Judging CERCLA: an Empirical Analysis of Circuit Court Decision-Making

Clifford Chad Henson, University of Illinois at Urbana-Champaign
Judging CERCLA: an Empirical Analysis of Circuit Court Decision-Making

Clifford Chad Henson*
College of Law
College of Business
University of Illinois
504 E. Pennsylvania Ave
Champaign, IL 61820
henson1@law.illinois.edu

Abstract: Political scientists, and increasingly legal scholars, have become skeptical of judges’ attempts to explain decisions based exclusively on applying fact to law, and have attempted to identify factors that influence judicial decision-making. This study isolates a set of cases dealing with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and identifies variable sets corresponding to factors one would expect to be significant under competing models of judicial decision-making. While both the legal and extra-legal model independently explain some judicial decision-making, the legal model has more explanatory power and adds significantly to the explanatory power of the extra-legal model, while the extra-legal model does not add significantly to the explanatory power of the legal model. Further, some significant factors in judicial decisions may be open to manipulation by litigants.

*The Property and Environment Research Center made this research possible though their generous fellowship program. In particular, I would like to thank Andrew Morriss, Roger Meiners, Walter Thurman, Dan Benjamin, Jonathan Adler, Sarah Anderson, Dhammika Dharmapala, Hon. Harry T. Edwards III, Corbett Grainger, P.J. Hill, Jonathan Klick, Larry Ribstein, Kurt Schneir, Tom Ulen, and Reed Watson for their valuable suggestions, guidance, insight, and support. All errors are my own.
Table of Contents

I. INTRODUCTION ....................................................................................................................... 3

II. CERCLA .................................................................................................................................... 4

III. JUDICIAL DECISION-MAKING MODELS ........................................................................ 5
   III.A. THE SAMPLE AND DEPENDENT VARIABLES ........................................................... 5
   III.B. THE UTILITY-MAXIMIZATION MODEL .................................................................... 8
   III.C. THE LEGAL MODEL ................................................................................................. 10
   III.D. THE EXTRA-LEGAL MODEL .................................................................................. 16
   III.E. SUMMARY .................................................................................................................. 20

IV. RESULTS ............................................................................................................................... 22
   IV.A. LEGAL MODEL RESULTS ........................................................................................ 22
   IV.B. EXTRA-LEGAL MODEL RESULTS ............................................................................ 27
   IV.C. SUMMARY OF RESULTS ......................................................................................... 31

V. CONCLUSION ........................................................................................................................ 36
I. INTRODUCTION

Theories of judicial decision-making attempt to explain judicial decisions and the factors that play important roles in those decisions. Some legal scholars and political scientists have argued that empirical analysis of judicial opinions reveals more than self-disclosed legal reasoning and stated jurisprudential philosophies.1 While some studies have tested a single model2 or the effects of modifying a particular model of judicial decision-making,3 little research has been done to test the relative predictive and explanatory power of multiple models of judicial decision-making except those studies that have focused on applying constraints to the attitudinal model.4

This study identifies factors that influence appellate court decision-making in cases involving the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)5 and investigates if the results correspond to or differ from the expectations of legal and extra-legal theories of judicial decision-making. To identify these factors, I isolate CERCLA cases resulting in federal appellate opinions, and collect factors on these cases, and use multivariate regression analysis to compare the marginal effect of each decision-making model.

---


2 See, e.g., Theodore W. Ruger, Pauline T. Kim, Andrew D. Martin & Kevin M. Quinn, The Supreme Court Forecasting Project: Legal and Political Science Approaches to Predicting Supreme Court Decisionmaking, 104 COLUM. L. REV. 1150 (2004) (finding that a predictive model was better-able to forecast U.S. Supreme Court decisions than a panel of experts).

3 Thomas J. Miles & Cass R. Sunstein, The New Legal Realism, 75 U. CHI. L. REV. 831, 838 (2008) (noting that the “standard pattern” of empirical courts scholarship is some variation of Republican appointees preferring more conservative outcomes than Democrat appointees, tempered by other effects).


5 42 U.S.C. § 9601 et seq.
II. CERCLA

CERCLA imposes joint and several liability for the release or potential release of any hazardous substances. Under CERCLA, the Environmental Protection Agency (EPA) can undertake or order others to undertake removal or remedial actions. A removal action is short-term action to address an immediate environmental problem. A remedial action involves longer-term solutions for serious environmental hazards, often including decontamination. To order a remedial action, the EPA must place a contaminated site on the National Priorities List (NPL). After the site is listed, the EPA either undertakes the remedial action and sues any potentially responsible party (PRP) for the costs or orders the private party to clean up the site. PRPs can sue each other to force a determination of how much each PRP will contribute.

CERCLA liability can cost hundreds of millions of dollars. Because of this, many PRPs choose to litigate, and both PRPs and the EPA may appeal adverse trial court decisions. Parties can argue that their property should never have been listed on the NPL, that the appropriate action is a removal rather than a remedial action (removal actions are generally less expensive), that they are not responsible for the damage, that damage should be imposed upon other

---

6 42 U.S.C. § 9604
7 42 U.S.C. § 9601(23), 42 U.S.C. § 9604
9 47 FR 31180-01, 1982 WL 143362 (F.R.)
10 For a discussion of this remedy, see William D. Evans, Jr., The “Cape Fear” Features of Superfund Contribution Litigation: the Available Remedies and Extent of Liability, 75 MICH. B.J. 1170 (1996)
12 While this study did not track individual cases from the trial court to the appellate level, an identical database search that looked at all federal courts yielded roughly four times as many results as those looking only at state appellate courts. This is a high level of appeals, similar to products liability appeals in state courts and vastly higher than more typical civil litigation. See BUREAU OF JUSTICE STATISTICS, APPEALS FROM GENERAL CIVIL TRIALS IN 46 LARGE COUNTIES, 2001–2005 1-2 (June 2006), available at http://bjs.ojp.usdoj.gov/content/pub/pdf/agctlc05.pdf.
15 United States v. Shell Oil Co., 294 F.3d 1045 (9th Cir. Cal. 2002)
parties,\textsuperscript{16} that the site in question is divisible,\textsuperscript{17} or otherwise challenge agency decisions. Some have challenged the constitutionality of the law as a whole\textsuperscript{18} (unsuccessfully), made procedural objections to the case proceeding,\textsuperscript{19} or engaged in other litigation strategies.

\textbf{III. JUDICIAL DECISION-MAKING MODELS}

\textbf{III.A. THE SAMPLE AND DEPENDENT VARIABLES}

To test the relationship between predictive factors and outcomes, I obtained information for 44 CERCLA cases.\textsuperscript{20} After designating the cases as appropriate for analysis, each significant

\textsuperscript{16} United States v. Burlington N. & Santa Fe Ry. Co., 520 F.3d 918 (9th Cir. 2008)

\textsuperscript{17} New Jersey Turnpike Auth. v. PPG Indus., 197 F.3d 96, 99 (3d Cir. N.J. 1999)

\textsuperscript{18} See, e.g. United States v. Monsanto Co., 858 F.2d 160, 173 (4th Cir. S.C. 1988). The court found that the CERCLA liability scheme generally did not constitute an ex post facto law or bill of attainder.


issue within each case was separately analyzed. Each significant issue is a separate observation, with each case yielding between one and eight observations. For each observation, dependent and independent variables identifiable from the text of the opinion were coded. Independent variables are related to a model of judicial decision-making, explained below.

The dependent variables for each reference are outcomes. Table 1 reports the descriptive statistics for the sample. The dependent variables for each reference are votes for private parties on each issue, outcome for private party on each issue, votes for private party on each case, and outcome for private party on each case. The variables are explained next.

Table 1: Descriptive Statistics for the Sample

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>VotIst</td>
<td>0.7920</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>VicIst</td>
<td>0.2673</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>VotCas</td>
<td>0.6138</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>VicCas</td>
<td>0.2079</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>ln(Courtclog)</td>
<td>6.2746</td>
<td>6.3421</td>
<td>5.2882</td>
<td>7.0967</td>
</tr>
<tr>
<td>ln(Days)</td>
<td>6.7738</td>
<td>7.3914</td>
<td>0</td>
<td>8.4237</td>
</tr>
</tbody>
</table>

