79	73.02
Number of observations	3,797	984	2,813

Panel B: Average values for cases tried to verdict

	Jury verdicts	Bench verdicts
Plaintiff win rate	51.55	49.46
Expected awards in \$1000 (1982-84\$)	283.05	233.28
Standard deviation of awards	1517.20	1410.95
Coefficient of variation	2.77	3.18
Years to disposition	1.90	2.09

Panel C: Percent of cases dismissed, settled, or trial in 1987-88^a

	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
Number of observations	996	276	720

a. Excludes cases in Houston. Houston did not use new settlement codes until 1988.

Table 2: Demand for Jury Trial^a

	Plaintiff demanded jury trial		Defendant demanded jury trial	
	(1) Jury–Bench ^b	(2) Jury/Bench ^b	(3) Jury–Bench ^b	(4) Jury/Bench ^b
Log(damages demanded)	0.122** (0.020) [0.034]	0.122** (0.020) [0.034]	0.011 (0.032) [0.001]	0.011 (0.032) [0.001]
Damages demand missing	1.057** (0.227) [0.251]	1.012** (0.227) [0.244]	-0.124 (0.356) [-0.012]	-0.087 (0.358) [-0.008]
Plaintiff win rate	1.355** (0.236) [0.380]	0.383** (0.083) [0.108]	0.484 (0.373) [0.045]	-0.158 (0.133) [-0.015]
Expected awards x 1000	0.052 (0.112) [0.015]	-0.002 (0.016) [-0.001]	-0.332 (0.176) [0.031]	-0.025 (0.026) [-0.002]
Coefficient of variation	0.117** (0.026) [0.033]	0.175** (0.055) [0.050]	0.054 (0.037) [0.005]	0.100 (0.069) [0.009]
Years to disposition	-0.437** (0.086) [-0.122]	-0.828** (0.198) [-0.234]	-0.437** (0.121) [-0.041]	-1.295** (0.278) [-0.120]
Detroit indicator	-0.636** (0.065) [-0.176]	-0.642** (0.067) [-0.178]	0.201* (0.102) [0.019]	0.165 (0.106) [0.015]
Houston indicator	-0.350** (0.066) [-0.092]	-0.419** (0.066) [-0.109]	-0.101 (0.112) [-0.009]	-0.075 (0.112) [-0.007]
Constant	-1.669** (0.227)	-1.371** (0.316)	-1.803** (0.363)	-0.442 (0.449)
Log-likelihood	-1698.10	-1703.75	-669.02	665.60

a. Estimated by probit. Dependent variable equals 1 if party demanded jury trial and equals 0 if the right to jury trial was waived. Standard errors are reported in parentheses and marginal effects in brackets. Marginal effects are calculated for an infinitesimal change at sample means for continuous variables and for a discrete change from 0 to 1 for indicator variables. Number of observations is 3,549.

** (*) indicate coefficient is significantly different from zero at 1% (5%) level, two-sided tests.

b. Columns (1) and (3): 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 in columns (1) and (3), and are equal to ratios of average jury to bench verdict values for nature of suit and circuit in columns (2) and (4). Coefficient on expected awards in columns 1 and 3 multiplied by 1000.

Table 3: Probability of Trial^a

	(1)	(2)	(3)
Jury trial demanded	-0.322** (0.052) [-0.100]	-0.296** (0.054) [-0.092]	-0.174** (0.056) [-0.055]
Log(damages demanded)		-0.041* (0.020) [-0.013]	-0.033 (0.020) [-0.011]
Damages demand missing		-0.385 (0.219) [-0.131]	-0.175 (0.222) [-0.058]
Plaintiff win rate ^b			0.620** (0.150) [0.200]
Expected awards x 1000 ^b			0.074 (0.173) [0.024]
Coefficient of variation ^b			0.024 (0.040) [0.008]
Years to disposition ^b			-0.319** (0.111) [-0.103]
Detroit indicator		0.041 (0.060) [0.013]	-0.012 (0.063) [-0.004]
Houston indicator		0.196** (0.064) [0.066]	0.202** (0.068) [0.067]
Constant	-0.548** (0.025)	-0.225 (0.220)	-0.490 (0.373)
Log-likelihood	-2179.90	-2172.86	-2115.08

a. Estimated by probit. Dependent variable equals 1 if case received judgment on default, consent, motion before trial, jury verdict, directed verdict, court trial, award of arbitrator, or other judgment, and equals 0 if case settles or is dismissed. Standard errors are reported in parentheses and marginal effects in brackets. Marginal effects are calculated for an infinitesimal change at sample means for continuous variables and for a discrete change from 0 to 1 for indicator variables. Number of observations is 3,797. ** (*) indicate coefficient is significantly different from zero at 1% (5%) level, two-sided tests.

b. Variables are averages calculated by nature of suit and circuit using data on all judgments reported in AO data set 1979-88.

Table 4: Probability of Trial v. Settlement^a

	(1)	(2)	(3)
Jury trial demanded	-0.634** (0.118) [-0.224]	-0.614** (0.122) [-0.218]	-0.284* (0.133) [-0.104]
Log(damages demanded)		-0.066 (0.056) [-0.025]	-0.068 (0.055) [-0.025]
Damages demand missing		-0.516 (0.584) [-0.200]	-0.453 (0.583) [-0.175]
Plaintiff win rate ^b			0.792* (0.345) [0.298]
Expected awards x 1000 ^b			0.786 (0.544) [0.296]
Coefficient of variation ^b			0.086 (0.097) [0.032]
Years to disposition ^b			-0.570* (0.268) [-0.214]
Detroit indicator		-0.130 (0.135) [-0.050]	-0.013 (0.144) [-0.005]
Constant	-0.147** (0.057)	0.507 (0.597)	-0.150 (0.948)
Log-likelihood	-425.78	-424.26	-401.09

a. Estimated by probit. Sample is comprised of cases receiving judgment or settling in Detroit and Kansas City district courts in 1987-88. Cases that were dismissed are excluded. Dependent variable equals 1 if case received judgment and equals 0 if case settles. Standard errors are reported in parentheses and marginal effects in brackets. Marginal effects are calculated for an infinitesimal change at sample means for continuous variables and for a discrete change from 0 to 1 for indicator variables. Number of observations is 664.

** (*) indicate coefficient is significantly different from zero at 1% (5%) level, two-sided tests.

b. Variables are averages calculated by nature of suit and circuit using data on all judgments reported in AO data set 1979-88.