21 Issue designations were distinguished based on (1) the Overview or Summary of the case listing the issue specifically, (2) the opinion specifically affirming or reversing a particular decision, or (3) the organization of the opinion treating the issue separately from other distinguishable issues. For example, one case raised three questions that were each decided separately: did appellant assume predecessor liability, were two locations discrete sites within the meaning of CERCLA, and should the lower court have permitted the plaintiff to present certain evidence related to damages. The court found for the government on all three issues. U.S. Bank Nat'l Ass'n v. U.S. EPA, 563 F.3d 199 (6th Cir. 2009). This methodology is not uncommon, and accounts for the nuance of a particular court decision in a more fine-tuned way than the Liberal-Conservative binary. See Harry T. Edwards and Michael A. Livermore, Pitfalls of Empirical Studies that Attempt to Understand the Factors Affecting Appellate Decisionmaking, 58 Duke L.J. 1895, 1924-1927 (critiquing the standard methods used to code appellate decisions). For example, one previous study has relied on authors’ agreement on the philosophy of constitutional interpretation used by a judge. Gregory C. Sisk, Michael Heise, and Andrew P. Morriss, Charting the Influences on the Judicial Mind: an Empirical Study of Judicial Reasoning, 73 N.Y.U. L. Rev. 1434 (1998). One study went further, coding tools of analysis used in judicial opinions, such as reliance on dictionaries, rules of plain meaning, etc. Jason J. Czarnecki & William K. Ford, The Phantom Philosophy? An Empirical Investigation of Legal Interpretation, 65 Md. L. Rev. 841, (2006).
<table>
<thead>
<tr>
<th>Variable</th>
<th>Value 1</th>
<th>Value 2</th>
<th>Value 3</th>
<th>Value 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>CirOvr8</td>
<td>0.7623</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>LowCtDec</td>
<td>0.3267</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Defer</td>
<td>0.5049</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Remedial</td>
<td>0.8712</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Cites</td>
<td>38.0396</td>
<td>30</td>
<td>4</td>
<td>107</td>
</tr>
<tr>
<td>Constit</td>
<td>0.1683</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>GovCont?</td>
<td>0.6931</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Proced</td>
<td>0.1289</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>OpinGOP?</td>
<td>0.5544</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>%GOP</td>
<td>0.5775</td>
<td>0.67</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>G-Circ</td>
<td>0.0891</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>G-Dist</td>
<td>0.3366</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>SupCtAtt</td>
<td>0.2986</td>
<td>0.302</td>
<td>0.275</td>
<td>0.31</td>
</tr>
<tr>
<td>CongAtt</td>
<td>0.0367</td>
<td>0.0359</td>
<td>0.0137</td>
<td>0.0555</td>
</tr>
<tr>
<td>Observations</td>
<td>101</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

VoteIss takes the value of the number of judges favoring the private party for the issue coded in the observation. A vote for reversal was coded as favoring the private party on any issue where the appellate court outcome was superior to the lower court ruling from the private party’s perspective. A vote for affirmance was coded as favoring the private party on any issue where the lower court favored the private party and the government sought review.

VoteCase takes the value of the number of judges favoring the private party in the case coded in the observation. A vote on a case was coded if the outcome favored by the appellate judge was superior to the lower court ruling from the private party’s perspective on the case as a whole or, if the government was the appealing party, affirmed the lower court decision in its entirety.

WinIssue takes the value of 1 if the outcome indicated by the appellate decision on the issue coded in the observation was favorable to the private party, 0 otherwise. A victory on an issue was coded if the opinion of the court produced an outcome superior to the lower court.

---

23 E.g. United States v. Tarkowski, supra fn 20.
ruling from the private party’s perspective or, if the government was the appealing party, affirmed the lower court decision.\textsuperscript{24}

\textit{WinCase} takes the value of 1 if the outcome indicated by the appellate decision on the case coded in the observation was favorable to the private party, 0 otherwise. A victory on a case was coded if the opinion of the court produced an outcome superior to the lower court ruling from the private party’s perspective or, if the government was the appealing party, affirmed the lower court decision in its entirety. In most cases, decisions were unanimous.\textsuperscript{25}

\textbf{III.B. THE UTILITY-MAXIMIZATION MODEL}

Judges are humans, and thus, a standard utility-maximization model would predict, have a desire to get the highest gain for the least cost.\textsuperscript{26} Judges do have the ability to act in ways to maximize their own utility.\textsuperscript{27} While judges cannot increase their salary, they can reduce the cost of handling their case load, and thereby increase their leisure time. For this reason, as judges’ case loads increase, one can reasonably expect that they will want to dispose of cases quickly so they have more time for other activities.\textsuperscript{28} To account for this, the restricted model uses $ln(Court\text{clog})$ as an independent variable. It takes the value of the natural log of the average number of cases each judge in the circuit, where the observation took place, decided during that

\begin{itemize}
\item \textsuperscript{24} Presumably, the reversal and/or remand of an appealed decision is favorable to the party seeking it.
\item \textsuperscript{25} United States v. Navistar Int'l Transp. Corp., supra fn 20 included a dissent; New Jersey Turnpike Auth. v. PPG Indus., United States v. Tarkowski, and United States v. W.R.Grace & Co., supra fn 20, all included concurrences. This low rate of separate opinion-writing in cases that typically involve large sums of money and complicated fact situations may be indicative of “Going-along voting,” and thus indicate that more work is being done by utility-maximization than I test for here. See Richard Posner, \textit{What Do Judges and Justices Maximize? (The Same Thing Everybody Else Does)}, 3 SUP. CT. ECON. REV. 1, 20 (1993)
\item \textsuperscript{26} Jeremy Bentham, \textit{The Principles of Morals and Legislation} 1, Amherst: Prometheus Books (1988)
\end{itemize}
year. I hypothesize a negative parameter estimate on this variable because it would presumably be easier to defer to agency determination of fact and law than exercise a more rigorous review.

The marginal effect of court clog on outcome is estimated by the following equation:

\[ \text{Outcome}_i = \beta_0 + \beta_1(\ln\text{CourtClog}_i) + \varepsilon_i \]

where the dependent variable is the outcome, the independent variable is the natural log of the average number of cases each judge in the circuit where the observation took place decided, \( \varepsilon \) is a zero-mean error term, and \( \text{Outcome}_i = V_i, W_i, V_c, W_c \) indicates alternatively VoteIssue, WinIssue, VoteCase, and WinCase. The model includes one explanatory variable.\(^{30}\) The null hypothesis cannot be rejected at the \( p < 0.5 \) level for any of the dependent variables.\(^{31}\) This means there is no evidence that the level of activity in any judicial circuit, by itself, alters the decision-making of judges. This utility-maximization model serves as the base model. All subsequent tests account for the case load of judges as a factor.\(^{32}\) No test in any of the future models found it to be significant at the \( p < .25 \) level for case outcomes. This should not be taken to mean that judges don’t maximize utility, however.\(^{33}\) The influence of court clog on citations was significant and negative, meaning that as judges were required to decide more cases, they included fewer unique

\(^{29}\) Natural logs were used rather than raw case totals because this method permits a greater degree of distinction among the circuits.

\(^{30}\) This model tests the variable most likely associated with the utility maximization model on its own for two reasons. First, the joint significance of other models is tested using the F-Tests infra at IV.C. Second, CourtClog is tested in conjunction with the other variables in three future models, so its effect when placeholder variables are present is tested elsewhere.

\(^{31}\) The results of these four bivariate regressions are not reported, but are available upon request.

\(^{32}\) This is included in all future models, despite the lack of evidence that it affects case outcomes, for two reasons. First, there is evidence that case load does affect judge (or clerk) behavior regarding average case citations, which are significant. Second, because the coefficient has consistent signs across outcomes, it is preferable to continue to control for any possible effect this variable may have.

\(^{33}\) Indeed, seeking one’s preferred policy outcome is a form of utility maximization, but one treated separately for the purpose of this analysis. Further, judges may genuinely derive utility from fulfilling their proscribed roles. Harry T. Edwards and Michael A. Livermore, supra at fn 21, 58 Duke L.J. at 1944 (“Most members of the bench care about the law, about acting responsibly towards the litigants before them, and about discharging their duty to the American people according to the highest professional standards.”).
citations in the opinion even though this does not appear to alter the final outcome of the case.\textsuperscript{34}

The implication, that judges accommodate their opinion-writing to case load but do not decide arbitrarily despite case pressures, tends to corroborate the assertion that, “. . .backlog pressure keeps [the judge] working hard, and reversal threat keeps him working carefully.”\textsuperscript{35}

\textbf{III.C. THE LEGAL MODEL}

While scholars disagree on the margin about what is appropriate for judges to consider as part of the law, one commonality among variations of the legal model is that the personal outcome preferences of the judge have no significant role to play: law is to remain separate from politics.\textsuperscript{36} Proponents of the legal model argue that judges ought to (normatively) and do (positively) follow the law without preferred outcomes exerting substantial influence on judicial decisions.

While the legal model has been criticized for its failure to deal with indeterminacy in the law, proponents argue that judges make a good faith effort to reach the best legal conclusion and that even absent such an effort, the law sets important constraints on the pursuit of policy preferences.\textsuperscript{37} Another criticism leveled at the legal model is the lack of empirical verification thus far. Empirically verifying the legal model is a Herculean task.\textsuperscript{38} Since most variants of the legal model argue that precedent matters, most studies focus on determining the extent to which

\begin{footnotesize}
\begin{itemize}
\item[34] This contrasts with previous studies finding that at the District Court level, caseload does not affect the opinion writing practices of federal judges. David A. Hoffman, Alan J. Izenman & Jeffrey R. Lidicker, \textit{Docketology, District Courts, and Doctrine}, 85 WASH. U. L. REV. 681 (2007).
\item[37] Terri Jennings Peretti, \textit{In Defense of a Political Court} 38 (1999).
\item[38] One study attempted to accomplish the task of categorizing judges on a single Circuit Court according to interpretative methodology. It involved a large coding team and devoted several pages plus two appendices to explaining how this coding worked and why it was (somewhat) reliable. Jason J. Czarnezki & William K. Ford, \textit{The Phantom Philosophy? An Empirical Investigation of Legal Interpretation}, 65 MD. L. REV. 841 (2006).
\end{itemize}
\end{footnotesize}
cases with high precedential value (e.g. Chevron\textsuperscript{39}) altered the decision-making of the courts that made the decision or subordinate courts. As applying precedent is an issue of judgment, efforts to use precedent frequently collapse into an exercise in armchair judging by academics.\textsuperscript{40} This is, scholars seeking to test a judge’s use of precedent must identify an expected result if a precedent is used properly, and that a departure from that result is a departure from precedent. It is thus difficult to design an objective empirical model. Any model that does not focus on precedent may not be testing a legal model and any model that does may only reflect the substitution of an academic’s judgment that that of the judge.

To try to avoid the pitfalls of using adherence to specific decisions to verify the legal model, I identify proxies for the cumulative effect of binding and non-binding precedent as well as other factors one might expect to be important to a judge attempting to use legal reasoning to reach a conclusion. I identify three sets of independent variables that one would expect to significantly explain CERCLA decisions if judges adhere to the legal model.

The first set of independent variables functions as a proxy for precedent. Two variables comprise this set. First, $\ln(Days)$ is a variable that takes the value of the natural log of the number of days since the day before the first case in the sample.\textsuperscript{41} This variable is included in the model because it is a proxy for non-binding precedent that would guide a judge’s decision. I hypothesize that this has a negative parameter estimate for all dependent variables because the government usually wins on appeal.\textsuperscript{42} For this reason, the trend in pro-government decisions


\textsuperscript{40} William N. Eskridge, Jr. & Lauren E. Baer, \textit{The Continuum of Deference: Supreme Court Treatment of Agency Statutory Interpretations from Chevron to Hamdan}, 96 GEO. L.J. 1083 (2008).

\textsuperscript{41} Thus, $\ln(Days)$ for the first case of the sample would be $\ln(1)$.

yields non-binding precedent adverse to the interest of private parties, and this increases over

time. A judge guided by non-binding precedent would thus be guided toward voting against
private parties as precedent accumulates. Second, CirOvr8, is a dummy variable that takes the
value of 1 if the circuit court contains more than eight observations in the sample, 0 otherwise.43
Eight observations is the cut-off because a circuit with eight observations is responsible for more
observations than the average circuit.44 This variable is included in the model because it is a
proxy for binding precedent that would constrain a judge’s decision. I hypothesize that this has a
negative parameter estimate for all dependent variables because the government usually wins on
appeal. For this reason, the trend in pro-government decisions yields binding precedent adverse
to the interest of private parties, and this increases as the number of rulings in a circuit increases.
A judge constrained by binding precedent would thus be increasingly prevented from voting for
private parties as precedent accumulates.45 For this assumption to be relevant for early cases in
the sample, I assume that the quantity of litigation in each circuit is homogeneous over time, so
that circuits deciding a large number of issues during the sample period also decided issues prior
to the sample period.46

Government has a higher success rate than any other type of party in appeals. Possible reasons for this include
expertise, superior resources, a judicial bias toward government, and others. Stanton Wheeler, Bliss Cartwright,
Robert Kagan, and Lawrence Friedman, Do the haves come out ahead? Winning and losing in state supreme courts.

43 A variable taking the value of the precise number of observations yielded no significant results but did not
generate substantial changes to any other variables.
44 The average number of observations/circuit was 7.769.
45 This is known as the “Chain Novel Hypothesis” based on Ronald Dworkin’s famous metaphor. Ronald Dworkin,
Law’s Empire 228-38 (1986).
46 The same Westlaw search that generated the cases in this sample was run restricted to cases prior to the first case
in this sample, individualized to each circuit. Using bivariate regression analysis to ascertain the predictive effect of
cases prior to 11/1996 on cases after 11/1996, there was a significant and positive relationship (p < .01, R-Squared =
.49). The overall ratio of post- to pre-sample cases was 1.00:1.08, with results for individual circuits falling between
1.00:0.55 (9th Circuit, which was still above-average for cases in each time period) and 1.00:1.73 (D.C. Circuit,
which was still below-average for cases in each time period). A further investigation into the doctrinal development
of precedent within and across circuits could certainly inform this analysis and shed some light on the viability of
the proxies for precedent used here, but is beyond the scope of this work.
The second set of independent variables relates to the legal and fact situation before the court that is not controlled by the parties to the litigation. Four variables comprise this set. The first independent variable is $LowCtDec$, a dummy variable that takes the value of 1 if the lower court decided the issue for the private party, 0 otherwise. I predict a positive parameter estimate on $LowCtDec$ for outcomes on any issue, but a negative parameter estimate for outcomes related to the overall case. This variable is included because lower courts applying legal rules would generally be correct, and thus circuit courts applying the law would find similarly to district courts applying the law. If political preferences dominate law, there would be little relationship because the district court judge’s party and the circuit court judges’ parties need not match. Further, affirmances are generally more common than reversals across appellate decisions, meaning that on any issue where the lower court decided for a private party, the appellate court is more likely to decide for that party (and vice versa). The parameter estimate for the case outcomes is negative, however, because every issue decided for the private party at the trial level increases the likelihood that the net effect of an appeal is to leave the party who won at the lower court worse off than they were prior to the appeal; in short, there are more opportunities to fail.

Second, $Defer$, is a dummy variable that takes the value of 1 if the appellate court indicates that it is deferring to the lower court, 0 otherwise. This is included because a court that accurately claims it is deferring to another court would review cases differently than a court...
reviewing the case *de novo*. I predict a parameter estimate consistent with the trend of lower court decisions. If private parties win most cases at the district court level, one would expect deference to exacerbate that result at the appellate level (and vice versa). Absent empirical data on that exact point, no a priori expectation of the direction of the parameter estimate is indicated.

Third, *Cites*, takes the value of the number of unique citations in the opinion of the court. This variable is included because, while imperfect, unique citations are a proxy for complexity. To avoid attributing excessive weight to differences in writing style, cases and statutes were only cited the first time they appeared, and a number of citations were excluded.\(^{49}\) I predict a negative parameter estimate, as increasing complexity would indicate that executive deference is appropriate, resulting in decisions less friendly to private parties opposing executive action.\(^{50}\)

Fourth, *Remedial*, is a dummy variable taking the value of 1 if the action taken or demanded by the EPA is considered a remedial action under CERCLA, 0 if it is a removal action.\(^{51}\) This variable is included because removal and remedial actions are subject to different legal standards in some issues. I am agnostic as to the expected parameter estimate.

The third set of independent variables consists of dummy variables indicating the issue before the court. These are important because the legal standards for evaluation of arguments and the controlling precedent differ for each issue before the court. Issues were divided into four mutually exclusive, all-encompassing categories. Three of the issues are represented as dummy variables. The fourth, as required to generate valid results, is excluded.\(^{52}\) The first, *Constit*, takes

---

\(^{49}\) Citations to CERCLA were excluded; pinpoint citations in cases and citations to multiple sections of the USC, CFR, or FRCP dealing with the same law, regulation, or rule were only counted the first time they appeared. Because of the ad hoc nature of some exclusions, the number of unique citations should be considered an approximation rather than exact count.


\(^{51}\) Where the classification of the site was at issue, the eventual decision of the court determined the code for this independent variable.

\(^{52}\) Originally, *Proced* was dropped from the sample because it was the most heterogeneous class. As cases related to damages comprised more than half the sample, however, those cases were dropped to strengthen the intercept.
a value of 1 if the lower court’s decision is challenged on constitutional grounds, 0 otherwise. I predict a negative parameter estimate, though the rarity of constitutional challenges may preclude statistical significance. Because a constitutional challenge to the statute in its entirety would not be upheld except as a last resort, and CERCLA litigation is still ongoing, any challenge to the constitutionality of CERCLA as a whole has obviously failed. Similarly, due process issues would presumably be resolved first as procedural issues or statutory interpretation issues. Thus, it is unlikely that courts would rule for private parties on constitutional grounds. Second, GovCont, takes a value of 1 if a private party was seeking contribution from the government or an agency thereof, 0 otherwise. I predict a positive parameter estimate, as GovCont is the only non-procedural issue where the government is held to the same standard as a private party. Third, Proced, takes a value of 1 if the lower court’s decision regarding an issue of civil procedure, evidence, or jurisdiction was addressed by the appellate court, 0 otherwise. The parameter estimate for Proced is ambiguous: the sheer range of issues covered under the heading of procedural concerns and the varying standards for evaluating each of them makes it difficult to predict the marginal effect of this argument. The excluded category is all issues related to the private party’s responsibility to pay damages. Issues in this category include challenges to site designation, challenges to apportionment, and challenges to the identification of a PRP. Because all these issues are reviewed with deference, the net effect of the exclusion of this variable is likely a reduction in the coefficient of the intercept.

The marginal effect of legal variables and court clog on outcome is estimated by the following equation:

---

53 These issues are lumped together because they deal with law (mostly) external to CERCLA.
54 While *sua sponte* adjudication is ordinarily frowned upon, judges are free to raise questions of subject matter jurisdiction *sua sponte.*
Outcome_i = \beta_0 + \beta_1(Courtlog_i) + \beta_2(lnDays_i) + \beta_3(CirOvr8_i) + \beta_4(LowCtDec_i) + \beta_5(Defer_i) + \beta_6(Remedial_i) + \beta_7(Cites_i) + \beta_8(Constit_i) + \beta_9(GovCont_i) + \beta_{10}(Proced_i) + \varepsilon_i

where the dependent variable is the outcome, the \beta’s are parameters to be estimated, \varepsilon is a zero-mean error term, and outcome = V_i, W_i, V_c, W_c indicates VoteIssue, WinIssue, VoteCase, and WinCase. The model includes ten explanatory variables.

III.D. THE EXTRA-LEGAL MODEL

While judges generally claim to adhere to the legal model, a body of literature suggests that judges decide cases based on their political preferences. The political ideology of judges is generally measured along a conservative-liberal spectrum.55 This theory is grounded in the view of Legal Realists that law is indeterminate and that the individual characteristics of a judge, from their political preferences to their breakfast choices, ultimately drives outcomes.56 This view has retained currency largely because there are a number of very close cases or cases where no law has been established where a judge’s political preferences seem intuitively likely to play a large role. Empirical studies almost unanimously find that some differences in appellate decision-making can be explained by the political ideology of the judge,57 using appointing President as proxy for the judge’s ideology.58

While the extra-legal model holds that judges do pursue their political preferences, not all variations of the model hold that judges must do so crudely. Judges who wish for their decisions to have staying power must avoid having those decisions overturned by a higher court or by

55 See generally, Jeffrey A. Segal & Harold J. Spaeth, The Supreme Court and the Attitudinal Model Revisited (2002).
57 See infra at part V.B. For an excellent literature review and an example of such a study, see Frank B. Cross, Decisionmaking in the U.S. Circuit Courts of Appeals, 91 CAL. L. REV. 1457 (2003).
Congress. Further, at the appellate level, judges must make decisions as part of a three-judge panel, and the preferences of colleagues may constrain any individual judge’s pursuit of personal preferences. To capture judges’ preferences and their non-legal constraints in pursuing them, I identify five independent variables that theory suggests would predict judges’ decisions.

The first independent variable is \textit{OpinGOP}, a variable that takes the value of 1 if the judge writing the majority opinion was appointed\textsuperscript{59} by a Republican President, 0 otherwise.\textsuperscript{60} This variable is included in the model because it is necessary to identify whether the ideology of all three judges explains decision-making or if the opinion-writer’s ideology is most predictive. I hypothesize that this has a positive parameter estimate for all dependent variables because Republicans are disinclined to favor environmental regulations. For this reason, Republican judges might resist writing opinions that would lead to a result they find distasteful, encouraging Democratic appointees with whom they share a panel to take on the burden of writing these decisions, and vice versa.

Second, \textit{\%GOP}, takes the value of the percentage of Republican-appointees on the 3-judge panel. The possible values are 0 (3 Democrats), 0.33 (1 Republican, 2 Democrats), 0.67 (2 Republicans, 1 Democrat), or 1 (3 Democrats).\textsuperscript{61} I predict a positive parameter estimate on the


\textsuperscript{60} Two cases did not have signed opinions. In one, all three panelists were Republican appointees. Montrose Chem. Corp. v. United States EPA, 1999 U.S. App. LEXIS 2456 (D.C. Cir. Jan. 21, 1999). In the other, a Republican appointee (Chief Judge Ginsburg) sat with two Democratic appointees. GE v. EPA, 360 F.3d 188 (D.C. Cir. 2004). Each case was responsible for a single observation. The opinion-writing judge in these cases was designated as Republican – in the former case because there was no other possibility and in the latter case because the senior judge on the panel was Republican. Switching the designation of that variable has the effect of causing \textit{OpinGop} to approach significance at \( p < .15 \). Nothing else substantially changes. Given the ultimate findings of this paper, some generosity to the Extra-Legal Model seems prudent. Excluding the variable entirely substantially reduces the viability of that model.

\textsuperscript{61} Altering the model to include three dummy variables for 1-Republican, 2-Republican, and 3-Republican panels did not substantially affect the results.
variable because Republicans are traditionally considered more hostile to environmental legislation and would presumably prefer to limit the scope of CERCLA. This variable is included in the model because decisions are made by majority vote, so the more judges of one party present on a panel, the more likely it is that the policy preferences associated with the dominant party will be outcome-determinative. Further, it is a reliable indicator of panel effects because conservatives on a panel tend to moderate the leftward leanings of liberals on that same panel according to the collegial model, and vice versa.\textsuperscript{62} I hypothesize that this has a positive parameter estimate for all dependent variables because Republicans are typically hostile to expansive CERCLA liability.\textsuperscript{63}

Third, $G$-Circ, is a dummy variable taking the value of 1 if the panel includes a guest judge from another circuit. Fourth, $G$-Dist is a dummy variable taking the value of 1 if the panel includes a guest judge from a U.S. District Court.\textsuperscript{64} These are included because judges who do not normally sit with the Court of Appeals may have different incentive structures than the judges who do normally sit on that Court. For example, they may need to worry less about social exclusion or retaliation from other members of that circuit in response to a dissent. Alternatively, they may be more inclined to go along as the immediate cost of disagreement is higher without an established relationship. I am agnostic as to the parameter estimate for these variables.

Fifth, SupCtAtt, takes a value equal to the mean Segal-Cover score of the Supreme Court Justices sitting at the time of decision.\textsuperscript{65} Each Justice is scored from 0 (most conservative) to 1

\textsuperscript{64} Two alternative tests for guest judges generated substantially similar results: a dummy variable taking the value of 1 if there was any guest judge and a variable taking the value of 1 if a guest circuit court judge and 2 if a guest district court judge.
\textsuperscript{65} For methodology, see Lee Epstein & Jeffrey Segal, Advice and Consent 109-111 (Oxford 2005); Jeffrey Segal, Lee Epstein, Charles Cameron, & Harold Spaeth, Ideological Values and the Votes of U.S. Supreme Court Justices
(most liberal). Because of the relative stability of the Court over the period studied, scores remained in a narrow band. This variable is included in the model because judges on the Court of Appeals presumably seek to avoid reversal. I predict a negative parameter estimate because Justices that are more conservative seem intuitively likely to prefer pro-business outcomes to those outcomes that would force businesses to pay for environmental harms. A more liberal Court would presumably prefer pro-government rulings in environmental cases.

Sixth, CongAtt, takes a value equal to the mean NOMINATE Common Space First-Dimension score\textsuperscript{66} for all members of the Congress in power at the time of decision.\textsuperscript{67} Each Congressperson is scored from 1 (most conservative) to -1 (most liberal). This is included in the model because judges on the Court of Appeals presumably seek to avoid reversal. I predict a positive parameter estimate because conservatives have historically been hostile to expansive CERCLA liability and judges would be more inclined to rule for private parties to avoid having their interpretations “corrected” by a more conservative Congress.

The marginal effect of extra-legal variables on outcome is estimated by the following equation:

\[ \text{Outcome}_i = \beta_0 + \beta_1(CourtClog_i) + \beta_{11}(OpinGOP_i) + \beta_{12}(\%GOP_i) + \beta_{13}(G-Circ_i) + \beta_{14}(G-Dist_i) + \beta_{15}(SupCtAtt_i) + \beta_{16}(CongAtt_i) + \varepsilon_i \]


\textsuperscript{67} Because these scores are not available for the 111\textsuperscript{th} Congress, I used the score for the 110\textsuperscript{th} Congress for the three observations that would otherwise be excluded. While imperfect, the 110\textsuperscript{th} Congress is the most liberal in the sample (though it would presumably be eclipsed by the 111\textsuperscript{th} Congress), and it is used for a small portion of the sample, so any skew is minimal. A more liberal Congress combined with 100\% pro-government decisions means that the correlation reported in this paper may be weaker than the correlation that would likely exist with full data. Lower numbers for NOMINATE are more liberal.
where the dependent variable is the outcome \( i \), the \( \beta \)'s are parameters to be estimated, \( \varepsilon \) is a zero-mean error term, and \( i = V_i, W_i, V_c, W_c \) indicates \( VoteIssue, WinIssue, VoteCase, \) and \( WinCase \).

The model includes seven explanatory variables.

**III.E. SUMMARY**

According to the legal model, judges apply objective external rules of law to the facts of the case in order to reach correct decisions. Under the extra-legal model, judges vote in accord with their policy preferences. Effectively, the debate comes down to the Legal Model’s adherents claiming that judges do what they say they do and the Extra-Legal Model’s adherents claiming that judges act to maximize preferred policy outcomes, with varying constraints. If the traditional Legal Model is right, then much of a judge’s decision-making can be explained by factors such as standards of review, lower court decisions, arguments made, citations to precedent, and similar factors. If the Extra-Legal Model is correct, then one would expect the party of the President who appoints the judges to explain and predict judicial decisions, along with the perceived ideology of the Supreme Court and Congress.

To test the relative power of each model, I run a series of tests to examine the joint significance of the variables in each model and the degree of explanatory power each model adds to the other. The marginal effect of all independent variables (“Combined Model”) on outcome is estimated by the following equation:

\[
\text{Outcome}_i = \beta_0 + \beta_1(Courtclog_i) + \beta_2(Days_i) + \beta_3(CirOvr8_i) + \beta_4(LowCtDec_i) + \beta_5(Defer_i) + \\
\beta_6(Remedial_i) + \beta_7(Cites_i) + \beta_8(Constit_i) + \beta_9(GovCont_i) + \beta_{10}(Proced_i) + \beta_{11}(OpinGOP_i) + \\
\beta_{12}(\%GOP_i) + \beta_{13}(G-Circ_i) + \beta_{14}(G-Dist_i) + \beta_{15}(SupCtAtt_i) + \beta_{16}(CongAtt_i) + \varepsilon_i
\]
where the dependent variable is the outcome $i$, the $b$’s are parameters to be estimated, $\varepsilon$ is a zero-mean error term, and $i = V_i, W_i, V_c, W_c$ indicates VoteIssue, WinIssue, VoteCase, and WinCase, respectively. The model includes fifteen explanatory variables, previously discussed.

After completing the regression analysis for the Utility-Maximization Model, Legal Model, Extra-Legal Model, and Combined Model, I perform a series of F-Tests to test the joint significance of all variables in the model. Using the Utility-Maximization Model as a baseline, I perform an F-Test for the Legal Model and Attitudinal Model. This functions to test the joint significance of the variables other than Courtclog in each of these two models. Subsequently, I perform an F-Test for the Combined Model using the Legal Model as a baseline (to test the added significance of the Extra-Legal Model) and using the Extra-Legal Model as a baseline (to test the added significance of the Legal Model). Because of the prevalence of substantial literature indicating that political factors can or should influence judicial decision-making, I predict that the Extra-Legal Model will have more explanatory power and that adding legal variables to the extra-legal variables in the Combined Model will have no significant effect.

---

68 The F-Statistic is estimated by the following equation:
$$ F = \frac{[\text{RSS}_1 - \text{RSS}_2] / (p_2 - p_1)]}{[\text{RSS}_2 / (n - p_2)]} $$
Where $\text{RSS}_1$ is the residual sum of squares of the base model, $\text{RSS}_2$ is the residual sum of squares of the model being tested, $p_1$ is the number of parameters in the base model, $p_2$ is the number of parameters in the model being tested, and $n$ is the number of observations. For the test of the Legal Model and Extra-Legal Model, the Utility-Maximization Model forms the base model. The test of the Combined Model is run twice, once with the Legal Model as the base model and once with the Extra-Legal Model as the base model. For these F-Tests, the DV in all analyses was Wc, as this was the outcome each model predicted best and is presumably the most important outcome for a party deciding whether or not to appeal.
69 See supra at part III.D. and infra at V.B.
IV. RESULTS

IV.A. LEGAL MODEL RESULTS

Taken together, the variables in the Legal Model explain just under one-third of the variance in victories and votes for cases and just over one-fifth of the variance in victories and votes on individual issues within those cases. Table 2 reports the parameter estimates for the four outcome models.

<table>
<thead>
<tr>
<th>Legal Model</th>
<th>WinCase</th>
<th>VoteCase</th>
<th>WinIssue</th>
<th>VoteIssue</th>
<th>Predict</th>
<th>Confirm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.9090^</td>
<td>2.4323</td>
<td>1.3991*</td>
<td>3.9027*</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>ln(Courtclog)</td>
<td>-0.0275</td>
<td>-0.0456</td>
<td>-0.1458</td>
<td>-0.4006</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>ln(Days)</td>
<td>0.0190</td>
<td>0.0533</td>
<td>0.0350^</td>
<td>0.1011^</td>
<td>Neg</td>
<td>No</td>
</tr>
<tr>
<td>CirOvr8</td>
<td>-0.3004***</td>
<td>-0.8312***</td>
<td>-0.2681**</td>
<td>-0.7343**</td>
<td>Neg</td>
<td>Yes</td>
</tr>
<tr>
<td>LowCtDec</td>
<td>-0.2229**</td>
<td>-0.6425**</td>
<td>0.0455</td>
<td>0.1626</td>
<td>Mix</td>
<td>Yes</td>
</tr>
<tr>
<td>Defer</td>
<td>-0.3567***</td>
<td>-1.0497***</td>
<td>-0.2019**</td>
<td>-0.5854**</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Remedial</td>
<td>-0.0971</td>
<td>-0.2912</td>
<td>-0.1768^</td>
<td>-0.5304^</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Cites</td>
<td>-0.0026*</td>
<td>-0.0074*</td>
<td>-0.0022^</td>
<td>-0.0061</td>
<td>Neg</td>
<td>Yes</td>
</tr>
<tr>
<td>Constit</td>
<td>-0.0544</td>
<td>-0.1272</td>
<td>0.0979</td>
<td>0.3297</td>
<td>Neg</td>
<td>No</td>
</tr>
<tr>
<td>GovCont?</td>
<td>0.0803</td>
<td>0.2361</td>
<td>0.4182***</td>
<td>1.2500***</td>
<td>Pos</td>
<td>Yes</td>
</tr>
<tr>
<td>Proced</td>
<td>0.0078</td>
<td>-0.0389</td>
<td>0.0797</td>
<td>0.1768</td>
<td>Neg</td>
<td>No</td>
</tr>
<tr>
<td>R Square</td>
<td>0.3165</td>
<td>0.3044</td>
<td>0.2445</td>
<td>0.2386</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R Square</td>
<td>0.2405</td>
<td>0.2272</td>
<td>0.1606</td>
<td>0.1540</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard Error</td>
<td>0.3554</td>
<td>1.0620</td>
<td>0.4075</td>
<td>1.2155</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: ^p < 0.25, *p < 0.15, **p < 0.05, ***p < 0.01

The first set of independent variables functioned as a proxy for precedent. Two variables comprised this set. The first, ln(Days), takes the value of the natural log of the number of days since the day before the first case in the sample. Originally, I hypothesized that ln(Days) would

---

70 The practical significance of the independent variables that are not dummy variables is computed by multiplying the coefficient by the interquartile range, which calculates the effect of the variable moving from its 25th percentile position to its 75th percentile position. Those are:

<table>
<thead>
<tr>
<th>Practical Significance</th>
<th>WinCase</th>
<th>VoteCase</th>
<th>WinIssue</th>
<th>VoteIssue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Courtclog</td>
<td>-0.0110</td>
<td>-0.0182</td>
<td>-0.0582</td>
<td>-0.1598</td>
</tr>
<tr>
<td>ln(Days)</td>
<td>0.0230</td>
<td>0.0647</td>
<td>0.0425^</td>
<td>0.1226^</td>
</tr>
</tbody>
</table>

Thus, for example, in the emboldened results that approach significance, as we move from the 25th percentile time period to the 75th percentile time period, the likelihood that the private party would win the case increases by 4.25% and the private party can expect to obtain 0.1226 additional votes. These findings approach significance at the p < 0.25 level, as reported in Table 2. Other reported outcomes did not approach statistical significance.
have a negative parameter estimate for all dependent variables. That hypothesis is not confirmed. Rather, the parameter estimates are positive but not significant for all dependent variables. Thus, this study finds no evidence that non-binding precedent, with pro-government decisions accumulating over time and disfavoring private parties, is substantially influencing judicial decisions. Also, since cases in the latter part of the sample occurred during a time of war while the earlier cases in the sample did not, it cautions against extending the tendency of courts to extend deference to government actors in rights and liberties situations to a general governmental deference. It is possible that given the effect of binding precedent, discussed below, persuasive precedent from other circuits has diminishing returns for the government and the accumulation of persuasive precedent benefits the private party, who would otherwise have less to rely upon.

Second, CirOvr8, is a dummy variable that takes the value of 1 if the circuit court contained more than the average number of observations in the sample. This variable is included in the model because it is a proxy for binding precedent that would constrain a judge’s decision. I hypothesized that CirOvr8, a proxy for binding precedent that would constrain a judge’s decision, would have a negative parameter estimate for all dependent variables. This hypothesis is confirmed. Circuits that decide more CERCLA issues than average are significantly less-inclined to vote for private parties in CERCLA litigation than circuits that rarely encounter those issues. This would tend to provide some weak confirmation for Dworkin’s Chain Novel

---

Hypothesis and contrasts with previous empirical tests finding that as precedent increases, discretion does as well.

The second set of independent variables relates to the legal and fact situation before the court outside the control of parties to the litigation. Four variables comprise this set. The first of these independent variables is LowCtDec, which is included to control for the trial court’s decision. I predicted a mixed parameter estimate (positive for issue, negative for case), and this hypothesis was confirmed. This indicates that district courts are generally applying law in ways similar as circuit courts on any particular issue; the negative parameter estimate on cases is simply a function of a party who wins an issue having more opportunities to end up in a worse position following appeal if they lose an issue there. Given the strong and significant correlation between decisions of the district courts and the circuit courts, it seems unlikely that the preferred outcomes of the trial judge just happen to coincide with those of three appellate judges.

Second, Defer, is significant and negative for all four dependent variables. Originally, I was agnostic regarding the direction of the predicted parameter estimate, knowing only that courts engaging in deferential analysis are likely to behave differently than courts reviewing cases de novo. The prediction that the parameter estimate would be consistent with the trend of lower court decisions was borne out, however.

Third, Cites, is a proxy for the legal or factual complexity of the case. I originally predicted a negative parameter estimate, as increasing complexity would indicate that executive

---

73 Stefanie A. Lindquist & Frank B. Cross, *Empirically Testing Dworkin's Chain Novel Theory: Studying the Path of Precedent*, 80 N.Y.U. L. REV. 1156, 1200 (2005). The cited study did not distinguish between binding and persuasive authority for the empirical test. Note that I find persuasive authority to be insignificant as a predictor of decisions, also. It is possible that the Chain Novel Hypothesis only functions for binding precedent. It is also possible, given that the Lindquist & Cross data covers a much longer period of time, that there was no chance of reaching similar results in this study.
74 Per Table 1, private parties won trial court judgments just under one-third of the time. Interestingly, however, the interaction term Defer*LowCtDec was not significant and positive when used to replace those two variables, indicating that perhaps more deference is granted to pro-government decisions than pro-private party decisions.
deference is appropriate, resulting in decisions less friendly to private parties opposing executive action. This hypothesis was confirmed, with parameter estimates negative and approaching significance across all outcomes. This complexity may provide a legal justification for the varying levels of deference agencies do (or do not) receive: judges increase deference when cases are factually or legally complex.75

Fourth, Remedial, is included because removal and remedial actions are subject to different legal standards in some issues. Originally, I was agnostic as to the expected parameter estimate. The parameter estimate is universally negative, but only approaches significance at the p < .25 level for issue outcomes and is not significant for case outcomes.

The third set of independent variables relates to fact and legal situations within the control of the litigants – the arguments pursued. This set is comprised of three dummy variables, with cases related to the appropriateness of damage awards dropped. The first argument tested Constit, a dummy variable taking the value of 1 if a constitutional argument was made. My model predicts a negative parameter estimate on this variable because constitutional challenged to the CERCLA regime as a whole had failed early on, as indicated by the continuation of CERCLA litigation. Surprisingly, this was not confirmed. While the parameter estimate on case outcomes was negative, the results were insignificant. For issue outcomes, where one would expect the result to be strongest, the parameter estimate was positive, though it failed to approach significance as well. One possible reason for this is the small number observations that involved constitutional claims.

"GovCont," as predicted, has a large positive and significant parameter estimate for issue outcomes. This likely reflects the specific waiver of sovereign immunity\textsuperscript{76} for purposes of CERCLA litigation, forcing the government into the same litigation position as private parties, subject to all the adverse precedent. The model’s predicted parameter estimate on \textit{Proced} was ambiguous; so is the outcome. Given the relatively small number of samples and the wide array of issues, it is possible that this variable is insignificant because of an insufficient unifying theme among the coded observations. The excluded argument category was all issues related to the private party’s responsibility to pay damages: challenges to site designation, apportionment, and the identification of a PRP. The coefficient on issue outcomes for all three argument variables is positive, confirming my hypothesis that the effect of this exclusion was to reduce the coefficient of the intercept. This is likely due to the deference afforded agency determinations in all of these cases. Interestingly, parameter estimates for case outcomes are mixed and insignificant for issues, indicating that judges appear to make judge issues within cases separately. This provides some reason to suspect that the judicial reasoning in an opinion is driven by something other than desire to reach a particular overall result.

In sum, according to the Legal Model, private parties are significantly more likely to come out ahead in circuits where there is little precedent, they are appealing a range of adverse decisions, and are engaging issues where there is little deference afforded the lower court decision. On any given issue, however, it is marginally beneficial to a private party to have the lower court decide the issue in their favor and to pursue a strategy of seeking government contribution where the government must meet the same standards as a private litigant to avoid liability. Seeking holistic challenges to the statute, trial procedure, or outcome is unlikely to be

\textsuperscript{76} United States v. Shell Oil Co., supra fn 20.
successful. Courts seem especially reluctant to rule that cost estimates, site definitions, and other administrative aspects of the EPA’s enforcement of CERCLA do not meet the requirements and thus preclude full liability on the part of private parties. This is consistent with the expectations of traditional legal analysis, where doctrinal analysis indicates that appellate courts would defer to the determinations of agencies within their areas of competence.77

IV.B. EXTRA-LEGAL MODEL RESULTS

Taken together, the variables in the Extra-Legal Model explain just under one-fifth of the variance in victories and votes for cases and just over one-tenth of the variance in victories and votes on individual issues within those cases. Table 3 reports the parameter estimates for the four outcome models.

Table 3: Extra-Legal Variable Parameter Estimates & Results

<table>
<thead>
<tr>
<th>Extra-Legal Model</th>
<th>WinCase</th>
<th>VoteCase</th>
<th>WinIssue</th>
<th>VoteIssue</th>
<th>Predict</th>
<th>Confirm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-1.6645</td>
<td>-5.0387^</td>
<td>-2.6935^</td>
<td>-8.1260*</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>ln(Courtclog)</td>
<td>0.1245</td>
<td>0.3914</td>
<td>0.1020</td>
<td>0.3242</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>OpinGOP</td>
<td>0.2265**</td>
<td>0.6465**</td>
<td>0.0998</td>
<td>0.2663</td>
<td>Pos</td>
<td>Yes</td>
</tr>
<tr>
<td>%GOP</td>
<td>-0.0184</td>
<td>-0.0244</td>
<td>0.1191</td>
<td>0.3880</td>
<td>Pos</td>
<td>No</td>
</tr>
<tr>
<td>G-Circ</td>
<td>-0.4112**</td>
<td>-1.2113**</td>
<td>-0.0991</td>
<td>-0.2753</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>G-Dist</td>
<td>-0.4274***</td>
<td>-0.8631***</td>
<td>-0.1741*</td>
<td>-0.4934*</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>SupCtAtt</td>
<td>4.6484</td>
<td>13.5675</td>
<td>8.1004*</td>
<td>23.9235*</td>
<td>Neg</td>
<td>No</td>
</tr>
<tr>
<td>CongAtt</td>
<td>-7.4754*</td>
<td>-21.7779*</td>
<td>-4.2202</td>
<td>-12.0123</td>
<td>Pos</td>
<td>No</td>
</tr>
<tr>
<td>R Square</td>
<td>0.1784</td>
<td>0.1746</td>
<td>0.0816</td>
<td>0.0793</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

78 The practical significance of the independent variables that are not dummy variables is computed by multiplying the coefficient by the interquartile range, which calculates the effect of the variable moving from its 25th percentile position to its 75th percentile position. Those are:

<table>
<thead>
<tr>
<th>Practical Significance</th>
<th>WinCase</th>
<th>VoteCase</th>
<th>WinIssue</th>
<th>VoteIssue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Courtclog</td>
<td>0.0497</td>
<td>0.1561</td>
<td>0.0407</td>
<td>0.1293</td>
</tr>
<tr>
<td>%GOP</td>
<td>-0.0063</td>
<td>-0.0083</td>
<td>0.0405</td>
<td>0.1319</td>
</tr>
<tr>
<td>SupCtAtt</td>
<td>0.1627</td>
<td>0.4749</td>
<td>0.2835*</td>
<td>0.8373*</td>
</tr>
<tr>
<td>CongAtt</td>
<td>-0.0396*</td>
<td>-0.1154*</td>
<td>-0.0224</td>
<td>-0.0637</td>
</tr>
</tbody>
</table>

Because SupCtAtt had identical 25th and 75th percentile numbers, the practical significance of this variable reflects its movement from the minimum to maximum values in the sample. Thus, as the Supreme Court moved from its most conservative position to its most liberal position, private parties had a 28.35% greater chance of winning any issue and could generally expect 0.8373 more votes on any issue, with this result approaching significance at the p < 0.15 level. As Congress moved from its most conservative position to its most liberal position,
The first two unique variables in the Extra-Legal Model, *OpinGOP* and *%GOP*, are measures for ideology. The expected parameter for each is positive. While the parameter estimate for *OpinGOP* is positive and significant for case outcomes, it does not approach significance for issue outcomes. The parameter estimate for *%GOP* does not approach significance for any outcome, and the coefficient is negative for case outcomes. Thus, there is no evidence here that the panel composition and the raw ideologies of the judges are substantially altering outcomes. Rather, there is a strong correlation between the opinion-writer and outcomes. Assuming that judges do not just “go along to get along,” as a utility-maximizing mechanism, and do vote their views as some judges assert is the case, this means that opinion-writing may be a function of the decision more than the decision is a function of opinion-writing. Thus, judges may use strategies available to them to ensure that they write opinions they want to write (those consistent with their preferred ideological outcomes) and avoiding writing those they would find distasteful (those inconsistent with preferred outcome).

This finding contrasts with studies finding that there are substantial panel effects whereby panels comprised of three judges vote differently based on the number of Republican-appointees in regulatory cases involving deference to agencies. This also contrasts with studies finding both ideological bias in the degree of deference granted to agencies and significant alterations in

<table>
<thead>
<tr>
<th>Adjusted R Square</th>
<th>0.1165</th>
<th>0.1125</th>
<th>0.0125</th>
<th>0.0100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Error</td>
<td>0.3833</td>
<td>1.1381</td>
<td>0.4420</td>
<td>1.3149</td>
</tr>
</tbody>
</table>

Notes: ^p < 0.25,*p < 0.15, **p < 0.05, ***p < 0.01
judicial behavior based on the precise mix of judicial ideologies on a panel. In particular, it does not confirm that panel composition for CERCLA litigation across circuits has as large an impact as it does for environmental challenges generally in the D.C. Circuit, tending to corroborate supposition that something individual to that circuit may be driving results in previous studies. This study finds no evidence that judges’ may be less willing to broadly apply laws that may be adverse to their political predilections in areas such as labor. It also fails to support claims that judges are more sympathetic to litigants coming from groups that are largely comprised of political allies.

The next two variables, $G$-Circ and $G$-Dist, are collegial variables. The predicted parameter estimates on each are ambiguous. The results, however, indicate a negative and significant parameter estimate for all case outcomes. This indicates that guest judges, regardless of whether they normally practice on another circuit or on a district court, are less inclined to vote for private parties than their counterparts who are judging on the circuit for which they normally judge. This may be the result of guest judges (especially district court judges), having

---

82 Thomas J. Miles & Cass R. Sunstein, Do Judges Make Regulatory Policy? An Empirical Investigation of Chevron, 73 U. CHI. L. REV. 823, 864 (2006). Though not included in the final model, I did test for panel effects for 1-, 2-, and 3-Republican panels. This did not generate statistically significant results, though all had positive coefficients. Further, the coefficient for 2-Republican panels was larger than the coefficient for 1-Republican panels. When I attempted to explain results using only the dummy variables, $\text{Outcome}_i = \beta_0 + \beta_1(1\text{GOP}_i) + \beta_2(2\text{GOP}_i) + \beta_3(3\text{GOP}_i) + \epsilon_i$, no variable was significant and the adjusted R-squared for the model was below .01. Also see, e.g., Thomas J. Miles & Cass R. Sunstein, The Real World of Arbitrariness Review, 75 U. CHI. L. REV. 761 (2008); J. P. Kastellec, Panel Composition and Voting on the U.S. Courts of Appeals, Paper presented at the annual meeting of the American Political Science Association, Hyatt Regency Chicago and the Sheraton Chicago Hotel and Towers (2007); Cass R. Sunstein, et al, Are Judges Political?: An Empirical Analysis of the Federal Judiciary 8-9.


84 Id. at 1720-1721.


an affinity for deferring to their colleagues and taking less active roles in deliberations,\textsuperscript{88} also tending to defer to administrative agencies and other government offices. This offers some support for the proposition that judges maximize utility, but this particular version of utility maximization has a political bent because it involves supporting the executive branch. The head of the executive branch gets to appoint judges to federal courts.

The next two variables, *CongAtt* and *SupCtAtt*, are strategic variables. The hypothesized parameter on *SupCtAtt* is negative (meaning that there would be more favorable outcomes for private parties as the Supreme Court became more conservative) and the hypothesized parameter on *CongAtt* is positive (meaning that there would be more favorable outcomes for private parties as Congress became more conservative), due to the different scales. The results indicate the opposite. A more liberal Supreme Court and Congress is associated with outcomes more friendly to private parties. These results approach significance for issue outcomes (for the Supreme Court) or case outcomes (for Congress), but not both for either. One possible explanation for this finding is that conservative politicians may dislike activist judiciaries\textsuperscript{89} while Supreme Court conservatives have strong preferences for agency deference.\textsuperscript{90} Because this is a small-n sample and the results only approach significance, it is entirely possible that it is just coincidence. A finding of no substantial relationship is consistent with the empirical findings that fear of reversal is not a significant factor affecting judicial behavior on circuit courts,\textsuperscript{91} likely due to the low probability that appellate decisions will be reviewed by the Supreme Court.\textsuperscript{92} This study also did

\textsuperscript{91} Richard S. Higgins and Paul H. Rubin, *Judicial Discretion*, 9 J.LEGAL STUD 129
not evaluate the overall ideology of the circuit to see if judges were voting to avoid potential en banc review – a factor that might play some role.\footnote{Tracey E. George, \textit{The Dynamics and Determinants of the Decision to Grant En Banc Review}, 74 WASH. L. REV. 213 (1999).} This ambiguity reflects mixed findings in the literature on the influence of Congressional ideology on court action. Previous studies found that court decision-making trends towards legislative preferences.\footnote{See, e.g. Pablo T. Spiller & Rafael Gely, \textit{Congressional Control or Judicial Independence: The Determinants of U.S. Supreme Court Labor-Relations Decisions, 1949-1988}, 23 RAND J. ECON. 463 (1990) (finding that Supreme Court decisions become more labor-friendly as Congress becomes increasingly liberal).} Others, however, find that judicial challenges to agency action are not strongly affected by the composition of Congress.\footnote{Richard L. Revesz, \textit{Congressional Influence on Judicial Behavior? An Empirical Examination of Challenges to Agency Action in the D.C. Circuit}, 76 N.Y.U. L. REV. 1100 (2001).}

In sum, there is some evidence indicating that the political policy outcomes of judges influence decisions in appellate CERCLA litigation when only extra-legal variables are tested. Very little of this influence is based on the ideological composition of the panel, however. The most influential factors include whether there are guests on the panel (which is harmful to private parties) and whether a Republican appointee writes the opinion (which is helpful to private parties).

\textbf{IV.C. SUMMARY OF RESULTS}

Taken together, the variables in the Combined Model explain just over one-third of the variance in victories and votes for cases and just over one-fourth of the variance in victories and votes on individual issues within those cases. Table 4 reports the parameter estimates for the four outcome models.

\begin{table}[h]
\centering
\caption{Combined Variable Parameter Estimates & Results}
\begin{tabular}{|l|c|c|c|c|c|c|}
\hline
\textbf{Combined Model} & \textbf{WinCase} & \textbf{VoteCase} & \textbf{WinIssue} & \textbf{VoteIssue} & \textbf{Signif Change} \\
\hline
-0.0110 & -0.0182 & -0.0582 & -0.1598 & & \\
0.0459 & 0.1331 & 0.0676 & 0.1981 & & \\
\hline
\end{tabular}
\end{table}

\footnote{The practical significance of the independent variables that are not dummy variables is computed by multiplying the coefficient by the interquartile range, which calculates the effect of the variable moving from its 25\textsuperscript{th} percentile position to its 75\textsuperscript{th} percentile position. Those are:}

\begin{table}[h]
\centering
\caption{Practical Significance}
\begin{tabular}{|l|c|c|c|c|}
\hline
\textbf{Practical Significance} & \textbf{WinCase} & \textbf{VoteCase} & \textbf{WinIssue} & \textbf{VoteIssue} \\
\hline
Courtclog & -0.0110 & -0.0182 & -0.0582 & -0.1598 \\
ln(Days) & 0.0459 & 0.1331 & 0.0676 & 0.1981 \\
\hline
\end{tabular}
\end{table}
Because the previous sections have addressed each independent variable individually, this section briefly focuses on some important changes between the results for independent variables reported in the Legal or Extra-Legal Models and the parameter estimates for those variables in the Combined Model.

Two variables see slight increases in significance. The Utility-Maximization model approaches significance at the p < .25 level for one issue outcome. Also, ln(Days), the proxy for non-binding precedent, approaches significance at the p < .25 level for case outcomes and the p

<table>
<thead>
<tr>
<th>Intercept</th>
<th>-0.3848</th>
<th>-1.5773</th>
<th>-0.5398</th>
<th>-2.0423</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>ln(Courtclog)</td>
<td>-0.0203</td>
<td>-0.0251</td>
<td>-0.1722</td>
<td>-0.4807</td>
<td>Increase</td>
</tr>
<tr>
<td>ln(Days)</td>
<td>0.0378^</td>
<td>0.1097^</td>
<td>0.0557*</td>
<td>0.1633*</td>
<td>Increase</td>
</tr>
<tr>
<td>CirOvr8</td>
<td>-0.2152*</td>
<td>-0.5751*</td>
<td>-0.2067*</td>
<td>-0.5495^</td>
<td>Decrease</td>
</tr>
<tr>
<td>LowCtDec</td>
<td>-0.1815*</td>
<td>-0.5133*</td>
<td>0.0828</td>
<td>0.2796</td>
<td>Decrease</td>
</tr>
<tr>
<td>Defer</td>
<td>-0.3176***</td>
<td>-0.9367***</td>
<td>-0.1776*</td>
<td>-0.5167*</td>
<td>Decrease</td>
</tr>
<tr>
<td>Remedial</td>
<td>-0.0324</td>
<td>-0.1002</td>
<td>-0.1269</td>
<td>-0.3834</td>
<td>Decrease</td>
</tr>
<tr>
<td>Cites</td>
<td>-0.0017</td>
<td>-0.0049</td>
<td>-0.0018</td>
<td>-0.0051</td>
<td>Decrease</td>
</tr>
<tr>
<td>Constit</td>
<td>-0.0768</td>
<td>-0.1983</td>
<td>0.0712</td>
<td>0.2458</td>
<td>None</td>
</tr>
<tr>
<td>GovCont?</td>
<td>0.0808</td>
<td>0.2289</td>
<td>0.4236***</td>
<td>1.2572***</td>
<td>None</td>
</tr>
<tr>
<td>Proced</td>
<td>-0.0018</td>
<td>-0.0729</td>
<td>0.0170</td>
<td>-0.0164</td>
<td>None</td>
</tr>
<tr>
<td>OpInGOP?</td>
<td>0.1560^</td>
<td>0.4538^</td>
<td>0.1850^</td>
<td>0.5406^</td>
<td>Decrease</td>
</tr>
<tr>
<td>% GOP</td>
<td>0.0262</td>
<td>0.1138</td>
<td>-0.0243</td>
<td>-0.0377</td>
<td>None</td>
</tr>
<tr>
<td>G-Circ</td>
<td>-0.1556</td>
<td>-0.4585</td>
<td>-0.0190</td>
<td>-0.0488</td>
<td>Decrease</td>
</tr>
<tr>
<td>G-Dist</td>
<td>-0.1736*</td>
<td>-0.4959*</td>
<td>-0.0783</td>
<td>-0.2099</td>
<td>Decrease</td>
</tr>
<tr>
<td>SupCtAtt</td>
<td>3.6881</td>
<td>11.4311</td>
<td>6.4518^</td>
<td>19.7222^</td>
<td>Decrease</td>
</tr>
<tr>
<td>CongAtt</td>
<td>-5.2769^</td>
<td>-15.5017</td>
<td>-3.8062</td>
<td>-11.0896</td>
<td>Decrease</td>
</tr>
<tr>
<td>R Square</td>
<td>0.3608</td>
<td>0.3488</td>
<td>0.2809</td>
<td>0.2757</td>
<td>See F-Test</td>
</tr>
<tr>
<td>Adjusted R Square</td>
<td>0.2390</td>
<td>0.2248</td>
<td>0.1439</td>
<td>0.1377</td>
<td>See F-Test</td>
</tr>
<tr>
<td>Standard Error</td>
<td>0.3558</td>
<td>1.0636</td>
<td>0.4115</td>
<td>1.2272</td>
<td></td>
</tr>
</tbody>
</table>

Therefore, as the case load of judges in a circuit increases from the 25th to 75th percentile, private parties are 5.28% less likely to win any given issue. As time passes from the 25th to 75th percentile period, private parties are 6.76% more likely to win any given issue and can expect to receive 0.1981 additional votes on any issue. Because SupCtAtt had identical 25th and 75th percentile numbers, the practical significance of this variable reflects its movement from the minimum to maximum values in the sample. As the Supreme Court moves from its most conservative to most liberal position, private parties are 22.58% more likely to win on an issue and can expect to receive 0.6903 more votes for an issue. As Congress becomes more conservative, from the 25th to 75th percentile, private parties can expect to win 2.8% less often.
< .15 level for issue outcomes relative to its parameter estimate for outcomes in the Legal Model. This increase in significance may increase the plausibility of the earlier supposition that persuasive authority has diminishing returns for the government, but has not yet reached that point for private parties.

The set of dummy variables indicating the issue before the court does not change in significance. GovCont? has the largest coefficient of any dummy variable in the model and remains highly significant for issue outcomes. %GOP, the variable identifying ideological composition of the panel, remains insignificant and does not approach significance for any outcome model.

All other independent variables had parameter estimates decreasing in significance when placed in the Combined Model. CirOvr8 changed from being significant for all outcomes to approaching significance for all outcomes. LowCtDec changed from being significant for case outcomes to approaching significance, and no longer approaches significance for issue outcomes. Defer remained highly significant for case outcomes but only approaches significance for issue outcomes. Neither Remedial nor Cites approach significance for any outcome in the Combined Model. Of the independent variables originally in the Extra-Legal Model, none retain significance in the Combined Model. OpinGOP? approaches significance at the p < .25 level for all outcomes, showing a slight increase in relative importance for issue outcomes but a substantial decrease for case outcomes. The only relationship approaching significance at p < .15 is a negative parameter estimate on G-Dist. This seems to indicate that the explanatory power of each variable set is substantially reduced when combined with other variable sets, and further testing is necessary to ascertain which sets of variables are driving the explanatory power of the Combined Model.
Overall, the Combined Model explains more than any of the embedded models, and both the Legal Model and Extra-Legal Model explain more than the embedded Utility-Maximization Model. To ascertain whether or not additional variables are providing some unique explanation within the larger models, a series of F-tests is required. Table 5 reports the results of a series of F-Tests,\(^97\) testing the joint significance of the additional variables to each model.

<table>
<thead>
<tr>
<th>Table 5: Reported Results of an F-Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-Stat</td>
</tr>
<tr>
<td>1. F-Test (Util -&gt; Legal)(^98)</td>
</tr>
<tr>
<td>2. F-Test (Util -&gt; Extra)(^99)</td>
</tr>
<tr>
<td>3. F-Test (Extra -&gt; Combined)(^100)</td>
</tr>
<tr>
<td>4. F-Test (Legal -&gt; Combined)(^101)</td>
</tr>
</tbody>
</table>

As indicated by the first and second F-Test, both the Legal Model and Extra-Legal Model are independently significant. This means that the Legal Model explains some judge behavior beyond that which is explained by the Utility-Maximization Model. Likewise, the Extra-Legal Model explains some judge behavior beyond that which is explained by the Utility-Maximization Model. This is consistent with the Chief Judge of the D.C. Circuit’s assertion that “A researcher who assumes the existence of ideological bias or strategic behavior may ‘find’ that these exist,

---

\(^97\) See supra part IV.C.

\(^98\) F-Test (Util->Legal) is a 9-degree-of freedom test of the restriction that all the coefficients on the Legal variables are zero, in a model that includes all of the Utility Maximization variables as well. The null hypothesis can be rejected at p < .01.

\(^99\) F-Test (Util->Extra) is a 6-degree-of freedom test of the restriction that all the coefficients on the Extra-Legal variables are zero, in a model that includes all of the Utility Maximization variables as well. The null hypothesis can be rejected at p < .01.

\(^100\) F-Test (Extra->Combined) is a 9-degree-of freedom test of the restriction that all the coefficients on the Legal variables are zero, in a model that includes all of the Extra-Legal and Utility Maximization variables as well. The null hypothesis can be rejected at p < .01.

\(^101\) F-Test (Legal->Combined) is a 6-degree-of freedom test of the restriction that all the coefficients on the Extra-Legal variables are zero, in a model that includes all of the Legal and Utility Maximization variables as well. The null hypothesis cannot be rejected at p < .75.
while a researcher who considers alternative explanations may find that what exists is rather
different. This study adds to the literature by doing both, then comparing the findings.

The comparison comes from the third and fourth F-Test, reported above. The third F-Test
uses the Extra-Legal Model as a base model, then adds the additional Legal Model variables to
generate the Combined Model. This test indicates that using the Extra-Legal Model as the base
model, addition of the unique Legal Model variables adds explanatory power with significance
of $p < .01$. This means that it is highly likely that Extra-Legal Model does not fully explain
judicial decision-making and that the Legal Model explains some portion of outcomes the Extra-
Legal Model does not. This conclusion is intuitively validated by a cursory look at Table 3 and
Table 4, where the Adjusted R-Squared more than doubles when moving from the Extra-Legal
Model to the Combined Model. The fourth F-Test uses the Legal Model as a base model, then
adds the additional Extra-Legal Model variables to generate the Combined Model. This test
indicates that using the Legal Model as the base model, addition of the unique Extra-Legal
Model variables was not shown to add explanatory power, with $p > 0.75$. This means that it is
highly unlikely that the Extra-Legal Model explains some portion of outcomes that the Legal
Model does not. This conclusion is intuitively validated by a look at Table 2 and Table 4, where
the Adjusted R-Squared slightly decreases when moving from the Legal Model to the Combined
Model. This finding validates the finding by empirical researchers and assertions by judges
that legal factors are highly important to judicial decision-making.

There are many reasons this study might not confirm ideological voting of the sorts
typically found. First, many of the Republican appellate judges in the sample had been sitting
judges for some time by the latter portion of the sample, and ideological drift could account for

---

deviation from political preferences.\textsuperscript{104} Further, judges could be shaping precedent in accord with their ideology in other ways. One suggestion is that judges selectively publish opinions to avoid generating precedent contrary to ideology.\textsuperscript{105} Less than 4\% of the sample consisted of unpublished opinions, so it does not appear likely that judges are using that particular strategy to generate ideologically-preferable long-term outcomes in these cases.

V. CONCLUSION

When confined to appellate CERCLA litigation from 1996-2009, judges’ self-reports indicating that they decide cases based on law are corroborated by empirical evidence. While there is some evidence that judges do respond to incentives and constraints, the results do not indicate that this is made manifest in outcomes. The Legal Model has the most explanatory power of the three models independently tested. While the Legal Model and Extra-Legal Model are each independently significant, the Legal Model does add explanatory power to the Extra-Legal Model while the Extra-Legal Model has not been shown to add explanatory power to the Legal Model. Specifically, the Adjusted R-Squared of Legal Model is slightly decreased with the Combined Model, while the Adjusted R-Squared of the Extra-Legal Model more than doubles with the Combined Model. Most interestingly, the percentage of Republican appointees on an appellate panel was not shown to be significant at even the p < .25 level in any model, indicating that raw political preferences may be irrelevant to outcomes. While the political affiliation of the opinion-writer is significant for case outcomes in the Extra-Legal Model and approaches significance Combined Model, the opinion-writer may be a function of outcome as plausibly as the reverse. Thus, when the conclusion is confined properly to the limits of the cases tested, it


\textsuperscript{105} David S. Law, Strategic Judicial Lawmaking: Ideology, Publication, and Asylum Law in the Ninth Circuit, 73 U. CIN. L. REV. 817 (2005)
appears likely that the Legal Model is the most accurate and parsimonious model for judicial decision-making.